

# SOUTH SHORE SIMFLUENCER

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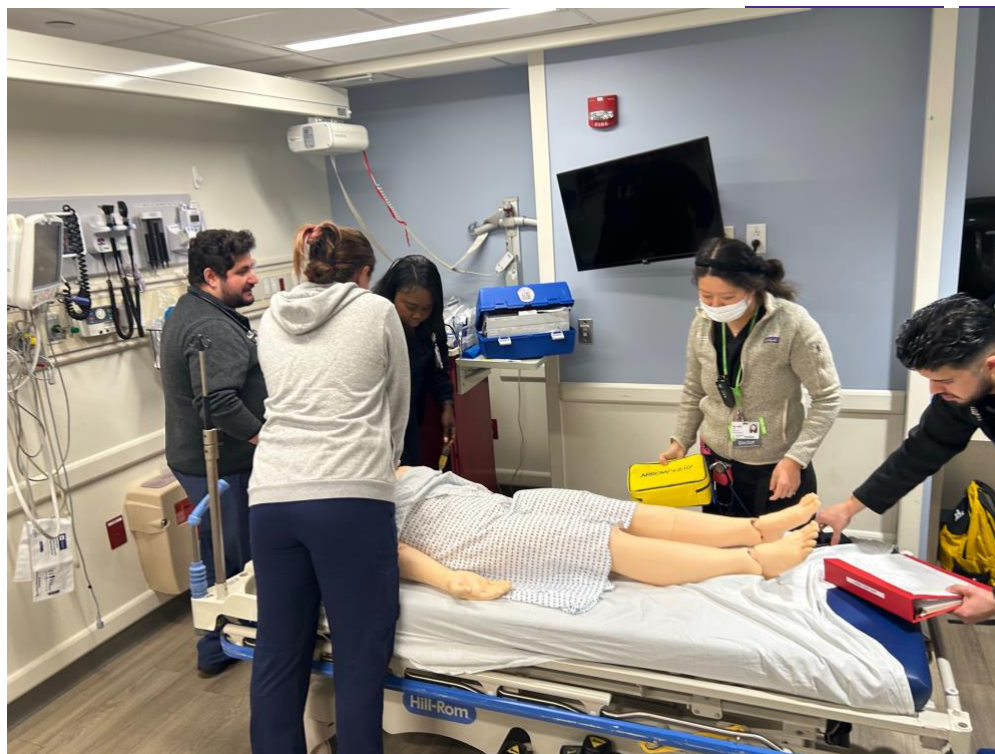


Figure 1: Dr. Yan, Dr. Pinkhasov, and RN's Sam, Julie, and Hernan working together to resuscitate a patient who collapsed in the waiting room

## **WELCOME TO THE SSUH SIMFLUENCER!**

Welcome to the 3<sup>rd</sup> issue of The SSUH Simfluencer! This newsletter will serve as an educational tool for all faculty, staff, and learners in the emergency department (ED) at South Shore University Hospital. We will go over lessons learned, latent safety threats, and review best practices for managing critically ill patients in the ED.

This month, we discuss takeaways from our adult cardiac arrest simulation, review IO's, LUCAS application, and ACLS.

Once again, I would like to thank each person who participated in these simulations. Your enthusiasm has made this initiative a success!

## **LET'S REVIEW ACLS!**

... and review team dynamics!

## **WHAT'S THE DEAL WITH THE LUCAS?**

How do we apply it?

