

## Background Information:

The Boston Children's Hospital (BCH) Maternal Fetal Care Center expanded surgical services to include interventions for fetuses of pregnant women. To ensure excellence in care for these patients within our institution, a need to provide training for our current pediatric Post-Anesthesia Care Unit (PACU) nurses in preparing and recovering the maternal fetal patient was identified.

## Objectives of Project:

To develop and implement a training program for pediatric PACU nurses to ensure the delivery of safe and quality care to the maternal fetal patient.

## Process of Implementation:

Nursing leaders created a PACU subject matter expert (SME) group of 11 nurses. All Maternal Fetal SMEs:

- Became Advanced Cardiovascular Life Support certified
- Completed the Association of Women's Health, Obstetric and Neonatal Nurses Fetal Heart Monitoring education course
- Attended both maternal fetal simulation and live skills sessions

Multidisciplinary collaboration with BCH Immersive Designs Systems facilitated four simulation sessions. A specialized maternal fetal simulator was used to train staff on fetal monitoring, tocometry, obtaining fetal heart tone dopplers, and emergency response (Figure 1).

Additionally, resources were provided (Figure 2) and live skills sessions were held for the Maternal Fetal SME group.

- These sessions utilized pregnant volunteers to practice fetal monitoring, tocometry, and fetal heart tone dopplers
- A patient case scenario was developed to orient attendees on the maternal hemorrhage cart and response protocol
- Educational lectures on obstetric medication pharmacology and psychosocial support of the maternal fetal patient were also provided (Figures 3-6)



Figure 1. Simulation Skills Session



Figure 3. RN Applying Tocometry and Fetal Heart Monitoring Transducer During Live Skills Session

