Provincial Clinical Knowledge Topic
Post-Partum Hemorrhage, Adult – Inpatient
Maternal & Child Health
V 1.2

Revision History

Version	Date	Description of Revision	Completed By / Revised By
1.1	Feb. 2018	Appendix A-Oxytocin revised as per Pharmacy Monograph	Dr. Tom Corbett
1.2	April 2018	Correction to units for misoprostol in PPH tray	Dr. Tom Corbett

Important Information Before you Begin

The recommendations contained in this knowledge topic have been provincially adjudicated and are based on best practice and available evidence. Clinicians applying these recommendations should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care. This knowledge topic will be reviewed periodically and updated as best practice evidence and practice change.

The information in this topic strives to adhere to Institute for Safe Medication Practices (ISMP) safety standards and align with Quality and Safety initiatives and accreditation requirements such as the Required Organizational Practices. Some examples of these initiatives or groups are: Health Quality Council Alberta (HQCA), Choosing Wisely campaign, Safer Healthcare Now campaign etc.

This topic is based on the following guidelines:

- SOGC Clinical Practice Guideline: Active Management of the Third Stage of Labour: Prevention and Treatment of Post-Partum Hemorrhage http://www.jogc.com/article
- MORE^{OB} – Post Partum Hemorrhage https://secure.moreob.com

Rationale

Post-Partum Hemorrhage (PPH) occurs in 5% of all deliveries, and is the leading cause of maternal death world-wide, with an estimated mortality rate of 140,000 per year. The majority of these deaths occur within 4 hours after delivery, an indication they are a consequence of the third stage of labour.
PPH that is not fatal can result in further interventions, iron deficiency anemia, pituitary infarction with associated poor lactation, and exposure to blood products, coagulopathy, organ damage with associated hypotension and shock[1]. PPH is an obstetric emergency and requires prompt management to effectively reduce the risk of morbidity and mortality.

Post-Partum hemorrhage, in Canada, increased by 22% from 5.1% in 2003 to 6.2% in 2010. This was driven by a 29% increase in atonic post-partum hemorrhage (3.9% in 2003 vs.5.0% in 2010). Post-partum hemorrhage with blood transfusion increased from 36.7 to 50.4 per 10,000 deliveries), while post-partum hemorrhage with hysterectomy increased from 4.9 to 5.8 per 10,000 deliveries. Post-partum hemorrhage with uterine suturing, or ligation/embolization of pelvic arteries, increased from 4.1 to 10.7 per 10,000 deliveries. These increases occurred in most provinces and territories, and could not be explained by changes in maternal, fetal, and obstetric factors. [2]

Goals of Management

Definitions

- Post-Partum Hemorrhage[2] (PPH): blood loss in excess of 500 mL in a vaginal birth and in excess of 1,000 mL in an abdominal delivery. For clinical purposes any blood loss that has the potential to produce hemodynamic instability should be considered a post-partum hemorrhage. Clinical estimates of blood loss are often inaccurate
- Primary Post-Partum Hemorrhage[2] – bleeding within the first 24 hours after birth. Approximately 70% of immediate PPH cases are due to uterine atony.
- Secondary Post-Partum Hemorrhage[2] – bleeding between 24 hours after delivery of the baby and six weeks post-partum. Most late hemorrhages are due to retained products of conception, infection or both.

Key Principles

1. Prevent post-partum hemorrhage (PPH) through active management of the third stage of labour.
2. Proactively identify patients with associated risk factors of PPH and manage appropriately. Identify and transfer high risk patients before emergency care required.
3. Provide uterotonics to promote uterine contractions, prevent uterine atony, and speed delivery of the placenta. Oxytocin, if available, is the recommended choice of uterotonic in most cases.
4. Promptly recognize, assess, and treat blood loss
5. Assess the immediate needs of the patient: Circulation, Airway and Breathing (CAB's). Monitor for signs of hypovolemic shock.

Decision Making

Etiology of Post-Partum Hemorrhage (PPH)

Primary post-partum hemorrhage (PPH) is defined as excessive bleeding that occurs within the first 24 hours after delivery with blood loss in excess of 500 mL for vaginal delivery and in excess of 1000 mL for abdominal delivery. For clinical purposes any blood loss that has the potential to produce hemodynamic instability should be considered a PPH.[1] (Goals of Management – Definitions)

Underlying causes of PPH can be summarized, utilizing the 4 T's, as follows:

1. Tone – Uterine atony, distended bladder
2. Tissue – retained placenta or products of conception, clots
3. Trauma – vaginal, cervical or uterine injury
4. Thrombin coagulopathy (pre-existing or acquired)

