Title:
Answering the Call for Improved Maternal Safety

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Session Title:
Promoting Maternal Health
Slot:
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3:15 PM

Keywords:
Maternal Early Warning System, Maternal Morbidity and Mortality and Nursing Quality Improvement

References:
Association of Women's Health, Obstetric and Neonatal Nurses. (2013). The AWHONN postpartum project: Maternal morbidity and mortality rates. Retrieved from http://www.pphproject.org/maternal-morbidity-mortality.asp.

Center for Disease Control. (2016). Severe maternal morbidity in the United States. U.S. Department of Health and Human Services. Retrieved from http://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html

Isaacs, R.A., Wee, M.Y.K., Bick, D.E., et al. (2015). A national survey of obstetric early warning surveys in the United Kingdom: five years on. Anaesthesia 2014; 69:687-94

Main, E.K. & Menard, M.K. (2013). Maternal Mortality: Time for National Action. Obstet Gynecol. 122(4):735–6. doi: http://dx.doi.org/10.1097/AOG.0b013e3182a7dc8c

Mhyre, J., D'Oria, R., Hameed, A., Lappen, J., Holley, S., Hunter, S., Jones, R., King, J., & D'Alton, M. (2014). The maternal early warning criteria: A proposal from the National Partnership for Maternal Safety. Co-published by the Journal of Obstetric, Gynecologic, and Neonatal Nurses, 43, 771-779; and Obstetrics and Gynecology, 124, p. 782-787.

Abstract Summary:
Over 600 women die each year in the United States as a result of pregnancy or delivery complications and approximately half of the maternal deaths have been determined to be preventable; the obstetric early warning system is a powerful process aimed at reducing and even preventing maternal morbidity.
Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
Discuss current focus on improving maternal outcomes.	Maternal morbidly and mortality rates in the United States have increased for the past 20

	years and every facility that provides maternity care has been called upon to develop protocols that address the leading causes of maternal harm or death.
Recognize the value of a maternal early warning system.	The National Partnership for Maternal Safety recommends that birth facilities develop written criteria describing early warning signs indicating a change or deterioration in a patient's condition and the requirement to promptly seek further assistance.
Describe implementation of a maternal early warning system.	The MEWS process for this institution includes a single validated vital sign or physiologic parameter triggering a specific communication pattern between nurses and physicians that leads to a bedside physician assessment by a senior level resident or attending. The goal is to have a bedside evaluation by a senior level provider within 15 minutes of an abnormal parameter being reported.
Discuss maternal and fetal outcomes related to maternal early warning system.	A total of 5925 deliveries with 8971 patient visits were reviewed for outcomes. The overall Obstetric Adverse Event Rate was significantly higher pre-MEWs, compared to post-MEWS (pre 4.45% versus post 2.35% p=0.017). Retrospective review of pre-MEWS patients revealed 6% of patients would have triggered MEWS, with 25% of these experiencing adverse outcomes. Prospective review after MEWS initiation revealed 9% (n=503) of patient actually triggered MEWS with 17.8% experiencing adverse outcomes.

Abstract Text:

Over 600 women die each year in the United States as a result of pregnancy or delivery complications and approximately half of the maternal deaths have been determined to be preventable (CDC, 2016). African American women have 3-4 times more deaths than women of all other racial/ethnic groups (AWHONN, 2013). Maternal morbidly and mortality rates in the United States have increased for the past 20 years and every facility that provides maternity care has been called upon to develop protocols that address the leading causes of maternal harm or death (Main & Menard, 2013).

The early detection of severe illness in pregnant women is challenging due to the childbearing population being generally healthy, the rarity of such events combined with the normal changes in physiology associated with pregnancy and childbirth may be considered abnormal in the non-pregnant state. Yet, early recognition is essential because deterioration can be alarmingly rapid with catastrophic consequences. The National Partnership for Maternal Safety recommends that birth facilities develop written criteria describing early warning signs indicating a change or deterioration in a patient's condition

and the requirement to promptly seek further assistance (Mhyre, D'Oria, Hameed, et al, 2014). Obstetric early warning systems have helped to prevent maternal morbidity and have value in structuring the surveillance of hospitalized women with an established risk of morbidity (Isaacs, Wee & Bick, 2015).

