Primary postpartum haemorrhage

Clinical Guideline Presentation v6

45 minutes

Towards CPD Hours

References:

Queensland Clinical Guideline: *Primary postpartum haemorrhage (PPH)* is the primary reference for this package.

Recommended citation:

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Disclaimer:

This presentation is an implementation tool and should be used in conjunction with the published guideline. This information does not supersede or replace the guideline. Consult the guideline for further information and references.

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Abbreviations

BP	Blood pressure
BPM	Beats per minute
CCT	Controlled cord traction
CS	Caesarean section
DIC	Disseminated intravascular coagulation
FFP	Fresh frozen plasma
GA	General anaesthetic
GP	General Practitioner
Hb	Haemoglobin
IDC	Indwelling urinary catheter
IM	Intramuscular

IV	Intravenous
IVC	Intravenous cannula
IU	International units
MHP	Major haemorrhage protocol
MRI	Magnetic resonance imaging
OT	Operating theatre
PLT	Platelets
PPH	Primary postpartum haemorrhage
RBC	Red blood cells
TXA	Tranexamic acid
VTE	Venous thromboembolism

Learning objectives

- Identify PPH risk factors and strategies to mitigate risk
- Recognise PPH early and initiate treatment
- Manage PPH relevant to the cause(s)
- Determine when to activate the major haemorrhage protocol

Definitions

Primary postpartum haemorrhage is defined as excessive bleeding in the first 24 hours after birth. A variety of measures may be used to identify PPH.

Volume of blood loss

- PPH ≥ 500 mL
- Severe PPH ≥ 1000 mL
- Major haemorrhage ≥ 2500 mL

Haemoglobin (Hb)

- Retrospectively diagnosed following a ≥ 10 g/L drop in Hb level

Haemodynamic compromise

- Assessed based on clinical presentation
- Manifests as worsening tachycardia, hypotension and reduced urine output
- Signs of compromise may not be evident until large volumes of blood are lost
  - Due to visual underestimation of blood loss, haemodynamic compromise may be the first sign of PPH

Aetiology (4Ts)

Tone (70-80%)

- Atonic uterus

Trauma (20%)

- Lacerations of the cervix, vagina and perineum including episiotomy
- Extension laceration at CS
- Uterine rupture or inversion
- Non-genital tract trauma (e.g. subcapsular liver rupture)

Tissue (10%)

- Retained products, placenta, membranes, clots

Thrombin (<1 %)

- Coagulation abnormalities

PPH risk factors

There are numerous risk factors for PPH, and it is important to identify them early. Many women who have a PPH will have no risk factors.

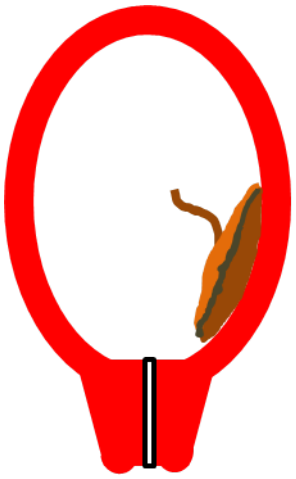
Antenatal risk factors

- > 35 years of age
- Parity > 3
- Previous PPH
- Antepartum haemorrhage, placental abruption
- Abnormal placentation
- Pre-eclampsia, diabetes, anticoagulants
- Polyhydramnios, macrosomia
- Obesity
- Anaemia
- Multiple pregnancy, artificial reproductive technology
- Previous uterine surgery, fibroids
- Ethnicity— Asian, Pacific Island, Sub-Saharan Africa

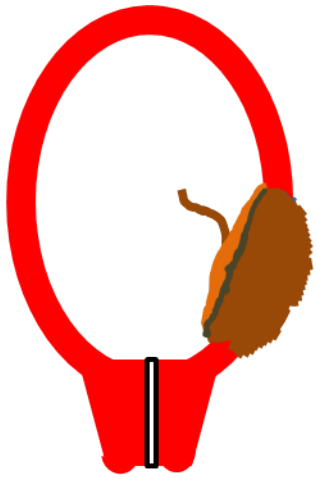
Abnormal placentation

Abnormal placentation can refer to the placental location (placenta praevia) or abnormal adhesion (placenta accreta spectrum disorder)

