

National Consensus Guideline for Treatment of Postpartum Haemorrhage

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National Consensus Guideline for Treatment of Postpartum Haemorrhage

Postpartum haemorrhage (PPH) is a significant cause of maternal morbidity and mortality. Early recognition and action is essential for effective treatment.

Early open and ongoing communication is critical in order to effectively treat any woman experiencing a PPH. Communication channels include those between health professionals as well as with the woman and her partner and family/whānau.

In any case of PPH:

- · call for help
- assess and arrest the bleeding
- minimise the impact of blood loss and resuscitation
- document the clinical events and interventions.

Action should be undertaken as soon as abnormal blood loss is suspected – before the woman has lost 500 mL of blood.

Effective treatment requires identification of cause: consider the 4 Ts: Tone, Trauma, Tissue and Thrombin in any assessment. Note: more than one site may be contributing to the overall blood loss.

In all cases of PPH, it is necessary to consider the maternal condition in relation to known blood loss, and if the maternal condition worsens with no visible blood loss, it is imperative to assess the cause as early possible.

Regardless of setting, practitioners and facilities providing maternity care should understand how to organise transfer of any woman experiencing PPH. Clear transfer protocols should be in place, along with treatment plans, to enable timely intervention and access to additional and specialist assistance when required.

Careful monitoring and documentation during the immediate treatment of PPH and over the next 24–48 hours is critical. Accurate estimation and documentation of cumulative blood loss as well as the treatment provided is necessary.

In cases of significant blood loss, early transfusion with red blood cells is essential to maintain tissue oxygenation. In urgent situations where cross-match blood is unavailable, transfusion with O negative blood is required.

During PPH treatment, allocate a responsible person to the role of caring for the baby, partner and family/whānau.

A PPH experience can be traumatic for the woman, her partner and family/whānau and practitioners involved. Provide all those involved with the opportunity for discussion, reflection and debriefing where necessary.

Bibliography

Assessing and arresting blood loss

Estimating blood loss

Baldwin S, Rucklidge M. 2009. Management of obstetric haemorrhage. *Update in Anaesthesia* 25(2): 41–8. URL: http://update.anaesthesiologists.org/wp-content/uploads/2010/07/Update-252.pdf update.anaesthesiologists.org/wp-content/uploads/2010/07/Update-252.pdf (accessed on 6 May 2013).

Bose P, Regan F, Paterson-Brown S. 2006. Improving the accuracy of estimated blood loss at obstetric haemorrhage using clinical reconstructions. *BJOG: An International Journal of Obstetrics and Gynaecology* 113(8): 919–24.

Dildy GA, Paine AR, George NC, et al. 2004. Estimating blood loss: can teaching significantly improve visual estimation? *Obstetrics and Gynecology* 104(3): 601–6.

Patel A, Goudar SS, Geller SE, et al. 2006. Drape estimation vs. visual assessment for estimating postpartum hemorrhage. *International Journal of Gynecology and Obstetrics* 93(3): 220–4.

Sloan NL, Durocher J, Aldrich T, et al. 2010. What measured blood loss tells us about postpartum bleeding: a systematic review. *BJOG: An International Journal of Obstetrics and Gynaecology* 117(2): 788–800.

Toledo P, McCarthy RJ, Hewlett BJ, et al. 2008. The accuracy of blood loss estimation after simulated vaginal delivery. *Obstetric Anesthesia Digest* 28(3): 172–3.

Zhang WH, Deneux-Tharaux C, Brocklehurst P, et al, on behalf of Euphrates Group. 2010. Effect of a collector bag for measurement of postpartum blood loss after vaginal delivery: cluster randomised trial in 13 European countries. *BMJ* 340: 293.

Zwart JJ, Yazdani ST, Harvey MS, et al. 2010. Under reporting of major obstetric haemorrhage in the Netherlands. *Transfusion Medicine* 20(2): 118–22.

Uterotonics

Belghiti J, Kayem G, Dupont C, et al. 2011. Oxytocin during labour and risk of severe postpartum haemorrhage: a population based, cohort-nested case-controlled study. *BMJ Open* 1(2). URL: http://bmjopen.bmj.com (accessed on 6 May 2013).

Buekens P, Althabe P. 2010. Post-partum haemorrhage: beyond the confrontation between misoprostol and oxytocin. *The Lancet* 375(9710): 176–8.

Choy CMY, Lau WC, Tam WH, et al. 2002. A randomised controlled trial of intramuscular syntometrine and intravenous oxytocin in the management of the third stage of labour. *BJOG: An International Journal of Obstetrics and Gynaecology* 109: 173–7.

