# postpartum haemorrhage



**Note**

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.
Information in this statewide guideline is current at the time of publication.
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If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.
This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

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# Postpartum haemorrhage flow chart

- Call for immediate assistance
- Consider **Tone, Trauma, Tissue, Thrombin**

## PLACENTA DELIVERED:

- Administer oxygen at 8-12 L
- Lower the head of the bed
- Insert IV access x 2 (16 gauge)
- Resuscitate with intravenous fluids
- Group and cross match x 2 units blood
- Consider warmed IV fluids and the use of pressure infusion device
- Ensure uterus is contracted

### UTERUS IS WELL CONTRACTED

- Position the woman in lithotomy
- Ensure adequate analgesia
- Consider examination in OT
- Inspect for **trauma**
- Suture and repair

### IF UTERUS IS WELL CONTRACTED AND TRAUMA REPAIRED AND BLEEDING CONTINUES CONSIDER

- **thrombin**
- Consider coagulation abnormalities
- Collect bloods CBP, D-dimer, COAGS, INR, APTT, fibrinogen & FDP's
- Treat coagulation abnormalities with FFP +/- platelets, cryoprecipitate
- Consider DIC and consult haematologist

### UTERUS IS NOT WELL CONTRACTED

- **tone**
- Continue uterine massage and expel clots
- If fundus feels bulky PV examination to remove clots
- Insert IDC
- Repeat bolus uterotonic (oxytocin OR if no contraindications, give Syntometrine® or ergometrine) and commence a 40IU oxytocin (Syntocinon®) infusion
- Check placenta is complete
- If still unresponsive, consider misoprostol or intramyometrial Prostaglandin F2α

### IF BLEEDING CONTINUES ENSURE ADEQUATE SPECIALIST MEDICAL AND ANAESTHETIC BACKUP AND TAKE THE WOMAN TO THEATRE

- Intramyometrial prostaglandin F2α
- Exploration of the uterine cavity
- Consider uterine tamponade with Bakri balloon
- Consider uterine/vaginal packing
- Bimanual compression

### IF BLEEDING CONTINUES CONSIDER

- B lynch brace suture
- hysterectomy
- angiography and embolism
- ligation of the internal iliac vessels

## PLACENTA UNDELIVERED:

- **tissue**
- Perform uterine massage
- Repeat uterotonic
- Insert IDC
- Continue CCT
- IV access x 2 (16 gauge)
- USS +/- VE

### CONDITION STABLE:

- Is placenta adherent or trapped?
- Assess clinical blood loss
- Group and cross match
- Provide oxygen, lower head of the bed, IV access, IVT
- MROP in theatre with analgesia
- Monitor and observe
- Consider MROP in delivery room if there is a delay in securing theatre

### UNSTABLE AND WITH RAPID PPH >1500mL:

- HELP
- Vaginal examination to remove clots
- Oxygen, IV access and intravenous resuscitation
- Group and cross match 6 units (Consider need to activate Massive Transfusion Protocol)
- Collect bloods (CBP coags D-dimer)
- MO to liaise with transfusion and haematology
- Lower head of the bed
- Use warmed IV fluids with pressure infusion bag
- Second bolus of oxytocin (Syntocinon®)
- Prepare for MROP in theatre
- Observe for shock
- Oxygen saturations and pulse oximetry
- **CONSIDER POSSIBILITY ABNORMALLY ADHERENT PLACENTA**

### PLACENTA UNDELIVERED:

Consider the possibility of

- Placenta accreta
- Placenta increta
- Placenta percreta

### PLACENTA UNDELIVERED:

- If the woman experiences rapid blood loss and is haemodynamically unstable delegate 2 people to continue resus and commence bimanual compression of the uterus
- Consider aorto-caval compression if unsuccessful

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## Definition

A blood loss at birth of up to 500 mL is considered to be normal

The traditional definition of a primary postpartum haemorrhage is a blood loss of 500 mL or more in the first 24 hours

Postpartum haemorrhage can be minor (500-1,000 mL) or major (> 1,000 mL). A major PPH can be further described as moderate (1,000-2,000 mL) or severe (> 2,000 mL)[1]

A widely accepted definition of postpartum haemorrhage (PPH) in many institutions is a blood loss of 600 mL for a normal birth and 750 mL for a caesarean birth

