Royal Hospital for Women (RHW)
BUSINESS RULE
COVER SHEET

REF: T24/83593

NAME OF DOCUMENT	Postpartum Haemorrhage (PPH)- Prevention and Management
TYPE OF DOCUMENT	Clinical Business Rule
DOCUMENT NUMBER	RHW CLIN110
DATE OF PUBLICATION	20.12.24
RISK RATING	High
REVIEW DATE	December 2026
FORMER REFERENCE(S)	NA
EXECUTIVE SPONSOR	Medical Clinical Co-Director of Maternity Services Midwifery Clinical Co-Director of Maternity Services
AUTHOR	N. Dastur (Midwifery Unit Manager, Birth Unit) G. Bickmore-Hutt (Clinical Midwifery Educator, Birth Unit) S. Arbidans (Clinical Midwifery Consultant, Clinical Practice Development) R. Falconer (Registrar) S. Livingstone (Obstetrician)
SUMMARY	Outline the roles and responsibilities of identifying and managing a post-partum haemorrhage
KEY WORDS	Post-partum haemorrhage, critical bleeding protocol, CERS pathway

This Clinical Business Rule (CBR) is developed to guide safe clinical practice at the Royal Hospital for Women (RHW). Individual patient circumstances may mean that practice diverges from this Clinical Business Rule. Using this document outside RHW or its reproduction in whole or part, is subject to acknowledgement that it is the property of RHW and is valid and applicable for use at the time of publication. RHW is not responsible for consequences that may develop from the use of this document outside RHW.

Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.

1 BACKGROUND

The aim of this CBR is to outline the roles and responsibilities in the prevention, education, early identification, escalation and management of postpartum haemorrhage (PPH).

Postpartum haemorrhage (PPH), commonly defined as a blood loss of 500ml or more within 24 hours of birth, occurs in approximately 5% of all births and remains a leading cause of preventable maternal morbidity and mortality[1].

Key definitions:

	Definition
PPH	Blood loss > 500mls
Minor PPH	Blood loss of ≥ 500 – 1000ml during or after childbirth with no clinical signs of shock
Severe PPH	Blood loss of ≥ 1000mls OR any amount of blood loss that causes significant signs of haemodynamic compromise (shock)
Massive PPH	Any amount of pregnancy/postpartum blood loss that causes signs of severe haemodynamic compromise OR is life threatening OR is likely to result in the need for massive blood transfusion
Critical Bleeding Protocol (CBP)	POWH- Critical Bleeding Protocol A protocol for multidisciplinary escalation & simultaneous response plan, including dose, timing and ratio of blood and blood component therapy specifically for women with massive postpartum haemorrhage

Primary PPH	Occurs within the first 24 hours following birth
Secondary PPH	Occurs after 24 hours and before 6 weeks postpartum
CERS	Clinical Emergency Response System

2 RESPONSIBILITIES

2.1 Midwifery, Nursing and Medical Staff – counselling, identification, management and escalation of risk factors, recommendations for management of third stage and provision of care during any blood loss within pregnancy or the postpartum period

2.2 Domestic Services and Administration, Access and Demand and Afterhours managers – support to midwifery and medical staff during escalation of PPH as per CERS pathway

3 PROCEDURE

3.1 Clinical Practice

Prevention of PPH

Antenatal

- Provide all relevant and current evidence when counselling the woman regarding hospital recommendations and support informed decision making
- Develop a clear plan in consultation with the woman in the antenatal period that includes:
  - identified antenatal and intrapartum risk factors for PPH (see appendix 1)
  - standard recommendation for active management of third stage of labour
  - benefits and risks of both active and physiological management of third stage
  - a woman's right to decline blood or blood components transfusion, requiring referral and discussion with obstetric consultant (refer to Blood Products – Management of Pregnant Woman unable to use Blood Products CBR)
  - clear documentation of plan in woman's medical record
- Recommend woman attend routine haemoglobin screening throughout antenatal period, manage as per Iron Deficiency, Anaemia and Haemoglobinopathies in Pregnancy CBR

