

# Prevention and Management of Postpartum Hemorrhage Standard Protocol



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## **Introduction:**

Postpartum hemorrhage is the leading cause of maternal death worldwide, with an estimated mortality rate of 140 000 per year. PPH occurs in 5% of all deliveries and is responsible for a major part of maternal mortality. The majority of these deaths occur within 4 hours of delivery, which indicates that they are a consequence of the third stage of labor.

Nonfatal PPH results in further interventions, iron deficiency anemia, pituitary infarction (Sheehan's syndrome) with associated poor lactation, exposure to blood products, coagulopathy, and organ damage with associated hypotension and shock. Since all parturient women are at risk for PPH, care providers

need to possess the knowledge and skills to practice active management of the third stage of labor to prevent PPH and to recognize, assess, and treat excessive blood loss.

Studies have indicated that 5.8 % of women had a PPH in their first pregnancy. The risk of a first PPH in a second or third pregnancy was still 4-5%. The risk of recurrence of PPH in a subsequent pregnancy was up to 15%. Both average blood loss and risk of PPH are greater with caesarean section operations and with the rise in these procedures over the past decade it is important that all clinicians are aware of the prevention, early recognition and treatment of PPH.

## **Protocol and Recommendations for Interventions and Practices**

### **Prevention- Active management of the third stage of labour (AMTSL)**

1. Use of uterotonics
2. Delaying of cord clamping
3. Controlled cord traction
4. Uterine massage

### **Treatment**

1. Availability of postpartum hemorrhage emergency equipment tray in all obstetric units.
2. Estimation of blood loss using clinical markers .
3. Fluid and blood product transfusion management.
4. Arrest bleeding
  - a. Pharmacological strategies
  - b. Mechanical strategies .
  - c. Surgical techniques such as ligation, selective arterial occlusion or embolization by interventional radiology, uterine compression sutures and hysterectomy.
5. Home delivery resulting in Post partum haemorrhage
6. Documentation
7. Source references for review.

## **1. Definition:**

Primary PPH is generally defined as blood loss greater than or equal to 500 ml within 24 hours after birth or any amount of blood loss resulting in hemodynamic changes.

Secondary PPH is any abnormal or excessive bleeding from the birth canal occurring between 24 hours and 12 weeks after delivery.

The degree of hemodynamic compromise or shock parallels the amount of blood lost, but some women will become compromised with a relatively small blood loss. This may include women with preeclampsia, anemia and women of small stature. ***The incidence of PPH may be underestimated by up to 50%, due to the clinical difficulty in accurately estimating blood loss***

## **2. Risk assessment**

Common risk Factors:

- Anemia
- Past history of post partum hemorrhage or retained placenta.
- Ante partum hemorrhage including abruption.

- Over-distended uterus (twins, large fetus, polyhydramnios).
- Large baby/large placenta.
- Grande multipara (Para 4 or more) and with history of post partum hemorrhage.
- Prolonged labor, e.g. first stage >12hours, second stage >3hours.
- Operative delivery.
- Assisted delivery.
- Dystocia.
- Chorioamnionitis.

**PPH may occur in women without identifiable risk factors. It is therefore recommended that active management of the third stage of labor be offered to all women during childbirth, whenever a skilled provider is assisting the delivery. (I-A)**

### **3.Prevention**

**Active Management of Third Stage of Labor ( AMTSL) should be offered to women since it reduces the incidence of post-partum hemorrhage due to uterine atony. (I-A)**

**3.1. Administration of uterotonic agents** within one minute of the delivery of the baby, palpate the abdomen to rule out the presence of an additional baby(s)

3.1.1 Give oxytocin 10 units IM. Oxytocin administered intramuscularly, is the preferred medication and route for the prevention of PPH in low-risk vaginal deliveries. **(I-A)**

3.1.2 Oxytocin 5 to 10 IU diluted and given intravenously over 1 to 2 minutes can be used for PPH prevention after vaginal birth. **(I-B)**

3.1.3 Intravenous infusion of oxytocin (10 to 20 IU in 500 mL, 150 mL per hour) is an acceptable alternative for AMTSL. **(I-B)**

3.1.4 If oxytocin is not available, Methyl ergometrine 0.2 mg Intramuscular can be used **(II-1B)**

3.1.5 Injection carboprost 250mcg intramuscular can be used. **(II- 3L)**

3.1.6 Misoprostol 600 mcg orally/rectally can be used if injectable uterotonics are not available.

Oral administration of misoprostol should be reserved for situations when safe administration and/or appropriate storage conditions for injectable oxytocin and ergot alkaloids are not possible. **(II-1B)**

In cases of multiple pregnancy, all fetuses must be delivered prior to administration of oxytocic drugs to avoid intrauterine asphyxia.

