

Informational Bulletin

Resuscitation Reminders

Date: February 9, 2021

Number: 21.008

Effective Date: February 9, 2021

Expiration Date: N/A

Approved By: Darren L. Stevens, Fire Rescue Chief



We are very pleased to share the following notes from Fauquier County OMD, Dr. Michael Jenks.

1. CPR is pretty much the whole game.

- a. Starting compressions immediately on discovery of “no pulse” is very important. The first compressions on every patient with cardiac arrest are done by hand. It takes too long to set up the Lucas device. This should be done at the first rhythm check, and should be done as quickly as possible (<10 seconds, ideally).
- b. Uninterrupted CPR is the best CPR you can do. Compressions build up a pressure gradient in the coronary arteries, providing blood flow to the heart muscle. Every pause in compressions eliminates that pressure gradient, which you have to "build up" again when you re-start compressions.
- c. 00-120 bpm compression rate, this is pretty quick. But you still need to allow full recoil of the chest wall so that the Left Ventricle has time to fill with blood.
- d. Monitoring **the quality of compressions delivered by the LUCAS is your responsibility**. As you know, these things have a tendency to slide on the patient's chest. Continuous automatic compressions are no good if those compressions are being delivered to the patient's liver. Just as you would monitor the quality of CPR delivered by a brand new EMT, the LUCAS needs your guidance.

2. Airway is not the priority.

- a. For the first couple of minutes of CPR, just an OPA and a NRB will do a fine job while you get things set up.
- b. Don't do anything with the airway, especially early on in the resuscitation, that will interrupt compressions.
- c. Place an ETT if it can be placed (with video laryngoscopy) *without stopping compressions*, otherwise do your patient a favor and insert a King LT while CPR continues uninterrupted. Continuous CPR is what saves these patients, not endotracheal tubes.
- d. Don't be distracted by agonal respirations. These are common soon after cardiac arrest. If the patient is unresponsive and without a pulse, they need CPR. The presence of agonal respirations is associated with *better* outcomes, because this generally means that the arrest just happened. Take advantage of your early arrival and get right to work!

3. Electricity is a good thing.

- a. Once a shockable rhythm is detected, shock it *immediately*.
- b. After the shock is delivered, get right back on the chest for compressions. Do not wait to see if you've converted the rhythm. You will figure that out in another 2 minutes at your next rhythm check.
- c. Chest compressions should be continued while the defibrillator is charging. Uninterrupted CPR is really important, in case I haven't made that clear by now.
- d. Coarse VF is more responsive to electricity than Fine VF. If your patient has Fine VF, what can you do to make it Coarse VF, and increase the chances that you can shock them out of it? You guessed it . . . high quality CPR. VF goes from Coarse to Fine because the "high-energy phosphates" and other substrates are used up in the heart muscle cells. High-quality CPR increases blood flow to the heart muscle, delivering more nutrients, leading to more Coarse VF. Better for shocking!

4. Medications are occasionally helpful.

- a. Epinephrine probably works. Probably. But, if it works, it most likely has it's best effect if given early. So, don't delay. And, epi likely works the best with *non-shockable* rhythms, so prioritize this in these cases. (VF/VT = early electricity, then epi if needed. Asystole/PEA = early epi)
- b. Amiodarone is useful for VF/VT that just won't get better with defibrillation. Consider Amio (300mg IV/IO) after the 2nd or 3rd defibrillation attempt. Don't use amiodarone in a patient if it looks like underlying a-fib with *known* Wolf-Parkinson White syndrome.
- c. Others — there is no good reason to empty the code box in every cardiac arrest. Here are a couple of other thoughts on meds:
 - i. Most every cardiac arrest that doesn't get immediately better with electricity will get epinephrine.
 - ii. Refractory VF/VT will get amiodarone.
 - iii. What about PEA? I never found the H's and T's to be that useful. Here's another way to think about it: If the patient has PEA with a narrow-complex QRS, the problem is most likely some kind of process that decreases blood return to the Right side of the heart (tension pneumothorax, pericardial tamponade, PE, hypovolemia). If the QRS is wide, think about tox or metabolic (this might be a more reasonable time to use Bicarb or Calcium, for example).

5. Termination of efforts.

- a. There are three factors strongly associated with poor outcomes:
 - i. Unwitnessed arrest
 - ii. No shocks delivered
 - iii. No ROSC after 4 cycles of CPR and rhythm check (2 minutes of CPR each)
 - iv. EtCO₂ <10 after 20 minutes of CPR is another indicator of very poor outcome, assuming you have good airway placement.

- b. These are things you might want to mention on the phone if you call for approval to terminate a resuscitation that you have started.

Thank you for all of your great work. Your community is lucky to have you out there.

Questions regarding this bulletin should be directed to Operational Medical Director Michael Jenks.