LOYOLA UNIVERSITY HEALTH SYSTEM

The Coding Patient
- A Modified Review Of ACLS -

Emergency Medicine Clerkship

A PART OF TRINITY HEALTH

Discussion Overview

- The Basics - Pushing, Breathing & Shocking
- Medications
- Pulseless Algorithms - AHA recommendations
- "H's & T's" - Another way of looking at them
- PoCUS
- ROSC care
- Code termination
- Bonus material - time allowing

ACLS Topics Not Covered

- Rhythms with pulses
- Acute Coronary Syndrome (ACS)
- Acute Stroke
- Brady and Tachyarrhythmias

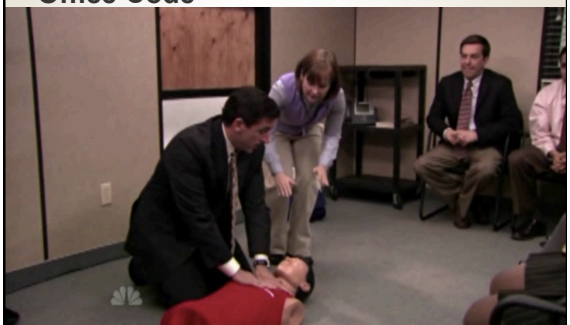
Resources/References

- Experience
- American Health Association ACLS protocol
- REBELEM.com
- EMCrit.org
- ALIEM.com
- EMRAP podcast
- Crashingpatient.com

Who has seen an in-hospital code?

How was it run?

Office Code



- https://www.youtube.com/watch?v=Vmb1tqYqyII

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The Basics

Pushing, Breathing and Shocking

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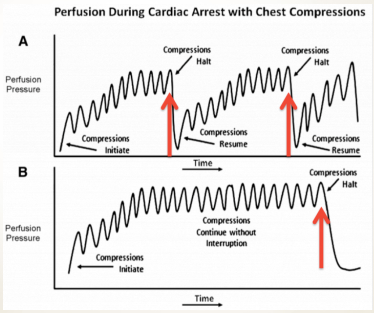
CPR
Quality

- How Fast?
  - 100-120 bpm (level IIa rec)
  - Stayin' Alive (Bee Gees)
  - Another One Bites the Dust (Queen)
- How Deep?
  - 2-2.4" or 5-6cm (level I rec)
    - Don't forget about the recoil
- What Ratio?
  - No advanced airway: 30-2
  - Airway: Continuous compressions with ventilating every 6 seconds

CPR
Minimizing Interruptions



CPR
Tips for Minimizing Interruptions

- Compressions **DO NOT** need to be stopped during attempts at airway management
- Counting out loud during cardiac ultrasound assessments
- Skipping pulse checks in favor of watching for a bump in the end-tidal CO_2
- Rotate compressors every 2 minutes
- Team Sport
  - In game coaching, teamwork, communication
- Minimize total pre and post shock (level I rec)

Breathing – Ventilation

- How often should you "bag the patient?"
  - No airway: 30-2
  - Airway: Continuous
    - Ventilating every 6 seconds
- How much?
  - Enough to make the chest wall rise… but not the whole bag (~500cc)
- Get a good seal...
  - Until you get a good airway
  - Consider two handed
  - Other airway adjuncts

Bagging – Ventilation
Intubation

- Get it right the first time!
  - As the number of attempts increases, the incidence of Adverse Events (AEs) increases substantially (Sakles et al 2013)
    - First attempt success = 14.2% AEs
    - Two attempts = 47.2% AEs
    - Three attempts = 63.6% AEs
    - Four or more attempts = 70.6% AEs

Sakles, John C, Stephen Chiu, Jarrod Mosier, Corrine Walker, and Uwe Stolz. 2013. The importance of first pass success when performing orotracheal intubation in the emergency department. Academic emergency medicine : official journal of the Society for Academic Emergency Medicine, no. 1

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CPR
Quality – End Tidal CO_2

- Improve CPR if…
  - $PETCO_2$ <10 mmHg,
    - Cardiac Output (CO) is a major determinant of CO_2 delivery to the lungs, so $PETCO_2$ correlates well with CO
  - Relaxation Phase pressure <20 mmHg
    - Relaxation phase = Diastolic BP = surrogate for Coronary Perfusion Pressure
- Low $EtCO_2$ (≤ 10) after 20 minutes of CPR is strongly associated with resuscitation failure
  - Not be used in isolation
  - Not be used in non-intubated patients

Shocking! – Defibrillation

Shock Energy
- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Former Loyola- Medtronic Defibrillator
200J,300J,360J

Loyola & Hines- Zoll Defibrillator
120J, 150J, 200J

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Medications

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Medications

"While the listed drugs have theoretical benefits in selected situations, no medication has been shown to improve long term survival in humans after cardiac arrest. Priorities are defibrillation, oxygenation and ventilation together with external cardiac compression."