- If present, the risk of PPH increases
- Ultrasound or MRI can be used to detect or further investigate abnormal placentation
- Careful care planning for birth is required relative to findings, including;
  - Timing, location, and mode of birth
  - Presence of expert clinicians
  - Availability of blood and blood products
  - Availability of resources and equipment



normal



percreta

Antenatal anaemia

Recommend routine antenatal screening for anaemia. A low antenatal haemoglobin (Hb) has a strong association with PPH.

What are care recommendations for anaemia in pregnancy?

- Discuss importance of optimising Hb antenatally
- Offer dietary advice about minimising anaemia
- Recommend therapeutic oral iron supplements as first line treatment
- If indicated, recommend an intravenous iron infusion
- Recommend monitoring of Hb and ferritin levels throughout pregnancy

Blood products declined

In some instances, blood transfusion may not be an option.

If blood products are declined, establish a plan of care with the woman to minimise the risk and severity of PPH

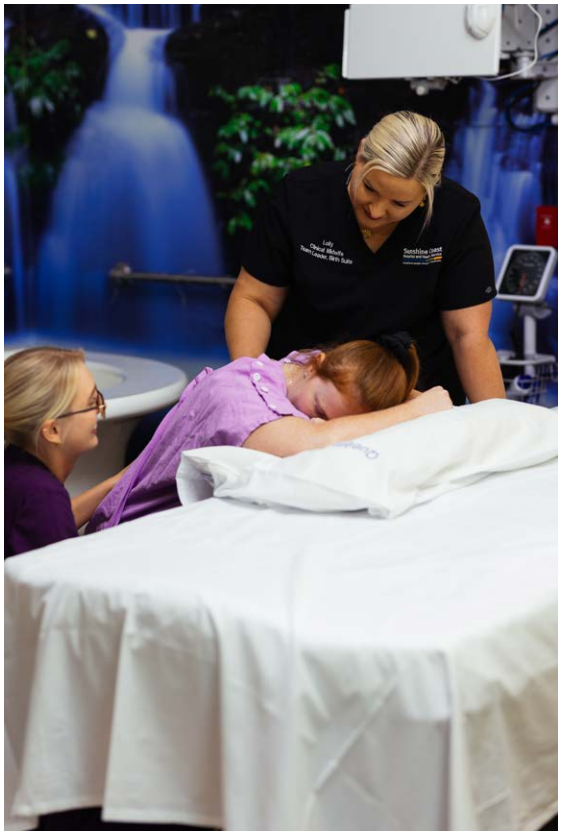
- Recommend completion of an Advanced Health Directive, and request a certified copy for the medical record
- Clarify and document individual preferences regarding acceptable and unacceptable treatment options
- Discuss importance of monitoring and optimising Hb and iron stores antenatally
- Discuss mode of birth and birth plan
- Recommend active/modified active management of third stage
- Recommend a multi-disciplinary team approach
- Discuss potential interventions if PPH occurs

Intrapartum PPH risk factors

Continually assess PPH risk factors during labour and birth as circumstances may change. Alter care recommendations accordingly.

Intrapartum risk factors

- Oxytocin use in labour
- Prolonged second or third stage of labour
- Retained placenta, manual removal of placenta
- Assisted vaginal birth
- CS birth
- General anaesthesia
- Uterine rupture
- Perineal trauma
- Infection
- Non-cephalic presentation
- Precipitate labour



Intrapartum care

Amaya is G3 P2 and presents to birthing suite in active labour. She is planning a vaginal birth.

What PPH intrapartum risk management strategies will you discuss with Amaya?