Liabsuetrakul T, Choobun T, Peeyananjarassri K, et al. 2007. Prophylactic use of ergot alkaloids in the third stage of labour. *Cochrane Database of Systematic Reviews*, Issue 2, Art. No. CD005456. DOI: 10.1002/14651858.CD005456.pub2. URL: www.thecochranelibrary.com (accessed 6 May 2013).

WHO. 2012. WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. Geneva: World Health Organization. URL: www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241548502/en/ (accessed 6 May 2013).

Carboprost

Tuncalp O, Hofmeyr GJ, Gulmezoglu AM. 2012. Prostaglandins for prevention of postpartum haemorrhage. *Cochrane Database of Systematic Reviews*, Issue 8, Art. No. CD000494. DOI: 10.1002/14651858.CD000494.pub4. URL: www.thecochranelibrary.com (accessed 6 May 2013).

Misoprostol

Blum J, Winikoff B, Raghavan S, et al. 2010. Treatment of postpartum haemorrhage with sublingual misoprostol versus oxytocin in women receiving prophylactic oxytocin: a double-blind, randomised, non-inferiority trial. *The Lancet* 375(9710): 217–23.

Gülmezoglu M, Villar J, Ngoc N, et al. 2001. WHO multicentre randomised trial of misoprostol in the management of the third stage of labour. *The Lancet* 358(9283): 689–95.

Hofmeyer GJ, Walraven G, Gulmezoglu AM, et al. 2005. Misoprostol to treat postpartum haemorrhage: a systematic review. *BJOG: An International Journal of Obstetrics and Gynaecology* 112(5): 547–53.

Khan RU, El-Refaey H, Sharma S, et al. 2004. Oral rectal and vaginal pharmacokinetics of misoprostol. 2004. *Obstetrics and Gynecology* 103(5, Pt 1): 866–70.

O'Brien P, El-Refaey H, Gordon A, et al. 1998. Rectally administered misoprostol for the treatment of postpartum haemorrhage unresponsive to syntocinon and ergometrine: a descriptive study. *Obstetrics and Gynecology* 92(2): 212–14.

Widmer M, Blum J, Hofmeyer GJ, et al. 2010. Misoprostol as an adjunct to standard uterotonics for treatment of post-partum haemorrhage: a multicentre, double-blind randomised trial. *The Lancet* 375(9728): 1808–13.

Winikoff B, Dabash R, Duracher J, et al. 2010. Treatment of post-partum haemorrhage with sublingual misoprostol versus oxytocin in women not exposed to oxytocin during labour: a double-blind, randomised, non-inferiority trial. *The Lancet* 375(9710): 210–16.

Tranexamic acid

Alok AK, Hagen P, Webb JB. 1996. Tranexamic acid in the management of postpartum haemorrhage. *BJOG: An International Journal of Obstetrics and Gynaecology* 103(12): 1250–1.

Peitsidis P, Kadir RA. 2011. Antifibrinolytic therapy with tranexamic acid in pregnancy and postpartum. *Expert Opinion Pharmacotherapy* 12(4): 503–16.

Carbetocin

Askar AA, Ismail MT, Amro AE, et al. 2011. Carbetocin v syntometrine in the management of third stage of labour following vaginal delivery. *Archives of Gynecology and Obstetrics* 284(6): 1359–65.

Dansereau J, Joshi A, Helewa M, et al. 1999. Double blinded comparison of carbetocin versus oxytocin in prevention of uterine atony after cesarean section. *AJOG: American Journal of Obstetrics and Gynecology* 180(3, Pt1): 670–6.

Leung SW, Ng PS, Wong WY, et al. 2006. A randomised control of carbetocin versus syntometrine in the management of third stage of labour. *BJOG: An International Journal of Obstetrics and Gynaecology* 113(12): 1459–64.

Su LL, Rauff M, Chan YH, et al. 2009. Carbetocin versus syntometrine for the third stage of labour following vaginal delivery—a double-blind randomised controlled trial. *BJOG: An International Journal of Obstetrics and Gynaecology* 116(11): 1461–6.

HemoCue[©] and coagulation clot lysis tests

Poe MF. 1959. Clot observation test for clinical diagnosis of clotting defects. *Anesthesiology* 20: 825–9.

Uterine compression balloons

Bakri YN, Amri A, Abdul Jabber F. 2001. Tamponade-balloon for obstetrical bleeding. *International Journal of Gynaecology and Obstetrics* 74(2): 139–42.

Condous GS, Arulkumaran S, Symonds I, et al. 2003. The 'tamponade test' in the management of massive postpartum haemorrhage. *Obstetrics and Gynecology* 101(4): 767–72.