Labour and Birth

- Recommend an Intravenous Cannula (IVC) for woman with identified risk factors when in established labour and collect a Full Blood Count (FBC), and Group and Hold
- Consider crossmatch ≥ two units red blood cells for a woman with known placenta praevia, suspected placenta accreta, severe anaemia, thrombocytopenia or known coagulopathy
- Consider PPH prophylaxis in the context of a single major risk factor or cumulative minor risk factors (see appendix 3)
- Recommend active management of third stage as per Third stage management CBR
- Assess uterine tone and ensure accurate measurement of PV bleeding

Postpartum

- Assess all observations and record on the Standard Maternity Observation Chart (SMOC) NSW Health Standard Maternity Observation Chart
- Assess uterine tone and PV loss following birth, then every 15 minutes for the first hour, then based on the woman's individual risk factors and clinical condition
- Consider IVC to remain in situ for a woman with identified risk factors for PPH
- Activate CERS if clinician concern, continued blood loss or woman symptomatic to loss requiring intervention

Treatment of Primary PPH

- Call for help
- Activate CERS and manage as per Management of the deteriorating MATERNITY woman
- Manage PPH following a stepwise approach (see appendix 2) acknowledging that the following steps may occur simultaneously:
    - Recognise and Respond
    - Resuscitate
    - Identify and treat the cause
    - Reassess and refer

Recognise and Respond

- Remain with woman, providing clear and concise communication/explanation to the woman and her support people regarding the emergent situation
- Consider and address the cause of bleeding (4 T's):
    - Tone – uterine tone is the most common cause of primary PPH
    - Trauma –perineal, vaginal and cervical lacerations
    - Tissue – review of the placenta and membranes as complete/incomplete to exclude retained products of conception
    - Thrombin – review for maternal coagulation abnormalities

(NB: NSW Health PD suggests the addition of 5th T: Theatre – surgical interventions should be initiated promptly)

- Assess observations for signs of deterioration, document on SMOC
- Commence measurement and recording of blood loss, weighed and measured and document on SMOC

Resuscitate

- Lie woman flat and keep warm
- Insert 2 x large bore IVC (14-16 gauge) and collect a full blood count and group and hold +/- cross match (if not previously collected)
- Maintain uterine tone with regular uterine massage
- Assess observations every 5 mins until woman is stable or transferred to OT
- Maintain normal oxygen saturation (SpO2) with supplemental oxygen via face mask if required
- Commence treatment with uterotonic medications after ascertaining if there are any contraindications to specific therapies (see appendix 3)
- Consider use of Intravenous (IV) Tranexamic acid (TXA)
- Insert an In-dwelling urinary catheter (IDC) with hourly measurement of output
- Commence rapid infusion of (ideally warmed) fluids in consultation with obstetric and anaesthetic team. Care should be taken to avoid fluid overload
- Assign a midwife/medical officer as scribe to document on woman's medical record

Reassess and refer

- Activate CERS and transfer to OT if:
    - clinician concern
    - bleeding continues and/or
    - cumulative blood loss has reached ≥ 1500mls with evidence of ongoing bleeding
- Consider activation of CBP (NB: adequate thawing of frozen product takes 30 mins)

Blood loss ≥ 1500mls with ongoing bleeding

- Transfer to OT
- Notify consultant obstetrician and consultant anaesthetist to attend
- Administer IV Tranexamic acid if not already given
- Consider applying bimanual compression while proceeding to OT
- Perform Rotational Thromboelastometry (ROTEM)
- Ensure blood product replacement is led by the anaesthetic team, use with or without ROTEM guidance:
    - Communicate directly with the Blood Bank (ext 23232) and state if ROTEM guided or NON-ROTEM guided, as per POWH- Critical Bleeding Protocol

