MATERNITY UNIT

GUIDELINE: Postpartum Haemorrhage (PPH) – prevention, prophylaxis and management

SCOPE: All midwives, nurses and obstetricians working in the maternity unit

AUTHOR: Midwifery Educator

PURPOSE: To provide best practice guidance on the prevention and management of postpartum haemorrhage

DEFINITIONS: There are numerous definitions of PPH in the literature. The most widely recognised is blood loss in excess of 500ml for a vaginal birth, and greater than 1,000mls for a caesarean section. Because it is often difficult to accurately measure blood loss, the usefulness of 'traditional' definitions of PPH is now being questioned.

A **primary PPH** occurs within 24 hours of childbirth, a **secondary PPH** occurs from 24 hours to the first six weeks after the birth.

At Hauora Tairāwhiti it has been agreed that **the definition of a primary PPH is a blood loss during the first 24 hours of 500mls or more, regardless of the mode of birth** as it is the potential effect on the woman that is important, as is adequate and timely management. This is also the definition used to bench mark against data collection throughout New Zealand.

GUIDELINE

PPH is a life-threatening event and can cause short and long term maternal morbidity and mortality.

Identification of women at increased risk and initiation of appropriate preventative measures and prophylaxis is an important step in preventing PPH and/or reducing the overall blood volume lost during a PPH.

We have developed a traffic-light risk-assessment tool to guide practitioners and women/whanau through planning appropriate care in the antenatal and intrapartum period (see appendix 1). This tool is to be used to guide risk assessment of all women in the antenatal period to instigate care planning in order to address modifiable risk factors (anaemia and BMI) – see "Iron supplementation in pregnancy" guideline and "Women with a BMI ≥ 35: Management of pregnancy and Birth" guideline. This tool is also to be used for all women attending maternity in labour to initiate planning for appropriate third stage management.

The optimal management of PPH requires a multi-disciplinary approach to ensure rapid and aggressive early intervention. 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.

The National PPH guideline (Appendix 2) can be accessed from the guideline folder in each birthing suite and is also attached to the red emergency trolley. This guideline provides clear instructions of the actions required depending on the amount of bleeding.

In any case of PPH:

- Call for help
- Assess and arrest the bleeding
- Minimise the impact of blood loss with resuscitation measures
- Document the clinical events and interventions
- Debrief the family/whanau
- Incident report if ≥ 1L

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 as 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.

- during PPH and until haemostasis achieved – 5-10 minutes BP, P, RR, SpO2, blood loss running total
- Once PPH under control and woman stable – full observations (BP, P, RR, blood loss, fundal tone, and output) half hourly for 2 hours, hourly for 4 hours and then 4 hourly until discharge. Temperatures 4 hourly for first 24hrs post PPH, and then at least once per shift throughout the woman's stay in maternity. Fluid balance chart for at least the first 24hrs post PPH.

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. Consider activating the massive blood transfusion policy sooner rather than later. This can only be activated by a senior medical officer (SMO). The midwife may wish to prompt the SMO to activate this in circumstances of excessive or uncontrolled bleeding.

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.

Blood loss % (ml)	Systolic blood pressure, mm/Hg	Signs and symptoms
10 – 15% (500 to 1,000)	Normal	Palpitations, dizziness, tachycardia
15 – 25% (1,000 to 1,500)	Slightly low	Weakness, sweating, tachycardia – **Urgent action is required at this stage, do not leave until next stage**
25 – 35% (1,500 to 2,000)	70 to 80	Restlessness, pallor, oliguria
35 – 45% (2,000 to 3,000)	50 to 70	Collapse, air hunger, anuria

At Tairāwhiti Hauora we have access to a Bakri balloon from theatre, see APPENDIX 3. We also weigh all blood soiled linen and disposables to estimate blood loss, see APPENDIX 4.

ASSOCIATED DOCUMENTS

Hauora Tairāwhiti – Massive Blood Transfusion Policy
Maternity Unit Guideline - Women with a BMI ≥ 35: Management of pregnancy and Birth
Maternity Unit Guideline – Iron supplementation in pregnancy

REFERENCES

Ministry of Health. (2013) National Consensus Guideline for Treatment of Postpartum Haemorrhage. Wellington: Ministry of Health.
Massive Obstetric Haemorrhage Study – AMOSS Newsletter No.23. May 2015
An overview of postpartum hemorrhage (2016) accessed via https://www.uptodate.com/contents/overview-of-postpartum-hemorrhage?source=see_link 03/03/2017

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Appendix 1

RISK FACTORS FOR PPH

All women to be assessed on admission in labour with continuous reassessment throughout labour and delivery

