**Pre-brief**

1. The purpose of this mock code is to increase confidence and skill in a safe/non-judgemental learning environment. The focus is on learning- if you don’t know something, please ask. This is not a test!
2. The mock code will last for about 10 minutes, followed by a 10 minute de-brief.
3. Please treat this as you would with a regular code- get the crash cart if needed, start an IV, use the supplies you need.
4. We will give you a scenario, and guide you through the code. When you tell us that you’re assessing something – we’ll tell you what you find.
5. Closed-loop communication- Say what you are doing out loud, as you are doing it, and again once the action is complete.
6. Provide the scenario…

**The case being performed is an emergent C-section for fetal bradycardia with a General Anaesthetic. The case started about 10 minutes ago. The patient is a 23 year old female. G1 P0, health pregnancy, no previous medical or surgical history. Anesthetic is a General with ETT using Sevoflurane to maintain anesthesia. Induction medications used - Midazolam, Remifentanil and Propofol. She has a foley to urometer in situ.**

1. Please assume the roles you would typically (if you don’t have a role, stand back and observe).
2. The mock code starts now.

Scenario

The case being performed is an emergent C-section for fetal bradycardia with a General Anaesthetic. The case started about 10 minutes ago. The patient is a 23 year old female. G1 P0, health pregnancy, no previous medical or surgical history. Anesthetic is a General with ETT using Sevoflurane to maintain anesthesia. Induction medications used - Midazolam, Remifentanil and Propofol. She has a foley to urometer in situ.

**Other Patient Information:**

**Wt:** 145 lbs (65.77 kg)

**Family surgical history** - unknown, but a great-uncle passed away after complications from an appendectomy in the 1960s

The monitor is showing this:

|  |  |
| --- | --- |
| What is the rhythm? | Sinus Tachycardia with peaked T waves (120’s),  |
| Next action? | * Assess the patient for adequate sedation
 |
| All pre-op blood work was "normal". The ventilator begins alarming high peak pressures, and the ETCO2 begins to rise (60s-70s) despite increasing respiratory rate.The patient’s jaw is clenched and she is diaphoretic. |
| What do you think might be happening? | * Suspect Malignant Hyperthermia
 |
| **Anesthesia** - What is your next action?  | * Stop the offending anesthetic agent
* Use ambubag while changing the circuit
* ?Consider Airway management (ensure Bite guard in place)
* Hyperventilate with 100% O2 @ 10L/min +
* Notify Surgeon to halt procedure ASAP if able (baby is out)
* Call for help - additional nursing AND a 2nd Anaesthetist /MD
* Call for the MH cart
* Change CO2 Absorbent Canister and change circuit tubing
* Insert activated charcoal filters into the inspiratory and expiratory limbs of the breathing circuit.
* Consider obtaining ICU ventilator that is gas free.
* Call MH Hotline (1-800-644-9737) *or delegate someone to do*
* Insert core temperature probe if not already in place (esophageal)
 |
| **Nursing** - What is your next action? | * Identify roles… who is going to do what?
* Get the MH cart and the Crash cart
* Ensure IV access - may require multiple
* Reconstitute & Administer Dantrolene (at least 2-3 nurses)
* Insert foley (3-way)
* Monitor temperature - Administer cold fluids, ice packs, cooling blanket
* Code Leader (Anesthetist - should be the one talking to MH Hotline)
* Ensure someone is acting as recorder
* Runner(s)
 |
| ETCO2 has risen to 90 mm Hg, Temp is 39.2. Patient remains tachycardic with peaked T waves. Muscle spasms & diaphoresis are observed. |
| Next actions? | * Change all IVs to Normal Saline 0.9% (NOT Ringers Lactate)
* Administer Dantrolene as soon as it’s ready (2.5 mg/kg rapidly through large-bore IV, if possible. Repeat as frequently as needed)
* Ice packs to head, neck, axilla, groin - consider bladder irrigation
* Obtain labs (Blood Gas, CBC, Lytes, Gluc, CK, PT, PTT, Urine Myoglobin)
* Notify Internal Medicine and ICU
 |
| No change in patient status, except temperature continues to rise |
| Next actions - Nursing | * Administer Dantrolene again
* Large doses (>10mg/kg) may be required for patients with persistent contractures or rigidity.
* Obtain ECG
 |
| Next actions - Anesthesia | * Treat dysrhythmias with standard medication
	+ Avoid calcium channel blockers.
* Consider administration of sodium bicarbonate, 1-2 mEq/kg dose, for base excess greater than -8 (maximum dose 50 mEq).
* If hyperkalemia (K > 5.9 or less with ECG changes) is present, treat with:
	+ Calcium chloride 10 mg/kg (maximum dose 2,000 mg)

or * Calcium gluconate 30 mg/kg (maximum dose 3,000 mg) for life-threatening hyperkalemia
	+ Glucose/insulin:

For adult patients: 10 units regular insulin IV and 50 ml 50% dextrose* Check glucose levels hourly
 |
|  | * Diurese to >1ml/kg/hr urine output.
* If CK or K+ rise, assume myoglobinuria and give bicarbonate infusion of 1 mEq/kg/hr, to alkalinize urine
 |
|  | * When stable, transfer to post anesthesia care unit or intensive care unit for at least 24 hours. Key indicators of stability include:
* ETCO2 is declining or normal
* Heart rate is stable or decreasing with no signs of ominous dysrhythmias
* Hyperthermia is resolving
* If present, generalized muscular rigidity has resolved
 |

**De-brief**

How did that go?

What went well and why?

What was the most challenging?

In what way is there room for improvement?

What do *we* need to do to adjust?

Was communication clear during the Mock Code?

Was it clear to everyone who had each role and their responsibilities during the code?

Did the team have everything they needed to run the code?

What resources are available to you for your continuing education needs?