The classification of PPH in relation to the amount of blood loss is problematic, largely due to a well-documented underestimation of blood loss

A clinically relevant alternative is a substantial fall in the haematocrit e.g. 10 % (normal range 0.32 to 0.47 L/L), or the requirement for a blood transfusion[3]

## Incidence

In 2010, PPH occurred in 10.4 % (2,040) of births in South Australia[4]

## Aetiology

PPH may be associated with:

- Abnormalities of uterine contraction (Tone) 70 %
- Retained products of conception or invasive placenta (Tissue) 10 %
- Genital tract trauma (Trauma) 20 %
- Abnormalities of coagulation (Thrombin) < 1 %

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## Antenatal and intrapartum risk factors for PPH

The assessment of risk of PPH is dynamic and is an ongoing process that continues even after the end of the third stage

Some risk factors should be identified in the antenatal period and at admission in labour, such as:

- Antepartum haemorrhage (especially placental abruption and placenta praevia)
- Postpartum haemorrhage with a previous pregnancy
- Known placenta accreta
- Multiple pregnancy
- Coagulopathies

Others that can be identified at that time, but with a smaller increase in risk, are:

- Anaemia
- Nulliparity
- Pre-eclampsia
- Large baby
- Obesity
- Elective or previous LSCS

Some characteristics of labour and birth also increase the risk. They include:

- Need for and use of oxytocics in labour
- Prolonged labour (second stage in particular)
- Pyrexia in labour
- Operative delivery
- Episiotomy
- Placental retention

It should be noted, however, that two thirds of women who experience postpartum haemorrhage have no identifiable risk factors
For further information please see Table 11.1 Antenatal and Intrapartum risk factors for PPH

## Preventive antenatal management

Detect and treat anaemia antenatally

Women with suspected abnormally adherent placenta have a high risk of PPH and should have a management plan documented in their case notes

- Arrange antenatal consultation as appropriate e.g. physician, radiologist and anaesthetist
- Consult with a radiologist to determine if magnetic resonance imaging (MRI) is indicated to assess the degree of placental penetration into the myometrium

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## Intrapartum management of women at risk for PPH

- All women with known significant risk of PPH should be managed at a hospital equipped with high dependency / intensive care facilities and access to specialist services
- All units should have a Postpartum haemorrhage box containing emergency equipment, fluids and medications (see example contents list below). Other useful aids to consider in an emergency include a flash card with signs of hypovolaemic shock, a postpartum haemorrhage scribe sheet and an emergency blood card detailing the local process for obtaining blood (see examples in appendix 2, 3)

### Planned vaginal birth in women at risk for PPH

- Confirm labour management plan with medical officer when the woman arrives in labour
- Establish intravenous access (16 gauge cannula)
- Group and save. In some cases it may be necessary to group and match units of blood
- Active management of the third stage
- This may include having a 40 IU oxytocin (Syntocinon®) infusion available to commence when needed (please see PPG Oxytocin: prophylaxis for third stage of labour and PPH)

### Planned caesarean section in women at risk of PPH

- May be associated with placenta praevia or other cases with a high risk of haemorrhage
- An experienced obstetrician should be physically present in theatre
- An experienced consultant anaesthetist should provide anaesthesia
- At least four units of red blood cells should be cross-matched and immediately available
- Insert two large bore cannulae (at least 16 gauge)
- Intravenous fluids should be warmed (use temperature controlled fluid warming device e.g. blood warmer) to avoid hypothermia
- Ensure that devices to infuse fluid under pressure are in theatre
- Consider warming of the woman e.g. using a forced air warmer

### Suspected abnormal adherence of placenta

- Arrange the back-up of another experienced obstetrician, gynaecologist, urologist or vascular surgeon
- Serious consideration should be given to having the caesarean section done in a hospital with adult intensive care facilities
- Preoperative consultation with an interventional radiologist to determine the availability and feasibility of embolisation should the need arise

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## Placenta undelivered (not associated with PPH)

- Palpate uterus to confirm if contracted (avoid indiscriminate handling)
- Ensure uterotonic (oxytocin) was given at the time of birth
- Upright position (provided there is no haemodynamic instability)
- Encourage skin to skin contact between mother and baby and early suckling
- Consider releasing the cord clamp, to allow the blood trapped in the placenta to drain
- Wait 30 minutes for signs of placental separation (follow link to active management of the third stage)