  - Notify the Access and Demand Manager (ADM)/After Hours Nursing Manager (AHNM) on pager 44020. Porter to collect blood products, if unavailable for immediate transport of blood products, the ADM/AHNM must make alternate arrangements
- Reassess uterine tone in OT and consider uterine balloon tamponade
- Communicate with multidisciplinary teams if surgical assistance is anticipated, particularly when laparotomy and further surgical techniques are required
- Activate CBP if either of the following criteria met:
  - Woman is likely to need replacement of her entire blood volume in 24 hours
  - Woman is receiving or has received transfusion of 4 units red blood cells within 4 hours, in addition to haemodynamic instability and/or ongoing blood loss

Secondary PPH - > 24 hours and less than 6 weeks postpartum

- Attend accurate history taking and full clinical assessment
- Escalate as per clinical presentation and CERS protocol. Management depends on bleeding volume and the likely cause. Consider the following:
  - Insert IVC and collect bloods including FBC, coagulation/fibrinogen
  - Commence treatment with uterotonics medications and rapid infusion of fluid replacement
  - Insert IDC
  - Order abdominal Ultrasound Scan (USS)
  - Intravenous antibiotics

3.2 Documentation

- Medical record

3.3 Education Notes

- PPH is considered preventable in many cases, and poor outcomes are often attributed to delayed recognition and mismanagement of the primary blood loss[3]
- PPH trolleys are located in Birth unit, Antenatal and Postnatal ward
- Routine prophylactic oxytocin administered after birth of the anterior shoulder reduces the risk of PPH by more than 40%[1]
- Active management of third stage involves
  - Oxytocin 10 international units intramuscular (IM)
  - Controlled cord traction (CCT) following identified signs of separation of the placenta from the uterine wall
- Blood loss of ≥ 2000ml carries a significant risk of coagulopathy[2]

- Secondary PPH accounts for 1-2% of all PPH's. The most common causes include subinvolution, retained products and endometritis. Less common causes include uterine vascular disorders (e.g. Arterial Venous Malformations) and coagulopathies[4]
- ROTEM is a point of care testing method used to quickly assess whole blood haemostasis in the management of bleeding from a variety of causes[2,5]
- ROTEM test machine is located in OT and collected in a Sodium Citrate tube (blue top)
- The use of uterine balloon tamponade (e.g. Bakri) has been shown to have a high success rate in management of a PPH due to uterine atony, as well as significantly decreased the use of arterial embolisation[6]
- Due to a positive fluid balance, inability to excrete excess water, increased Antidiuretic Hormone secretion during labour and birth, as well as the use of oxytocin and its fluid retaining effect, women at term and in labour are at an increased risk of hyponatraemia[7]. Intrapartum hyponatraemia is potentially life threatening, yet often non-specific symptoms can result in delayed diagnosis[7]
- Misoprostol is a Prostaglandin E1 analogue and can be used in the management of PPH due to its ability to stimulate the production of oxytocin receptors and assisting with sustained myometrial contractility[9]
- Simulations of PPH management are recommended for all staff

3.4 Related Policies/procedures

- POWH- Critical Bleeding Protocol
- Management of the deteriorating MATERNITY woman
- Iron Deficiency, Anaemia and Haemoglobinopathies in Pregnancy
- Management of Third stage and Retained Placenta
- Blood Products- Management of pregnant woman unable to use blood products
- Maternal collapse
- Escalation for Birthing Services
- Perineal/Genital tract trauma - primary and secondary management
- Balloon Placement for Uterine tamponade
- Fibrinogen Concentrate in the management of Critical Bleeding
- Hyponatremia (Adult) - Management of including hypertonic saline - administration and precautions
- NSW Health Guideline- Postpartum Haemorrhage (PPH) GL2021_010
- NSW Health Policy Directive PD2014_028 Open Disclosure Policy
- NSW Health Policy Directive PD2020_047 Incident Management