## **VASCULAR ACCESS DURING CARDIAC ARREST**

... it's all about the IO

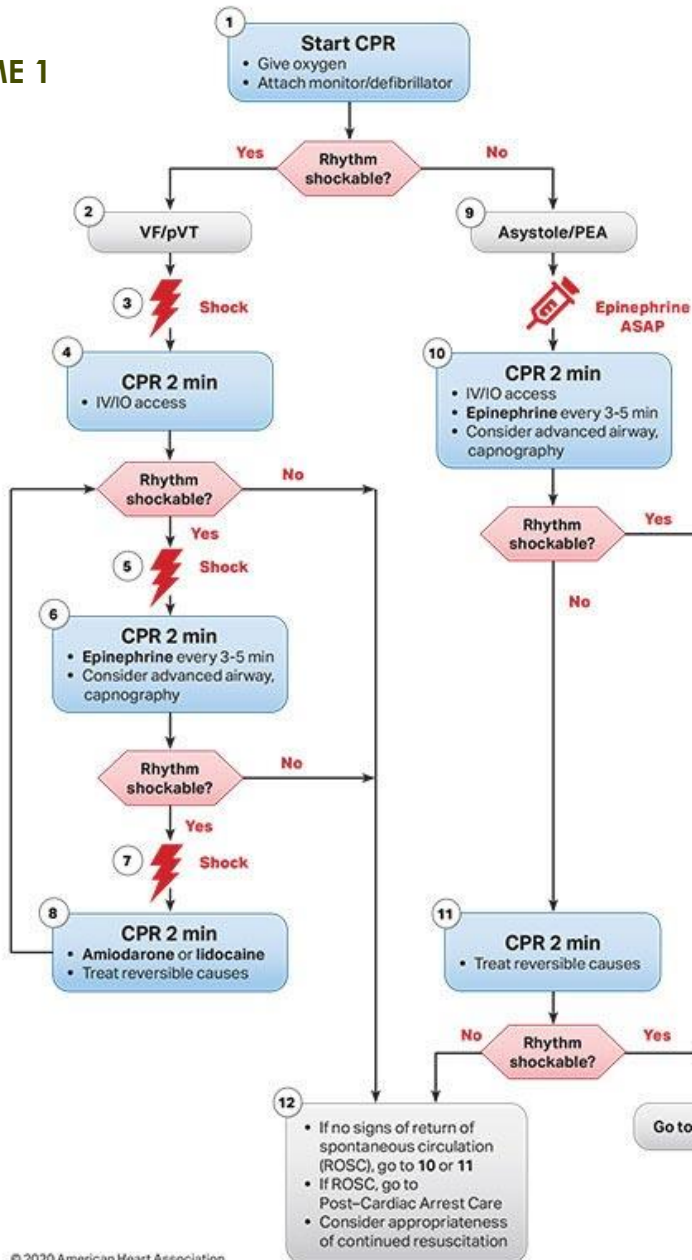
# ACLS REVIEW

(Courtesy of the American Heart Association)



Figure 2: Clear assigned roles are essential to any resuscitation

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CPR Quality
<ul style="list-style-type: none"> <li>Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.</li> <li>Minimize interruptions in compressions.</li> <li>Avoid excessive ventilation.</li> <li>Change compressor every 2 minutes, or sooner if fatigued.</li> <li>If no advanced airway: 30:2 compression-ventilation ratio.</li> <li>Quantitative waveform capnography               <ul style="list-style-type: none"> <li>If PETCO<sub>2</sub> is low or decreasing, reassess CPR quality.</li> </ul> </li> </ul>
Shock Energy for Defibrillation
<ul style="list-style-type: none"> <li><b>Biphasic:</b> 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.</li> <li><b>Monophasic:</b> 360 J</li> </ul>
Drug Therapy
<ul style="list-style-type: none"> <li><b>Epinephrine IV/IO dose:</b> 1 mg every 3-5 minutes</li> <li><b>Amiodarone IV/IO dose:</b> First dose: 300 mg bolus. Second dose: 150 mg.</li> <li><b>Lidocaine IV/IO dose:</b> First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.</li> </ul>
Advanced Airway
<ul style="list-style-type: none"> <li>Endotracheal intubation or supraglottic advanced airway</li> <li>Waveform capnography or capnometry to confirm and monitor ET tube placement</li> <li>Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions</li> </ul>
Return of Spontaneous Circulation (ROSC)
<ul style="list-style-type: none"> <li>Pulse and blood pressure</li> <li>Abrupt sustained increase in PETCO<sub>2</sub> (typically ≥40 mm Hg)</li> <li>Spontaneous arterial pressure waves with intra-arterial monitoring</li> </ul>
Reversible Causes
<ul style="list-style-type: none"> <li>Hypovolemia</li> <li>Hypoxia</li> <li>Hydrogen ion (acidosis)</li> <li>Hypo-/hyperkalemia</li> <li>Hypothermia</li> <li>Tension pneumothorax</li> <li>Tamponade, cardiac</li> <li>Toxins</li> <li>Thrombosis, pulmonary</li> <li>Thrombosis, coronary</li> </ul>