— Australian Resuscitation Council Statement

Medications
What medications do we typically think of?

- Asystole/PEA
  - Epinephrine
  - ~~Vasopressin~~
  - ~~Atropine~~
- V-Fib/V-tach
  - Epinephrine
  - ~~Vasopressin~~
  - Amiodarone
  - ~~Lidocaine~~
  - Magnesium (Torsades)

#AHA ACLS 2018 update!

Lidocaine is back! Amio or Lidocaine for VF/pVT

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Medications
Epinephrine

- ACLS recommendations:
  - **"CONSIDER"** epinephrine 1mg every 3-5 minutes
    - Allow for some wiggle room in the way we choose to deliver intra-arrest vasopressors.
    - But give early for non-shockable rhythm, if you are going to give it

Medications
Amiodarone

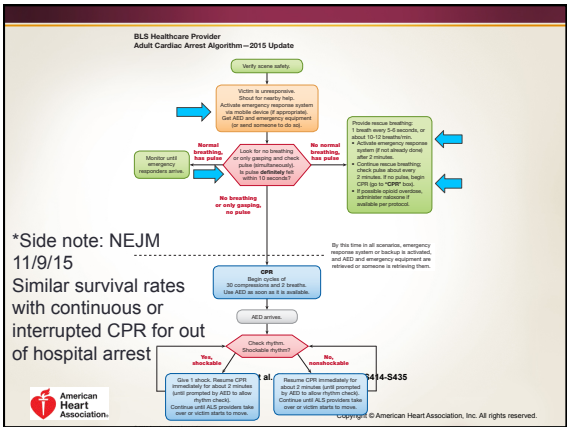
- What's the dosing?
  - First dose: 300mg bolus (IV/IO)
  - Second dose: 150mg bolus (IV/IO)
- Does it work?
  - Increase short-term survival to hospital admission…
  - But doesn't improve long-term outcomes
  - Defibrillation matters more
- If you're going to give it…
  - Give early after shock to circulate them.
  - Optimal time not established, but peak effect can be delayed 1-2min in cardiac arrest

Medications
Lidocaine

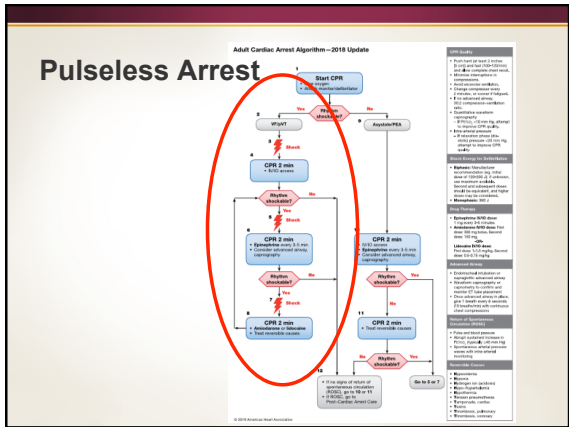
- What's the dosing?
  - First dose: 1-1.5 mg/kg bolus (IV/IO)
  - Second dose: 0.5- 0.75 mg/kg bolus (IV/IO)
- Does it work?
  - Increase short-term survival to hospital admission…
  - But doesn't improve long-term outcomes
  - Defibrillation matters more
- If you're going to give it…
  - Give early after shock to circulate them.
  - Optimal time not established, but peak effect can be delayed 1-2min in cardiac arrest

Medications
What else do I give during codes…

- Glucose
  - If accucheck not done or is hypoglycemic
- Magnesium
  - If torsades, severe hypokalemia/hypomag, or digoxin toxicity
- Calcium
- Bicarbonate



*Side note: NEJM 11/9/15
Similar survival rates with continuous or interrupted CPR for out of hospital arrest



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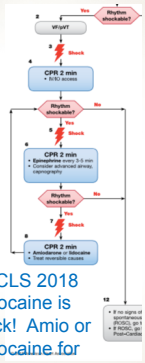
VT/VF

*Side note:
Give meds early after shock to circulate them

#ACLS 2015
-Shockable rhythm - insufficient evidence to make a rec. about the optimal timing of epinephrine administration, defi b. is a major focus of resuscitation.