3.5 References

1. World Health Organisation (WHO). WHO Recommendations Uterotonics for the prevention of postpartum haemorrhage Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.
2. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) (2017). Management of Postpartum Haemorrhage (PPH) C-Obs 43.
3. Bláha, J., Bartošová,T. (2022). Epidemiology and definition of PPH worldwide. *Best Practice & Research Clinical Anaesthesiology*, *36*(3–4).325-339. https://doi.org/10.1016/j.bpa.2022.11.001
4. Chainarong N, Deevongkij K, Petpichetchian C. Secondary postpartum hemorrhage: Incidence, etiologies, and clinical courses in the setting of a high cesarean delivery rate. PLoS One. 2022 Mar 1;17(3):e0264583. doi: 10.1371/journal.pone.0264583. PMID: 35231065; PMCID: PMC8887715.
5. Drotarova M, Zolkova J, Belakova KM, Brunclikova M, Skornova I, Stasko J, Simurda T. Basic Principles of Rotational Thromboelastometry (ROTEM®) and the Role of ROTEM-Guided Fibrinogen Replacement Therapy in the Management of Coagulopathies. Diagnostics (Basel). 2023 Oct 16;13(20):3219. doi: 10.3390/diagnostics13203219. PMID: 37892040; PMCID: PMC10606358.
6. Suarez, S., Conde-Agudelo, A., Borovac-Pinheiro, A., Suarez-Rebling, D., Eckardt, M., Theron, G., Burke, T.F. (2020). Uterine balloon tamponade for the treatment of postpartum hemorrhage: a systematic review and meta-analysis. *American Journal of Obstetrics and Gynaecology*, 222(4). 293.e1-293.e52. https://doi.org/10.1016/j.ajog.2019.11.1287
7. Shanmugharaj Y, Schut V, Syed R, Zakaryan A. Overconsumption of fluids during labour leading to water intoxication and a tonic-clonic seizure in a healthy labourer. BMJ Case Rep. 2021 Jun 23;14(6):e242674. Doi:10.1136/bcr-2021-242674.
8. Phillips, J. M., Eppes, C., Rodriguez, M., Sakamoto, S. (2023). Traditional uterine tamponade and vacuum-induced uterine tamponade devices in obstetrical hemorrhage management. *American Journal of Obstetrics & Gynaecolgy MFM*. *5*(2). https://doi.org/10.1016/j.ajogmf.2022.100739
9. Chen, Y., Jiang, W., Sun, D., Zhang, X., Wu, F., Zheng, C.(2021). Prostaglandins for Postpartum Hemorrhage: Pharmacology, Application, and Current Opinion. *Pharmacology. International Journal of Experimental and Clinical Pharmacology*. *106*(9-10). 477-487. https://doi.org/10.1159/000516631

4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal

health professionals such as Aboriginal liaison officers, health workers or other culturally specific services

5 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours
- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017_044-Interpreters Standard Procedures for Working with Health Care Interpreters.

6 NATIONAL STANDARDS

- Standard 2 – Partnering with Consumers
- Standard 4 – Medication Safety
- Standard 5 - Comprehensive Care
- Standard 6 – Communicating for Safety
- Standard 7 – Blood Management
- Standard 8 – Recognising and Responding to Acute Deterioration

7 REVISION AND APPROVAL HISTORY

Date	Revision No.	Approval
16.12.24	7	RHW BRGC
29/10/2024		Maternity CBR Committee
Reviewed and endorsed Maternity Services LOPs group 5/10/21 Reviewed to incorporate Critical Bleeding Protocol and replace PACE terminology with Rapid Response August 2019 Approved Quality & Patient Safety Committee 20/6/19 Reviewed and endorsed Maternity Services LOPs group 18/6/19 – replaced Massive Transfusion in Obstetrics & Gynaecology (Code Pink) Reviewed and endorsed Maternity Services LOPs 19/6/18 Approved Quality & Patient Care Committee 4/2/16 Reviewed and endorsed Maternity Services LOPs group December 2015 Approved Quality & Patient Safety Committee December 2012 Amendment to dosages in appendix May 2014 Reviewed and endorsed Maternity Services LOPs group December 2012 Reviewed Obstetric Clinical Guidelines Group Sept 2010 – Approved Quality & Patient Safety Committee 21/10/10		