**Do not give methyl ergometrine to women with hypertension and cardiac disease.**

**Do not give injection carboprost to women with bronchial asthma.**

**3.2 Delayed cord clamping** by at least 60 seconds in premature newborns (<37 weeks' gestation) since there is less intraventricular hemorrhage and less need for transfusion in those with late clamping. **(I-A)**

Early clamping (<30 seconds) may be required if there is placenta praevia or vasa praevia, tight nuchal cord or if the baby is asphyxiated and requires immediate resuscitation.

**3.3 Controlled cord traction** by applying a traction (pull) and counter traction (push) above the pubic bone on a well contracted uterus.

If the placenta does not descend during 30-40 seconds of controlled cord traction do not continue to pull on the cord:

3.3.1 Gently hold the cord and wait until the uterus is well contracted again. With the next contraction, repeat controlled cord traction with counter-pressure.

3.3.2 Controlled cord traction can be attempted if the placenta is still undelivered 30 minutes after administration of oxytocin, provided the uterus is contracted.

3.3.3 If the membranes tear, gently examine the upper vagina and cervix wearing sterile/disinfected gloves and use a sponge forceps to remove any pieces of membrane that are present. Look carefully at the placenta to be sure none of it is missing. If a portion of the maternal surface is missing or there are torn membranes with vessels, suspect retained placenta fragments and take appropriate action.

3.4 **Uterine massage** immediately after placental delivery until the uterus is contracted. Palpate for a contracted uterus every 15 minutes. Ensure that the uterus does not become relaxed (soft) after you stop uterine massage.

## 4 Treatment of established PPH

The prompt measures undertaken to resuscitate and arrest bleeding depend on the degree of shock.

### Communicating with the patient and her relatives in a case of PPH.

Clear information of what is happening should be given in the native language. While following the basic approach of simple 'ABC' (A and B-assessment of airway & Breathing, C-evaluation of Circulation) a severely bleeding woman should be resuscitated and evaluated simultaneously.

**The most common cause of primary PPH is uterine atony. However, clinical examination must be undertaken to exclude other or additional causes:**

- \_retained products (placenta, membranes, clots)
- \_vaginal/cervical lacerations or haematoma
- \_ruptured uterus
- \_broad ligament haematoma
- \_extragenital bleeding (for example, subcapsular liver rupture)
- \_uterine inversion.

Remember the Mnemonic “ **The 4 T’s**”

- Soft boggy uterus (**Tone**),
- Explore genital tract (**Trauma**),
- Inspect placenta, consider retained placental tissue (**Tissue**),
- Observe clotting (**Thrombin**).

**Always adopt a team approach. (III-C)** Once excessive blood loss is suspected treatment must be initiated quickly and the following should happen concurrently.

### Call for Help.

- Uterine massage after delivery of the placenta, consider bimanual compression.
- Check and record vital signs.

- Insert 2 large bore IV cannulas 16 or 18 gauge. Bloods to be collected for laboratory investigations for full blood count, clotting studies and cross match for 4 units.
- Give further dose of uterotonics.
- Insert indwelling urinary catheter and commence careful fluid balance measurement.
- Non pneumatic Anti Shock Garments

**Fluid replacement:**

- Crystalloid, e.g. Ringer’s Lactate or 0.9% sodium chloride
- Plasma expanders
- Blood (packed cell), Platelets, FFP, cryoprecipitate.

**If still bleeding:**

- Recheck genital tract for trauma, suture or pack vagina if necessary.
- Surgical management to be undertaken as early as possible.