### In the next 30 minutes:

- Confirm uterus is contracted
- Repeat controlled cord traction (avoid forceful cord traction and fundal pressure as they may cause uterine inversion)
- Perform a vaginal examination to establish if placenta is trapped or adherent
- Delivery of a trapped placenta can usually be achieved using controlled cord traction
- If CCT unsuccessful, consider the need for tocolysis: Intravenous glyceryl trinitrate 100-200 micrograms OR glyceryl trinitrate as a metered dose spray that delivers 400 micrograms per spray emission will provide short term uterine relaxation (please see PPG Tocolysis for uterine hypercontractility)
- Remove placenta if in the vagina

### Clinical tips

- Portable ultrasound scan can show if the placenta is still in the upper segment or whether it has separated and is in the lower segment of the uterus (in a separated placenta, the entire myometrium is thickened and a clear demarcation can be seen between the myometrium and the placenta)
- **Do not use ergometrine or Syntometrine or infuse large volumes of fluid if the woman has preeclampsia or an elevated blood pressure in labour**

### If placenta is not expelled (associated with PPH)

- Perform uterine massage to expel clots and repeat uterotonic e.g. oxytocin 10 IU intravenous, or 10 IU intramuscular (avoid ergometrine / Syntometrine for retained placenta because it causes tonic uterine contraction, which may delay expulsion)
- Empty the bladder / catheterise
- Repeat controlled cord traction
- Insert IV access (16 gauge cannula) and take CBP, group and save
- Perform portable ultrasound (if not already done) +/- vaginal examination to confirm if placenta has separated (trapped) or still adhered. Remove placenta if trapped and remove any clots present

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## Placental retention

### Condition stable

- Determine if placenta adherent or trapped
- Assess for clinical signs of blood loss (remove any clots present)
- Group and cross match 2 units and complete blood picture to laboratory
- Commence resuscitation as appropriate e.g. oxygen treatment, lower head of bed, establish IV access using 16 gauge cannula and infuse intravenous fluids
- Arrange for manual removal of the placenta in theatre with anaesthesia
- Continue to monitor maternal observations (e.g. continuous pulse oximeter, blood pressure, respiration, pulse, capillary refill and maternal condition)
- Maintain fluid balance chart
- In case of significant blood loss consider if the placenta has separated and repeat controlled cord traction. If not separated and there is a delay in theatre access, consider manual removal with appropriate analgesia in the delivery room
- **NB: A retained placenta may develop into a PPH if management / transfer to theatre is delayed**

### Clinical tip

- The practice of injecting oxytocin into the umbilical cord in cases of retained placenta has not been shown to decrease the number cases requiring manual removal. The practice may delay definitive treatment and therefore increase the chance of PPH[5]

### With rapid PPH >1,000 mL

- Call for help – midwifery, obstetric and anaesthetic
- Assess airway and breathing
- Administer oxygen at 10-15 litres via re-breathing face mask
- Assess circulation
- Stop the bleeding – e.g. vaginal examination to exclude causes other than atony, remove any clots present, apply pressure to minimise bleeding
- Lower the head of the bed and position the woman flat (may remain with legs bent or in lithotomy)
- Intravenous access x 2 using 16 gauge cannulas
- Group and cross match at least 2 units and complete blood picture, coagulation studies including fibrinogen and D-dimer to laboratory
- Resuscitate with appropriate intravenous fluid (ideally warmed), e.g. sodium chloride 0.9 %, Hartmann's solution (crystalloid) or Gelafusine® (gelatin – based colloid)
- The need for red cell blood packs should be considered early to restore oxygen carrying capacity. Red cell transfusion is likely to be required before 30 to 40 % of blood volume is lost; the loss of over 40 % of blood volume is immediately life threatening. If cross matched blood is unavailable, give group specific blood or O negative blood