Post-Partum Hemorrhage Risk Factors

Table 1 **Post-Partum Hemorrhage Risk Factors[1]**

Etiologic	Category and Process	Clinical Risk Factors
TONE	• Overdistention of uterus	• Polyhydramnios • Multiple gestation • Macrosomia
	• Uterine muscle exhaustion	• oxytocin use • Induction of labour • Rapid labour • Prolonged labour • High parity
	• Intra-amniotic Infection	• Fever • Prolonged rupture of membranes
	• Functional /anatomic distortion of the uterus	• Fibroids • Placenta Previa/Accreta • Uterine anomalies
	• Uterine Relaxing Medications	• Halogenated anesthetics • Nitroglycerin
	• Bladder Distention	
TISSUE	• Retained products of conception o Abnormal placentation o Retained cotyledon or succenturiate lobe	• Incomplete placenta at delivery • Previous uterine surgery • High parity • Abnormal placenta (ultrasonography)
	• Retained Blood Clots	• Atonic uterus
TRAUMA	• Lacerations of the cervix, vagina, or perineum	• Precipitous delivery • Operative delivery
	• Extensions, lacerations at cesarean section	• Malposition • Deep engagement
	• Uterine Rupture	• Previous uterine surgery
	• Uterine Inversion	• High parity • Fundal placenta • Excessive cord traction

THROMBIN	• Pre-existing states o Hemophilia A o Von Willebrand's Disease o History of previous PPH	• History of hereditary coagulopathies or liver disease
	• Acquired in pregnancy o Idiopathic thrombocytopenic purpura o Thrombocytopenia and eclampsia o Disseminated intravascular coagulation o Gestational Hypertensive disorder of pregnancy with adverse conditions: a) Intrauterine fetal demise b) Severe infection c) Abruption d) Amniotic fluid embolus	• Bruising, elevated blood pressure • Elevated blood pressure • Fetal demise • Fever, neutrophilia/neutropenia • Antepartum hemorrhage • Sudden collapse
	• Therapeutic Anticoagulation	• History of thrombotic disease

Adapted from SOGC Clinical Practice Guideline 2009

Prevention of Post-Partum Hemorrhage (PPH)

The most common cause of PPH is uterine atony. The primary recommended approach for prevention is the active management of the third stage of labour.

Interventions should include:

- Attendance at delivery by providers with the training and skills to actively manage the third stage of labour
- Use of uterotonics after delivery of the newborn and before delivery of the placenta
  - Uterotonic agent options include: (Appendix A)
    - oxytocin – the recommended uterotonic of choice for vaginal deliveries
    - ergonovine maleate – an alternative if oxytocin is not available (contraindicated in the presence of hypertension and there is an increased risk of retained placenta if given intravenously)
    - carbetocin – the recommended uterotonic of choice for operative delivery
    - misoprostol – an alternative if oxytocin is not available (use a lower dosage to minimize side effects)
- Delayed clamping of the umbilical cord by 1 to 3 minutes. Early cord clamping recommended only when newborn resuscitation is required
  - Late clamping confers physiologic benefit to the newborn up to 6 months into infancy
- Immediate skin to skin contact between mother and infant
- Immediate palpation of the fundus to confirm that the fundus is firm
- Controlled traction of the cord, after cord samples taken, including arterial and venous blood gas samples
- Spontaneous delivery of the placenta allowed, with subsequent intervention, if necessary, that involves uterine massage and the use of uterotonics
- If the placenta has not delivered after approximately 15 minutes and oxytocin has not been given, give it at this time. Ensure IV access. The longer the delay the greater the risk of PPH.

