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RESEARCH

Effectiveness of an Obstetrics-Based Advanced Cardiac Life Support Education Program

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ABSTRACT

Objective: To study the effectiveness of an obstetrics-based advanced cardiac life support education (ACLS OB) program with pre- and postcourse maternal mock code drills and surveys evaluating satisfaction and self-confidence in abilities of labor and delivery (L&D) nurses to perform ACLS algorithms.

Design: Quasi-experimental pretest/posttest study.

Setting: Obstetric units in a community hospital system.

Participants: Labor and delivery nurses ($N = 96$).

Methods: Nurses rotated through an ACLS OB course when their ACLS recertification was due. Two studies were done. Prior to the class, nurses participated in a maternal mock code drill during annual skills review, and performances were scored. One year later, nurses participated in maternal mock code drills. Results were compared with the previous year's scores. In the second study, pre- and postclass surveys were completed reflecting nurses' satisfaction and self-confidence with successfully completing elements of American Heart Association (AHA) algorithms following attendance at traditional ACLS classes versus ACLS OB.

Results: The scores of nurses who completed the ACLS OB course were significantly greater overall when performing ACLS MegaCode algorithms ($z = -6.08$, $p < .001$) for 18 of 21 individual elements of the algorithm. Nurses reported statistically significant increases ($p < .001$) in all 13 elements of satisfaction and self-confidence following completion of ACLS OB over traditional ACLS courses.

Conclusions: Emphasizing changes in ACLS for obstetric patients during the precourse and using patient scenarios encountered in obstetric settings improved nurses' performance in maternal MegaCode scenarios. The course also increased self-satisfaction and self-confidence of obstetric nurses in their ability to perform ACLS algorithms.

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Nurses working in labor and delivery (L&D) units are often required to function as operating room and postanesthesia nurses when caring for women who have cesareans, which necessitates certification in advanced cardiac life support (ACLS). The American Society of PeriAnesthesia Nurses (ASPAN) addressed staffing and personnel management in Standard III of the ASPAN guidelines: "The professional perianesthesia nurse providing Phase I level of care will maintain a current Advanced Cardiac Life Support (ACLS) and/or Pediatric Advanced Life Support (PALS) provider status as appropriate to the patient population served" (ASPAN, 2012, p. 7). Phase I is defined as "the immediate postanesthesia period" during which time "basic life-sustaining needs are of the highest priority and constant vigilance is required . . . as the needs of patients are neither minimal nor episodic" (ASPAN, 2012, p. 7).

According to The Joint Commission (2009), patients with the same health status and condition should receive a comparable level of care quality regardless of where that care is provided within the hospital:

> Comparable standards of care mean that the organization can provide the services that patients need within established timeframes and that those providing care, treatment, and services have required competence. Perinatal units should generally maintain comparable care standards as those in the main hospital

surgical suites/postanesthesia care unit (PACU). (The Joint Commission, 2009, p. 29)

In a recent position statement, the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) (2010) indicated that obstetric surgical patients undergoing general and regional anesthesia should receive perioperative care that is consistent with the general surgical population.

Although L&D nurses are largely successful in traditional hospital-wide ACLS courses and testing, there is little application to their patient population. Pregnant women present have unique needs in resuscitation scenarios. Fetal monitor parts should be removed prior to defibrillation so equipment is not damaged. Hand placement for chest compressions should be slightly higher on the pregnant woman's chest due to elevation of the heart in the chest cavity. The gravid uterus should be displaced to one side to alleviate compression of the vena cava and promote circulation during cardiopulmonary resuscitation (CPR). Placement of an advanced airway should occur early in maternal resuscitation, as intubation of pregnant women can be difficult. An emergency perimortem cesarean performed within 5 minutes of the initial arrest should be considered for a fetus greater than 20 weeks gestation to improve success of maternal resuscitation (American College of Obstetricians and Gynecologists [ACOG], 2009).

Although traditional ACLS may touch briefly on some of these necessary modifications, comprehensive obstetric education is not provided. The advanced cardiac life support course obstetric focus (ACLS OB) combines American Heart Association (AHA) ACLS course content with 4.5 hours of obstetric-specific didactic precourse information and uses scenarios that are applicable to the everyday practice of obstetric nurses. The program supports Knowles' adult learning principle theory, which indicates that adults prefer learning when content has personal or professional relevance (Russell, 2006). Adults are typically more receptive to new information if it is consistent with facts they already believe to be true. Placing emphasis on patient populations for whom nurses typically care makes content more meaningful and promotes knowledge retention. Measuring self confidence and self-satisfaction before and after the ACLS OB course provided a tool to understand nurses' self-efficacy in learning.

Although labor and delivery nurses are largely successful in traditional advanced cardiac life support courses and testing, there is little application to their patient population.

Local Problem

Before instituting ACLS OB, L&D nurses participated in the ongoing traditional ACLS program provided by the local hospital system and were able to pass the course exam and MegaCode. Although successful, nurses generally voiced discontent regarding their ability to retain steps of the algorithms when the course content was irrelevant to their everyday practice.

Nurses at St. Luke's Health System in Boise, Idaho, developed the ACLS OB course and published it in 2011 (Schimmelpfinnig & Martin-Stanfill, 2011). This 4.5 hour precourse (Table 1) designed to partner with the traditional AHA ACLS course instructs nurses in physiologic changes in pregnancy that require modifications to traditional applications of ACLS. It addresses the changing needs of the population and increased need for knowledge of ACLS in the obstetric demographic. A traditional AHA basic life support (BLS)/ACLS course follows with course exam and MegaCode. To make AHA scenarios more applicable to the obstetric setting, the patient's gender and the person

Table 1: Advanced Cardiac Life Support Obstetrics Course Content

Content	Time for Element
When lightning strikes (Background, Prevalence, Physical Adaptations of Pregnancy, Electrocardiogram Review)	2 h 25 min
Obstetric modifications to cardiopulmonary resuscitation and airway management	15 min
Tachycardia	10 min
The slow heart	5 min
Acute coronary syndrome & stroke	20 min
Obstetrics and ventricular fibrillation/pulseless ventricular tachycardia	5 min
Talking with families	40 min
Total didactic time	4 h 30 min