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- Consider the need for activation of the local Massive Transfusion Protocol (see Massive blood transfusion) this involves notification of transfusion laboratory and possibly haematologist) in the following situations:
    - Actual or anticipated requirement for 4 units of red cells in less than 4 hours
    - Actual or anticipated blood loss of 50 % of blood volume in 3 hours
    - Clinical or laboratory evidence of coagulopathy or a clinical diagnosis associated with coagulopathy, e.g. suspected amniotic fluid embolism.
- Hypothermia increases the risk of disseminated intravascular coagulation and other complications. This may be prevented by pre-warming resuscitation fluids, e.g. use temperature controlled blood warmers and warm air blankets
- To resuscitate more quickly, administer intravenous fluids using a pressure infusion device
- In the case of massive blood loss, the senior obstetrician / anaesthetist should liaise with the haematologist to arrange further appropriate resuscitation priorities e.g. fresh frozen plasma, platelets, cryoprecipitate, recombinant factor VIIa (FVIIa) (see Massive blood transfusion)
- Avoid hypotension by adequate fluid replacement in relation to ongoing measured blood loss
- Administer second bolus dose of oxytocin (Syntocinon®) 5-10 IU intravenously
- Prepare woman for manual removal of the placenta in theatre with anaesthesia after adequate pre-operative resuscitation
- Monitor maternal observations for clinical signs of shock (e.g. tachycardia, tachypnoea, decreased blood pressure, oxygen saturation, weakness, sweating, restless, nausea) and resuscitate if present
- Consider prophylactic antibiotics in theatre
- Consider the possibility of an abnormally adherent placenta

**If at any time bleeding is rapid or the woman is haemodynamically unstable**:

- Delegate two people (e.g. anaesthetist plus midwife or theatre nurse) to continue with resuscitative measures
- Bimanually compress the uterus by placing a fist in the anterior fornix of the vagina and the other hand rubbing up the uterine fundus
- If unsuccessful, perform aorto-caval compression

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## Retention of abnormally adherent placenta

> In abnormal adherence of placenta there is no dividing line between the decidua compacta and decidua spongiosa[6]

### Types:

***Placenta Accreta***

> Abnormal adherence of placenta with no plane of separation

***Placenta Increta***

> Placenta penetrates into the myometrium

***Placenta Percreta***

> Whole thickness of myometrium is invaded up to the serosal surface or beyond

For further information, please see PPG Antepartum haemorrhage or bleeding in the second half of pregnancy

### Causes:

> Implantation over previous caesarean section scar
> Manual removal of placenta after a previous pregnancy
> Placenta praevia
> Previous vigorous or repeated curettage (particularly postpartum)
> Previously treated intrauterine synechiae (adhesions)
> Presence of submucous myomata
> Pregnancy in uterine diverticulum

### Management

> If densely adherent placenta, do not try to remove
> Remove any non-adherent portions of the placenta
> Trim cord
> Observe closely – antibiotics if indicated
> The woman may need uterine artery embolisation, a hysterectomy or ligation of internal iliac arteries
> In the woman who is stable, hysterectomy may be avoided by the use of methotrexate [see references][11,12,13]

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## PPH after delivery of the placenta

- Treatment of PPH includes early detection followed by prompt attention to the resuscitation and a simultaneous search for the cause/s of bleeding (e.g. atony, retained tissue, trauma, or coagulopathy) to stop the bleeding
- Call for assistance - obstetric, midwifery and anaesthetic

### Resuscitation measures

- Assess airway and breathing
- Administer oxygen at 10-15 litres via re-breathing face mask
- Assess circulation
- Lower the head of the bed and position the woman flat (may remain with legs bent or in lithotomy)
- Intravenous access x 2 using 16 gauge cannulas and open IV infusion
- If estimated blood loss is <1,000 mL, take Group and Save & complete blood picture.
- If ongoing loss >1,000 mL (or rapid loss), cross match at least 2 units of blood and order complete blood picture and coagulation profile including fibrinogen
- Resuscitate with appropriate intravenous fluid (ideally warmed), e.g. sodium chloride 0.9 %, Hartmann's solution (crystalloid) or Gelafusine® (gelatin – based colloid)
- The need for red cell blood packs should be considered early to restore oxygen carrying capacity. Red cell transfusion is likely to be required before 30 to 40 % of blood volume is lost; the loss of over 40 % of blood volume is immediately life threatening. If cross matched blood is unavailable, give group specific blood or O negative blood
- Consider the need for activation of the local Massive Transfusion Protocol (please see PPG Massive blood transfusion) in the following situations:
    - Actual or anticipated requirement for 4 units of red cells in less than 4 hours
    - Actual or anticipated blood loss of 50 % of blood volume in 3 hours
    - Clinical or laboratory evidence of coagulopathy or a clinical diagnosis associated with coagulopathy, e.g. suspected amniotic fluid embolism.
- Hypothermia increases the risk of disseminated intravascular coagulation and other complications. This may be prevented by pre-warming resuscitation fluids, e.g. use temperature controlled blood warmers and warm air blankets
- To resuscitate more quickly, administer intravenous fluids using a pressure infusion device
- Ensure the uterus is contracted