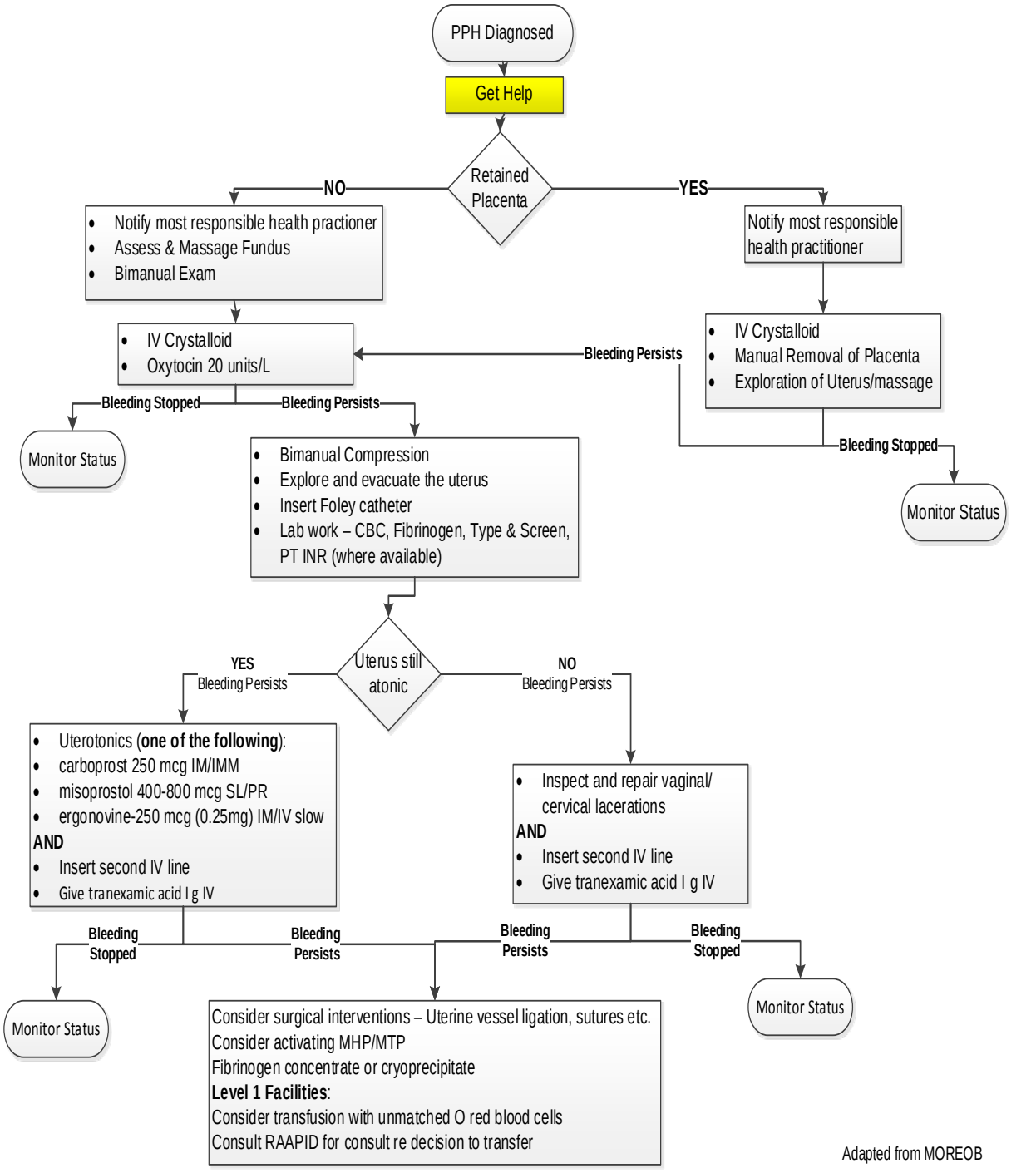
Table 2 **Management of Post-Partum Hemorrhage[1] (PPH)**

Initial Assessment	Clinical Signs	Assess Etiology	Directed Therapy	If Bleeding Continues	If Bleeding Continues	If Bleeding Continues
Call for Help Resuscitation: • Assess the CAB's • Monitor vital signs, O_2 Sat • Oxygen by mask as required • IV line – large bore • Crystalloid, isotonic fluid replacement • Administer Uterotonic • Insert Foley Catheter • Monitor Intake and Output Laboratory Tests • Fibrinogen, PT/INR • Type and Screen (if not done) • Cross Match • Complete Blood Count (CBC)	Uterus soft and relaxed	Uterine atony	Uterine massage Uterotonic drugs tranexamic acid	Non-surgical uterine compression • Bimanual uterine compression • Uterine Packing • Balloon (condom) tamponade	Compression sutures • B-Lynch • Vertical Compression • Cho square Uterine artery embolization	Artery ligation (uterine, hypogastric) Hysterectomy (subtotal or total)
	Placenta not separated or partially separated	Retained placenta	Whole placenta in uterus • Uterotonics • Controlled cord traction • Intraumbilical vein injection Incomplete separation • Manual exploration • Gentle curettage	Placenta still retained Manual Removal	Placenta still retained – Placenta accreta Partial or complete removal of placenta through laparotomy Hysterectomy	
	Excess bleeding or shock after birth	Low genital tract trauma	Repair tears in perineum, vagina, cervix			
		Uterine Rupture	Laparotomy – primary repair, hysterectomy			
	Uterine fundus not felt or visible	Uterine inversion	Correct inversion in theatre under general anesthesia	If nonsurgical correction fails, ensure the uterus remains contracted	Surgery Correction via laparotomy Hysterectomy	
	Clotting	Clotting Disorder	Treat accordingly with blood products			

Adapted from the SOGC Guideline: Active Management of the Third Stage of Labour: Prevention and Treatment of Post-Partum Hemorrhage

