**Purpose of the tool:** This tool describes the key perinatal safety elements related to the management obstetric hemorrhage. The key elements are presented within the framework of the Comprehensive Unit-based Safety Program (CUSP).

**Who should use this tool:** Nurses, physicians, midwives, and other labor and delivery (L&D) unit staff responsible for managing obstetric hemorrhage.

**How to use this tool:** Review the key perinatal safety elements with L&D leadership and unit staff to determine how elements will be implemented on your L&D unit. Consider any existing facility policies or processes related to obstetric hemorrhage. Consider using standing orders, preprinted checklists or algorithms, and staff simulation training to support implementation. A variety of links to resources from professional organizations and other safety initiatives are indicated throughout this document.

# Key Perinatal Safety Elements

***Standardize When Possible (CUSP Science of Safety)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use routine and standardized hemorrhage risk assessment on admission. | * Individual risk factors predict some occurrences of obstetric hemorrhage.[1](#_ENREF_1) A unit process for routinely assessing risk of hemorrhage upon admission to antepartum or L&D units can identify individuals at risk to ensure a prepared health care team. * Risk assessment may include presence of clinical conditions that increase risk of hemorrhage, or patient preferences that may limit the use of blood and blood products in the event of a hemorrhage. * A unit process for risk assessment can include assessing for conditions that are associated with obstetric hemorrhage, and may describe the unit process for different levels of risk. For example— |

***Standardize When Possible (CUSP Science of Safety) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use routine and standardized hemorrhage risk assessment on admission. (continued) | * Criteria for type and hold, type and screen, and type and cross on admission and as intrapartum status changes * Criteria for intravenous access on admission and as intrapartum status changes * Criteria for having specialized equipment (e.g., rapid volume infusers, cell saver technology) readily accessible * Several professional organizations and initiatives offer examples of conditions that increase risk of hemorrhage and sample risk assessment tools.[2-4](#_ENREF_2) |
| Use standardized obstetric hemorrhage kits and carts. | * Rapid access to pharmacologic therapy and surgical equipment necessary to respond quickly to a hemorrhage is facilitated by the use of prepackaged carts, kits, and trays. * These carts, kits, and trays can be stocked and stored on postpartum unit and L&D units. Such carts and kits may include commonly administered uterotonic agents, intravenous-access materials and fluids, equipment for bedside vaginal examination and manual evacuation, task lighting, and equipment for surgical management. * Several professional organizations and initiatives[2](#_ENREF_2),[3](#_ENREF_3) offer suggestions for medications and supplies to stock in hemorrhage kits, carts, or trays. |
| Use standardized approach for the active management of third stage of labor for vaginal births to prevent hemorrhage. | * The routine use of a unitwide approach for the active management of the third stage of labor can reduce variability among providers and nursing staff, potentially minimizing the risk of error. However, achieving unitwide agreement on the specifics of an approach may be challenging because of the available evidence about active management, differing values and opinions about the use of active versus expectant management, and patient preferences. |

***Standardize When Possible (CUSP Science of Safety) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use standardized approach for the active management of third stage of labor for vaginal births to prevent hemorrhage. (continued) | Consider using CUSP strategies to gain consensus on a standard approach that yields the most standardization while still allowing flexibility for patient preferences and/or where evidence is insufficient and variability in approach in unlikely to increase risk of errors. Options and examples for a standardized approach include the following:   * *Evidence of benefit and harms*: Studies show that the active management of the third stage reduces maternal blood loss and rates of postpartum hemorrhage. However, this approach is also associated with increased maternal diastolic blood pressure, pain, use of analgesia, and number of women returning to hospital due to bleeding, and nausea (specific to ergot-derived uterotonics).[5](#_ENREF_5) * *Components of active management of third stage*: The components typically include[6-10](#_ENREF_6)— * use of a uterotonic drug soon after birth (oxytocin or ergot-derived agents), * controlled cord traction, and * performance of uterine massage after the delivery of the placenta.   Some consider early cord clamping to also be part of active management, but available evidence does not suggest it reduces rates of hemorrhage, and delayed cord clamping may provide health benefits to the neonate.[9-11](#_ENREF_9)   * *Evidence about the individual components of active management:* * Evidence suggests that the uterotonic agent is the most important component of active management; oxytocin is typically recommended as it has the most favorable risk/benefit profile.[10](#_ENREF_10),[12](#_ENREF_12),[13](#_ENREF_13) |

