

10 practical, evidence-based recommendations for managing severe postpartum hemorrhage

From planning ahead to calling in a multidisciplinary team in special cases, here is advice on handling this obstetric emergency

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By the time a pregnancy reaches term, approximately 500 to 800 mL of blood are circulating through the uterus and placenta every minute, thanks to the intricate network of blood vessels permeating these organs. So it is not surprising that postpartum hemorrhage complicates as many as one in every 20 deliveries, both vaginal and cesarean. Usually, hemorrhage is the result of uterine atony, but other entities may also cause or contribute to acute bleeding.

Severe postpartum hemorrhage, defined as a loss of more than 1,500 mL of blood, complicates approximately 1% of all deliveries and is a leading cause of maternal death. Severe PPH poses serious and often unpredictable challenges to obstetric providers, from the need to make an early diagnosis and establish and treat the cause to the ability to manage hemorrhagic shock.

In this article, I sort through data on the management of this potentially catastrophic event and summarize 10 evidence-based recommendations that can help reduce acute and long-term maternal complications.

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1. Plan and rehearse a step-by-step approach

Wise A, Clark V. Challenges of major obstetric haemorrhage. *Best Pract Res Clin Obstet Gynaecol.* 2010;24(3):353-365.

It is important to anticipate and prepare for the possibility of PPH so that you can respond quickly and effectively when it occurs. Evaluation and management should be simultaneous and should not be hindered by confusion or chaos. Successful management requires early recognition; identification of the cause; the securing of help; continuous monitoring of vital signs and blood loss; prompt resuscitation with fluids, blood, and blood products; and medical or surgical treatment.

2. Know the signs and symptoms of severe hemorrhage

Moore J, Chandraharn E. Management of massive postpartum haemorrhage and coagulopathy. *Obstet Gynaecol Reprod Med.* 2010;20(6):174-180.

Persistent vaginal bleeding is the first sign of PPH. The bleeding may be continuous oozing or it may be profuse. In addition to bleeding, the patient will exhibit several of the signs and symptoms listed in the **TABLE**, page 46.

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Signs and symptoms of postpartum hemorrhage

Signs	Symptoms
Systolic pressure, ≤ 90 mm Hg	Anxiety
Pulse, ≥ 110 beats per minute	Restlessness
Narrow pulse pressure	Tachypnea
Coldness and clamminess	Dizziness
Pale appearance	Hunger for air
Oliguria or anuria	Confusion

3. Call for help within 10 minutes after making the diagnosis of PPH

Driessen M, Bouvier-Colle MH, Dupont C, et al. Postpartum hemorrhage resulting from uterine atony after vaginal delivery. Factors associated with severity. Obstet Gynecol. 2011;117(1):21-31.

In the early stages of uterine atony, delaying care beyond 10 minutes increases the risk of severe PPH.

4. Identify patients at very high risk of hysterectomy and end-organ dysfunction

O'Brien D, Babiker E, O'Sullivan O, et al. Prediction of peripartum hysterectomy and end organ dysfunction in major obstetric haemorrhage. Eur J Obstet Gynecol Reprod Biol. 2010;153(2):165-169.

Rossi AC, Lee RH, Chmait RH. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. Obstet Gynecol. 2010;115(3):637-644.

In a study of 117 cases of severe obstetric hemorrhage, several independent risk factors for peripartum hysterectomy and end-organ dysfunction were identified:

- number of previous cesarean deliveries (odds ratio [OR], 3.28; 95% confidence interval [CI], 1.95-5.5)
- placenta previa (OR, 13.5; 95% CI, 7.7-184)

- placenta accreta (OR, 37.7; 95% CI, 7.7-184)
- uterine rupture (OR, 7.25; 95% CI, 1.25-42)
- number of units of red blood cells (RBCs) transfused (OR, 1.31; 95% CI, 1.13-1.5).

5. Perform uterine-compression sutures within 1 hour after delivery

Kayem G, Kurinczuik JJ, Alfirevic Z, Spark P, Brocklehurst P, Knight M; UK Obstetric Surveillance System (UKOSS). Uterine compression sutures for the management of severe postpartum hemorrhage. Obstet Gynecol. 2011;117(1):14-20.

Balloon tamponade of the uterine cavity and uterine-compression sutures are crucial in the management of PPH. In a series of 211 women who were treated with a uterine-compression suture to control PPH, the rate of hysterectomy was 16% if the procedure was performed within an hour of delivery, but it rose to 42% with a delay of 2 to 6 hours.

6. When you suspect placenta previa or placenta accreta, plan delivery by a multidisciplinary team

Eller AG, Bennett MA, Sharshiner M, et al. Maternal morbidity in cases of placenta accreta managed by multidisciplinary care team compared with standard obstetric care. Obstet Gynecol. 2011;117(2 Pt 1):331-337.

Placenta previa and placenta accreta are frequently associated with severe intra-partum and postpartum hemorrhage. In a retrospective cohort study of 141 cases of placenta accreta that were managed by a multidisciplinary care team (n=79) or received standard obstetric care (n=62), women managed by the multidisciplinary team were less likely (43% vs 61%) to require a large volume of transfusion. They were also less likely to require reoperation within 7 days of delivery for bleeding complications (3% vs 36%) and less likely to experience composite maternal morbidity (47% vs 75%).



