Smart Medicine
STONY BROOK
UNIVERSITY HOSPITAL
Expert Care

Code Noelle: An Interdisciplinary Approach to Reducing Maternal Morbidity and Mortality Secondary to Maternal Hemorrhage

A. Combs, RNC, W.Davila, RNC, A. Lynch, RNC,
T. Griffin, MD, P. Ogburn, MD, E. Steinberg, MD, R. Adsumelli, MD, D. Galanakis, MD
Division of Nursing, Stony Brook University Hospital,
Departments of Obstetrics and Gynecology, Anesthesia and Pathology,
School of Medicine, State University of New York at Stony Brook

Background

New York State has the highest rate of maternal mortality in the United States, 12.9/100,000. The most common causes of maternal death are pregnancy induced hypertension (PIH), embolism and obstetrical hemorrhage.

Obstetrical hemorrhage is known as the most preventable cause of maternal mortality. Hemorrhage accounted for 15.2% 0f all reported maternal mortalities in New York State between 2003 and 2005 (SMI ACOG Report 2005). Ninety seven percent (97%) of all hemorrhage deaths occurred while women were hospitalized. These deaths spanned all socioeconomic classes and, in addition to the deaths, an even larger number of "near misses", women who had severe hemorrhages but survived were reported.

In an effort to decrease the risk of maternal hemorrhage related morbidity and mortality the perinatal services at Stony Brook University Hospital developed a Maternal Hemorrhage Task Force.

Methods

An interdisciplinary group was formed and charged with improving the processes related to caring for pregnant women at risk for hemorrhage and systems that impact their care.

The task force then developed interdisciplinary hemorrhage protocols with emphasis on rapid access to blood products.

Educational programs with didactic components and simulation drills were developed to assist the staff with preparing for emergencies and to identify system issues.

Monthly debriefing meetings to review the responses to simulated and real maternal hemorrhages and identify areas of strength and areas that require improvement have been established.

Results

Documentation:
- the creation of forms to assist clinicians in the assignment of hemorrhage risk
- the development of complete order sets to facilitate rapid response in the event of an actual hemorrhage

Education:
- improved education regarding blood products, how to requisition them and differentiating between stat and emergency blood requests
- the development of objective criteria to call a "Code Noelle"
- the implementation of a physician Hemorrhage Flow Sheet for inter-service patient assessment and communication

T. Griffin, MD and "Noelle" ™, Gaumard Scientific Company Inc.

E. Steinberg, MD, M. Kang, MD, A. Hall, RN, and S. Micelli, RN during simulation.

Linda Goia, MD, Andrea Miller, RN, Penny Hall, RN and other members of the L&D staff during a "Code Noelle" drill.

Communication:
- the development of an overhead "Code Noelle" group page to rapidly notify critical personnel
- the identification of roles for the professional and ancillary nursing staff including triage, nurse scribe and runners
- the involvement of distribution services to facilitate elevator availability to move specimens, blood products and personnel
- the completion of a unit based telephone directory that contains important hospital extensions

Equipment:
- centralization of emergency supplies
- synchronization of the clocks in the LDRs and ORs on the computer systems, to assure accuracy and proper documentation of events
- the review of existing surgical trays for adequacy of instruments

Conclusions

Simulation technology can be applied to the Obstetrical Inpatient setting.

Simulated maternal hemorrhage drills are an effective form of interdisciplinary team building.

Simulated maternal hemorrhage drills provide a platform to identify systems issues in preparing for maternal emergencies.

Hemorrhage drills and systematic non-punitive chart review of actual maternal hemorrhages will decrease the risk of adverse maternal outcomes.