

SOUTH SHORE SIMFLUENCER

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Figure 1: Our ED team (Dr. Garra, Charlotte, Hannah, and Maria) resuscitating a patient with unstable ventricular tachycardia, requiring synchronized cardioversion!

WELCOME TO THE SSUH SIMFLUENCER!

Welcome to the 5th 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 will explore our new pediatric critical care room, review the code 100 process in the ED, and discuss identification and management of malignant hyperthermia!

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

NEW PEDIATRIC RESUSCITATION ROOM!

Come explore the new pediatric critical care room!

CODE 100

What to do when a crashing neonate presents to the ED

IT'S GETTING HOT HOT HOT...

Identification and management of malignant hyperthermia

NEW PEDIATRIC CRITICAL CARE ROOM

- Welcome to the new pediatric critical care room, located in isolation 4!
- All equipment required to resuscitate critically ill children should be available here
- Any additional equipment will be located in GREEN BINS in the trauma closet
- Take a few minutes during your next shift to orient yourself!



Figure 3: Panda warmer for neonates and infants. Note the QR codes on the wall above- scan for valuable pediatric resources!



Figure 4: To the left (multiple colors) is the pediatric code cart. The cart to the right (pink) is the neonatal code cart.

Figure 2: Pediatric airway tower! All equipment should be organized per colors on the Broselow tape

CODE 100

- **What is a code 100?**
 - Activated during a neonatal resuscitation
- **Who responds to a code 100?**
 - ED attending, resident, RNs, SNAs
 - NICU attending, ACP, and RN team
- **Where will this occur in the ED?**
 - Preferably in isolation 4 (pediatric critical care room)
 - When anticipating a code 100, please remove any additional equipment from the room to make space for the clinical team
- **What's the difference between a neonatal resuscitation and pediatric resuscitation?**
 - Use NRP algorithm to resuscitate neonates (see diagram to right)
 - Use PALS to resuscitate pediatric patients
 - Chest compression to ventilation ratio:
 - Neonate- 3:1
 - Pediatric- 15:2
 - Neonates are not going to have an SpO₂ of 100% until several minutes after birth! (See table below)
 - When intubated:
 - Neonatal compressions should be coordinated with ventilations in 3:1 ratio
 - In contrast, compressions are continues in intubated pediatric patients per PALS
- **Where do I find neonatal resuscitation equipment?**
 - Pink neonatal code cart
- **How do I obtain vascular access in a neonate?**
 - IO (pink)
 - Umbilical vein catheterization (kit should be in pink code cart)
- **What if I can't remember NRP?**
 - Use PALS!