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## If the uterus is not contracted, management is:

- Continue uterine massage to stimulate a contraction and expel any clots present. If the uterine fundus feels bulky and uterine massage does not expel clots, put on sterile gloves and perform vaginal examination to remove clots
- Insert indwelling catheter
- Repeat bolus oxytocin 5-10 IU intravenous OR 10 IU intramuscular. Alternatively repeat bolus ergometrine 25 to 50 micrograms intravenous (draw up 250 micrograms [0.5 mL] ergometrine and dilute to 5 mL with sodium chloride 0.9 % [1 mL = 50 micrograms], may repeat after 2 to 3 minutes) or 250 micrograms intramuscular (see in Ergot derivatives: prophylaxis for 3rd stage management and PPH)
- Prepare and commence an 40 IU oxytocin infusion (see in Oxytocin prophylaxis for the 3rd stage of labour and PPH management)
- Check that the placenta is complete
- Consider Cytotec® (misoprostol) 800 to 1,000 micrograms per rectum OR intramyometrial Prostaglandin F2α (please see PPG in Prostaglandin analogues for postpartum haemorrhage)

## If bleeding continues despite a well contracted uterus look for other causes:

- Position the woman in lithotomy with adequate anaesthesia / analgesia
- Ensure adequate lighting, assistance and instruments to provide adequate exposure
- It may be necessary to take the woman to theatre to examine under anaesthesia
- Inspect vulva, vagina, cervix and perineum for trauma. Consider uterine rupture
- Suture and repair as indicated
- Consider coagulation abnormalities
- In addition to complete blood picture, check D-dimer, coagulation studies including INR, APTT, fibrinogen, FDPs
- If coagulation abnormalities are present, activate the massive transfusion protocol (see Massive blood transfusion) , which includes fresh frozen plasma (FFP), cryoprecipitate +/- platelets
- Consider underlying cause if disseminated intravascular coagulation (DIC) present. Consult with haematologist regarding appropriate blood products including tranexamic acid, recombinant activated factor VII and physician
- If DIC is secondary to sepsis, also consult with microbiologist
- Consider transfer of the woman to a hospital with appropriate intensive care facilities

## If bleeding persists:

- Contact the theatre and anaesthetist if not already done
- Ensure adequate consultant obstetric / specialist support available
- Consider repeating ergometrine
- Transfer woman to theatre

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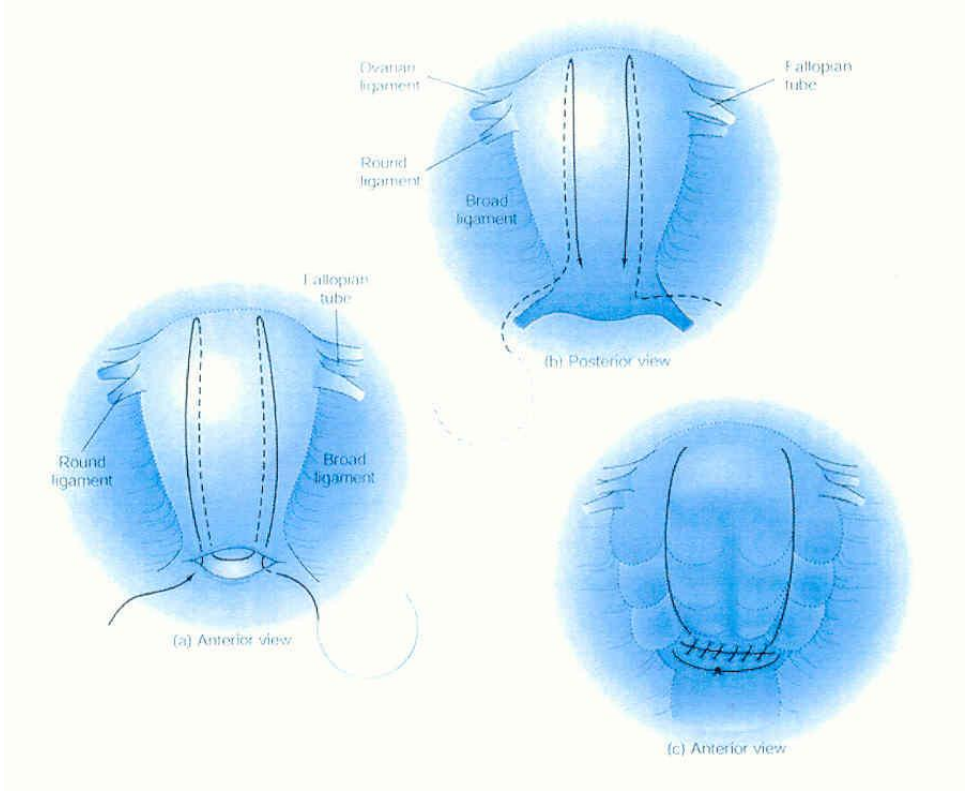
### In theatre management