Post-Partum Hemorrhage Treatment Algorithm

Figure 1 Post-Partum Hemorrhage[1, 2, 5] (PPH) Treatment Algorithm



- Access Help
- Monitor circulation, airway and breathing (CAB's) and level of consciousness
- Assess and record all vital signs and O_2 saturation
- Consider supplemental oxygen to maintain O_2 saturation at 90%
- Determine etiology of hemorrhage based on tone, tissue, trauma or thrombin (PPH Risk Factors) and whether the placenta has been delivered
- Initiate at least one large bore IV (minimum 18 gauge)
- Run an IV crystalloid (lactated ringers is preferred) with oxytocin 20 units/L in 1000 mL added, titrate to control blood loss, or give oxytocin 5 Units IV bolus.[2]
- Attempt to manage bleeding by:
    - Uterine massage, bimanual compression
    - Express uterine clots
    - Insert Foley catheter
- Obtain coagulation studies (CBC, Fibrinogen, Type and Screen (if not done) Cross match, PT/INR) based on assessment of hemostasis (PPH order set)
- Consider uterine balloon tamponade if the above does not control bleeding
- Consider inserting second IV line based on homeostasis of the patient and ongoing blood loss
- If bleeding persists administer tranexamic acid 1 g over 10 minutes and then infuse 1 g over 8 hours following initial dose[5] if significant bleeding persists (*compatibility with oxytocin has not yet established and this should be infused via a separate IV line*) (Appendix B) and the following
- If bleeding persists determine and administer appropriate uterotonic: (Appendix A)
    - carbetocin 100 microgram IM or IV bolus over 1 minute (recommended for operative delivery)
    - misoprostol 400 – 800 microgram SL (preferred route) **OR** misoprostol 800 - 1000 microgram PR (if unable to take oral medications)
    - carboprost 250 microgram IM
    - ergonovine maleate 250 microgram (0.25 mg) IM or IV (contraindicated in the presence of hypertension)
- Consider surgical intervention if bleeding persists such as uterine vessel ligation, compression sutures
- Monitor blood loss and assess hemostasis (Assessment of hemostasis) by monitoring vital signs. One method of assessing blood loss can be done by weighing pads.
- Consider prophylactic antibiotic administration, particularly if there has been a manual removal of the placenta.

In order to minimize the risk of morbidity and mortality, clinicians must have an organized plan of management. It is recommended to have a standard equipment tray readily available to facilitate immediate management of hemorrhage.

Example contents for PPH tray

- Airway
    - Emergency airway bag (contains masks, airways, self-inflating bag etc.)
- Access/exposure:
    - Vaginal retractors
    - Drapes (sterile)
    - Bright light
- Sutures suitable for compression
- Uterine/vaginal tamponade
    - Laparotomy sponges
    - Gauze rolls
    - Uterine balloon (Bakri, Sengstaken-Blakemore, surgical gloves)
- Fluid Management
    - Foley Catheter
    - Urometer
    - IV solution(s) normal saline, lactated ringers
    - Fluid warming sets (if available)
- Laboratory
    - 2 packages of phlebotomy supplies and blood tubes
- Medications (follow Pharmacy recommendations for storage and expiration)
    - tranexamic acid – 1 g
    - ergonovine maleate – 250 microgram/mL (0.25 mg)
    - carboprost – 250 microgram/mL
    - oxytocin – 20 unit(s)
    - misoprostol 200 microgram tablet(s)
- Diagrams
    - Uterine artery and ovarian artery ligation
    - Uterine compression techniques, B-lynch and Cho Technique

Management of Hemostasis with Post-Partum Hemorrhage

Hemostasis Mnemonic

H	help
E	etiology/ensure uterotonics and blood
M	massage
O	oxytocin/prostaglandins
S	shift to OR with compression (uterine or antishock garments)
T	tamponade test
A	compression sutures
S	systemic pelvic devascularization
I	intervention radiology
S	sub/total hysterectomy

Assessment of Hypovolemic Shock

Excessive bleeding, or hemorrhage, results in net loss of intravascular volume and decreased oxygen delivery to tissues and organs leading eventually, if volume is not replaced, to hypovolemic shock.
The signs and symptoms listed here should be utilized at the bedside to evaluate the amount of blood loss as the degree of shock parallels the amount of blood loss that results in clinical changes.[2] The amount of blood loss required to produce hemodynamic instability is different in each obstetrical patient and is dependent upon the health status of the woman.

Table 3 **Assessment of Hypovolemic Shock**[2]

Degree of Shock	Blood Loss	Signs and Symptoms
Mild	Less than 20%	• Diaphoresis • Delayed Capillary Refill time • Cool extremities • Anxiety
Moderate	20-40%	As above plus: • Tachycardia • Tachypnea • Postural hypotension • Oliguria
Severe	Greater than 40%	As above plus: • Hypotension • Agitation/confusion

Considerations for Transfusion

Blood loss should be replaced with blood products where there are signs and symptoms of hypovolemic shock despite crystalloid resuscitation and ongoing hemorrhage is occurring.