Antenatal Risk Factors

Anaemia (Hb<90)	
Platelet count <80,000	Known abruption or recent APH
Refusal of Blood Products	Abnormal placental implantation (praevia)
BMI <18 or >35	Prior uterine surgery
Multiple pregnancy	Uterine fibroids >5cm
Current or previous macrosomia	Five or more previous births
Polyhydramnios	Previous PPH

Intrapartum Risk Factors

Chorioamnionitis/PROM	Augmented labour
Prolonged prodromal phase	Precipitous labour & birth
Prolonged 1st or 2nd stage	Instrumental delivery
Emergency LSCS	Retained placenta

RECOMMENDATIONS:

If No identified risk factors	Active 3rd stage unless physiological requested by woman and labour has remained physiological including having had no narcotics
If 1/2 present:	Active Management -IV sited with CBC and group and hold 5 units Syntocinon diluted in 9.5mls NSaline IV after delivery of infant Syntocinon infusion 40 units/1litre saline at 250mls/hr
If 3/4 present:	Add syntometrine 1ampoule IM at delivery of placenta (if contraindicated contact O&G for discussion of plan to prevent PPH)
If >4 present:	Contact O&G for discussion of plan to prevent PPH

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Appendix 2

MINISTRY OF HEALTH

Treating Postpartum Haemorrhage

Initial early recognition and action

Call for help
- Allocate roles
  - include care of baby, partner and family/whānau

Assess and arrest bleeding
- Lie woman flat
- Deliver placenta
- Massage fundus and expel clots
- Place baby skin to skin
- Administer uterotonics
  - Syntocinon 10iu IM or 5iu IV or Syntometrine 1ml IM (unless contraindicated)
- Empty bladder

Identify cause
- Consider the 4Ts
  - Tone – uterine atony
  - Tissue – retained placenta
  - Trauma – lacerations or rupture
  - Thrombin – coagulopathy

Minimise impact of blood loss
- Insert large bore IV cannula (16g)
- Take blood for FBC, Group and Hold, Coags
- Give high flow oxygen
- Consult with specialist obstetrician regarding transfer
- Start rapid IV fluid replacement and commence with crystalloids (Normal Saline, Hartmann's or similar)

Maternal observations and clinical assessment¹
- Assess and document:
  - blood pressure, pulse, respiratory rate, temperature, cumulative blood loss, fluid balance

Blood loss stops and woman's condition is stable
- Continue observations and clinical assessments
- Document plan for ongoing care (including best location)
- Ensure woman has adequate level of observation by health professional or partner, family/whānau with access to health professional or emergency services
- Watch for further blood loss
- Check haemoglobin

¹ [illegible]

Ongoing significant bleeding

Don't delay transfer to secondary/tertiary obstetric service if at home or in a primary unit
- Allocate care of baby to suitable person
- Commence Syntocinon infusion (40iu in Normal Saline 1000mls over 4 hours)
- Reconsider the 4Ts
- Apply bimanual compression to arrest blood loss
- Ensure senior obstetric and midwifery team present on arrival

Call for additional support
- Transfer care to senior obstetrician as per Referral Guidelines
- Summon anaesthetist
- Prepare theatre team
- Inform laboratory of major PPH
  - send blood to lab on arrival: FBC, Group & Hold, coagulation studies
  - request blood for transfusion

Assess and arrest bleeding
- Reconsider the 4Ts
- Assess cumulative blood loss
- Insert second large bore IV cannula (16g)
- Massage the fundus to expel clots and consider bimanual compression
- Insert indwelling catheter
- Administer Carboprost² 250mcg every 15 minutes (maximum of 8 doses), IM or intrauterine **or** Misoprostol 800mcg, buccal or PR
- Consider EUA for
  - removal of retained placenta/products
  - repair of tears
  - intrauterine balloon or packing

Resuscitation
- Give crystalloids (maximum 2–3L)
- Give red cell transfusion as soon as possible
- Start transfusing O Neg red cells if urgent transfusion required until cross-matched blood available

Maternal observations and clinical assessment
- Assess and document:
  - blood pressure, pulse, respiratory rate, temperature, cumulative blood loss, fluid balance

Blood loss stops and woman's condition is stable
- Continue observations and clinical assessments
- Document plan for ongoing care (including best location)
- Ensure 1:1 care
- Watch for further blood loss
- Check haemoglobin via FBC

² Carboprost can cause severe bronchospasm. Avoid in women with a history of asthma or bronchospasm.