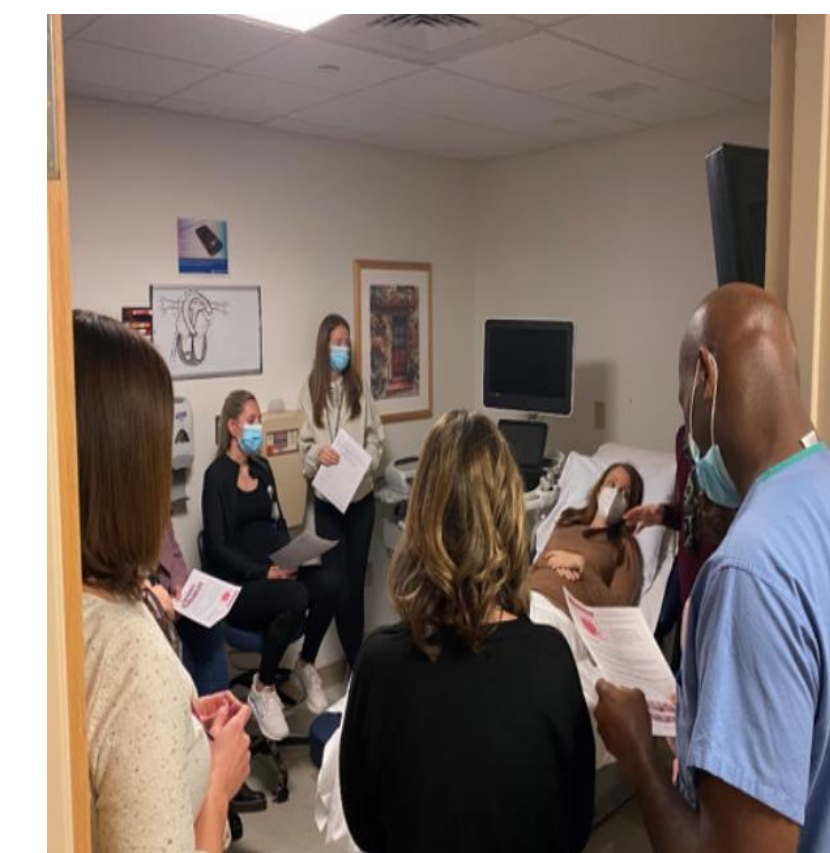


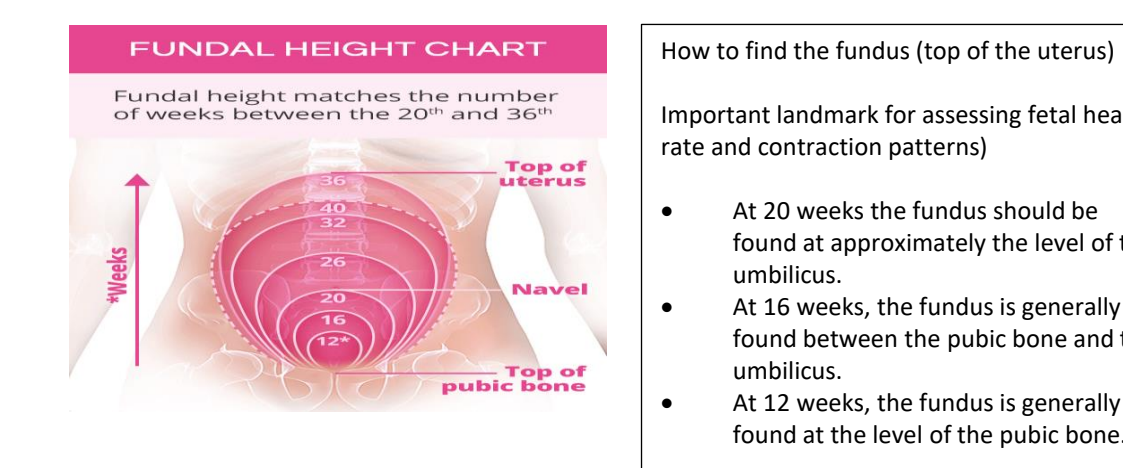
Figure 4. Live Skills Education Provided Bedside



Figure 5. RNs Participating in Hemorrhage Cart Derby



Figure 6. Medication education



### Leopold's Maneuvers

Used to determine fetal position, presentation and engagement.

**Fun fact:** The Leopold maneuvers, named after the German obstetrician and gynecologist Christian Gerhard Leopold. Four classical maneuvers are used to palpate the gravid uterus systematically. This method of abdominal palpation is of low cost, easy to perform, and non-invasive.

**First** maneuver is to determine the part of the fetus in the fundus. Also finding the fundus gives us information about the gestational age.

**Second** maneuver is to locate the back, arms and legs. This is helpful for fetal monitoring because the fetal heart is heard best over the fetal back

**Third** maneuver is to determine the part of the fetus presenting into the pelvis

**Fourth** maneuver is to determine the degree of cephalic flexion and engagement

*Notes – first 3 maneuvers – the examiner (you) will be facing up to the mother's face. For the fourth maneuver, the examiner is facing towards the patient's legs*