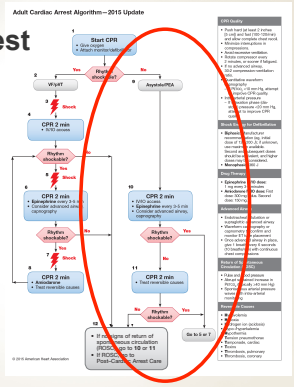


#ACLS 2018
Lidocaine is back! Amio or Lidocaine for VF/pVT

#ACLS 2015
Total preshock and postshock pauses should be as short as possible I, C-LD.
Target compression fraction ≥ 60%

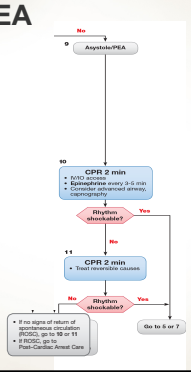
*Side note:
Longer pre-shock pause independently associated with decreased survival

Pulseless Arrest



Asystole/PEA

#ACLS2015
Nonshockable rhythm - may be reasonable to administer epinephrine as soon as feasible
IIb, C-LD



- https://www.youtube.com/watch?v=FnAOmxr

H's & T's

H's
- Hydrogen Ion – Acidosis
- Hyper/Hypokalemia
- Hypothermia
- Hypovolemia
- Hypoxemia
- (Hypoglycemia)

T's
- Toxins
- Tamponade – Cardiac
- Tension Pneumothorax
- Thrombosis
  - Cardiac
  - Pulmonary
- (Trauma)

H's

- Hydrogen Ion (Acidosis)
  - Check ABG.
  - Give Bicarb (metabolic) and Ventilate (resp)
- Hypothermia
  - Warm them to >30°C
- Hyper/Hypokalemia
  - Calcium etc.
- Hypovolemia
- Hypoxemia
  - Intubate
- "Hypoglycemia"
  - Accucheck and give glucose

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T's

- Toxins
  - Narcan or bicarb
  - Figure out source
  - Lengthy list
  - Consider Intralipid
- Tamponade (cardiac)
  - Diagnose with Ultrasound
  - Pericardiocentesis
- Tension PTX
  - Needle Decompression
- Thrombosis – Cardiac
  - Stabilize and get to Cath
- Thrombosis – Pulmonary
  - Lytics
- "Trauma"
  - Examine and Ultrasound Pt
  - Causes other H's & T's

Alternate Framework for H's and T's

- Chaotic to try to remember all of them
- Do we try to fix all of them?
- What's a good solution?

NEW US Based PEA Framework

PEA – EVALUATION

QRS NARROW MECHANICAL (RV) PROBLEM	QRS WIDE METABOLIC (LV) PROBLEM
• Cardiac tamponade • Tension PTX • Mechanical hyperinflation • Pulmonary embolism	• Severe hyperkalemia • Sodium-channel blocker toxicity
ACUTE MI Myocardial rupture	AGONAL RHYTHM ACUTE MI Pump failure
BEDSIDE US: LV HYPERDYNAMIC PSEUDO-PEA	LV HYPOKINETIC OR AKINETIC TRUE PEA

Narrow Complex PEA Management

PEA – MANAGEMENT

QRS NARROW
MECHANICAL (RV) PROBLEM → WIDE OPEN FLUIDS, PLUS:

• Cardiac tamponade	→ PERICARDIOCENTESIS
• Tension PTX	→ NEEDLE DECOMPRESSION
• Mechanical hyperinflation	→ VENTILATOR MANAGEMENT
• Pulmonary embolism	→ THROMBOLYSIS

Wide Complex PEA Management

PEA – MANAGEMENT

QRS WIDE
METABOLIC (LV) PROBLEM → PHARMACOLOGIC MANAGEMENT

IV CALCIUM CHLORIDE	• Severe hyperkalemia
IV SODIUM BICARBONATE BOLUSES	• Sodium-channel blocker toxicity

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Point of Care Ultrasound (POCUS)

Ultrasound will be your friend

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HI-MAP Mnemonic Device Finding Source

