

Patient Safety Committee: “How We Do It” Expert Opinion *Hemorrhage Carts: Improving Maternal Safety*

Contributor & Editor:

Rachel M. Kacmar, MD

University of Colorado School of Medicine
Aurora, CO

Contributors:

Jennifer M. Banayan, MD

University of Chicago
Chicago, IL

Jean M. Miles, MD

Memorial Healthcare System
Hollywood, FL

Cristina L. Wood, MD

University of Colorado
Aurora, CO



Implementing measures that impact patient safety on Labor and Delivery can be a challenge. However, Obstetric (OB) anesthesiologists are well positioned to help institute these safety initiatives both as internal quality improvement as well as system-wide multi-disciplinary practice improvement. The SOAP 2017 Patient Safety Workshop at the annual meeting will explore several ways OB Anesthesiologists can help lead system changes to ensure a culture of safety for obstetric patients. The following is one example of such an initiative.

Obstetric hemorrhage is a common and often preventable cause of maternal morbidity and mortality worldwide, is one of the top three causes of mortality and occurs in approximately 5% of all pregnancies.¹ In the United States, the rate of blood transfusion for maternal hemorrhage has tripled from 1998-2008.² The Joint Commission on the Accreditation of Healthcare Organizations has suggested using a protocol driven approach for obstetrical hemorrhage that reduces maternal morbidity and mortality.³ In addition, the SMFM/ACOG Maternal Safety Consensus Meeting in 2013 recommended readiness for every obstetrical unit by having immediate access to hemorrhage medications, a response team, transfusion protocols, unit-based drills and a hemorrhage cart.^{4,5} There are many institutions across the country that have implemented and maintained a hemorrhage cart as a proactive measure to respond to obstetric hemorrhage, both in the operating room, and in the labor suite.

The following is one private practice institution’s response to implementing a hemorrhage cart at their center.

Jean Miles (Memorial Healthcare System):

Because maternal hemorrhage may occur during any phase of the peripartum period, we (Department of Anesthesiology) developed an Obstetric Hemorrhage Cart and Anesthesia Critical Care Cart which provide immediate access to supplies and medications that expedite treatment and resuscitation. In order to assure reliable supply availability, all contents of the carts are standardized. Standardization of cart contents

incorporates an “exchange cart” process once the cart has been used. A patient sticker is placed on the attached inventory charge sheet that is located on the cart, and pharmacy and central supply departments charge and restock the needed cart supplies. Cart maintenance and cleaning occurs during the restocking process. In order to ensure the cart contents are secure, a breakaway plastic lock is placed on the outside of the cart. This device serves as a visual means to identify the status of cart usage and as a method to determine integrity of cart contents. A standardized exchange protocol also assists the pharmacy and central supply in monitoring expiration dates and inventory control. Additionally, the cart contains a laminated checklist to direct the cart exchange process.

These mobile, secure and standardized carts stored in the L&D operating rooms as well as on the antepartum unit and are thus easily accessible from all areas of labor and delivery and serve to streamline timely treatment measures during acute maternal hemorrhage.

The specific shape (and contents) of a hemorrhage cart or box varies by institution. Several members of the SOAP Patient Safety Committee contributed photos of their carts (see next page). Table 1 depicts suggestions of items that could be included in the development of a new obstetric hemorrhage cart.

Patient Safety Committee continued on next page

Category	Sample Items
Documents	Peripartum hemorrhage protocol List of cart contents by drawer**
Obstetric supplies	Sterile speculum and gel Exam gloves, sleeve and gown Vaginal packing Chux pads and drapes Suture Red rubber catheter/ Foley catheter Bakri balloon
Anesthesia supplies	Venous access supplies (large bore catheters and central line kit) Arterial line set-up Laboratory tubes Syringes (including ABG) Blood tubing Pressure bags IV fluids (if room available)
Medications	Epinephrine Lidocaine Calcium chloride Oxytocin Misoprostol Methylergonovine/ Carboprost (if proper storage possible)
Miscellaneous	Scale

* Based on lists of cart contents provided by members of the SOAP Patient Safety Committee

** Cart contents should be regularly verified for specified par number and expiration dates

References

1. Bateman BT, Berman MF, Riley LE, Leffert LR. The epidemiology of postpartum hemorrhage in a large, nationwide sample of deliveries. *Anesth Analg.* 2010;110:1368–73.
2. Callaghan WM, Creanga AA, Kuklina EV. Severe maternal morbidity among delivery and postpartum hospitalizations in the United States. *Obstet Gynecol.* 2012;120:1029–1036.
3. Joint Commission on Accreditation of Healthcare Organizations, USA. . Preventing maternal death. Sentinel Event Alert. 2010;26:1–4
4. Main EK., Goffman D, Scavone BM, Low LK, Bingham D, Fontaine PL, et.al. National Partnership for Maternal Patient Safety: Consensus Bundle on Obstetric Hemorrhage. *Anesthesia and Analgesia* 2015; 121: 142-148.
5. Flescher A, Meirowitz N. Care bundles for management of obstetrical hemorrhage. *Semin Perinatol.* 2016 Mar;40(2):99-108.6.

Education Committee continued from page 11

Creating focus groups addressing the attitudes and priorities of the healthcare team members during crisis simulations will benefit all parties involved. We can design educational simulation encounters that help uncover other systems-based errors. Individual and subspecialty communication biases can be particularly important when transporting a patient between labor and delivery and remote areas. Transport often involves special equipment or monitors, using elevators and emergency access, or even moving between buildings. An effective debriefing at the end of one such simulation can help individual providers understand the challenges and mental frameworks of the other members of the care team; identification of discrepancies will help guide creating effective strategies, use of technologies, and be a trigger for policy updates and implementation. As we expand our healthcare simulation programs, it is critical that we use include aspects of individual communication biases and off-unit drills - to ensure safe teamwork practices and responses to crises for all of our pregnant patients.

References

- Dadiz et al., 2013; Fan et al., 2005; “full-text,” n.d.; Minehart et al., 2012; Posner et al., 20)Dadiz, R., Weinschreider, J., Schriefer, J., Arnold, C., Greves, C. D., Crosby, E. C., ... Guillet, R. (2013). Interdisciplinary simulation-based training to improve delivery room communication. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*, 8(5), 279–91.
- Fan, E., Macdonald, R. D., Adhikari, N. K., Scales, D. C., Wax, R. S., Stewart, T. E., & Ferguson, N. D. (2005). Outcomes of interfacility critical care adult patient transport: a systematic review. full-text. (n.d.).
- Helmreich, R. L. (1984). Cockpit management attitudes. *Human Factors*, 26(5), 583–589.
- Minehart, R.D., Pian-Smith, M. C. M., Walzer, T. B., Gardner, R., Rudolph, J. W., Simon, R., & Raemer, D. B. (2012). Speaking across the drapes: communication strategies of anesthesiologists and obstetricians during a simulated maternal crisis. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*, 7(3), 166–70.
- Posner, G., Moore, S., Chiu, M., Crooks, S., Lampron, J., & Sydor, D. (2014). Simulated Obstetrical Trauma. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare*, 9(4), 270–275.