- Review the medical record to identify any antenatal and intrapartum PPH risk factors
- If PPH risk factors identified, may recommend an intravenous cannula based on individualised circumstances
- Recommend a prophylactic uterotonic for management of third stage

What information do you consider when recommending a prophylactic uterotonic?

- PPH risk factors
- Medication contraindications
- Route of administration
  - Is an IVC present?
- Mode of birth
- Location of birth
  - Cold-chain storage availability

Assessment of blood loss

Amaya has an uncomplicated vaginal birth and third stage of labour. Your visual estimation of blood loss is 350 mL.

How can accuracy of blood loss assessment be improved?

- Recognise that visual estimation is subjective and can be imprecise
- Consider the volume, nature and speed of blood loss
- Use pictorial guides and participate in simulated scenarios
- If visual estimation exceeds 300 mL, measure/weigh blood loss to quantify the volume
- Monitor clinical presentation and assess for haemodynamic compromise

Responding to PPH

Amaya reports feeling a gush of blood. On inspection her pad is soaked and there is blood on the bed sheets. Amaya feels dizzy and has a heart rate of 124 bpm.

You call for help.

What will be the initial actions of the multidisciplinary team?

- Commence fundal massage
- Continue to assess volume and rate of bleeding
- Lie Amaya flat and keep her warm
- Administer oxygen at 10–15 L/min
- Monitor vital signs
- Assessment of 4 Ts (tone, trauma, tissue, thrombin)
- Establish IV access x 2 and send urgent bloods
- Measure/weigh the blood loss
- Review birth history (third stage complete, prophylactic uterotonic given)
- Consider insertion of IDC
- Maintain accurate fluid balance

IV fluid replacement

Aims to promote tissue perfusion and oxygen carrying capacity.

What are important considerations during fluid replacement?

- Warm all fluids wherever possible
- Avoid dilutional coagulopathy
- Limit IV fluids to a total of 3.5 L
  - Commence with crystalloid up to 2 L
  - If additional indicated, crystalloid or colloid up to 1.5 L
- If colloid used, limit to 1.5 L
- If haemodynamic compromise or active bleeding, consider RBC transfusion

Signs and symptoms of haemodynamic compromise due to blood loss

Blood loss (mL)	Systolic blood pressure	Signs and symptoms	Degree of shock
500–1000	Normal	Palpitations, dizziness, tachycardia	Compensated
1000–1500	Slight decrease	Weakness, sweating, tachycardia	Mild
1500–2000	Marked decrease (70–80 mm Hg)	Restlessness, pallor, oliguria	Moderate
2000–3000	Profound decrease (50–70 mmHg)	Collapse, air hunger, anuria	Severe

Assessment of 4 Ts: Tone

You begin an assessment of uterine tone by palpating Amaya's fundus.

What initial measures do you take?

- Massage the uterine fundus to stimulate contractions
- Expel uterine blood clots
- Check placenta and membranes are complete
- Ensure bladder is empty, insert IDC if necessary
- Continually assess the need for bi-manual compression

Timely administration of first line uterotonics is essential to PPH management. What can be administered?

- Oxytocin 5 IU IV over 1–2 minutes (if delayed IV access, oxytocin 10 IU IM)
- Oxytocin IV infusion (oxytocin 30 IU in 500 mL sodium chloride 0.9%). Administer via infusion pump at rate of 5–10 IU per hour
- Ergometrine 250–500 micrograms IM *or* IV (reconstituted) over 1–2 minutes
- Consider, misoprostol 800–1000 micrograms sublingual or per rectum

Tranexamic acid

Amaya's blood loss is weighed and measured, totalling 800 mL. Tranexamic acid is ordered.

When should you consider administering Tranexamic acid (TXA)?

- Give TXA as soon as possible after onset of PPH—ideally within three hours of recognition

Why give TXA?

Evidence suggests use:

- Reduces postpartum blood loss, blood transfusion, laparotomy to control bleeding and death due to PPH
- Does not increase risk of thromboembolic events

How do you administer TXA?