- **H**eart
  - Pericardial Effusion
    - Tamponade
  - RV Dilatation
    - PE
  - RV Collapse
    - Tamponade
    - PTX
    - Mechanical Hyperinflation
  - Ruptured Mitral Valve
    - MI
- **I**nferior Vena Cava
  - Fluid status
- **M**orrison's Pouch
  - Trauma
  - Ruptured Ectopic
- **A**orta
  - Ruptured Aortic Aneurysm
- **P**neumothorax

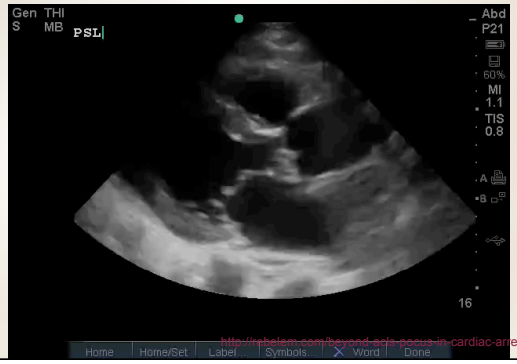
Ultrasound in Cardiac Arrest

- Alternate Framework to the H's and T's
- Assessment for the presence or absence of Cardiac Output
- Confirming ETT placement

1. Assessment for the presence or absence of Cardiac Output

- How do we currently assess cardiac output during a code?
- Why is this a bad approach?
  - It's insensitive
  - It isn't specific
  - Inter-rated reliability of pulses is poor
    - Only 78% accurate

POCUS in Cardiac Arrest - CO



http://rebelem.com/beyond-acls-pocus-in-cardiac-arrest/

2. Confirming ETT placement

- How do we confirm placement?
  - Continuous waveform capnography
  - Ultrasound (qualitative EtCO2 or EDD) was added if capnography not available

Confirming ETT with US

https://www.youtube.com/watch?v=NvTan3189P4

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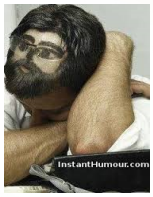

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ROSC care

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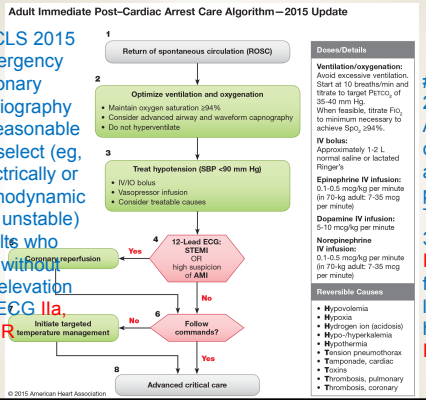
#ACLS 2015 Emergency coronary angiography is reasonable for select (eg, electrically or hemodynamically unstable) adults who are without ST elevation on ECG IIa, B-NR



#ACLS 2015 All comatose adult patients: Temp 32C-36C I, B-R for at least 24 hours IIa, C-EO

Post Resuscitative Care

- Spend an extra 10 min at the bedside sweating the small stuff after an intubation or after achieving ROSC
  - Turn down FiO2 to avoid hyperoxia
  - Tweak the vent (6cc/kg tidal volume)
  - Check cuff pressure on ETT tube
  - Optimize MAP
  - Optimize position (head of bed elevation >30 degrees)
  - Confirm the cause of arrest if possible
  - Optimize temp: 36 degrees by 4th hour post ROSC if don't follow commands
  - Consider antibiotics

Post Resuscitative Care

TEACH: Check with your team if any of the interventions need clarification or explanation. If you are convincing, they will do this for other patients also.

Hyperoxia & the Post-Arrest Patient

- **Early hyperoxia was found to be an independent predictor of poor neurologic outcome at hospital discharge.**
- **One hour longer duration of hyperoxia was associated with a 3% increase in the risk of poor neurologic outcome**
- **SaO2 could not reliably exclude the presence of hyperoxia.**

Roberts BW, et al. Association between early hyperoxia exposure after resuscitation from cardiac arrest and neurological disability: a prospective multi-center protocol-directed cohort study. *Circulation* 2018; epub ahead of print.

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Antibiotics?