Reviewed July 2007 – Approved Clinical Performance & Quality Committee August 2007
Endorsed Maternity Services Clinical Committee 10/12/02 – Approved Quality Council 16/12/02

Appendix 1. Risk factors for PPH

CAUSE	ANTEPARTUM	INTRAPARTUM	POSTPARTUM

TONE 70%	• Maternal age ≥ 35years
	• BMI ≥ 35
	• Grand multiparity
	• Uterine anomalies (fibroids)
	• Hx of primary or secondary PPH
	• Hx of APH in current pregnancy
	• Over distension of uterus
	  ○ Multiple pregnancy
	  ○ Polyhydramnios
	  ○ Fetal macrosomia > 4kg
		• Precipitate labour
		• Prolonged labour (1st/2nd/3rd stage)
		• Arrest of descent
		• Uterine infection
		• Oxytocin use for augmentation or induction of labour
		• Instrumental birth (forceps or vacuum)
		• Intrapartum haemorrhage
			• Drug induced hypotonia (magnesium sulphate, anaesthetic agent)
			• Bladder distention

TRAUMA 20%		• Precipitate labour • Instrumental birth (forceps)	• Cervical, uterine or perineal lacerations • Caesarean birth
TISSUE 10%	• Hx of retained placenta • Abnormal placentation (placenta praevia, accreta, percreta or increta)		• Retained placenta • Manual removal of placenta or products (membranes, clots) • Uterine inversion

THROMBIN 1%	• Intrauterine fetal death
	• Therapeutic anticoagulation
	• Maternal bleeding disorders
	  ○ Von Willebrand Disease
	  ○ Idiopathic thrombocytopenia purpura
	  ○ Thrombocytopenia
	  ○ Disseminating intravascular coagulation (DIC)
		• Amniotic fluid embolism (AFE)
		• DIC
			• AFE
			• DIC

NOTE: Most cases of PPH occur in women with no identifiable risk factors

Appendix 2: Primary PPH Quick Reference Guide

PRIMARY PPH QUICK REFERENCE GUIDE – DETECT AND RESPOND

DETECTION

ARE YOU CONCERNED THAT THE WOMAN IS AT RISK OF PRIMARY PPH?

Does the woman have any of the following risk factors, signs or symptoms present?

Antenatal

- ❑ History of previous PPH
- ❑ Uterine distention (e.g. multiple pregnancy, polyhydramnios)
- ❑ Anaemia, clotting disorders
- ❑ Abnormal placentation (e.g. accreta, praevia)
- ❑ Uterine/amniotic infection
- ❑ Intrauterine fetal demise (IUFD)

Intrapartum/Postpartum

- ❑ Prolonged first, second, and/or third stage
- ❑ Arrest of descent
- ❑ Cervical, uterine or perineal lacerations
- ❑ Instrumental birth (forceps or vacuum)
- ❑ Syntocinon infusion for augmentation or IOL
- ❑ Retained or incomplete placenta or membranes

NOTE: This list is not exhaustive. Remember two thirds of cases of Primary PPH cannot be predicted.

The most important single warning of diminishing blood volume and mild shock is tachycardia. This often precedes a fall in blood pressure.