Ongoing uncontrolled bleeding

Call for additional help
- Senior obstetrician and senior anaesthetist clinically responsible for care
- Consult with haematologist/transfusion medicine specialist
- Transfer to operating theatre

Assess and arrest bleeding
- Reconsider the 4Ts
- Consider laparotomy
- Consider early recourse to hysterectomy
- Consider other options if appropriate:
  - uterine compression suture (+/- tamponade balloon/packing)
  - uterine artery ligation
  - internal iliac embolisation
  - aortic compression

Resuscitation
- Administer blood and blood products
- Trigger massive transfusion protocol (MTP) where available*
- Avoid hypothermia, hypocalcaemia and acidosis
- Use of cell saver where available
- Consider tranexamic acid
- Consider recombinant factor VIIa

Maternal observations and clinical assessments
- Consider arterial line or central venous line
- Assess and document blood pressure, pulse, respiratory rate, temperature, oxygen saturation
  - document cumulative blood loss and accurate fluid balance (hourly urine output)
  - hourly FBC and coagulation studies

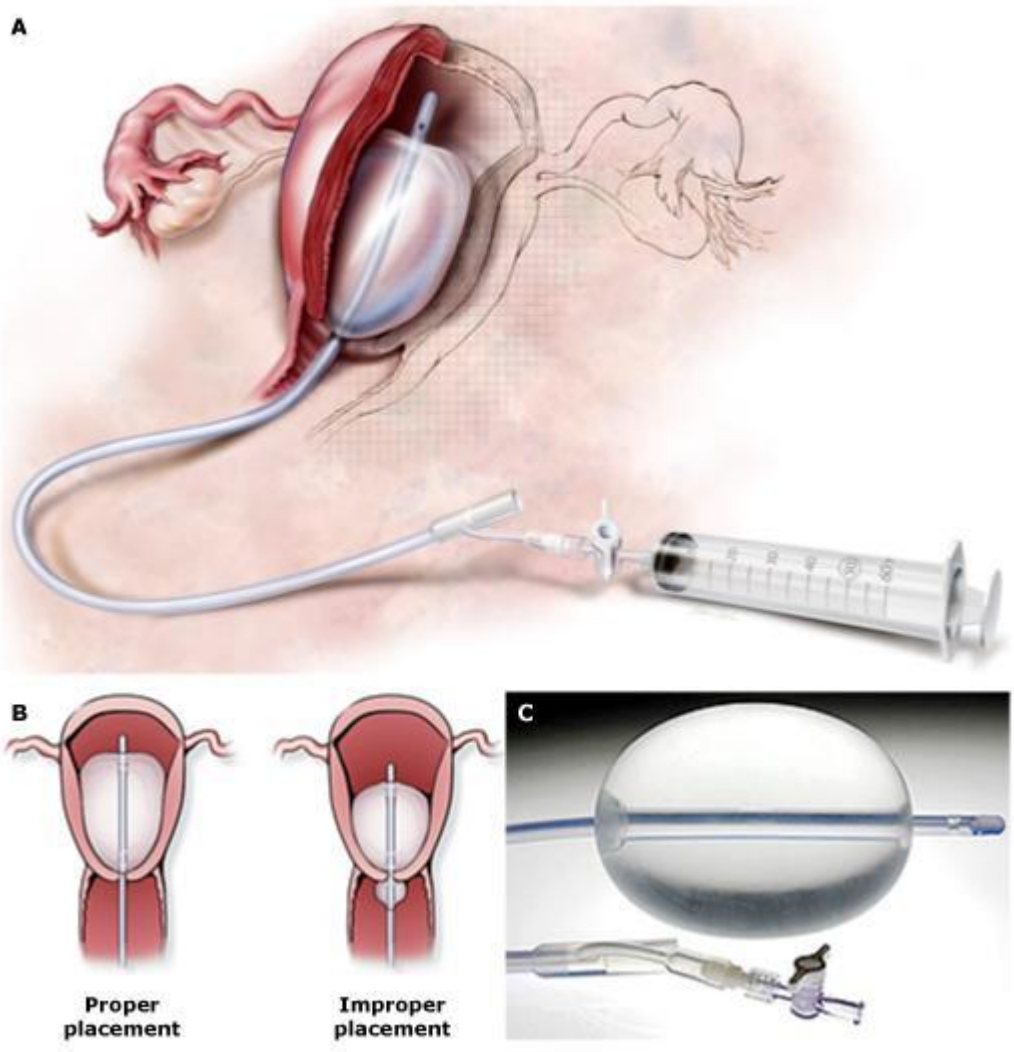
Blood loss stops and woman's condition is stable
- Make plan for ongoing care
- Consider transfer to ICU

* Many units are using MTP, [illegible] early recognition and prevention of worsening coagulation.

There should be ongoing communication with the woman, her family and whānau and multidisciplinary team throughout.