- Consider intramyometrial injection of 2.5 mg of prostaglandin F2α (see in Prostaglandin analogues for postpartum haemorrhage)
- Consider exploration of uterine cavity under anaesthesia
- Consider uterine tamponade with balloon (see in Balloon tamponade and uterine packing for major PPH)
- Consider packing the uterus and vagina
- Bimanually compress the uterus by placing a fist in the anterior fornix of the vagina and the other hand rubbing up the uterine fundus
- If this controls the bleeding, maintain this compression for at least 30 minutes
- If uterotonics and mechanical compression techniques are unsuccessful, decide whether to perform
    - B-lynch brace suture
    - Angiography and embolisation
    - Ligation of the internal iliac vessels
    - Hysterectomy

## Figure 11.1: B-Lynch brace

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## Table 11.1 Antenatal and Intrapartum risk factors for PPH[14]

| | Aetiological /Process | Clinical Risk Factors |
|---|---|---|
| **Abnormalities of Uterine Contraction (Tone) 70 %** | > Atonic uterus | > Physiological management of 3rd stage<br>> Prolonged 3rd stage (> 30 min) |
| | > Over-distended uterus | > polyhydramnios<br>> multiple gestation<br>> macrosomia |
| | > Uterine muscle exhaustion | > rapid labour<br>> prolonged labour<br>> high parity<br>> labour augmented with oxytocin (Syntocinon®) |
| | > Intra-amniotic infection | > pyrexia<br>> PROM (> 24 hours) |
| | > Drug induced hypotonia | > Magnesium sulphate, nifedipine, salbutamol<br>> General anaesthetic |
| | > Functional / anatomical distortion of the uterus | > fibroid uterus<br>> placenta praevia<br>> uterine abnormalities<br>> bladder distention, which may prevent uterine contraction |
| **Retained Products of Conception (Tissue) 10 %** | > Retained products<br>> Abnormal or adherent placenta<br>> Retained cotyledon or succenturiate lobe | > incomplete placenta at delivery<br>> placenta accreta or percreta<br>> previous uterine surgery<br>> high parity<br>> abnormal placenta on USS |
| **Genital Tract Trauma (Trauma)20 %** | > lacerations of the cervix, vagina or perineum | > precipitous labour<br>> operative delivery |
| | > extensions, lacerations at caesarean section | > malposition<br>> deep engagement |
| | > uterine rupture | > high parity<br>> fundal placenta |
| **Abnormalities of Coagulation (Thrombin)1 %** | > retained blood clots<br>> pre-existing states:<br>> haemophilia A<br>> von Willebrand's disease | > history of hereditary coagulopathies<br>> history of liver disease |

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| | | |
|---|---|---|
| | Acquired in pregnancy<br>> idiopathic thrombocytopenia purpura<br>> thrombocytopenia with pre-eclampsia<br>> disseminated intravascular coagulation<br>> pre-eclampsia<br>> intrauterine fetal death<br>> severe infection<br>> abruption<br>> amniotic fluid embolism | > atonic uterus<br>> bruising<br>> elevated BP<br><br><br><br>> fetal demise<br>> fever, WCC<br><br>> sudden collapse |
| | > therapeutic anti-coagulation | > history of deep venous thrombosis or pulmonary embolism |

**Risk Factors for PPH** *(Adapted from SOGC Clinical Practice Guideline Active Management of the Third Stage of Labour: Prevention and Treatment of Postpartum Haemorrhage, 2009)*

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## Appendix 1: Postpartum haemorrhage box contents

The introduction of a PPH box (containing required equipment, medications and documentation) is recommended for all units managing postpartum haemorrhage.