- AHA didn't address this but 38% of post-arrest pts were bacteremic
  - Unclear if bacteremia was cause or result of

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Code termination

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But There is No Advance Directive…

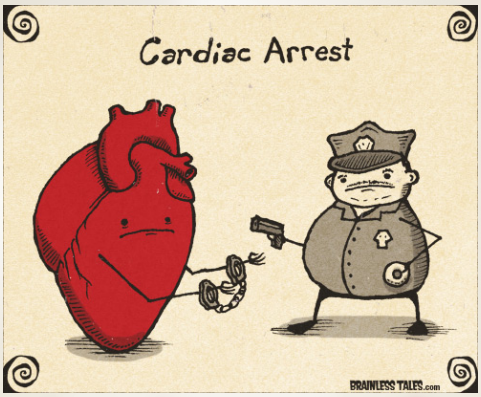
- There is no consensus
  - "Physicians are under no ethical obligation to render treatment that they judge have no realistic likelihood of medical benefit to the patient." -ACEP
- Assess likely outcome, based on scientific evidence
- Weigh risks and benefits of resuscitation, in conjunction with family and PCP, if available.

$ETCO_2$

- Low $EtCO_2$ ($\leq$ 10) after 20 minutes of CPR is strongly associated with resuscitation failure
  - Not be used in isolation
  - Not be used in non-intubated patients

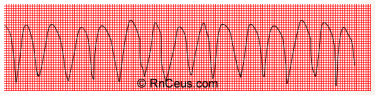
Treat the Patient AND the Family

- Communicate with family and loved ones
- Allow family to be present during resuscitative efforts, if appropriate
- Use a multidisciplinary approach to family communication
  - Spiritual, psychosocial, and educational support



Megacode Review

- 52 yo male appears unresponsive when you check on him for morning rounds



Thank you!

- https://www.bing.com/videos/search?q=pericardial+effusion+on+ultrasound+subxyphoid+view&&view=detail&mid=B2BABBAB645AF2314084B2BABBAB645AF2314084&FORM=VRDGAR

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BONUS MATERIAL

Special Situations and Possible Futures

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Bonus Material!

- PALS
- Opioid-associated life-threatening emergencies
- Pregnancy and cardiac arrest
- Asthma
- Pulmonary embolism
- ECMO
- Lipid Emulsion Therapy

Bonus Material Pediatrics/PALS

- Compression rate 100-120
- Depth at least 1/3 AP diameter (4cm infant, 5cm child) but once reached puberty compress 5-6cm
- Initial Joules of 2 J/kg then 4 J/kg, up to 10 J/kg
- ROSC Temp = 5 days normothermic or 2 days 32-34 then 3 days normothermic
- Both cuffed and uncuffed ETT are acceptable
- Check glucose in pediatric arrest (I, C)

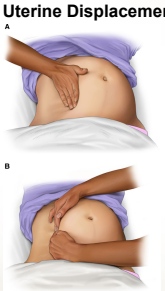
Bonus Material Opioid-associated…

- If Cardiac Arrest
  - Begin CPR
  - Administer naloxone based on the possibility of respiratory arrest, not in cardiac arrest
- Not Cardiac Arrest
  - Use BVM and administer Naloxone

Bonus Material Pregnancy and cardiac arrest

Manual Left Uterine Displacement (LUD) IIa, C-LD

-PMCD should be considered at 4 minutes IIa, C-EO



-Nonsurvivable maternal trauma or prolonged pulseless
-No reason to delay performing PMCD I, C-LD

American Heart Association. Eric J. Lavonas et al. Circulation. 2015;132:S501-S518

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Bonus Material
Asthma

- Early intubation
- Always consider pneumothorax as a cause
  - If you suspect it or see it on ultrasound, needle decompress!!!!
- If already on a ventilator…
  - Disconect from ventilator as "gas trapping" may have been the cause
- Consider higher shock energies if initial defibrillation attempts fail
  - Dynamic hyperinflation increases transthoracic impedance

Bonus Material
Pulmonary embolism

- Confirmed PE
  - Systemic thrombolysis, surgical embolectomy, and mechanical embolectomy are reasonable IIa, C-LD
- Suspected PE
  - Systemic thrombolysis may be considered IIb, C-LD

Bonus Material
ECMO/ECPR

- ECMO may be considered
  - Venoarterial extracorporeal membrane oxygenation including bypass
  - Alternative to conventional CPR
  - Refractory arrest when suspected etiology of the cardiac arrest is potentially reversible (e.g. acute CAD, PE, profound hypothermia, myocarditis, toxicologic) during a limited period of mechanical cardiorespiratory support IIb, C-LD
  - **ECPR** can be used in select patients when local resources can support it. Remember that there is still no high-quality study that compares ECPR to conventional CPR.
  - CHEER (CPR, Hypothermia, ECMO, Early Reperfusion)

Bonus Material
Lipid Emulsion Therapy

- Proposed mechanism:
  - Creates a lipid compartment in the serum sequestering lipophilic medications from the tissues
- Local anesthetic systemic toxicity IIb, C-EO
- Other forms of drug toxicity which failed standard resuscitative measures IIb, C-EO
  - Lipophilic agents such as beta-blockers, calcium channel blockers, herbicides, and psychotropic agents
- Potential concerns
  - Interactions with epinephrine during CPR
  - May interfere with ECMO circuits

Bonus
Bonus

- **Social media** is now officially recommended as a method to notify potential rescuers of a cardiac arrest. Several apps are available for download such as Pulsepoint that will let you know if there is a cardiac arrest nearby.