Danso D, Reginald P. 2002. Combined B-Lynch suture with intrauterine balloon catheter triumphs over massive postpartum haemorrhage. *BJOG: An International Journal of Obstetrics and Gynaecology* 109(8): 963.

Georgiou C. 2009. Balloon tamponade in the management of postpartum haemorrhage: a review. *BJOG: An International Journal of Obstetrics and Gynaecology* 116(6): 748–57.

Johanson R, Kumar M, Obhrai M, et al. 2001. Management of massive postpartum haemorrhage: use of a hydrostatic balloon catheter to avoid laparotomy. *BJOG: An International Journal of Obstetrics and Gynaecology* 108(4): 420–22.

Sinha SM. 2003. The 'tamponade test' in the management of massive postpartum haemorrhage. *Obstetrics and Gynecology* 102(3): 641–2.

Uterine packing gauze

Bagga R, Jain V, Kalra J, et al. 2004. Uterovaginal packing with rolled gauze in postpartum hemorrhage. *Medscape General Medicine* 6(1): 50.

Hsu S, Rodgers B, Lele A, et al. 2003. Use of packing in obstetric hemorrhage of uterine origin. *Journal of Reproductive Medicine* 48(2): 69–71.

Maier RC. 1993. Control of postpartum hemorrhage with uterine packing. *AJOG: American Journal of Obstetrics and Gynecology* 169(2, Pt1): 317–21.

Stepwise devascularisation of the uterus / B-Lynch / brace sutures

AbdRabbo SA. 1994. Stepwise uterine devascularization: a novel technique for management of uncontrolled postpartum hemorrhage with preservation of the uterus. *AJOG: American Journal of Obstetrics and Gynecology* 171(3): 694–700.

Allam NS, B-Lynch C. 2005. The B-Lynch and other uterine compression suture techniques. *International Journal of Gynaecology and Obstetrics* 89(3): 236–41.

B-Lynch C, Coker A, Lawal AH, et al. 1997. The B-Lynch technique for the control of massive obstetric haemorrhage: an alternative to hysterectomy? Five cases reported. *BJOG: An International Journal of Obstetrics and Gynaecology* 104(3): 372–5.

Kayem G, Kurinczuk J, Alfirevic Z, et al. 2011. Specific second-line therapies for postpartum haemorrhage: a national cohort study. *BJOG: An International Journal of Obstetrics and Gynaecology* 118(7): 856–64.

Lombaard H, Pattinson RC. 2009. Common errors and remedies in managing postpartum haemorrhage. *Best Practice and Research Clinical Obstetrics and Gynaecology* 23(3): 317–26.

Mallappa Saroja CS, Nankani A, El-Hamamy E. 2010. Uterine compression sutures, an update: review of efficacy safety and complications of B-Lynch sutures and other uterine compression techniques for postpartum haemorrhage. Archives of *Gynaecology and Obstetrics* 281(4): 581–8.

Ouahba J, Piketty M, Huel C, et al. 2007. Uterine compression sutures for postpartum bleeding with uterine atony. *BJOG: An International Journal of Obstetrics and Gynaecology* 114(5): 619–22.

Sentilhes L, Gromez A, Razzouk K, et al. 2008. B-Lynch suture for massive persistent postpartum hemorrhage following stepwise uterine devascularization. *Acta Obstetricia et Gynecologica* 87(10): 1020–6.

Sentilhes L, Gomez A, Trichot C, et al. 2009. Fertility after B-Lynch suture and stepwise uterine devascularization. *Fertility and Sterility* 91(3): 934, e5–9.

Tsvetkov K, Angelova M, Monastirska M, et al. 2008. About stepwise uterine devascularisation in early post-partum haemorrhages. *Akush Ginekol* 47(5): 34–7.

Wergeland H, Alagic E, Lokvik B. 2002. Use of the B-Lynch suture technique in postpartum hemorrhage. Tidsskr *Nor Laegeforen* 122(4): 370–2.

Fibrin glues and gel

Nelson WL, O'Brien JM. 2007. Uterine sandwich for persistent uterine atony: combining the B-Lynch compression suture and an intrauterine Bakri balloon. *AJOG: American Journal of Obstetrics and Gynecology* 196(5): e9–10.

Palacios-Jaraquemada J, Fiorillo A. 2010. Conservative approach in heavy postpartum hemorrhage associated with coagulopathy. *Acta Obstertricia et Gynaecologica* 89(9): 1222–5.

Artery ligation

Allahbadia G. 1993. Hypogastric artery ligation: a new perspective. *Journal of Gynecologic Surgery* 9(1): 35–42.