Appendix 3

Bakri balloon for management of postpartum hemorrhage (stored in theatre)



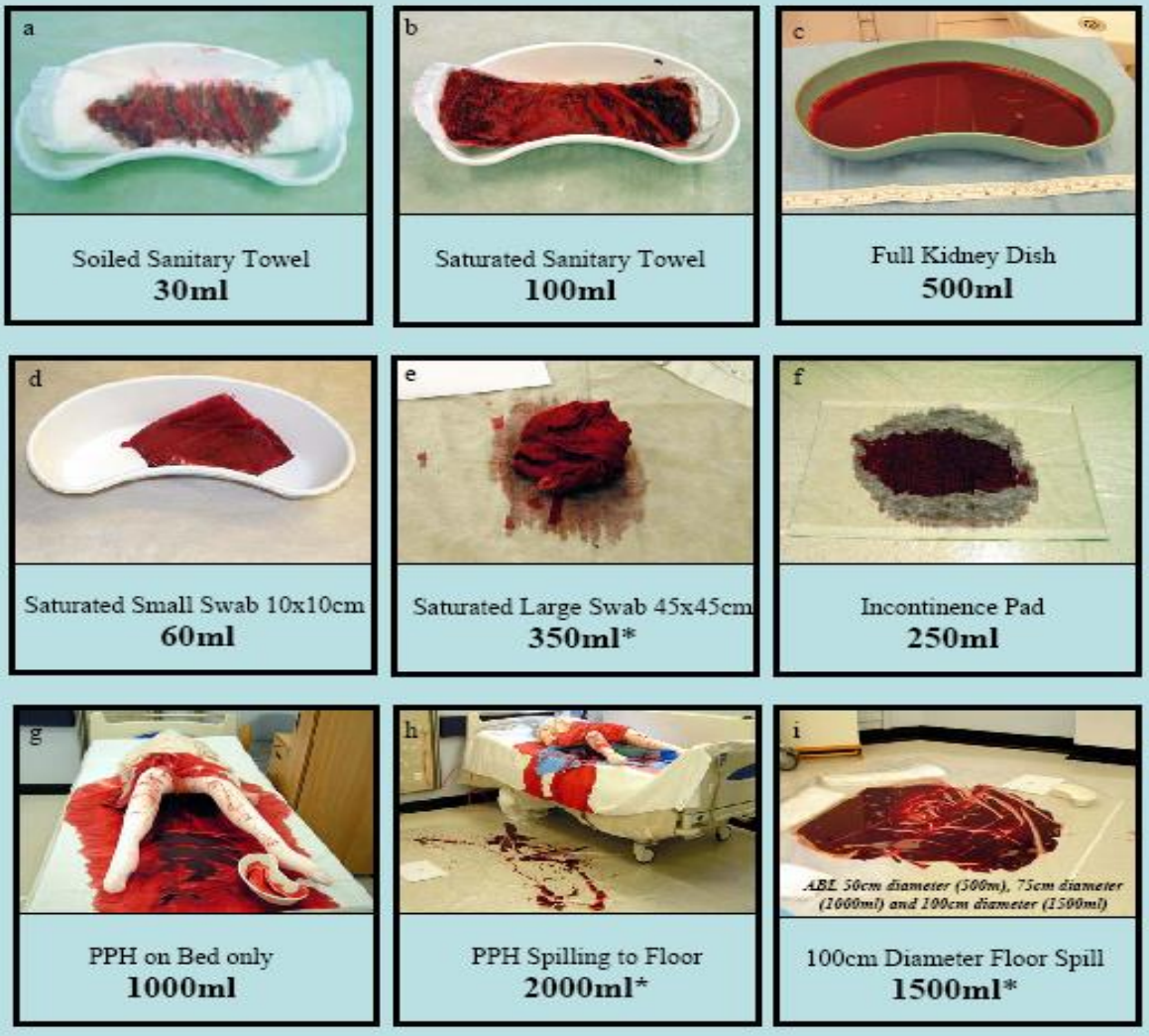
A) The Bakri balloon catheter is used for temporary control or reduction of postpartum hemorrhage when conservative management of uterine bleeding is warranted. It is easy to place and rapidly achieves tamponade within the uterine cavity, thereby potentially avoiding a hysterectomy. B) Under ultrasound guidance, the balloon portion of the catheter is inserted into the uterus, making certain that the entire balloon is inserted past the cervical canal and internal ostium. C) The device is intended for one-time use. *Reproduced with permission from: Cook Women's Health.*

This is a silicone balloon with a capacity of 500ml normal saline and the strength to withstand a maximum internal and external pressure of 300mg/Hg.

Appendix 4

Pictorial Reference Guide to Aid Visual Estimation of Blood Loss at Obstetric Haemorrhage

Mr Patrick Bose, Dr Fiona Regan and Miss Sara-Paterson Brown
(Queen Charlotte's Hospital, London)



***Blood loss in scenarios (e) (h) (i) are significantly underestimated ($p<0.05$)**