POSTPARTUM HEMORRHAGE: LESSONS LEARNED FROM OTHER STATES

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BACKGROUND AND LITERATURE REVIEW

We reviewed maternal hemorrhage protocols developed in the states of Washington and New York. Primary goals included improving patient care and providing guidelines that practitioners could use to respond seamlessly and consistently to life-threatening maternal hemorrhage. The protocols were not published.

The Washington protocol was initially developed at a single Level III center, University of Washington, and then later expanded to other Level II and III centers in the Puget Sound Region. The protocol focused on blood product replacement and assumed that initial attempts to control bleeding had failed. Specific medical therapy management, uterine compression sutures and hysterectomy were not addressed. In contrast, the New York protocol was developed to address a more global approach to maternal hemorrhage and focused on issues related to early response by displaying educational posters in labor and delivery units. Both protocols accounted for the infrequent occurrence of life-threatening hemorrhage (incidence in California is approximately 2% of births) and addressed the occurrence of disseminated intravascular coagulation (DIC) outlining that its development significantly increases risks of maternal morbidity and death. (1, 2) Clinical knowledge and skills atrophy without regular practice; therefore, well-defined protocols improve coordination and management of obstetrical hemorrhage.

The Washington protocol focused on availability of appropriate blood product replacement. The obstetrician or anesthesiologist activated the protocol when they recognized hemorrhage. Fixed quantities of packed red blood cells (RBCs), fibrinogen, fresh frozen plasma (FFP) and platelets were released from the blood bank to labor and delivery as soon as they were prepared, while blood products were administered in accordance with lab results. Additional personnel were assigned to patient care as needed; for example, a hematologist was usually available for immediate consultation.

In New York State, maternal hemorrhage accounted for 52% of all maternal deaths with the vast majority occurring during hospitalization. Individual obstetrical care providers infrequently encounter major obstetrical hemorrhage and may not readily recall the type of medicines, the exact doses and the frequency of administration of these drugs. The focus of this state protocol was to decrease variability in management of acute hemorrhage among care providers. Key steps deemed necessary to manage such catastrophic acute events were printed on large

posters and placed in strategic areas such as labor and delivery rooms, OR suites, antepartum and postpartum areas and in emergency departments. Space to write key phone numbers or providers' names was available (i.e. blood bank, anesthesia, invasive radiologist, gynecology oncologist or general surgeon, hematologist, interventionist and maternal fetal medicine specialists). Additionally, guidelines recommended that key medications be readily accessible for bedside response instead of requiring pharmacy requests. Hemorrhage "kits" compiled and stored in labor and delivery and OR suites added to successful response to hemorrhage.

RECOMMENDATIONS

1. Every hospital has a scripted algorithm or protocol that outlines all steps for activation and response to maternal hemorrhage. Charge nurses triage and designate additional staff to respond to specific protocol steps; and all phone numbers of potentially needed personnel are included.
2. Both physician and nursing staff can activate an emergency maternal hemorrhage protocol.
3. Develop a collaborative policy/procedure with the blood bank for issue of a specified "OB Emergency Hemorrhage Pack" that includes RBCs, FFP, cryoprecipitate and platelets.
4. Identify a local expert with experience in hemorrhage and DIC treatment for contact as needed.
5. Post medicine doses and suture techniques in labor and delivery and OR suites for reference.
6. Perform scheduled hemorrhage protocol drills and assessments for both physicians and registered nurses.

EVIDENCE GRADING

Level of Evidence: II-3. Evidence obtained from multiple time series with or without interventions. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence. Strong quality improvement data such as statistical process control or other well-designed analysis.
Level of Evidence: III-C. Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees (C: recommendations based primarily on consensus and expert opinion).

REFERENCES

1. Lu MC, Fridman M, Korst LM, Gregory KD, Reyes C, Hobel CJ, et al. Variations in the incidence of postpartum hemorrhage across hospitals in California. Maternal Child Health Journal 2005 September;9(3):297-306.

2. Lurie S, Feinstein M, Mamet Y. Disseminated intravascular coagulopathy in pregnancy: thorough comprehension of etiology and management reduces obstetricians' stress. Archives of gynecology and obstetrics 2000;263(3):126-30.