**The list below provides an example of contents that may be considered for the PPH box:**

| | |
|---|---|
| **Intravenous fluids and equipment** | 1L sodium chloride 0.9 % or Hartmann's solution x 2,<br>Gelafusine 500 mL x 2<br>IV giving set x 2<br>IV pressure bag x 2<br>**Set up for oxytocin infusion (keep in plastic bag)**<br>500 mL sodium chloride 0.9 % or Hartmann's solution<br>Medication added labels x 2<br>10 mL syringe x 1<br>2 mL syringe x 1<br>Needles 18 g x 1 / 21 g x 1 / 23 g x 1<br>Alcohol wipes |
| **Additional equipment for vaginal examination** | x 4 sponge holders<br>x 1 Sims speculum |
| **Pathology specimen tubes and equipment (keep in plastic bag)** | Blue top (coagulation studies) x 1 / small purple top x 1 (complete blood picture) / large purple top x 1 (group and cross match) / green top (electrolytes)<br>20 mL syringe x 2<br>10 mL syringe x 2<br>Needles 21 g x 4<br>Tourniquet x 1<br>Alcohol wipes |
| **Pulse oximeter**<br>**Emergency space blanket** | |
| **Medications** | Misoprostol 200 micrograms tablets x 1 sachet<br>**Box from fridge containing:**<br>Oxytocin x 5<br>Syntometrine x 5 OR<br>Ergometrine x 5 |
| **Indwelling urinary catheter equipment or catheter pack** | Indwelling urinary catheter 14G Foley, water based lubricant,<br>10 mL syringe x 1,<br>water for injections 10 mL x 1, catheter bag (hourly measure), sodium chloride 0.9 % 30 mL sachet x 1 |
| **Documentation folder containing:** | Flashcard 'Hypovolaemic shock'<br>Emergency blood card (detailing process for obtaining emergency blood)<br>List of blood tests required<br>Specimen bags (Documentation records: pathology forms / blood record / transfusion request / preoperative checklist / progress sheets / High Dependency chart / fluid balance chart / Special observations chart |

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# Appendix 2: Example of hypovolaemic shock flash card

## Assessment of the hypovolaemic shock

Blood volume in pregnant woman = weight in kg / 12, expressed as litres, (approximately 6 litres in a 70 kg woman)

| | Class I | Class II | Class III | Class IV |
|---|---|---|---|---|
| **Blood loss** | 15% | 15-30% | 30-40% | >40% |
| **Pregnant** | 1,000 mL | 1,300 mL | 2,000 mL | 2,700 mL |
| **Resp rate** | 14-20 | 20-30 | 30-40 | > 40 |
| **Pulse Rate** | <100 | >100 | >120 | >140 |
| **Systolic BP** | Normal | Normal | Decreased | Decreased |
| **Diastolic BP** | Normal | Increased | Decreased | Decreased |
| **Mental state** | Anxious | Anxious/confused | Confused/agitated | Lethargic |
| **Urine output** | >30 | 20-30 | 5-15 | Negligible |

Modification of American College of Surgeons Advanced Life Support Classification by Management of Advanced Life Support and Trauma in Obstetrics (MOET)

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## Appendix 3 Postpartum haemorrhage scribe example