***Standardize When Possible (CUSP Science of Safety) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use standardized approach for the active management of third stage of labor for vaginal births to prevent hemorrhage. (continued) | * Options for timing of uterotonic administration vary; it can be given upon delivery of the anterior shoulder, upon delivery of the entire baby, at the first sign of placental separation, or upon expulsion of the placenta. Evidence of timing is limited to studies using intravenous oxytocin; these studies suggest no differences between administration before or after placental expulsion.[14](#_ENREF_14) * Evidence suggests that controlled cord traction in vaginal deliveries slightly reduces postpartum hemorrhage, shortens the duration of the third stage, and reduces risk of manual placental removal but has no effect on severe hemorrhage, need for transfusion, or therapeutic uterotonics. Thus, providers and women may consider using if these outcomes are considered important.[12](#_ENREF_12) * The evidence is insufficient regarding the effectiveness of uterine massage alone or in addition to uterotonics. Some recent guidelines have recommended against the prophylactic use of massage for women who have received prophylactic uterotonics because it may cause maternal discomfort, with little added benefit.[10](#_ENREF_10),[13](#_ENREF_13) |

***Create Independent Checks (CUSP Element)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use cognitive aids such as checklists, flow sheets, and algorithms based on best practice guidelines to guide clinical response to obstetric hemorrhage. | * The evidence suggests that cognitive aids such as checklists, flow sheets, protocols, and algorithms based on best practices may improve team response and management of hemorrhage.[15-17](#_ENREF_15) * These aids provide logic and focus to guide responses in what can sometimes be a chaotic environment. These aids ensure that available treatment options are considered and can help the team maintain situational awareness about what has been done, what the current status is, and what steps may |

***Create Independent Checks (CUSP Element) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use cognitive aids such as checklists, flow sheets, and algorithms based on best practice guidelines to guide clinical response to obstetric hemorrhage. (continued) | come next. Lastly, these aids can help with documentation of the hemorrhage episode.   * Examples of checklists, flow sheets, protocols, and algorithms for clinical response to obstetric hemorrhage are available in the published literature, through perinatal safety and quality collaboratives and professional  organizations.[1-3](#_ENREF_1),[9](#_ENREF_9),[18](#_ENREF_18) |
| Quantify blood loss during and after all deliveries. | * Nonstandardized, informal, visual estimation methods typically underestimate blood loss, resulting in delayed recognition and management of obstetric hemorrhage.[19](#_ENREF_19),[20](#_ENREF_20) * The routine use of quantitative methods for measuring blood loss by the health care team may facilitate earlier recognition and intervention, though few studies have formally evaluated whether this approach improves outcomes.[10](#_ENREF_10),[21-23](#_ENREF_21) * Methods for quantification of blood loss may vary by type of delivery (vaginal or cesarean), but typically involve quantifying blood loss beginning immediately after birth of the infant, using calibrated under-buttocks drapes, weighing blood-soaked objects to estimate volume, and directly measuring blood in collection containers. Standardized visual estimation of blood-soaked materials using visual aids is also an option for quantification of blood loss.[24](#_ENREF_24) * Staff training may be required to effectively implement routine and efficient quantification of blood loss. Several professional organizations and initiatives offer of training materials and cognitive aids for quantification of blood loss.[2](#_ENREF_2),[25](#_ENREF_25) |