## A FEW REMINDERS:

- Assign clear roles
- Utilize closed loop communication
- If no advanced airway: **compressions to ventilations are 30:2**
- When can I pause compressions?
  - Pulse check
  - If no LUCAS- during defibrillation
  - Resume compressions immediately after shock
  - Continue compressions while defibrillator is charging
- Consider reversible causes of cardiac arrest (H&T's, see above algorithm)



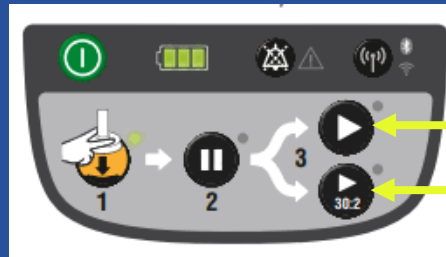
# WHAT'S THE DEAL WITH THE LUCAS?



Figure 3: Correct application of the LUCAS during a pulse check. Notice how the patient's arms are above his head.



- Provides mechanical chest compressions
- 2 modes:



Continuous

30:2

- **When do I apply?**
  - During pulse check
- **How do I apply?**
  - During pulse check, roll patient and apply backboard
    - TIP: Lift patient's arms ABOVE head before rolling!
    - Most patients can fit in the LUCAS if you do this maneuver
  - Resume compressions
  - Apply top part while compressions are taking place
    - Yellow finger holes unlock device when pulled
    - Apply side opposite compressor, listen for click
    - Slide other side through compressor's arms, listen for click
  - To adjust location, push down on device and slide along bed (Should be ABOVE xiphoid)
  - Push piston down to contact patient's chest
  - Select continuous or 30:2
- **When do I pause the LUCAS?**
  - During a pulse check
  - Seriously....that's it!
  - Yes, you can defibrillate while it is on!
- **Where can I find the LUCAS?**
  - Critical care closet
  - Batteries located there too
- **What if the patient already arrives on a LUCAS from EMS?**
  - Yay! Make sure you have an extra battery
  - Confirm positioning is correct

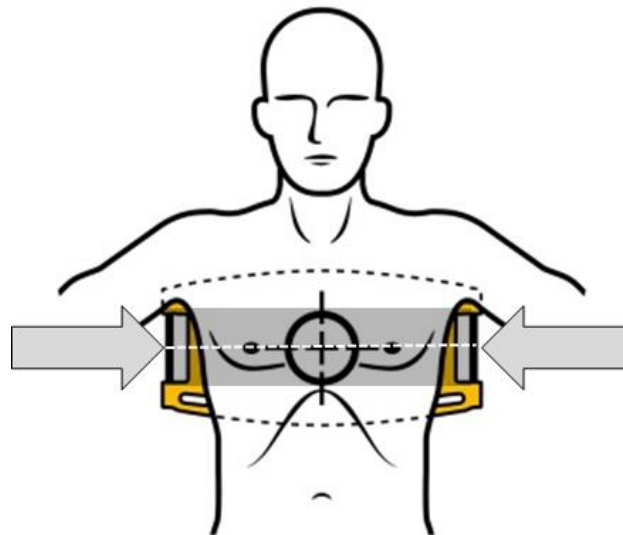


Figure 4: Correct positioning of the LUCAS. The piston should be located at nipple level (above the xiphoid)