Initial steps

- Ensure all efforts are made to provide laboratory samples to transfusion medicine/hematology (fibrinogen, cross match 2 units, CBC, PT/INR) if not already done
- Ensure tranexamic acid has been administered, 1 g IV infused over 10 minutes. (PPH Algorithm). Ideally administered within 3 hours of delivery.
- Repeat dosage of tranexamic acid, following initial bolus, if bleeding is continuing and significant, 1 g IV and infuse over 8 hours
- If moderate to severe bleeding continues, or the fibrinogen level falls to less than 2g/L, then administer 4 g of fibrinogen concentrate (RIASTAP™), or 8 to 10 units of cryoprecipitate
- Consider transfusion with unmatched O red blood cells (for sites where the above blood products or laboratory results are not yet available)
- Contact RAAPID for consultation with Transfusion Medicine Physician and Obstetrician for consideration of transfer to higher level of care (if level one facility and no obstetrician on call or immediate laboratory testing)

Activation of the Massive Hemorrhage/Transfusion Protocol Consideration

The Massive Hemorrhage/Transfusion Protocol, where available, (refer to local Massive Hemorrhage/Transfusion Protocols) is initiated by a physician's order in consultation with Transfusion Medicine. Transfusion Medicine will then provide direction for any additional laboratory work to be completed and blood components and products to be administered e.g. fresh frozen plasma

The Massive Hemorrhage Protocol should be activated if:

- Four or more units of RBC's transfused within 1 hour with ongoing blood loss or more than 6 units of RBC's within one bleeding episode with anticipated ongoing blood loss
- Hemorrhage is greater than 2000 – 2500 mL
- Patient shock/hemodynamic instability
- Clinical or laboratory evidence of coagulopathy

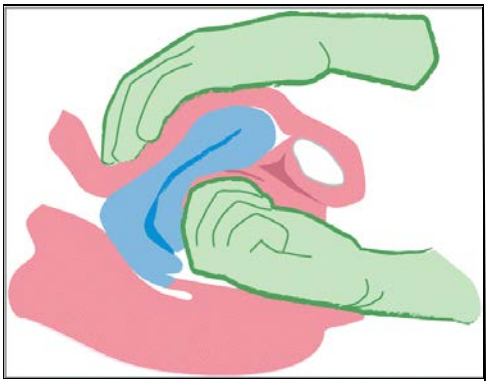
Intractable PPH Treatment Options

If the bleeding is uncontrolled and the patient is hemodynamically unstable the following are recommended options for treatment.

Medical Options

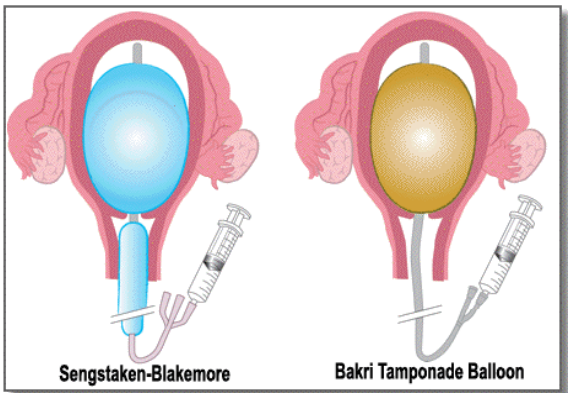
- Bimanual compression of the uterus
- Uterine Balloon Tamponade (e.g. below)
  - Bakri Tamponade
  - Sengstaken Blakemore esophageal catheter
- Uterine Packing
  - The uterus is packed with enough gauze to control bleeding while avoiding trauma to the uterine wall

Figure 1 **Bimanual Compression** [2]



Following administration of uterotonic and external uterine massage and if bleeding persists, bi-manual compression of the uterus should be performed. This will reduce further bleeding until assistance arrives. This will also assess for retained products or clots, uterine rupture or inversion.

Figure 2 **Uterine Balloon Tamponade** [2]



The entire balloon is positioned past the cervical canal. Once inserted, the balloon is filled with a sterile solution (up to 250-500 mL of normal saline). The balloon is left in place for 8 to 48 hours and then gradually deflated and removed.