**4.1 Availability of postpartum hemorrhage emergency equipment tray in all obstetric units** Before any simple (non-operative) procedure, it is necessary to gather and prepare all supplies. Missing supplies can disrupt a procedure. PPH kit ,PPH drugs kit and Trauma Exploration kits must be made available in the delivery unit. **(II-2B)**

It is recommended that r all the kits to be replaced and updated as and when the kits are utilized

**4.2 Availability and usage of NASG** in all the places conducting deliveries.

**4.3** Using following clinical markers for estimation of blood loss **(III-B)**

	<b>Compensation</b>	<b>Mild Shock</b>	<b>Moderate Shock</b>	<b>Severe Shock</b>
<b>Blood Loss</b>	900 ml 15%	1200-1500 ml 20-25%	1800-2000 ml 30-35%	2400 ml 40%
<b>BP (systolic)</b>	No change	Minor (postural) fall (80-100 mmHg)	Marked fall (70-80 mmHg)	Profound fall (50-70 mmHg)
<b>Signs &amp; symptoms</b>	Minimal	Weakness, anxiety, +tachycardia, slow capillary refill, +oliguria	Tachycardia, restlessness, cold/clammy skin, pallor, oliguria	Collapse, depressed mental state, air hunger, anuria, circulatory arrest if untreated

No study has addressed sufficiently visual estimation of blood loss during management of the third stage of labor for the purpose of diagnosing PPH.

**4.4 Fluid and blood product transfusion management**

<b>Crystalloid solution</b>	Up to 2 litres Ringer's lactate or Normal saline
<b>Colloid</b>	Up to 1.5 litres colloids until blood arrives
<b>Blood Cross matched</b>	Sufficient quantity of cross matched blood
<b>Fresh frozen plasma</b>	4 units for every 6 units of red cells or prothrombin time/activated partial thromboplastin time > 1.5 x normal (12–15 ml/kg or total 1 litres)
<b>Platelet concentrate</b>	If PLT count < 50000 per microliter (mcL).
<b>Cryoprecipitate</b>	If fibrinogen < 1 gm /litre

Intravenous fluid replacement with isotonic crystalloids like normal saline, Ringer's lactate in preference to colloids for resuscitation of women with PPH. High doses of colloids, which are more expensive than isotonic crystalloids, may cause adverse effects.

## **4.5 Arrest bleeding**

When uterine atony is perceived to be a cause of the bleeding, the following mechanical and pharmacological measures should be instituted, **in turn**, until the bleeding stops:

Pharmacological strategies

Mechanical strategies

Surgical strategies

Over view:

- a) Bimanual uterine compression.
- b) Ensure bladder is empty (Foley catheter, leave in place).
- c) Injection Oxytocin 5 units by slow intravenous injection ( repeat if necessary). Oxytocin infusion (40 units in 500ml RL/NS at 150ml/hour) unless fluid restriction is necessary.
- d) Injection Methyl ergometrine 0.2 mg by slow intravenous or intramuscular injection, Repeat 0.2 mg IM /IV after 15 minutes if required. Maximum of four doses.  
Continuing dose- give 0.2 mg IM every 6 to 8 hours  
(contraindicated in women with hypertension)
- e) Injection Carboprost 250 micrograms by intramuscular injection repeated at intervals of not less than 15 minutes to a maximum of 8 doses (contraindicated in women with asthma).
- f) Misoprostol 800 micrograms orally/ rectally.

### **Pharmacological strategies**

**4.5.1 Oxytocin is superior to ergometrine alone** or a fixed-dose combination of ergometrine and oxytocin, prostaglandins.

**4.5.2 If oxytocin is not available**, or if the bleeding does not respond to oxytocin, ergometrine or oxytocin-ergometrine fixed-dose combination should be offered as second-line treatment.

**4.5.3 If the above second-line treatments are not available**, or if the bleeding does not respond to the second-line treatment, a prostaglandin should be offered as the third line of treatment.

**4.5.4 There is no added benefit of offering misoprostol as adjunct treatment for PPH** in women who have received oxytocin during the third stage of labour. Where oxytocin is available, and is used in

the management of the third stage of labour, oxytocin alone should be used in preference to adjunct misoprostol for the management of PPH.

**4.5.5 In the treatment of PPH, where the first- and secondline uterotonics are not available** or have failed, as a last resort 800 µg misoprostol orally/rectally can be used.

**4.5.6 Tranexamic acid may be offered as a treatment for PPH** if: (i) administration of oxytocin, followed by second-line treatment options and prostaglandins, has failed to stop the bleeding; or (ii) it is thought that the bleeding may be partly due to trauma.