Bonus
Bonus

- **Regionalized care** for cardiac arrest is also recommended, which involves diverting cardiac arrest patients to specialized centers that provide comprehensive care. This care may include Extracorporeal CPR (ECPR), such as extracorporeal membrane oxygenation, and organ harvesting, both of which are given special attention in this update.

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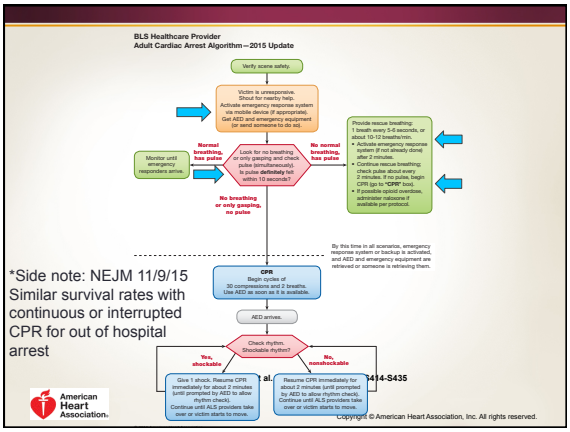
We also treat the human spirit.®



*Side note: NEJM 11/9/15 Similar survival rates with continuous or interrupted CPR for out of hospital arrest

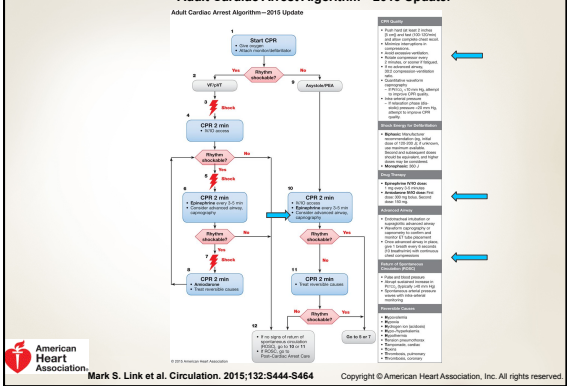
CPR Quality

- Push hard [at least 2-2.4 inches (5-6 cm)] I, C-LD
- Push fast (100-120/min) IIa, C-LD
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2
- Quantitative waveform capnography
  - If PETCO2 <10 mm Hg, improve CPR quality
- Intra-arterial pressure
  - If diastolic pressure < 20 mm Hg, improve CPR quality

*Side note: CO is the major determinant of CO2 delivery to the lungs so PETCO2 correlates well with CO

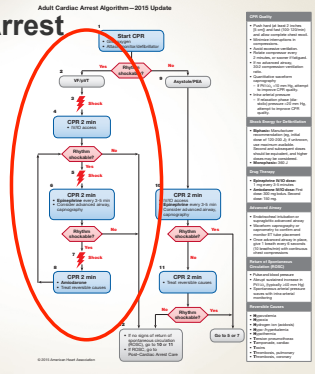
*Side note: Diastolic BP = surrogate for CPP

Adult Cardiac Arrest Algorithm—2015 Update.



Mark S. Link et al. Circulation. 2015;132:S444-S464 Copyright © American Heart Association, Inc. All rights reserved.

Pulseless Arrest



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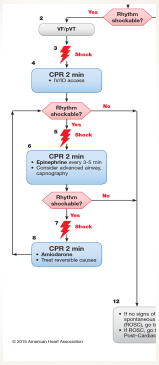
VT/VF

*Side note:
Give meds early after shock to circulate them

#ACLS 2015
-Shockable rhythm - insufficient evidence to make a recommendation about the optimal timing of epinephrine administration, defibrillation is a major focus of resuscitation.



#ACLS2015
Total preshock and postshock pauses should be as short as possible I, C-LD. Target compression fraction ≥ 60%

*Side note:
Longer pre-shock pause independently associated with decreased survival

We make things too complicated!