Angiographic Embolization may be considered if the above medical interventions do not manage the post-partum hemorrhage

Surgical Options

- Uterine vessel ligation
- Uterine compression sutures
    - o B-Lynch procedure/Cho technique
- Internal Iliac artery ligation
- Peri-partum hysterectomy

Figure 3 ***B-Lynch Technique*** [2]

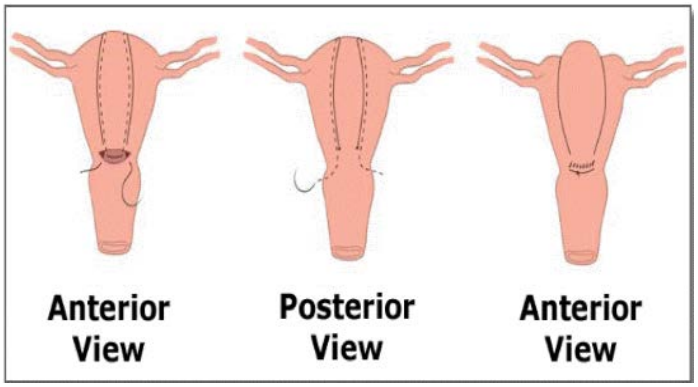
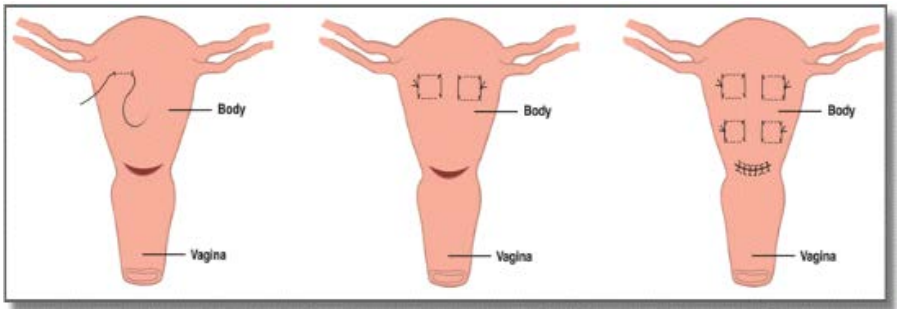


Figure 4 **Cho Technique** [2]



Order Set: Post-Partum Hemorrhage

Order Set Components

Order Set Keywords: post-partum, hemorrhage, PPH

Diet

- ☐ NPO

Monitoring

- ☐ Vital Signs: These orders need to be re-evaluated when the patient stabilizes or by two hours, whichever occurs first. Vital signs to include: temperature (T), pulse rate (P) respiratory rate (RR), blood pressure (BP), and oxygen saturation (O_2 sat)
  - ☐ Q15min X ____ times
  - ☐ Q ___ hour X ____ hours
- ☐ Intake and Output
  - ☐ Foley Catheter – Insert. Connect to straight drainage.
  - ☐ Monitor Output: urine hourly

Laboratory Investigations

Hematology

- ☐ Complete Blood Count with differential
- ☐ Fibrinogen
- ☐ PT INR

Transfusion Medicine

- ☐ Type and Screen (*if not done*)
- ☐ Cross Match for ____ units

Respiratory Care

- ☐ Oxygen therapy: administer if oxygen saturation falls below 90% and titrate to maintain oxygen saturation greater than or equal to 90%

Intravenous Therapy

- ☐ Intravenous Cannula – Insert: Initiate IV

- ☐ IV bolus or rapid infusion:
  - ☐ 0.9 % NaCl infusion IV ____ mL at ____mL/hour over _____ minutes
  - ☐ lactated ringers infusion IV at _____ mL/hour over _____ minutes

Maintenance IV

- ☐ 0.9 % NaCl infusion IV _____ mL/hour
- ☐ lactated ringers infusion IV ____ mL/hour

- ☐ If hemodynamically unstable – Insert: Second line
  - ☐ 0.9 % NaCl infusion IV at _____ mL/hour
  - ☐ lactated ringers infusion IV at _____ mL/hour

Medications
Consider antimicrobial prophylaxis, e.g. ampicillin or ceFAZolin, for those patients who have had significant medical/surgical intervention for post-partum hemorrhage

- ☐ oxytocin infusion ___ units (*20 unit – 40 unit*) in 0.9% NaCl 1000 mL. Titrate to control blood loss. Discontinue when fundus firm and blood loss controlled.
- ☐ oxytocin infusion ___ units (*20 unit – 40 unit*) in lactated ringers 1000 mL. Titrate to control blood loss. Discontinue when fundus firm and flow controlled.