***Learn From Defects (CUSP Element)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Debrief and analyze obstetric hemorrhage events. | * Unit can decide its approach to debriefing events based on seriousness of event, expertise available, and data monitoring and tracking capabilities.   + Informal debriefings by clinical team immediately following event should use an approach that does not shame or blame individuals. This allows for understanding of what went well, what could have gone better, and what could be done differently next time.   + Regular forum with a multidisciplinary team can help the unit learn from defects and sensemaking using the following tools:     - Discovery form     - Root cause analysis     - Eindhoven model     - Failure mode and effects analysis     - Probabilistic risk assessment     - Causal tree worksheet     - Interdisciplinary case reviews |
| Have a process in place to review severe maternal hemorrhage or hemorrhage-related mortality events. | * Unit can decide its approach to reviewing cases of severe obstetric hemorrhage. This might include an existing medical peer review process or review by a perinatal safety or quality committee. * A sample process and forms for a committee review are available at the Council on Patient Safety in Women’s Health Care, http://[www.safehealthcareforeverywoman.org](http://www.safehealthcareforeverywoman.org). Select: “Get SMM Forms” menu |
| Share outcomes or process improvements from the informal (debriefing) and formal analysis with staff to achieve transparency and organizational learning. | * Sites can decide how often this information will be shared, how much will be shared, and with whom, and whether this is specified in a unit policy or is handled more informally. |

***Simulation (SPPC Program Pillar)***

| **Key Perinatal Safety Elements** | **Examples/Customizable Components** |
| --- | --- |
| Sample scenarios:   * Antepartum hemorrhage * Postpartum hemorrhage | * Two sample scenarios available through the AHRQ Safety Program for Perinatal Care can be used to train teams on key perinatal safety elements related to obstetric hemorrhage. One scenario is an antepartum hemorrhage, and the other is a postpartum hemorrhage. These scenarios reinforce teamwork and communication related to—   + situational awareness,   + early identification of hemorrhage through quantification of blood loss,   + use of cognitive aids, checklists, and protocols to focus clinical management,   + communication with rapid responders and other units of the hospital (e.g., lab, blood bank, OR),   + communication with patient/family, and   + use of briefings, huddles, and debriefings. * Several professional organizations and initiatives also offer sample simulation scenarios and “drills” related to obstetric hemorrhage.[26-28](#_ENREF_28) |

***Teamwork Training (TeamSTEPPS)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Have situational awareness. | Because only 5 to 10 percent of obstetric hemorrhages occur in patients with risks for hemorrhages,[1](#_ENREF_1) care teams should maintain situational awareness for all patients.  Situational awareness refers to all staff caring for the patient—   * knowing what the patient’s plan is through briefings and team management, * being aware of what is going on and what is likely to happen next, * verifying and checking back on information, * providing ongoing updates.   In the context of obstetric hemorrhage, this includes using standard prevention approaches per unit protocol, monitoring for signs and symptoms of obstetric hemorrhage, and knowing the plan for a timely response to prevent further deterioration once a hemorrhage is identified. |

***Teamwork Training (TeamSTEPPS) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Use SBAR (**S**ituation, **B**ackground, **A**ssessment, and **R**ecommendation), callouts, huddles, and closed-loop communication techniques. | * Use SBAR, callouts, huddles, and closed-loop communication among team members. In the context of hemorrhage, these techniques are particularly useful—   + for communicating a sense of urgency when requesting other unit personnel and provider for help responding to a hemorrhage,   + for communicating changes in maternal or fetal status,   + when giving and receiving new orders to manage the hemorrhage,   + when briefing new care team members who arrive to support a rapid response, and   + when regrouping to discuss plan of care if patient fails to respond to initial measures. |
| Communicate during transitions of care. | * Use of transition communication techniques assures a shared mental model of plan of care and patient risks for hemorrhage between shifts or between units. |
| Have high-reliability teams   * Anyone can sound an alarm, request help, or challenge the status quo. * Hierarchy is minimized. * Communication is continuous, valued, and expected. | * Team members protect each other from work overload and place requests or offers for assistance in the context of patient safety. It is expected that assistance will be actively sought and offered. * Team members will advocate for the patient when one person’s viewpoint does not coincide with another using these team communication techniques:   + Assert a corrective action in a firm and respectful manner.   + Use CUS language: “I am **c**oncerned. I am **u**ncomfortable. This is a **s**afety issue.”   + Use the "two-challenge" rule, repeating concern, and asking whether you have been heard.   + Use a predetermined “stop the line” phrase. |

