Review of the Hospital Policy on Prevention of PPH

PPH Quality Improvement Team

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1 Introduction

This is the second phase of the improvement plan. It focuses on reviewing the Hospital's choice of uterotonic agent as well as its procurement, storage and utilization.

The first phase of the improvement plan (seminar/training of staff) was conducted on the 26th of July. Data collected since the seminar shows promising results as it appears that the impact of the seminar has not only led to improved care but also decrease incidence of Postpartum Haemorrhage. Measurements[1] are still ongoing and we should be able to present a comprehensive report soon.

2 Uterotonic Drugs

These are drugs that act directly on the smooth muscles of the uterus and increase the tone, rate, and strength of rhythmic contractions. They are used to reduce the amount of blood lost after childbirth by preventing or treating uterine atony. The use of a uterotonic drug immediately after delivery of the newborn is one of the most important actions used to prevent postpartum haemorrhage.

2.1 Common Uterotonic Drugs

2.1.1 Oxytocin

It is secreted naturally by the posterior pituitary gland during later pregnancy, labour, and during breast feeding. It acts to stimulate uterine contractions at the start of labour and throughout the birth process. When administered externally in moderate doses, it produces slow generalised contractions of the uterine wall muscles with full relaxation in between. It causes sustained tonic uterine contractions in high doses. *It is the WHO recommended uterotonic agent of choice[2].*

[1] outcome, balancing and process measurements

Dosage

- 10 International Units

Route

- Intramuscular

Drug action and effectiveness

- acts within 2 to 3 minutes
- effect lasts about 15 to 30 minutes

Side Effects

- no known contraindication for postpartum use[2]

Heat and light stability

- more stable than ergot-based uterotonic drugs to heat and light
- losses 14% of its potency by 1 year at room temperature of 30°C
- may be inactivated if exposed to high ambient temperature

2.1.2 Ergometrine

Ergot-based compound. It is not naturally occuring. It causes tetanic contractions of the uterus and may cause or exacerbate high blood pressure. It is useful in some patients who show poor response to oxytocin use.

[2]different guidelines apply when using it at other times for other reasons

Dosage

- 0.5mg

Route

- Intramuscular

Drug action and effectiveness

- acts within 6 to 7 minutes (has a slow onset of action)
- effect lasts 2 to 4 hours

Side Effects

- Contraindicated in women with hypertension, heart disease, retained placenta, pre-eclampsia or eclampsia
- may increase the risk of retained placenta.

Heat and light stability

- heat and light labile
- should be kept in the dark and refrigerated at 2 to 8°C

2.1.3 Misoprostol

Found naturally in the fatty acids of the uterus, menstrual fluids, and amniotic fluid. It is a prostaglandin E_1 analog used for a range of obstetric and gynaecological purposes including cervical ripening, induction of labour, prevention and treatment of postpartum haemorrhage.

Table 1: stability of uterotonic agents

	Oxytocin	Misoprostol	Ergometrine
Stability when exposed to heat*	2	1	3
Stability when exposed to light*	2	1	3

*Most stable: 1; least stable: 3

Dosage

- 600µg

Route

- Oral, par rectum

Drug action and effectiveness

- acts within 6 minutes
- peak serum concentration between 18 and 34 minutes
- effect lasts up to 75 minutes

Side Effects

- no known contraindication for prostaglandin use[3]
- common side effects are shivering and elevated body temperature

Heat and light stability

- stable to ambient temperature and light
- should be stored at room temperature away from excess heat and moisture.

[3]different guidelines apply when using it at other times for other reasons

Table 2: change in effectiveness of injectable uterotonic drugs after one year of controlled storage

uterotonic drug	dark (4-8°C)	dark (30°C)	light (21-25°C)	Effects of heat and light/key findings
oxytocin	0% loss	14% loss	7% loss	minimal effect from light, more stable for longer time at higher temperatures than ergometrine
ergometrine	5% loss	31% loss	90% loss	significantly more affected by heat and light, not stable at higher temperatures

3 Observations

Our observations are as follows:

- prior to the improvement phase of this project, the Hospital uses intramuscular injection of 0.5mg ergometrine as uterotonic agent for patients with normal blood pressure and 10 IU oxytocin IM for patients with elevated blood pressure
- post seminar/training, 10 IU oxytocin IM has become the uterotonic agent of choice for all patients
- the Hospital has a mixed supply of oxytocin vials (both the dark-coloured and the transparent vials)
- in the central store, uterotonic agents are stored on the shelf
- in the peripheral stores (delivery room, nursing desk, theatre) uterotonic agents are stored on the shelf (nursing desk) and in containers which have no covers (delivery room and theatre)
- oxytocin injections at the peripheral store are more than 2 years post production date[4]

[4]as at the time of compilation of this document

4 Recommendations

1. 10 IU oxytocin intramuscular injection as the uterotonic agent of choice in the management of third stage of labour in all women
2. the purchase of dark-colored vials, as opposed to transparent vials, of oxytocin
3. that the production date of purchased oxytocin should be as recent as possible, the quantity of which the Hospital should be able to consume within few months.
4. that the central store should have a refrigerator to keep the injections at 2-8°C
5. peripheral storage should be in a dark container with a tight cover away from exposure to direct sunlight and not longer than a month
6. injectible uterotonics should be withdrawn at about the time it is to be administered and not before.

5 Conclusion

Like all quality improvement plans, this phase implementation will go through the stages of Plan -> Do -> Study -> Act cycle. We hope to implement (Do) these recommendations this month, collect data (Study) for analysis next month and incorporate the lessons learnt (Act) in the formulation of the next phase of our plans.

We strongly believe the Hospital's target of PPH average of $< 10\%$ by December 2015 is achievable and that we are on track to making it a reality.

Once again, we want to thank you sir for believing in this project and giving us the opportunity to conduct this project and for believing in it.

References

[1] POPPHI. Prevention of Postpartum Hemorrhage: Implementing Active Management of the Third Stage of Labor (AMTSL): A Reference Manual for Health Care Providers. Seattle: PATH; 2007.

[2] WHO. WHO Recommendation for the Prevention and Treatment of Postpartum Haemorrhage. Geneva; 2012.

[3] USAID preventing postpartum haemorrhage online course