**4.5.7 Recombinant factor VIIa for the treatment of PPH** should be limited to women with specific haematological indications. **(II-3L)**

### **Mechanical (non medical) methods**

**4.5.8 Uterine massage** should be started once PPH has been diagnosed.

**4.5.9 Bimanual uterine compression** may be offered as a temporizing measure in the treatment of PPH due to uterine atony after vaginal delivery.

**4.5.10 External aortic compression for the treatment of PPH** due to uterine atony after vaginal delivery may be offered as a temporizing measure until appropriate care is available

**4.5.11 Intrauterine balloon or condom tamponade** may be offered in the treatment of PPH due to uterine atony in women who have not responded to treatment with uterotonics, or if uterotonics are not available, **(III-L)**

**4.5.12 Uterine packing is not recommended for the treatment of PPH** due to uterine atony after vaginal delivery.

### **Surgical methods**

**4.5.13 Initiate surgical hemostasis sooner rather than later.**

If pharmacological and mechanical measures fail to control the hemorrhage the following conservative surgical interventions should be attempted in the following sequence depending on clinical circumstances and available expertise **(III-B)**

\_ Haemostatic brace suturing (such as using procedures described by B-Lynch or modified compression sutures)

\_ Bilateral ligation of utero ovarian vessels

\_ Bilateral ligation of internal iliac (hypogastric) arteries

\_ Selective arterial embolization.

**4.5.14 Consider obstetrical hysterectomy as early as possible** whenever there is dilemma over conservative methods of surgical procedures.

## **5 Management of retained placenta**

If controlled cord traction is unsuccessful, manual removal of the placenta should be performed.

This should be carried out in the operating theatre with intravenous access and adequate anaesthesia.

Ascertain hemoglobin, blood group and type, cross match before shifting the patient to Operation theatre.

### **5.1 Uterotonics for retained placenta**

If the placenta is not expelled spontaneously, clinicians may offer 10 IU of oxytocin in combination with controlled cord traction.

- Ergometrine is not recommended, as it may cause tetanic uterine contractions, which may delay expulsion of the placenta.

### **5.2 Intraumbilical vein injection of oxytocin**

Intraumbilical vein injection of oxytocin with saline is offered for the management of retained placenta (II-2C.)

### **5.3 Manual removal of placenta**

If controlled cord traction, administration of uterotonics and intraumbilical vein injection of oxytocin+saline fail manual extraction of the placenta under anesthesia should be offered as the definitive treatment.

## **6. Home Delivery resulting in PPH**

**Misoprostol** 800 – 1000 microgram oral to be given immediately.

**Shift** the patient to the nearest health centre, District or Regional Hospital. If necessary, transfer to **tertiary care Hospital** after initial resuscitation (in instances where full therapeutic measures such as blood bank facilities, surgical expertise, operating theatre facilities or embolization are not available or for intensive care monitoring in a patient who continues to bleed).

### **7. Documentation**

Accurate documentation of a delivery with postpartum hemorrhage is essential.

**8. Proper monitoring** at regular intervals till the patient recovers from hemodynamic shock and bleeding. All the patients should have regular follow up and correction of anemia.

### **9. Source References for review**

1. WHO guidelines for the management of postpartum haemorrhage and retained placenta-2009
2. FIGO-ICM Joint Statement Management of the Third Stage of Labour to Prevent Post-partum Haemorrhage, 2003.
3. Prevention and management of postpartum haemorrhage, Green Top Guideline No.52 May 2009 (Minor revisions November 2009 and April 2011)
4. Active Management of the Third Stage of Labour: Prevention and Treatment of Postpartum Hemorrhage SOGC guideline No.235, October 2009
5. Prevention and treatment of postpartum hemorrhage in low-resource settings- FIGO GUIDELINES, International Journal of Gynecology and Obstetrics Volume 117, Issue 2, May 2012, Pages 108–118

## **Classification of evidence levels**

### **Quality of Evidence Assessment**

I: Evidence obtained from at least one properly randomized controlled trial

II-1: Evidence from well-designed controlled trials without randomization

II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group

II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees



## **Classification of Recommendations**

- A. There is good evidence to recommend the clinical preventive action
- B. There is fair evidence to recommend the clinical preventive action
- C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making.
- D. There is fair evidence to recommend against the clinical preventive action
- E. There is good evidence to recommend against the clinical preventive action
- L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

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