***Teamwork Training (TeamSTEPPS) (continued)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Have high-reliability teams (continued) | * Team members manage conflict using a constructive positive approach to emphasize “what is right, not who is right”:   + **D:** Describe the specific behavior or situation.   + **E:** Express how the situation makes you feel or concerns you.   + **S:** Suggest other alternatives.   + **C:** Consequences stated in terms of team goals, not punishment. |

***Patient and Family Engagement (CUSP Module)***

| **Key Perinatal Safety Elements** | **Examples** |
| --- | --- |
| Communicate with patient and family during a hemorrhage episode. | * The patient and family are part of the team.   + Ensure a shared mental model with patient and family as well as the clinical team.   + Have training and policies for L&D staff to provide timely, clear information to patient and family to explain what is happening, what needs to happen next, risks, benefits, and processes for obtaining consent.   + Provide reassurance continuously. |
| Disclose any unintended outcomes. | Use unit-established process for disclosing unintended outcomes. This may include the following:   * Prompt, compassionate, and honest communication with the patient and family * Investigation * Ongoing communication with the patient and family * Apology and remediation * System and process improvement * Measurement and evaluation * Education and training |

**References**

1. Audureau E, Deneux-Tharaux C, Lefevre P, et al. Practices for prevention, diagnosis and management of postpartum haemorrhage: impact of a regional multifaceted intervention. BJOG. 2009 Sep;116(10):1325-33. PMID: 19538416.

2. Lyndon A, Lagrew D, Shields L, et al., eds. Improving Health Care Response to Obstetric Hemorrhage (California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care). Developed under contract #08-85012 with the California Department of Public Health; Maternal, Child and Adolescent Health Division. Stanford, CA: California Maternal Quality Care Collaborative; 2010.

3. Harvey CJ, Dildy GA. Obstetric Hemorrhage. Washington, DC: Association of Women’s Health, Obstetric, and Neonatal Nurses; 2012.

4. American Congress of Obstetricians and Gynecologists. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. Obstet Gynecol. 2006 Oct;108(4):1039-47. PMID: 17012482.

5. Begley CM, Gyte GM, Devane D, et al. Active versus expectant management for women in the third stage of labour. Cochrane Database Syst Rev. 2011(11):CD007412. PMID: 22071837.

6. Oladapo OT, Okusanya BO, Abalos E. Intramuscular versus intravenous prophylactic oxytocin for the third stage of labour. Cochrane Database Syst Rev. 2012;2:CD009332. PMID: 22336865.

7. Westhoff G, Cotter AM, Tolosa JE. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. Cochrane Database Syst Rev. 2013;10:CD001808. PMID: 24173606.

8. Liabsuetrakul T, Choobun T, Peeyananjarassri K, et al. Prophylactic use of ergot alkaloids in the third stage of labour. Cochrane Database Syst Rev. 2007(2):CD005456. PMID: 17443592.

9. Burke C. Active versus expectant management of the third stage of labor and implementation of a protocol. J Perinat Neonatal Nurs. 2010 Jul-Sep;24(3):215-28; quiz 29-30. PMID: 20697238.

10. Tuncalp O, Souza JP, Gulmezoglu M, et al. New WHO recommendations on prevention and treatment of postpartum hemorrhage. Int J Gynaecol Obstet. 2013 Dec;123(3):254-6. PMID: 24054054.

11. McDonald SJ, Middleton P, Dowswell T, et al. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. Cochrane Database Syst Rev. 2013;7:CD004074. PMID: 23843134.

12. Du Y, Ye M, Zheng F. Active management of the third stage of labor with and without controlled cord traction: a systematic review and meta-analysis of randomized controlled trials. Acta Obstet Gynecol Scand. 2014 Jul;93(7):626-33. PMID: 24828584.