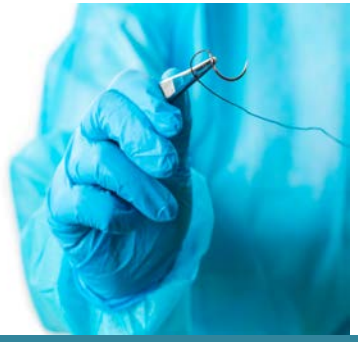
- Tranexamic acid 1 gram undiluted IV over 10 minutes
- If bleeding persists after 30 minutes or stops and restarts within 24 hours of first dose, a second dose of 1 gram may be given
- Reconstitution not required
- Administer via infusion device

Assessment of 4Ts: Trauma

A colleague is assessing for trauma. Amaya remains tachycardic and now feels clammy. She continues to bleed.

What causes of trauma should be assessed?

- Genital trauma including puerperal haematoma
- Cervical trauma
- Uterine rupture
- Uterine inversion
- Consider, non-genital tract trauma



What are important considerations when assessing for any genital trauma?

- Review birth history for intrapartum risk factors
- Maximise visualisation of the genital tract (e.g. lithotomy, retractors, assistants)
- Provide effective anaesthetic or analgesia (local, regional or GA)
- Facilitate prompt repair
- *Ask:* Is there a need for transfer to OT for optimal visualisation, repair and/or to treat shock?

Assessment of 4Ts: Tissue

It is noted that Amaya has trailing membranes visible beyond the introitus.

How should this be managed?

- Use sponge forceps to clamp membranes and without traction roll forceps to create a rope of membranes
- Move forceps in an up and down motion and gently apply traction
- Maternal pushing may assist removal
- Once delivered, perform vaginal examination to assess completion, monitor uterine tone and blood loss

If Amaya's placenta was still insitu, what would NOT be recommended?

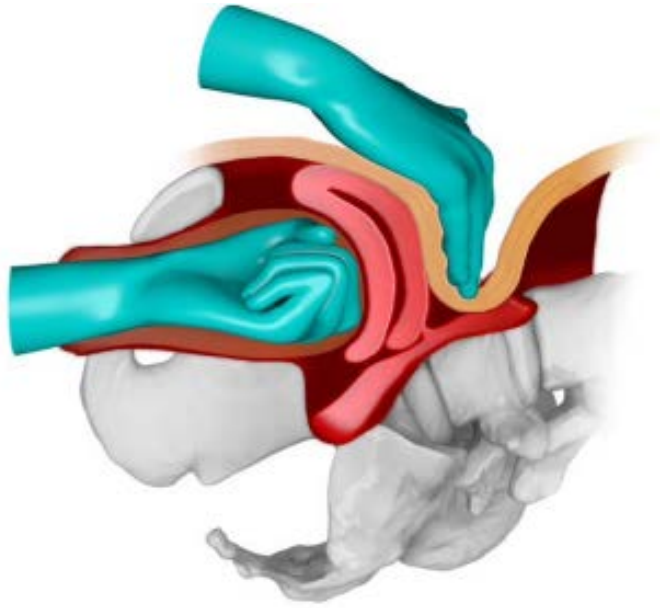
- Use of CCT in the absence of uterotonic drugs or prior to signs of placental separation
- Ergometrine, as tetanic contractions may delay expulsion
- Prostaglandin E2 alpha (dinoprostone)
- Use of umbilical vein for oxytocin injection

Treatment options

If Amaya's bleeding cannot be controlled with pharmacological therapy, what treatment options are available?

Mechanical procedures

- Bimanual compression
- Intrauterine balloon tamponade (e.g. Bakri)



Bimanual compression: Image supplied by the Clinical Skills Development Service, Metro North Health

Surgical procedures

- Haemostatic uterine suture (e.g. B-Lynch suture)
- Uterine or internal iliac artery embolisation
- Utero-ovarian artery ligation
- Internal iliac artery ligation (if expertise available)
- Hysterectomy—perform early if life is threatened

Assessment of 4Ts: Thrombin

Amaya's uterus is unable to maintain tone. She is shivering and laboratory results are abnormal, indicating coagulopathy.