Cheng YY, Hwang JI, Hung SW, et al. 2003. Angiographic embolization for emergent and prophylactic management of placenta accreta: a four-year experience. *Journal of the Chinese Medical Association* 66(12): 727–34.

Chou MM, Hwang JI, Tseng JJ, et al. 2003. Internal Iliac artery embolization before hysterectomy for placenta accreta. *Journal of Vascular and Interventional Radiology* 14(9, Pt 1): 1195–9.

Clark SL, Phelan JP, Yeh SY, et al. 1985. Hypogastric artery ligation for obstetric hemorrhage. *Obstetrics and Gynecology* 66(3): 353–6.

Maassen MS, Lambers MD, Tutein Nolthenius, et al. 2009. Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage. *BJOG: An International Journal of Obstetrics and Gynaecology* 116(1): 55–61.

Ojala K, Perala J, Kariniemi J, et al. 2005. Arterial embolization and prophylactic catheterization for the treatment of severe obstetric hemorrhage. *Acta Obstetricia et Gynecologica* 84(11): 1075–80.

O'Leary JL, O'Leary JA. 1974. Uterine artery ligation for control of post-cesarean section hemorrhage. *Obstetrics and Gynecology* 43(6): 849–53.

O'Leary JA. 1995. Uterine artery ligation in the control of post-caesarean hemorrhage. *Journal of Reproductive Medicine* 40(3): 189–93.

Winograd RH. 2008. Uterine artery embolization for postpartum haemorrhage. *Best Practice Research Clinical Obstetrics and Gynaecology*. 22(6): 1119–32. DOI: 10.1016/j.bpobgyn.2008.08.009.

Hysterectomy

Knight M. 2007. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. *BJOG: An International Journal of Obstetrics and Gynaecology* 114(11): 1380–7.

Knight M, Kurinczuk JJ, Spark P, et al. 2008. Cesarean delivery and peripartum hysterectomy. *Obstetrics and Gynecology* 111(1): 97–105.

Lone F, Sultan AH, Thakar R, et al. 2010. Risk factors and management patterns for emergency obstetric hysterectomy over two decades. *International Journal of Gynaecology and Obstetrics* 109(1): 12–15.

Rossi AC, Lee RH, Chmait RH. 2010. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. *Obstetrics and Gynecology* 115(3): 637–44.

Turner MJ. 2010. Peripartum hysterectomy: an evolving picture. *International Journal of Gynaecology and Obstetrics* 109(1): 9–11.

Minimising impact of blood loss and resuscitation

Crystalloids and colloids

Fuller AJ, Bucklin BA. 2010. Blood product replacement for postpartum hemorrhage. *Clinical Obstetrics and Gynecology* 53(1): 196–208.

Schierhout G, Roberts I. 1998. Fluid resuscitation with colloid or crystalloid solutions in critically ill patients: a systematic review of randomised trials. *BMJ* 316(7136): 961–4.

Stainsby D, MacLennan S, Thomas D, et al. 2006. Guidelines on the management of massive blood loss. *British Journal of Haematology* 135(5): 634–41.

Blood and blood products

James A, McLintock C, Lockhart E. 2012. Postpartum haemorrhage: When uterotonics and sutures fail. *American Journal of Hemotology* 87(S1): S16–22. URL: http://onlinelibrary.wiley.com/doi/10.1002/ajh.23156/pdf (accessed 1 July 2013).

Royal College of Obstetricians and Gynaecologists. 2007. Blood transfusions in obstetrics. *Green-top Guideline No. 47*. Amended July 2008. URL: www.rcog.org.uk/files/rcog-corp/uploaded-files/GT47BloodTransfusions1207amended.pdf (accessed 6 May 2013).

Recombinant factor VII (rFVIIa)

Ahonen J, Jokela R. 2005. Recombinant factor Vlla for life threatening post-partum haemorrhage. *British Journal of Anaesthesia* 94(5): 592–5.

Franchini M, Franchi M, Bergamini V, et al. 2010. The use of rFVll in obstetric haemorrhage. *Clinical Obstetrics and Gynecology* 53(1): 219–27.

Levi M, Levy JH, Andersen HF, et al. 2010. Safety of recombinant activated factor Vll in randomized clinical trials. *New England Journal of Medicine* 363(19): 1791–800.

Pepas LP, Arif-Adib M, Kadir RA. 2006. Factor Vlla in puerperal hemorrhage with disseminated intravascular coagulation. *Obstetrics and Gynecology* 108(3, Pt 2): 757–61.