# VASCULAR ACCESS

## DURING CARDIAC ARREST

- **Intraosseous (IO) access is preferred during cardiac arrest, why?**
  - Quick, easy
  - Obtaining IV access during a cardiac arrest is difficult and takes a team member away from other tasks
- **Where is the easy IO?**
  - On each code cart
  - Additional needles located in critical care closet
    - Pink needles located in green bins
    - Blue and yellow in cart with long angiocatheters
- **How does it work?**
  - Uses medullary space as non-collapsible entry point into systemic venous system
  - Acts as a central line
- **Preferred locations for IO access:**
  - Proximal humerus
  - Proximal tibia
  - Distal tibia
- **What color do I use?**
  - Most of the time: Blue
  - Small babies: Pink
  - **Adult with adipose tissue/edema: Yellow**
- **Indications**
  - Cardiac arrest
  - Failure to gain IV access in a trauma, burns, shock, or resuscitation setting
- **Contraindications**
  - Fractured bone on same side as IO placement (risk of compartment syndrome)
  - Overlying infection
  - Osteogenesis imperfecta
- **Don't I need labs?**
  - Lab results will take too long to affect management of the patient in cardiac arrest. H's and T's are treated empirically.
  - IO samples show good correlation with venous samples for: Hemoglobin/hematocrit, chloride, glucose, urea, creatinine, albumin
  - IO samples show poor correlation with venous samples for: WBCs, platelets, serum CO<sub>2</sub>, sodium, potassium, calcium

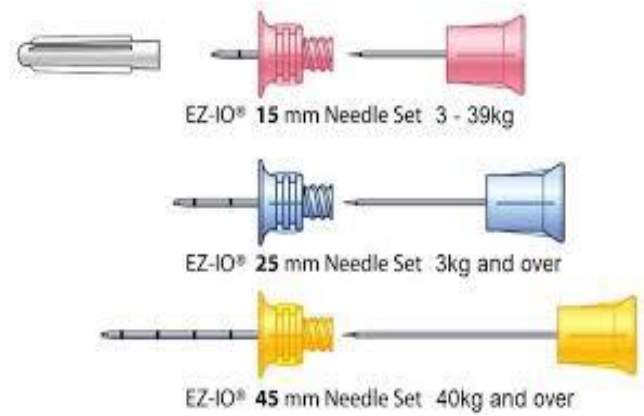
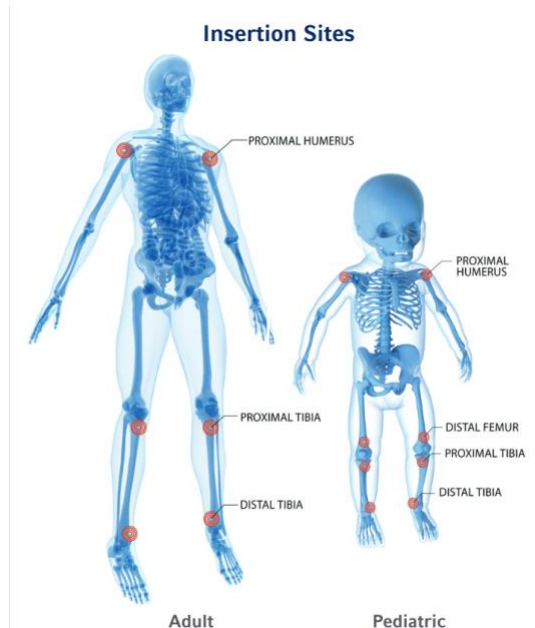


Figure 5: These are the three IO needle sizes available in the ED



Figure 6: Dr. Matos and RN's Wendy and Charlotte utilizing a proximal tibia IO to administer medications



# QUESTIONS? CONCERNS? TOPICS YOU WOULD LIKE TO SEE ADDRESSED USING SIMULATION?

Please reach out to us and let us know!

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Thanks!

-Lauren, Will, and Debby



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Check out some media from our  
recent simulation activities on  
instagram!