What are basic principles of coagulopathy management?

- Be alert to differing presentations of coagulopathy and treat accordingly
- Communicate clearly with the lab about the situation and requirements
- If available, use ROTEM® or TEG® guided replacement strategy
- Collect baseline bloods and repeat testing regularly
- Avoid hypothermia and acidosis
- Correct hypocalcaemia
- Be alert for early disseminated intravascular coagulation (DIC)

Remember – Coagulopathy can occur at any stage of PPH and often co-occurs with other causes

ROTEM® and TEG®

Point of care blood clotting analysers:
Thromboelastometry (ROTEM®) and thromboelastography (TEG®)

What are the benefits of ROTEM® and TEG®?

- Provide relative real time testing to detect early changes in coagulation parameters
- Reduced over-transfusion of blood products
- Enables directed blood replacement therapy
- Can aid diagnosis of cause of bleeding, and if coagulopathy, determine the type

If available, follow a locally agreed algorithm for interpretation of results and guided treatment strategy

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TEG® 6s hemostatsis analyzer image used by permission Haemonetics Corporation. TEG® and Thrombelastrograph® are registered trademarks of Haemonetics Corporation in the US, other countries or both.

Major Haemorrhage Protocol

Amaya continues to bleed. The Major Haemorrhage Protocol (MHP) is activated by the consultant obstetrician.

What criteria can lead to activation of the MHP?

- Major haemorrhage, estimated blood loss greater than 2500 mL
- Actual or anticipated need for ≥ 5 units RBC in 4 hours
- Haemodynamic instability
- Clinical or laboratory signs of coagulopathy

OR in lower resource settings as per local protocol

Aside from blood and blood product administration, what other measures will you take?

- Provide ongoing resuscitative care
- Ensure tranexamic acid given
- Actively warm Amaya and IV fluids
- Consult with support staff relevant to local setting; anaesthetist, haematologist, surgeon, interventional radiologist
- Regularly monitor blood results

MHP – blood and blood products

Your facility does not have a point of care blood clotting analyser. Blood products are dispensed from the laboratory in MHP packs.

How will you administer blood products?

Aim for a RBC:FFP:PLT ratio of at least 2:1:1

Give pack one:

- RBC 4 units (Group specific or O Negative)
- FFP 2 units

If required, give pack two:

- RBC 4 units (Group specific or O Negative)
- FFP 2 units
- PLT 1 unit (one unit every 8 units of RBC)

Consider need for:

- **Fibrinogen replacement:** Fibrinogen concentrate 3–4 g *or* whole blood cryoprecipitate 10 units *or* apheresis 4 units
- **Calcium supplementation:** 10% calcium gluconate 10 mL IV if ionised calcium < 1 mmol/L or at least every 4 units RBC

Postnatal care after PPH

Following a PPH, what are important postnatal care considerations?

- Most appropriate care unit (e.g. intensive care, birth suite or postnatal unit)
- Frequency of observations
  - Once stable, monitor at least 4 hourly for 24 hours (vital signs, uterine tone, blood loss)
- Monitoring of haemoglobin
- IV access for at least 24 hours
- VTE prophylaxis—risk increased following PPH
- Support mother/baby interactions, such as skin-to-skin and breastfeeding
- Offer debriefing by senior team member, preferably a clinician present during PPH

Preparing for discharge after PPH

What preparation for discharge is indicated (additional to usual)?

- Discuss anticipated longer physical recovery
- Discuss possible breastfeeding challenges
- Offer information regarding support services available in community
- Provide discharge letter and possible direct contact with GP
- Advise when to self-refer to GP, such as concerns regarding bleeding, infection, depression and VTE
- Provide information regarding increased risk of PPH in subsequent pregnancies
- Offer debriefing before discharge and at 6 weeks postpartum