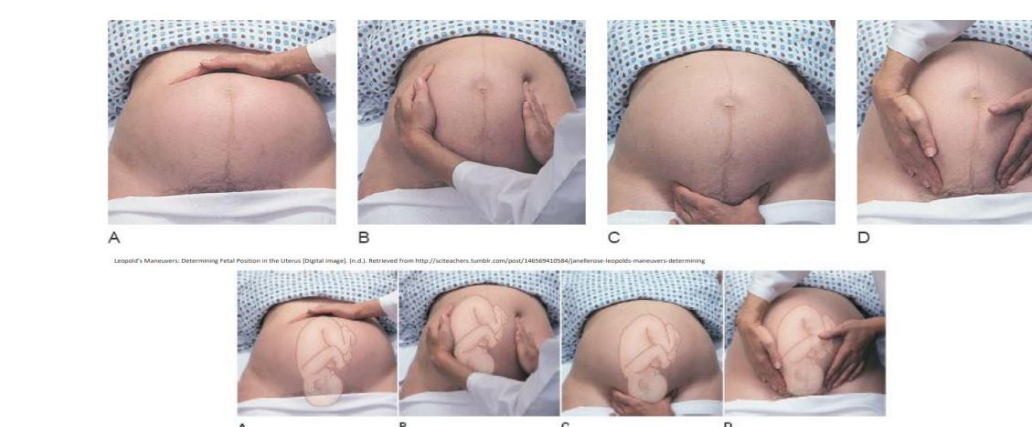


Figure 2: Resource Handout Provided to RNs at Skills Day

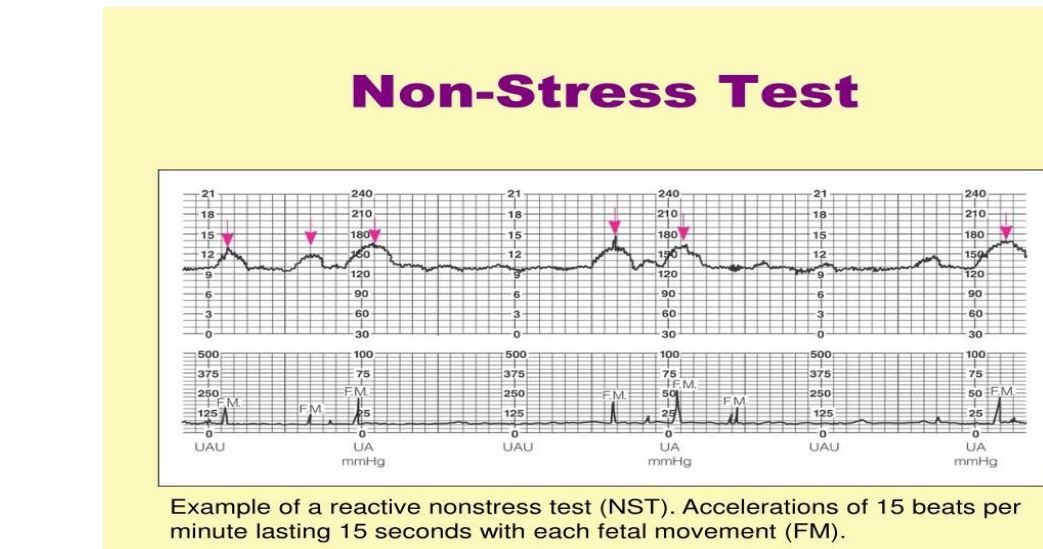
## Statement of Successful Practice:

- After training, 100% of Maternal Fetal SMEs answered "Yes" to "Do you feel more confident in taking care of the Maternal Fetal patient?" in an evaluation survey.
- All participants were observed to demonstrate competency in live skills training. Maternal Fetal SMEs have provided safe and quality care for over 50 fetal intervention surgical cases.

## Implications for Advancing the Practice of Perianesthesia Nursing:

- This program created a safe and high-quality model of care for PACU nurses caring for the maternal fetal patient.
- It also strengthened the multidisciplinary communication and teamwork across multiple departments in the institution to better serve a vulnerable patient population.

**Non-stress test (NST): what's it for?**  
Evaluates the baby's well-being before birth. Provides important information about oxygenation status.



### How to perform an NST:

Allow the patient to empty bladder before the procedure begins for their comfort.

Have the patient lie comfortably in a supine or left-sided semi-Fowler sitting position or in the left lateral position with pillows for support if needed. These positions displace the uterus to prevent compression of the vena cava and/or aorta. These positions also promote more fetal movement are more likely to have a reactive tracing.

Apply fetal heart rate and contraction monitors. Apply the ultrasonic gel to the diaphragm of the ultrasound transducer to improve contact.

Monitor the fetal heart rate and any contraction activity for at least 20 minutes. The patient may be given a tool to use to mark fetal movement. Accelerations in fetal heart rate should occur spontaneously and in response to fetal movement.

If there are no accelerations in 20 minutes, continue monitoring 20 more minutes. The fetus may be in a sleep cycle, during which there are usually no heart rate accelerations.

\*\*\*If there are no accelerations or fetal movement during the testing period, stimulation of the fetus may be necessary (e.g., acoustic stimulation, patient intake of cold liquids)\*\*\*

### Test interpretation:

**Reactive NST (normal):** Shows at least two accelerations of FHR with fetal movements of 15 bpm, lasting 15 seconds or more, over 20 minutes. (NOTE – less than 32 weeks we are looking for at least 10 bpm lasting 10 seconds or more).

*Note – only 65% of fetuses at 28 weeks are reactive. By 34 weeks, 95% of fetuses are reactive.*

**Nonreactive NST:** Accelerations are not present or do not meet the reactive criteria.

*For example, the accelerations do not meet the requirements of 15 beats per minute or do not last 15 minutes.*

If the test is considered nonreactive (non-reassuring), further testing may be needed.

### References:

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