Refer to the AHS Provincial Drug formulary, as applicable, for the following medications:

- ☐ tranexamic acid 1 g IV – infused over 10 minutes **and then** tranexamic acid 1 g IV infused over 8 hours if significant bleeding continues

Uterotonic (**Choose One**)

- ☐ misoprostol ____ microgram PO/SL once
- ☐ misoprostol _____ microgram RECTALLY once

- ☐ ergonovine 250 microgram (0.25 mg) DIRECT IV every 2 hours PRN to a maximum of 5 times (*contraindicated in the presence of hypertension*)
- ☐ ergonovine 250 microgram (0.25 mg) IM every 2 hours PRN to a maximum of 5 times (*contraindicated in the presence of hypertension*)

- ☐ carboprost 250 microgram IM every 15 minutes PRN (to maximum total dose of 2 mg [8 doses])

- ☐ carbetocin 100 microgram DIRECT IV once – slow injection. Administer over 1 minute. (*Recommended for operative delivery*)

Bowel Routine
Recommended if carboprost has been given as an uterotonic
- ☐ loperamide 2 mg PO every hour PRN. Give after each loose bowel movement. Maximum 16 mg/day.

Additional Medications

- ☐ _____
- ☐ _____

Referrals
- ☐ Consult Obstetrician
- ☐ Consult Anesthesia
- ☐ Consult Transfusion Medicine
- ☐ Consult RAAPID
- ☐ Consult Hematology
- ☐ Consult _____

Analytics

Baseline Analytic – Outcome Measure

Name of Measure	Order set usage for Post-Partum Hemorrhage
Definition	For all patients admitted for labour and birth, the number of times the order set post-partum hemorrhage is utilized: Overall capture the following: • Patient demographics, region • Site and Zone identifiers • Unit/area • Laboratory investigations
Rationale	These order sets are intended to standardize the process for post-partum hemorrhage across the province based on the Society of Obstetricians and Gynecologists and MORE^{OB} guidelines. This is intended to measure if the order set is being utilized and what percentage of the time. This is also to potentially decrease the number of post-partum hemorrhages in the province. This may also indicate areas where there are potentially adoption issues or gaps in the knowledge provided.
Notes for Interpretation	This will increase access to knowledge in rural areas and improve access across the province.
Cited References	1. Society of Obstetricians and Gynecologists. *Post-Partum Hemorrhage.* http://www.jogc.com/article/pdf 2013*;* Sept. Reviewed 2015; Mar. (Clinical Practice Guideline no. 296) Accessed June 2016 2. MORE^{OB}. *Post-Partum Hemorrhage*. https://secure.moreob.com 2016; Sept. Accessed Sept. 2016

Clinical Analytics – Outcome Measure #1

Name of Measure	For all patients admitted for labour and birth there is appropriate management of the third stage of labour
Definition	Based on SOGC[1] and MORE[OB 2] guidelines and clinical assessment the third stage of labour is actively managed by: • Use of an appropriate uterotonic upon delivery of the infant • Delayed cord clamping by 1 – 3 minutes • At birth immediate skin to skin contact between mother and infant • Spontaneous delivery of the placenta is allowed
Rationale	Studies have shown that physiologic management of the third stage of labour allows the placenta to deliver spontaneously and the uterus to contract thus decreasing the risk of post-partum hemorrhage
Notes for Interpretation	Consideration is required for those patients with a history of post-partum hemorrhage
Cited References	1. Society of Obstetricians and Gynecologists. Post-Partum Hemorrhage http://jogc.com/article/pdf 2013; Sept. Reviewed 2015 Mar. (Clinical Practice Guideline no. 296) Accessed June 2016 2. MORE[OB] Post-Partum Hemorrhage. https://secure.moreob.com 2016 Sept. Accessed Sept. 2016

Clinical Analytics – Outcome Measure #2

Name of Measure	For all patients determined to have a post-partum hemorrhage the number of times Massive Hemorrhage Protocol is activated.
Definition	Based on SOGC[1] and MORE[OB 2] guidelines and hemodynamic assessment the patient the Massive Hemorrhage/Transfusion Protocol is activated when: • Four or more units of RBC's transfused within 1 hour with ongoing blood loss or more than 6 units of RBC's within one bleeding episode with anticipated ongoing blood loss • Hemorrhage is greater than 2000 – 2500 mL • Patient shock/hemodynamic instability • Clinical or laboratory evidence of coagulopathy
Rationale	Intended to assess the number of times the massive hemorrhage protocol is initiated
Notes for Interpretation	Consideration is required for those patients with a history of post-partum hemorrhage
Cited References	1. Society of Obstetricians and Gynecologists. *Post-Partum Hemorrhage.* http://jogc.com/article/pdf 2013; Sept. Reviewed 2015 Mar. (Clinical Practice Guideline no. 296) Accessed June 2016 2. MORE[OB]. Post-Partum Hemorrhage. https://secure.moreob.com 2016 Sept. Accessed Sept. 2016

Disposition Planning

1. Considerations for Transfer[4]
   Decisions related to transferring a patient to higher level of care and transportation are the result of team communication and collaboration between sending and receiving physicians, nursing staff, and EMS staff. It also involves careful assessment of the patient's hemodynamic status, potential distance to the referring facility and ensuring that the transport personnel have the expertise, technical skills and clinical judgement to provide care for any emergency that may arise during transport.