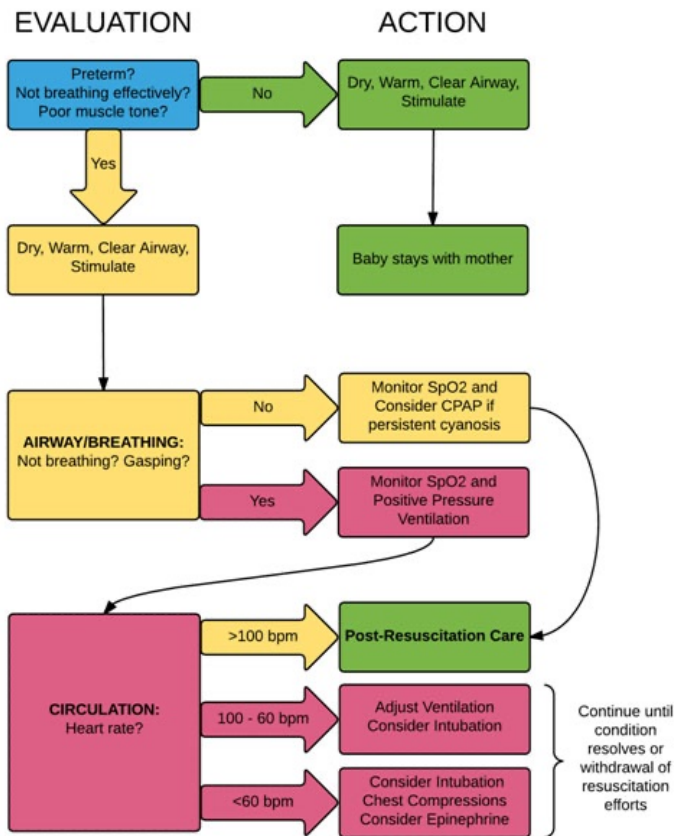


Figure 5: NRP Algorithm

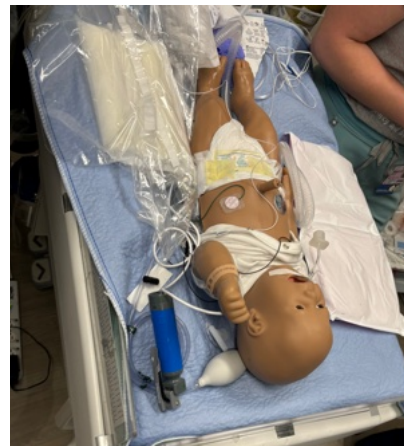


Figure 6: Our neonatal patient, who was just born at home, triggered a code 100 in the ED



Figure 7: Dr. Murza and the NICU team resuscitating our neonate! Thank you for all of the valuable education!

Target Oxygen Saturation over Time after Birth

1 min.	60-65%
2 min.	65-70%
3 min.	70-75%
4 min.	75-80%
5 min.	80-85%
10 min.	85-95%

MALIGNANT HYPERTHERMIA



Figure 8: Charlotte, Hannah, John, Bigem, and Dr. Wali managing a patient with malignant hyperthermia



Figure 9: RN Marissa reconstituting Dantrolene using the malignant hyperthermia cart

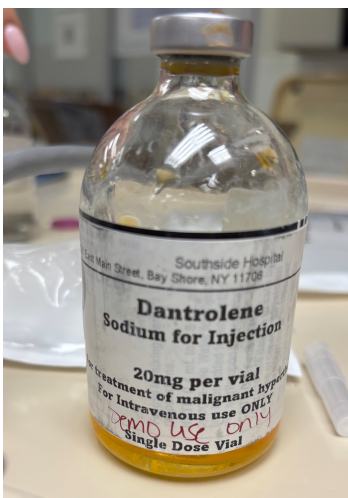


Figure 10: Dantrolene vial. 20mg/vial, requires 60mL sterile water for reconstitution. May need 10-12 vials initially!

*** A huge shoutout to Jessica Morales and Vincenza Maiello for creating our simulated Dantrolene!***

- **What is malignant hyperthermia?**
 - Genetic disorder of skeletal muscle causing hypermetabolic response to volatile anesthetic gases or succinylcholine
 - Unregulated calcium release causing widespread muscle contraction
- **Clinical features:**
 - Increased EtCO₂/minute ventilation
 - Muscle rigidity
 - Tachycardia
 - Hyperthermia (Increase by 1-2C every 5min)
 - Sweating in 20% of patients
 - Rhabdomyolysis, hyperkalemia, acidosis
 - Brown urine
- **Management**
 - Call for help! MH Hotline (1-800-633-9737)
 - Obtain malignant hyperthermia cart
 - Located in labor and delivery
 - Discontinue triggering agents
 - **Treatment: Dantrolene!**
 - Mechanism of action: Binds to RYR1 receptor to inhibit release of calcium from sarcoplasmic reticulum and attenuates extracellular calcium entry to negate cascade of MH events
 - Dysrhythmias/acidosis: Sodium bicarbonate 1-2mEq/kg
 - **AVOID CALCIUM CHANNEL BLOCKERS: Can cause hyperkalemia or cardiac arrest in the presence of dantrolene**
 - Dysrhythmias usually respond to treatment of acidosis and hyperkalemia
 - Active cooling
 - Stop once temp <100.4
 - Methods: Ice packs in groin and axilla, evaporative cooling (wet patient, fan), cool fluids, cool inhaled air, ice bath, bladder lavage, NG lavage
 - 100% oxygen, hyperventilation (goal pCO₂ 25)
 - Treat hyperkalemia (insulin, dextrose, IV fluids)
- **Dantrolene administration**
 - Mechanism of action:
 - Give 2.5mg/kg immediately, then 1-2.5mg/kg IV every 5 min until symptoms subside
 - Goal: reduction in EtCO₂, rigidity, tachycardia, hyperthermia
 - Reconstituting dantrolene
 - Dantrium (located in our MH cart)
 - 20mg/vial
 - Reconstitute with 60mL sterile water and shake until solution is clear
 - May need 10-12 vials initially!
 - Once stabilized- maintenance dose of 1mg/kg dantrolene IV every 4-6 hours

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!