OBSTETRICS

Prevention and management of postpartum hemorrhage: a comparison of 4 national guidelines

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OBJECTIVE: The purpose of this study was to compare 4 national guidelines for the prevention and management of postpartum hemorrhage (PPH).

STUDY DESIGN: We performed a descriptive analysis of guidelines from the American College of Obstetrician and Gynecologists practice bulletin, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, the Royal College of Obstetrician and Gynaecologists (RCOG), and the Society of Obstetricians and Gynaecologists of Canada on PPH to determine differences, if any, with regard to definitions, risk factors, prevention, treatment, and resuscitation.

RESULTS: PPH was defined differently in all 4 guidelines. Risk factors that were emphasized in the guidelines conferred a high risk of catastrophic bleeding (eg, previous cesarean delivery and placenta previa). All organizations, except the American College of Obstetrician and Gynecologists, recommended active management of the third stage of labor for primary prevention of PPH in all vaginal deliveries. Oxytocin was recommended universally as the medication of choice for PPH prevention in vaginal deliveries. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists and RCOG recommended development of a massive transfusion protocol to manage PPH resuscitation. Recommendations for nonsurgical treatment strategies such as uterine packing and balloon tamponade varied across all guidelines. All organizations recommended transfer to a tertiary care facility for suspicion of abnormal placentation. Specific indications for hysterectomy were not available in any guideline, with RCOG recommending hysterectomy "sooner rather than later" with the assistance of a second consultant.

CONCLUSION: Substantial variation exists in PPH prevention and management guidelines among 4 national organizations that highlights the need for better evidence and more consistent synthesis of the available evidence with regard to a leading cause of maternal death.

Key words: guideline, management, postpartum hemorrhage, prevention

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Postpartum hemorrhage (PPH) is the most common cause of maternal death and is responsible for one-quarter of maternal deaths globally, totaling approximately 140,000 deaths annually.[1,2] Although PPH is common, with an incidence of 5-15% of births,[3,4] life-threatening bleeding, defined by the Royal College of Obstetrician and Gynaecologists (RCOG) as an estimated blood loss >2.5 L or receipt of >5 units of blood products or treatment for coagulopathy, which is estimated to occur in 3.7 per 1000 pregnancies.[5]

An important component of patient safety and the reduction of adverse outcomes includes the development of unambiguous guidelines.[6] Previous comparisons of national guidelines on topics such as vaginal birth after cesarean delivery,[7] intrapartum fetal surveillance,[8] fetal growth restriction,[9] and shoulder dystocia[10] have highlighted differences in definitions, causes, and recommendations. Because PPH is a leading cause of maternal morbidity and death, synthesis of national guidelines could inform schema to optimize peripartum outcomes. The purpose of this descriptive review is to compare 4 national guidelines and recommendations for 5 aspects of PPH: definition, risk factors, prevention, resuscitation, and treatment (nonsurgical and surgical).

Materials and Methods

The American College of Obstetrician and Gynecologists (ACOG) practice bulletin on PPH, guidelines from the

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TABLE 1
Summary of definitions, risk factors, prevention, and resuscitation recommendations among 4 national guidelines

Variable	American College of Obstetricians and Gynecologists (reaffirmed 2013)	Royal Australian and New Zealand College of Obstetricians and Gynaecologists (reviewed 2014)	Royal College of Obstetrician and Gynaecologists (2011)	Society of Obstetricians and Gynaecologists of Canada (2009)
Definition	>500 mL (vaginal)	>500 mL during puerperium	Minor (500 mL-1 L)	Any amount threatening hemodynamic stability
	>1000 mL (cesarean)	Severe postpartum hemorrhage >1000 mL	Moderate major (1-2 L)	
			Severe major (>2 L)	
Incidence	4-6% of pregnancies	5-15% in Australia	3.7/1000 (>5 units packed red blood cells)	5% of all deliveries
Prevention	Not discussed	Active management of third-stage labor	Active management of third-stage labor	Active management of third-stage labor
		Determine placental location	Determine placental location	Carbetocin 100 μg over 1 minute intravenously (cesarean or vaginal + 1 risk factor)
		Oxytocin, dose not specified	Oxytocin, 5 IU intravenous (cesarean delivery)	
			Ergometrine 0.5 mg/oxytocin 5 IU intramuscularly 2nd line	
Resuscitation	Ample intravenous access	"Massive hemorrhage protocol" activation	Intravenous access × 2	Intravenous access × 2
	Crystalloid	Venous thromboembolism prophylaxis	Crystalloid, rapid, and warmed	Crystalloid solution
	Blood as needed			
	Blood bank notification			Postpartum hemorrhage tray
Medical management				
Oxytocin-Syntocinon	10-40 units intravenous or 10 units intramuscularly	Dose not specified, intravenous/intramuscularly	5 units intravenous, may repeat, or 40 units intravenous in 500 mL at 125 mL/hr	10 units intramuscularly/ 5 units intravenous or 20-40 units intravenous at 500 to 1000 mL/hr
Carbetocin				100 μg intravenous over 1 minute
Ergots	Methyl-ergonovine 0.2 mg intramuscularly every 2-4 hr	Ergometrine, dose not specified	Ergometrine 0.5 mg intravenous or intramuscularly	Ergonovine 0.25 mg intramuscularly or intravenously every 2 hr
Prostaglandins F_{2a}-carboprost	0.25 mg intramuscularly every 15-90 minutes, 8 dose maximum	500 μg intramuscularly incrementally up to 3 mg	0.25 mg intramuscularly every 15, 8 dose maximum or 0.5 mg intramyometrial	0.25 mg intramuscularly every 15, 8 dose maximum
Prostaglandins E_2-dinoprostone	20 mg PV or PR every 2 hr			
Prostaglandins E_1-misoprostol	800-1000 μg rectal	1000 μg rectal	1000 μg rectal	400-1000 μg oral or rectal
Factor VIIa	50-100 μg/kg every 2 hr		Base on coagulation results	Not recommended
Tranexamic acid			Not recommended	Not recommended

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