13. Hofmeyr GJ, Abdel-Aleem H, Abdel-Aleem MA. Uterine massage for preventing postpartum haemorrhage. Cochrane Database Syst Rev. 2013;7:CD006431. PMID: 23818022.

14. Soltani H, Hutchon DR, Poulose TA. Timing of prophylactic uterotonics for the third stage of labour after vaginal birth. Cochrane Database Syst Rev. 2010(8):CD006173. PMID: 20687079.

15. Skupski DW, Lowenwirt IP, Weinbaum FI, et al. Improving hospital systems for the care of women with major obstetric hemorrhage. Obstet Gynecol. 2006 May;107(5):977-83. PMID: 16648399.

16. ACOG Patient Safety and Quality Improvement Committee. ACOG Committee Opinion No. 526: Standardization of practice to improve outcomes. Obstet Gynecol. 2012 May;119(5):1081-2. PMID: 22525933.

17. Rizvi F, Mackey R, Barrett T, et al. Successful reduction of massive postpartum haemorrhage by use of guidelines and staff education. BJOG. 2004 May;111(5):495-8. PMID: 15104617.

18. American Congress of Obstetricians and Gynecologists. Patient Safety Checklist No. 10: postpartum hemorrhage from vaginal delivery. Obstet Gynecol. 2013;121(5):1151-2.

19. Schorn MN. Measurement of blood loss: review of the literature. J Midwifery Womens Health. 2010 Jan-Feb;55(1):20-7. PMID: 20129226.

20. Larsson C, Saltvedt S, Wiklund I, et al. Estimation of blood loss after cesarean section and vaginal delivery has low validity with a tendency to exaggeration. Acta Obstet Gynecol Scand. 2006;85(12):1448-52. PMID: 17260220.

21. Gabel KT, Weeber TA. Measuring and communicating blood loss during obstetric hemorrhage. J Obstet Gynecol Neonatal Nurs. 2012 Jul-Aug;41(4):551-8. PMID: 22548283.

22. Dildy GA, 3rd, Paine AR, George NC, et al. Estimating blood loss: can teaching significantly improve visual estimation? Obstet Gynecol. 2004 Sep;104(3):601-6. PMID: 15339775.

23. Zhang WH, Deneux-Tharaux C, Brocklehurst P, et al. Effect of a collector bag for measurement of postpartum blood loss after vaginal delivery: cluster randomised trial in 13 European countries. BMJ. 2010;340:c293. PMID: 20123835.

24. Zuckerwise LC, Pettker CM, Illuzzi J, et al. Use of a novel visual aid to improve estimation of obstetric blood loss. Obstet Gynecol. 2014 May;123(5):982-6. PMID: 24785850.

25. Association of Women’s Health, Obstetric and Neonatal Nurses. Practice Brief: Clinical Management Guidelines for Women's Health and Perinatal Nurses: Quantification of Blood Loss. 2014 May. <http://www.pphproject.org/downloads/awhonn_qbl.pdf>. Accessed May 2, 2016.

26. California Maternal Quality Care Collaborative. OB Hemorrhage Toolkit V 2.0. Improving Health Care Response to Obstetric Hemorrhage, Version 2.0: A California Toolkit to Transform Maternity Care. Released March 2015. <http://www.cmqcc.org/resources-tool-kits/toolkits/ob-hemorrhage-toolkit>. Accessed May 3, 2016.

27. Wisconsin Association for Perinatal Care. Postpartum Hemorrhage: Resources. 2014 <http://www.perinatalweb.org/major-initiatives/postpartum-hemorrhage/resources>. Accessed May 2, 2016.

28. American Congress of Obstetrics and Gynecology. ACOG Simulations Consortium Learning Objectives: Postpartum Hemorrhage Caused by Uterine Atony. n.d. <http://www.acog.org/~/media/Departments/Simulations%20Consortium/Learning%20Objectives/Postpartum_Hemorrhage.pdf>. Accessed May 2, 2016.

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