## Postpartum haemorrhage record (example only)

Please complete and/or circle appropriate responses

**Time of Call for help:**……..**By:**……**Date:**……

**On-going blood loss e.g. > 1,000 mL No Yes Time: ……..**

**Code Blue Obstetric called: No Yes Time:**……

**Fluid balance over last 6 hours: In**……..**Out**…….

**Time of delivery:**

**Placenta delivered: Yes……..No…….Complete: Yes…….No……..**

**Trauma to perineum: Yes Type: …… No**

**Transfer to theatre: No Yes Time……..**

**Activate Massive Transfusion Protocol* No Yes Time……**

### Communication

| Team member | Name | Time arrived |
|---|---|---|
| Obstetric Consultant | | |
| Obstetric Registrar | | |
| Obstetric RMO | | |
| Anaesthetic Consultant | | |
| Anaesthetic Registrar | | |
| Midwife | | |
| Midwife | | |
| Midwife | | |
| Patient Services Assistant | | |
| Other | | |
| | | |
| | | |
| | | |
| | | |

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| Resuscitation | | |
|---|---|---|
| **Initial Management** | **Time** | |
| $O_2$ 10-15 L / minute | | |
| $O_2$ saturation monitor / vital signs monitor | | |
| Position flat | | |
| Indwelling catheter | | |
| Uterine massage<br>Bimanual compression | | |
| PPH box / resuscitation | | |
| IV access x 2 | | |
| **Bloods:** | **Time** | **Results** |
| > CBP | | |
| > G&S | | |
| > G&M | | |
| Coagulation profile<br>> INR<br>> APTT<br>> Fibrinogen<br>> FDPs, D-Dimer | | |
| > U&E's<br>> Creatinine | | |
| **Resuscitation fluids** | | |
| **Type** | **Volume** | **Time** |
| Sodium chloride 0.9 % | | |
| Hartmann's | | |
| Gelofusine | | |
| RBC | | |
| FFP | | |
| Cryoprecipitate | | |
| Platelets | | |

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| | | |
|---|---|---|
| Additional treatments | | |
| Tranexamic acid | | |

**Other measures**

| | |
|---|---|
| Pressure bag / fluid warmer | |
| Warm air blanket<br>Space blanket | |

**Drugs**

| Drug | Dose | Time |
|---|---|---|
| Oxytocin | | |
| Oxytocin infusion | | |
| Syntometrine | | |
| Ergometrine | | |
| Misoprostol | | |
| PGF2α (in theatre use) | | |
| Other | | |
| | | |
| | | |
| | | |

Monitoring and investigations

| Time | Pulse | BP | Resps | Temp | $SpO_2$ | Capillary refill < 3 secs (Y/N) | Conscious state **AVPU |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

**AVPU: A=alert, V = only responds to voice, P = only responds to pain, U = unconscious

**EBL at delivery: (Weigh pads, linen) ……..**

**Ongoing EBL**

| Time | Amount | Cumulative total |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Scribe (name)**_____**Signature**_____

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## Abbreviations

| | |
|---|---|
| α | Alpha |
| et al. | And others |
| APTT | Activated partial thromboplastin time |
| CBP | Complete blood picture |
| CCT | Controlled cord traction |
| DIC | Disseminated intravascular coagulation |
| FDP's | Fibrin degradation products |
| FFP | Fresh frozen plasma |
| e.g. | For example |
| > | Greater than |
| IDC | Indwelling catheter |
| INR | International normalised ratio |
| IU | International units |
| IV | Intravenous |
| LSCS | Lower segment caesarean section |
| mg | Milligram(s) |
| mL | Millilitre(s) |
| MRI | Magnetic resonance imaging |
| MROP | Manual removal of placenta |
| OT | Operating theatre |
| % | Percentage |
| PV | Per vagina |
| +/- | Plus or minus |
| PPH | Post partum haemorrhage |
| PROM | Prelabour rupture of membranes |
| ® | Registered trademark |
| FVIIa | Recombinant Factor Seven a |
| RMO | Resident Medical Officer |
| SOGC | The Society of Obstetricians and Gynaecologists of Canada |
| USS | Ultrasound scan |
| VE | Vaginal examination |
| WCC | White cell count |

## Version control and change history

**PDS reference:** OCE use only

| Version | Date from | Date to | Amendment |
|---|---|---|---|
| 1.0 | 21 Jul 04 | 25 Jan 05 | Original version |
| 2.0 | 25 Jan 05 | 12 May 08 | Review |
| 3.0 | 12 May 08 | 24 Aug 09 | Review |
| 4.0 | 24 Aug 09 | 30 Apr 13 | Review |
| 5.0 | 30 Apr 13 | Current | |
| | | | |

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