Record observations on the Standard Maternity Observation Chart - SMOC

Does the woman have any RED ZONE observations OR blood loss ≥ 1500 mL OR additional criteria OR serious clinician concern?	Does the woman have any YELLOW ZONE observations OR blood loss ≥ 1000 mL OR additional criteria OR clinician concern?	Does the woman have cumulative blood loss ≥ 500 mLs following a VAGINAL BIRTH AND NO additional criteria or clinician concern?
YES	YES	YES

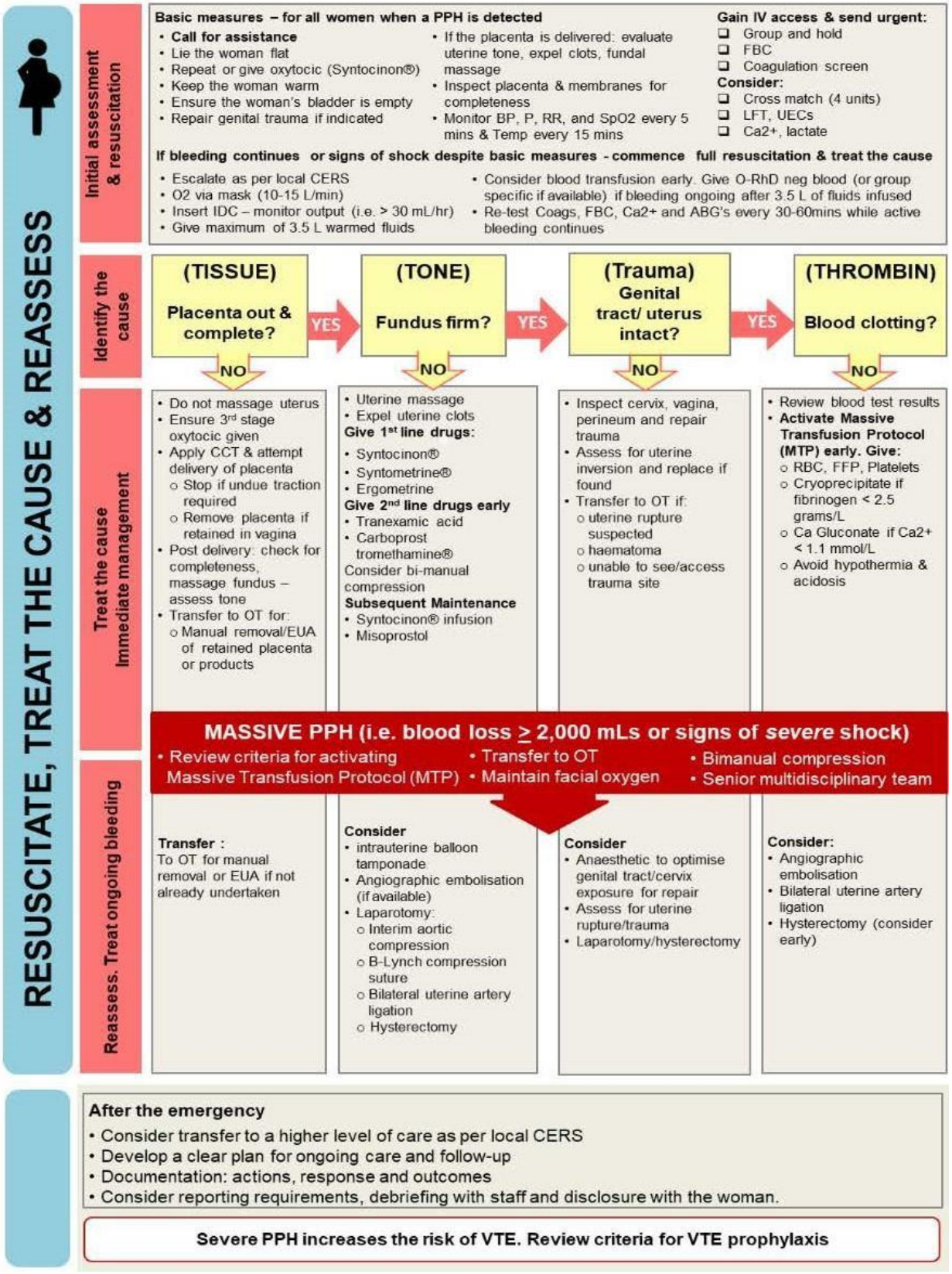
RESPOND & ESCALATE

Severe Primary PPH and symptoms of SHOCK are present This is a life threatening maternal emergency This woman is at risk of rapid deterioration • Call immediately for a Rapid Response (as per local CERS) • Measure / weigh blood loss • Commence management as per Primary PPH Quick Reference Guide – Management • Monitor for signs and additional causes of deterioration	Severe Primary PPH is present This woman is at risk of further deterioration • Immediate escalation to a medical officer (as per local CERS protocol) • Measure / weigh blood loss • Commence management as per Primary PPH Quick Reference Guide – Management • Monitor for signs and additional causes of deterioration	Primary PPH is present Act promptly to prevent deterioration • Call for assistance • Do not leave the woman • Increase maternal observations/assessments • Commence basic measures as per Primary PPH Quick Reference Guide – Management Escalate and commence full resuscitation measures if bleeding continues despite the above OR YELLOW or RED ZONE observations/criteria occur

Adapted from NSW MoH GL2021_10

Appendix 3

PRIMARY PPH QUICK REFERENCE GUIDE - MANAGEMENT



Adapted from NSW MoH GL2021_10

Appendix 4 Medication Management

Management	Medication	Dosage	Administration	Notes
Immediate	Oxytocin (Syntocinon®) 5 units/mL or 10 units/mL	10 units	IM or slow IV	Short acting oxytocic Repeat dose may be given if already administered as third stage prophylaxis.
	PLUS CONSIDER			