   If the decision is made that the patient requires transferring:
   - Contact RAAPID to arrange consult between referring and receiving physicians/sites
   - **Consult with Obstetrician on Call at transfer facility** to share above assessment and determine interim treatment and/or urgency of transfer. The Obstetrician notifies nursing unit of transfer.

The following are Maternal/Neonatal Indicators for consideration where the patient may require transferring to a higher level of care than available at the current facility.

Obstetrical Transport Decision Tree

Maternal /Neonatal Indicators
(List not all inclusive)

- Preterm Labor
- Preterm Rupture of Membranes
- Severe hypertension
- Antepartum Hemorrhage
- Medical Complications of Pregnancy
- Multiple Gestation
- Intrauterine Growth Restriction
- Fetal abnormalities
- Evidence of fetal compromise
- Failure to progress
- Fetal Malpresentation
- Vaginal Birth after Caesarean Section with no available OR
- Maternal trauma
- Post-Partum Hemorrhage

Appendix A – Post-Partum Hemorrhage Medications

Table **Post-Partum Hemorrhage Medications**

Medication	Dosage	Adverse Events	Contraindications
Oxytocin	IM – 10 Units Direct IV – Dilute dose in 3 to 5 mL IV solution and administer over 1 to 2 minutes IV – 20-40 units/L in 1000 mL	Cramping, nausea, vomiting, hyperstimulation of the uterus	Hypersensitivity to oxytocin (*not compatible with pantoprazole)
Carboprost (Hemabate)	IM – 250 micrograms May be repeated every 15 minutes, up to 8 doses	Flushing, **diarrhea**, nausea, vomiting, bronchospasm, restlessness, oxygen desaturation, hypertension	Active cardiac, renal, pulmonary, hepatic disease, or pelvic inflammatory disease Caution with Asthmatics
Carbetocin (Duratocin)	IM/IV – 100 micrograms bolus over 1 minute * 1 hour duration	Abdominal pain, flushing, headache, hypotension, nausea, vomiting, pruritus, tremor	
Misoprostol (Cytotec)	Rectally – 800 micrograms SL – 400-600 micrograms	Transient fever with doses 600 micrograms and over	
Ergonovine (Maleate)	IM/IV 250 micrograms (0.25 mg) *May repeat every 2-4 hours	Nausea, vomiting, **hypertension,** headache, dizziness	**Hypertensive disorders** of pregnancy (even if BP "normal") Some HIV drugs Existing DVT/PE or hypercoagulopathy
Tranexamic Acid	1 gram IV in 100 mL NaCl over 10 minutes – **must be given in a separate line if IV oxytocin is infusing**	Abdominal pain, headache, DVT/PE	

Appendix B – Tranexamic Acid Formulary Information

Indications for Use:

- Treatment or prevention of excessive bleeding due to increased fibrinolysis, or uncontrollable bleeding
- Treatment of trauma-associated hemorrhage

Contraindications:

- Hypersensitivity to Tranexamic Acid or excipients
- Acquired color vision disturbance
- History or risk of thrombosis, unless the patient is anticoagulated
- Subarachnoid Hemorrhage

Dosage:

- Adults IV 500 to 1000 mg IV
- Administer 1 g mixed in 100 mL NaCl over 10 minutes followed by an infusion of 1 g mixed in 250 mL NaCl over 8 hours

Administration

- Tranexamic Acid may be diluted in 100 mL mini-bag and infused over 10 minutes, Maximum rate of infusion 100mg/minute

Clinical Implications:

- Slow administration rate to avoid hypotension
- Monitor BP, heart rate at baseline and at 30 minutes after administration
- Assess patient for ongoing signs of hemorrhage
- Stop infusion if disturbances in color vision occurs

Adverse Events:

- Nausea and vomiting
- Abdominal Pain
- Diarrhea
- Hypotension
- Abnormal Bleeding times

Reference: AHS Pharmacy Parenteral Monograph – Tranexamic Acid

References

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Clinical Knowledge Topic Working Group Member List

We would like to acknowledge the contributions of the Provincial Clinical Knowledge Working Group members as follows. Your participation and time spent is appreciated.

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We would also like to thank the following primary care physicians and clinicians who participated in the colleague review process. Your input has been invaluable to the process. Dr. Susan Nahirniak, Dr. Adina McBain, Dr. Stephanie Hart, Dr. Jennifer Parker, Dr. Paul Walsh, Tara Renkas, Suzanne Koopmans, Megan McQuiston, Barbara Browne, Dorota Swietach, Yvonne Luu. Dr. Stephanie Cooper