Vinnie Jones CPR

https://www.youtube.com/watch?v=ILxjxfB4zNk

PUSHING! - CPR

- The Team, The Team, The Team!
- Quality
- Minimize Interruptions

CPR
The Team, The Team, The Team!

Performing CPR is a team sport!

- Have a game plan and pep talk if possible
- Communication is key
- No one likes a ball hog
- Sometimes a little in game coaching is needed

CPR
Quality

- How Fast?
  - 100-120 bpm
  - What songs work?
    - "Stayin' Alive" – Bee Gees
    - "Cecilia" – Simon & Garfunkel
    - "Rock Your Body" – Justin Timberlake
    - "I Will Survive" – Gloria Gaynor
    - "Sweet Home Alabama" – Lynyrd Skynyrd
    - "Quit Playing Games with My Heart" – Backstreet Boys
    - "Obladi-Oblada" – The Beatles
    - "Another One Bites the Dust" – Queen

AND Barbas's PERSONAL FAVOR

A Public Service Announcement from Imperial EMS:

Darth Vader's theme song, The Imperial March, is 104 beats/minute

The perfect tune to hum while you do CPR

CPR
Quality – End Tidal CO_2

$EtCO_2$ is a great tool to use during CPR to evaluate quality

Continuous End Tidal CO2 Monitoring in Cardiac Arrest

Abdullah Bakhsh, MBBS

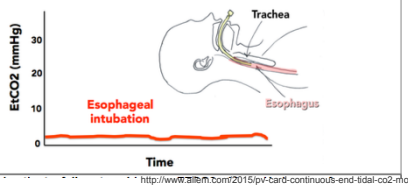
1. Link PMID: 26472995 2. Silvestri, PMID 15855946;
3. Ahrens 11688606; 4. Kleinman PMID: 26472993

Assuming relatively constant ventilation, the partial pressure of end tidal CO2 (ETCO2) correlates with cardiac output during CPR.

2015 American Heart Association (AHA) Recommendations

Continuous waveform capnography is recommended in addition to clinical assessment as the most reliable method of confirming and monitoring correct placement of an endotracheal tube (Class I, LOE C-LD). [1]

- No unrecognized misplaced intubation rates were observed with continuous ETCO2 monitoring. Failure to use continuous ETCO2 was associated with a 23% unrecognized misplaced intubation rate [2].



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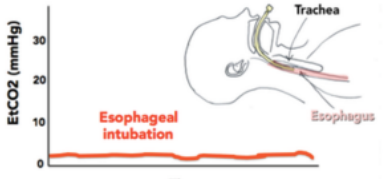
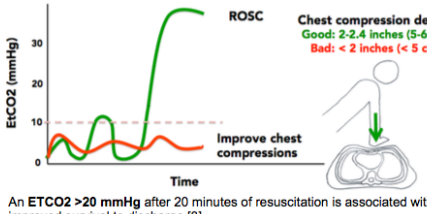


In intubated patients, failure to achieve an ETCO2 >10 mmHg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts but should not be used in isolation (Class IIb, LOE C-LD). [1]



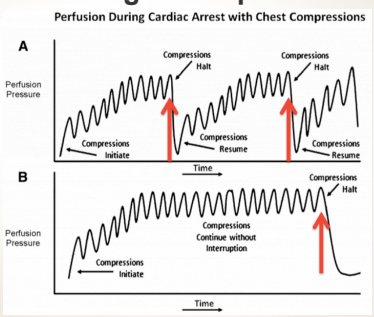
- An **ETCO2 >20 mmHg** after 20 minutes of resuscitation is associated with improved survival to discharge [3].
- During manual CPR, rescuers should perform chest compressions to a depth of ≥2 inches (5 cm) for an average adult, while avoiding excessive chest compression depths (>2.4 inches or 6 cm) (Class I, LOE C-LD). [4]

Updated 10/20/15

ALiEM Academic Life in Emergency Medicine

http://www.aliem.com/2015/pv-card-continuous-end-tidal-co2-monitoring/

CPR
Minimizing Interruptions



Shocking! – Defibrillation

Most important aspect of defibrillation/shock is… to minimize preshock and postshock pauses!

- Know your shock energy (depends on your machine)
- Chest compressions while you are charging
- Clear the patient, then shock
- Immediately after, resume compressions for another 2 minutes or 5 cycles

- In the beginning, as soon as the pads are on…. SHOCK THE PATIENT!!!
  - Do not wait 2 minutes/5 cycles to do so

Quick Basics Review

- Pushing!
- Shocking!
- Breathing!