Segal S, Hemesh JY, Blumenthal B, et al. 2003. Treatment of obstetric haemorrhage with recombinant activated factor VII (rVIIa). Archives of *Gynecology and Obstetrics* 268(4): 266–7.

Tanchev S, Platikanov V, Karadimov D. 2005. Administration of recombinant factor Vlla for the management of massive bleeding due to uterine atonia in the post-placental period. *Acta Obstetricia et Gynecologica* 84(4): 402–3.

Aortic compression

Riley DP, Burgess DW. 1994. External abdominal aortic compression: a study of a resuscitation manoeuvre for postpartum haemorrhage. *Anaesthesia and Intensive Care* 22(5): 571–5.

Intra-operative cell salvage (IOCS)

Catling S, Joels L. 2005. Cell salvage in obstetrics: the time has come. *BJOG: An International Journal of Obstetrics and Gynaecology* 112(2): 131–2.

National Institute for Health and Clinical Excellence. 2005. *Intraoperative Blood Cell Salvage in Obstetrics*. London: National Institute for Health and Clinical Excellence. URL: http://guidance.nice.org.uk/IPG144/Guidance/pdf/English (accessed 6 May 2013).

Royal College of Obstetricians and Gynaecologists. 2007. Blood transfusions in obstetrics. *Green-top Guideline No. 47.* Amended July 2008. URL: www.rcog.org.uk/files/rcog-corp/uploaded-files/GT47BloodTransfusions1207amended.pdf (accessed 6 May 2013).

Waters JH, Biscotti C, Potter PS, et al. 2000. Amniotic fluid removal during cell salvage in the cesarean section patient. *Anaesthesiology* 92(6): 1531–6.

General

Ahonen J, Stefanovic V, Lassila R. 2010. Management of post-partum haemorrhage. *Acta Anaesthesiologica Scandinavica* 54(10): 1164–78.

Centre for Maternal and Child Enquiries (CMACE). 2011. 'Top ten' recommendations. *Saving Mothers' Lives: Reviewing maternal deaths to make motherhood safer: 2006–2008. BJOG: An International Journal of Obstetrics and Gynaecology* 118(S1): 10–17. URL: http://onlinelibrary.wiley.com/doi/10.1111/j.1471-0528.2010.02847.x/pdf (accessed 22 September 2013).

Chavan R, Latoo M. 2013. Recent advances in the management of major obstetric haemorrhage. *British Journal of Medical Practitioners* 6(1): a604. URL: www.bjmp.org/content/recent-advances-management-major-obstetric-haemorrhage (accessed 3 September 2013).

Homer C, Clements V, McDonnell N, et al. 2009. Maternal mortality: what can we learn from stories of postpartum haemorrhage? *Women and Birth* 22(3): 97–104.

Mousa HA, Alfirevic Z. 2009. Treatment for primary postpartum haemorrhage. *Cochrane Database Systematic Reviews* Issue 1, Art. No. CD003249. DOI: 10.1002/14651858.CD003249.pub2. URL: www.thecochranelibrary.com (accessed 1 July 2013).

Queensland Maternity and Neonatal Clinical Guidelines Program. 2012. *Queensland Maternity and Neonatal Clinical Guideline: Supplement: Primary postpartum haemorrhage*. URL: www.health.qld.gov.au/qcg/documents/s_pph.pdf (accessed 1 July 2013).

Royal College of Obstetricians and Gynaecologists. 2009. Prevention and management of postpartum haemorrhage. *Green-top Guideline No. 52*. Minor revisions November 2009 and April 2011. URL: www.rcog.org.uk/files/rcog-corp/GT52PostpartumHaemorrhage0411.pdf (accessed 1 July 2013).

Sobieszczyk S, Breborowicz G. 2004. Management recommendations for postpartum haemorrhage. Archives of *Perinatal Medicine* 10(4): 1–4.

Varatharajan L, Chandraharan E, Sutton J, et al. 2011. Outcome of the management of massive postpartum hemorrhage using the algorithm 'HEMOSTASIS'. *International Journal of Gynaecology and Obstetrics* 113(2): 152–4.

Guidelines and consensus statements

Royal College of Obstetricians and Gynaecologists

New Zealand College of Midwives

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

World Health Organization

The Society of Obstetricians and Gynaecologists of Canada

The Royal College of Midwives

Training manuals for MOET, ALSO, PROMPT

New Zealand district health boards' guidelines and policies

Auckland

Counties Manukau

Waitemata

Northland

Waikato

Bay of Plenty

Tairawhiti

Hawke's Bay

Canterbury

South Canterbury

Otago and Southland, now Southern