	Ergometrine 500 microgram/mL **(see notes)**	250 micrograms **OR** 250-500 micrograms	Slow IV IM	Must only be given if oxytocin has been administered either as third stage prophylaxis or PPH treatment. Ergometrine can be repeated up to a maximum total of 1 mg, in the absence of contraindications.
	OR as an alternative to an oxytocin bolus and/or ergometrine bolus.			
	Oxytocin 5 units with ergometrine (Syntometrine®) 500 micrograms/mL	Give as 1 mL Syntometrine®	IM	Oxytocic combined with ergot derivative - longer acting combination therapy. A single repeat dose may be given if already administered as third stage prophylaxis
Early *(use both medications when bleeding not controlled)*	Tranexamic acid^ 100 mg/mL	1 gram	Slow IV	If bleeding persists after 30 minutes, a second dose may be administered
	AND			
	Carboprost# tromethamine 250 microgram/mL	250 micrograms	IM	Can be repeated at not less than 15 minutely intervals - (maximum of 8 doses)
Maintenance When bleeding is controlled *(use either medication to maintain tone)*	Oxytocin (Syntocinon®) infusion	40 units in 1 litre crystalloid	IV (given over 4 hours)	If commenced prophylactically, then this medication can be continued during the PPH and afterwards to maintain uterine tone
	OR			
	Misoprostol^ 200 micrograms	400 - 800 micrograms	Buccal / sublingual or rectal	Regardless of route of administration, misoprostol takes 1 to 2.5 hours to increase uterine tone

^Use of misoprostol and tranexamic acid for post-partum haemorrhage is considered off-label use. Ensure correct procedures are followed including the indication has been approved by the local Drug and Therapeutics Committee and informed patient (or delegate) consent is obtained (as per *Approval Process of Medicines for Use in NSW Public Hospitals*).

#Carboprost is only available for use in Australia under the Special Access Scheme (SAS). Hospitals will need to make arrangements through their individual pharmacy departments to ensure for availability and access to this product for emergency use. The prescriber will be required to complete a Category A form and obtain informed patient (or delegate) consent for use.

Adapted from NSW MoH GL2021_10