Assessment for the presence or absence of Cardiac Output

- How do we currently assess cardiac output during a code?
- Why is this a bad approach?
  - It's insensitive
  - It isn't specific
  - Inter-rated reliability of pulses is poor
    - Only 78% accurate
- So what?

3. Alternate Framework for H's and T's

We'll get to that in one second……..

H's & T's

…and another way of looking at them

Alternate Framework for H's and T's

- Chaotic to try to remember all of them
- Do we try to fix all of them?
  - Cause it is lengthy and diverse list of treatments!
  - Let's take a look…

Wide Complex PEA Management

Let's talk about meds, baby…

….unless it is actually a narrow complex masked as a wide-complex…

…but seriously let's talk about meds and get back to this later.

Medications
Epinephrine

- Alternative
  - Hang Epinephrine drip 0.5mcg/kg/min
    - Advantage #1: Cognitive offloading
    - Advantage #2: Avoidance of post-ROSC drop in BP
    - ★THIS IS STILL BEING STUDIED.★
    - ★DO NOT USE THIS ON EXAMS OR ACLS COURSES.★
- How to Make "Dirty Epi Drip"
  1. Take your code-cart epinephrine
  2. Inject the full 1mg into a 1000ml normal saline bag
     Final concentration 1mg/ml
  3. Run wide open until pump and formal bag can arrive

Medications
Vasopressin

Stop using it per 2015 recommendations

LOYOLA UNIVERSITY HEALTH SYSTEM

SOOOOOOO…you have done amazing CPR, you may have defibrillated, you oxygenated the patient, you may have given some medications but you definitely ruled out fixable causes, and……

$ETCO_2$

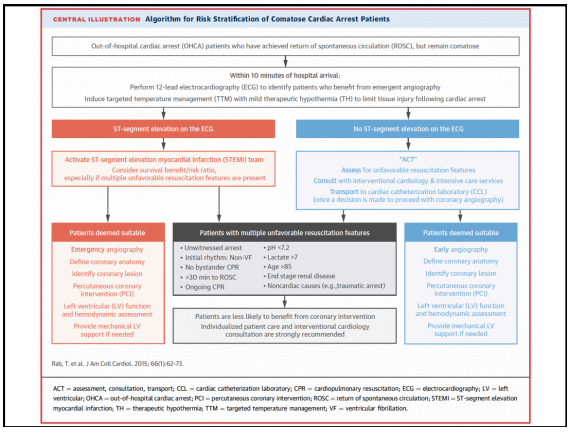
- If $PETCO_2$ abruptly increases to a normal value (35 to 40 mmHg), it is reasonable to consider that this is an indicator of ROSC
- If this is a sudden increase in continuously recorded $PETCO_2$ by >10 mmHg as an indicator of the possibility of ROSC.

Post Resuscitative Care Hypothermia

- ACLS Recommendations
  - All patients with post-arrest ROSC but comatose target temperature between 32°C and 36°C for at least 24 hours

Post Resuscitative Care Cardiac Cath

- Emergency coronary angiography
  - Electrically or hemodynamically unstable adults who are without ST elevation on ECG but are *comatose* after OHCA of suspected cardiac origin. IIa, B-NR
  - Post–cardiac arrest patients for whom coronary angiography is indicated, *regardless* of whether the patient is comatose or awake. IIa, C-LD



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LOYOLA UNIVERSITY HEALTH SYSTEM

Death Notification

- Gather: the family and friends
- Resources: Get your team
- Identify: yourself, everyone in the room, patient, etc
- Educate: Prehospital/ED/Hospital events
- Verify: patient has died (don't be vague)
- _ (insert pause) allow family time to react
- Inquire: if they have questions
- Nuts&Bolts: organ donation/funeral, viewing, PCP?
- Give: condolences and your contact information

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Review

- The Basics
  - Pushing, Shocking & Bagging
- POCUS
  - Ultrasound will be your friend
- "H's & T's"
  - Another way of looking at them
- Medications?
  - Epi, Vaso, Amio and others
- We got 'em back!
  - Now What?
- We are not getting 'em back?
  - Now What?

Resources

- Experience
- American Health Association ACLS protocol
- REBELEM.com
- EMCrit.org
- ALIEM.com
- EMRAP podcast
- Crashingpatient.com
- Their references
- References throughout
- Dr Reed's ACLS talk