The purpose of the quality improvement project that began in August of 2014 at an academic tertiary care hospital was to respond to the national call for action for an organized approach to decrease maternal morbidity and mortality. Through the OB/GYN quality review process, opportunities related to maternal morbidity and mortality were identified. A drilldown of the opportunities revealed that an early warning system may have a positive impact on the care the patients received. Initial discussions related to the project were conducted with nurse leaders, obstetric anesthesia and obstetric physicians to review the literature and department data. Also, a conference call was conducted with a subject matter expert, Dr. Mary D'Alton. Next, a taskforce of stakeholders was assembled to develop the maternal early warning system (MEWS) process. Once MEWS was approved by the multi-disciplinary OB/GYN Quality Review Committee, the taskforce refined the MEWS process, assisted with the staff education and conducted retrospective medical record audits.

Due to the pressing need to implement this risk reduction strategy, the taskforce had a tight timeline with which to implement MEWS. Unfortunately, the patient care needs predicated that the project move forward without information technology support; MEWS was not built into the electronic medical record prior to go-live. The education plan was developed and included a mandatory on-line module that contained an audio presentation with a video example of a MEWS trigger event, including the senior level provider assessment at the bedside. The education included a required post-test (80% for success). To reinforce the education, members of the taskforce conducted face-to-face huddles every day, on both shifts during the first week of go-live. Also, MEWS cards were distributed; the cards contain all of the MEWS triggers and the process. The cards are worn behind the employees badge for quick reference. For provider education, the Chief of OB Service conducted face-to-face in-services and also disseminated the MEWS process via electronic mail. The department conducts 'snapshots' at 0800 and 2000 daily; this forum provided an essential opportunity to reinforce MEWS information and expectations. Also, all active MEWS triggers are discussed at the snapshot and documented on the communication board.

The MEWS process for this institution includes a single validated vital sign or physiologic parameter triggering a specific communication pattern between nurses and physicians that leads to a bedside physician assessment by a senior level resident or attending. The goal is to have a bedside evaluation by a senior level provider within 15 minutes of an abnormal parameter being reported. The institution has a robust rapid response and code blue team; MEWS does not replace those escalation processes nor do the criteria overlap. To evaluate the quality improvement process, maternal and fetal outcomes were calculated and a composite obstetric adverse event index (OBAE) was tracked. Retrospective review of all patients who would have triggered the system prior to initiation (pre-MEWS) was compared to prospective outcomes after initiation (post-MEWS) in similar patients. A total of 5925 deliveries with 8971 patient visits were reviewed for outcomes. The overall OBAE was significantly higher pre-MEWs, compared to post-MEWS (pre 4.45% versus post 2.35% p=0.017). Retrospective review of pre-MEWS patients revealed 6% of patients would have triggered MEWS, with 25% of these experiencing adverse outcomes. Prospective review after MEWS initiation revealed 9% (n=503) of patient actually triggered MEWS with 17.8% experiencing adverse outcomes.

Previous to implementing MEWS, this facility relied upon junior providers to evaluate patients that had abnormal physiologic parameters; often times interns would be called and bedside evaluation was left to the discretion of the novice provider. There was not a defined process related to the length of time between the abnormal finding, the call and the evaluation. Developing a process that designates time expectations as well as requiring a senior level provider to evaluate a deteriorating patient with abnormal physiological parameters has had a positive impact on patient care, both statistically and clinically. The impact of MEWS on nursing is notable; there is a heightened awareness of abnormal physiologic parameters, the urgency of a situation and the expected provider response. The process empowers nursing staff to communicate effectively and utilize judicious escalation. Timely recognition and treatment

of serious illness in pregnant and post-partum women has the power to contribute to a reduction in maternal morbidity and mortality.