When placenta accreta was managed by a multidisciplinary team rather than standard care, transfusion requirements and the need for reoperation were lower

7. Consider conservative management of placenta accreta and placenta percreta in carefully selected women who desire future fertility

Sentilhes L, Ambroselli C, Kayem G, et al. *Maternal outcome after conservative treatment of placenta accreta*. *Obstet Gynecol*. 2010;115(3):526–534.

Extirpative surgery in the form of hysterectomy—with or without partial bladder resection—is usually considered the treatment of choice for these conditions. A retrospective multicenter study reported maternal outcomes after conservative treatment of 167 women who had placenta accreta or percreta (18% had percreta). Conservative management included one or more of the following:

- stepwise uterine devascularization
- pelvic vessel ligation or embolization
- uterine-compression sutures
- administration of methotrexate and antibiotics.

Conservative treatment was successful in 131 (78.5%) cases. Eighteen women underwent primary hysterectomy, and 18

women underwent delayed hysterectomy. One woman died after intraumbilical methotrexate administration, and 10 women (6%) experienced severe morbidity.

Conservative management should be offered only in centers that have adequate equipment and resources for patients who are properly counseled and who are motivated and agree to close follow-up. Planned cesarean hysterectomy remains the treatment of choice for multiparous women, as well as for women who have multiple cesarean deliveries with accreta, and those who do not accept the risks or who are not motivated to undergo close and prolonged follow-up.

8. Beware of von Willebrand disease

Pacheco LD, Costantine M, Saade GR, et al. *von Willebrand disease and pregnancy: a practical approach for the diagnosis and treatment*. *Am J Obstet Gynecol*. 2010;203(3):194–200.

This disease can cause immediate and delayed postpartum hemorrhage and has



Planned cesarean hysterectomy remains the treatment of choice for multiparous women who have placenta accreta or percreta

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(Editorial; May 2007)

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a prevalence of approximately 1% in the general population. Sixteen percent to 29% of women who have von Willebrand disease will experience PPH within 24 hours after delivery, and 20% to 29% will experience delayed postpartum bleeding.

Patients who have this disease should be managed in consultation with a hematologist and blood bank personnel. It entails use of desmopressin, plasma concentrates that contain von Willebrand factor (Humate-P), or cryoprecipitate.

9. Have fibrinogen concentrate on hand

Bell SF, Rayment R, Collins PW, Collis RE. The use of fibrinogen concentrate to correct hypofibrinogenemia rapidly during obstetric haemorrhage. Int J Obstet Anaesth. 2010;19(2):218-223.

Rahe-Mayer N, Sørensen B. Fibrinogen concentrate for management of bleeding. J Thromb Haemost. 2011;9(1):1-5.

This product can correct hypofibrinogenemia very rapidly. In women who have severe PPH, hypofibrinogenemia may develop as a result of dilutional coagulopathy or hypofibrinogenemia in conditions such

as abruption placentae with fetal demise, acute fatty liver of pregnancy, or amniotic fluid embolism. Treatment requires a high volume of fresh frozen plasma or cryoprecipitate. Fibrinogen concentrate is stored at room temperature, requires no cross-matching, and can be prepared and infused within 3 minutes.

10. Implement a protocol for massive transfusion

Sibai BM. Evaluation and management of postpartum hemorrhage. In: Management of Acute Obstetric Emergencies. New York, NY: Elsevier; 2011:41-70.

A delay in the treatment of hypovolemic shock can cause ischemic injury to the kidneys, liver, myocardium, and brain and can lead to diffuse intravascular coagulation (DIC), adult respiratory distress syndrome, and death. The objectives for having a protocol for massive transfusion include:

- administration of adequate blood and blood products
- maintenance of tissue perfusion
- ensuring adequate oxygen delivery
- correction of DIC.

These objectives are vital while the team is working to control the source of bleeding. 🚫



16% to 29% of women who have von Willebrand disease will experience postpartum hemorrhage within 24 hours after delivery, and 20% to 29% will experience delayed postpartum bleeding

Medical Verdicts

Postpartum bleeding, then hysterectomy and chronic pain

TWELVE DAYS AFTER GIVING BIRTH to her third child, a 30-year-old woman went to the emergency department with heavy vaginal bleeding. An ObGyn, using ultrasonography, found pieces of placental tissue still attached to the uterine wall. He performed suction dilatation and curettage and prescribed medication to help the uterus contract. When the bleeding did not slow or stop, he consulted his partner.

During exploratory surgery, they found several sources of hemorrhage, including diffuse uterine bleeding. After trying to control the bleeding, they performed an abdominal

hysterectomy; the woman had already lost one-half of her total blood volume.

► **PATIENT'S CLAIM** The ObGyns were negligent in performing the hysterectomy. In addition to being unable to have more children, she also now suffers from chronic pain syndrome.

► **PHYSICIANS' DEFENSE** They did what was needed to save the patient's life.

► **VERDICT** An Illinois defense verdict was returned.

»» *For more Medical Verdicts, go to page 50.*