



Uterotonics for the Active Management of the Third Stage of Labor

Managing Uterotonics for AMTSL

Uterotonic medicines are used for both preventing postpartum hemorrhage (PPH) and treating hemorrhage. However, the active management of the third stage of labor (AMTSL) as a prevention intervention greatly reduces the need for additional medicines and expensive, frequently unavailable, and sometimes risky-to-transfuse blood products used to manage hemorrhage. The prevention focus thus saves lives, valuable financial resources, and time that health care workers must spend providing crisis health care.

Stability of Uterotonics

To deliver AMTSL effectively, uterotonic medicines, preferably oxytocin, must be on hand to give to the mother immediately after her baby is born. Although it requires refrigeration, oxytocin can be used for up to three months if stored at room temperature, depending on the manufacturer (check manufacturer's label). Ergometrine, another uterotonic, is heat and light sensitive, so it must be managed appropriately to protect quality and stability until it is administered. Syntometrine is a product combining oxytocin and ergometrine; therefore, it has the stability problems associated with ergometrine. To maintain proper temperatures, a "cold chain" must be in place to manage heat-sensitive medicines.

A cold chain is a system of refrigerators, cold boxes, and other devices such as cold packs that maintain the proper temperature for medicines from the point of manufacture

to the point of administration.¹ In addition, a system for monitoring temperatures at points along the cold chain (e.g., in refrigerators and freezers) should be operational. Many program planners and managers are already familiar with the concept of the cold chain, which is vital to the storage and distribution of vaccines.

A third type of uterotonics are the prostaglandins (type E1)—for example, misoprostol. Off-label recommendations have been given for use of misoprostol in the prevention of PPH; however, additional clinical studies to provide more information on its effect are ongoing.

Uterotonics Supply Management

Even well-trained service providers will not be able to provide quality care unless the availability of stable and effective uterotonics is assured. Effectively managing uterotonics requires careful product selection, procurement, storage, distribution, and use, supported by a policy and regulatory environment that promotes the widespread provision of high-quality products.

Program planners need to consider the following four key aspects of pharmaceutical management.

¹ Management Sciences for Health and World Health Organization. *Managing Drug Supply*. 2nd ed. (West Hartford, CT: Kumarian Press, 1997), 332.

Selection

It is critical that program managers choose the uterotonic that is appropriate for the available program conditions (see Table 1). For example, selection may be guided by the capacity of the supply system to maintain product quality; medicines requiring a cold chain should only be put into systems that can maintain a cold chain to safeguard effectiveness. Questions to consider are—

- What medicine storage conditions are recommended to protect product quality?
- Are the identified products registered for use in the given setting?
- Are standard treatment guidelines in place for the medicine(s) chosen?
- Are skilled providers charged with delivering AMTSL empowered to administer the medicine(s) of choice, and do they have the skills to properly perform injections and monitor side effects?
- Should more than one type of uterotonic be available in the system?

Procurement

Quantification is the first step in procurement. A careful analysis of the number of facilities, deliveries, and rates of program expansion should be made to estimate the quantity of medicines to be supplied. Because uterotonics are used for a variety of therapeutic purposes, such as induction of labor, prevention of PPH, and treatment of PPH, needs must be reasonably estimated given all available information on projected uses. When quantification has been completed, procurement specifications must be set.

Questions to consider are—

- What quantity of medicines must be available for program use?
- How much of the medicine can a program initially afford to buy?

- Are management information systems in place so that consumption patterns can be monitored? Does the program have the capacity to do a forward-looking quantification rather than one based on historical consumption?
- How are medicines currently procured, and will the procurement process and specifications need to be modified?
- Do procurement specifications include criteria to ensure product quality?
- Is the supplier willing to ensure that clear and understandable information on prescribing, administration, and storage is included with the product?
- Can the supplier guarantee that a reasonable amount of product shelf life will remain when the medicines are delivered?
- Can supplier performance be monitored?

Storage and Distribution

In places where refrigeration is difficult, to maximize access to the product, program managers may have to consider the possibility that oxytocin can be used for up to three months even when kept at room temperature (depending on the manufacturer). For uterotonic medicines that require more stringent refrigeration up to the time of use, the maintenance of a cold chain is an essential part of a product quality assurance system. Vials or ampoules should not be removed from refrigeration and left on trays for indefinite periods in anticipation of need. Issues to consider are—

- Do those facilities in which medicines will be either stored or provided have adequate cold chain equipment?
- Do facilities have the means to monitor the cold chain (e.g., thermometers and temperature charts)?

- Can the cold chain be maintained during transportation?
- Are pharmacy and storekeeping staff members trained in the proper means of storing and dispensing the medicines?
- What are the storage conditions at the health facility level?
- Do providers have a means of accessing refrigerated supplies 24 hours a day?
- For births that take place outside of health facilities, does the birth attendant have a means of safeguarding medicine quality?
- Are there routine mechanisms to check the product for quality?
- Are records kept on the length of time that medicines are removed from the cold chain?
- Would it be better to use a product that is not heat sensitive or less heat sensitive?
- Are expired medicines removed from the system?

Use

For AMTSL to be successful, uterotonics must be prescribed and dispensed properly. Issues to consider are—

- Have all providers been trained in the appropriate use of the uterotonics available in the program?
- Is it feasible to train all personnel rapidly?
- Who will provide training?
- Are personnel aware of side effects or special considerations for administration?

- Can personnel counsel and educate patients effectively about the medicine, including purpose, timing of administration, and potential side effects?

Conclusion

Availability of uterotonics is a key component of any AMTSL intervention. Oxytocin is the recommended first-line medicine for AMTSL because it is effective within two to three minutes, has minimal side effects, can be used in all women, and can be used for up to three months when stored at room temperature (depending on the manufacturer).

A feasibility assessment can determine the best approach for implementing AMSTL. The approach will depend on the skills of providers, the infrastructure, the policy that guides the purchase, the importation of medicines, and any financial constraints.

A proactive approach to managing medicine supply will help a program deliver quality services to prevent postpartum hemorrhage.

For further information, please contact—

Rational Pharmaceutical Management Plus Program

Center for Pharmaceutical Management
Management Sciences for Health
4301 North Fairfax Drive, Suite 400
Arlington, VA 22203-1627 USA

Telephone: (703) 524-6575
Fax: (703) 524-7898
E-mail: rpmpplus@msh.org
<http://www.msh.org/rpmpplus>



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Table 1. Considerations in Selecting a Uterotonic

Uterotonic	Storage Requirements	Advantages/Disadvantages
Oxytocin (IM injection)	<ul style="list-style-type: none"> • Store between 2°C and 8°C (36°F and 46°F) • Delivery room stock may be kept at room temperature—30°C for up to one year with an expected loss of about 14 percent. Also, light does not destabilize oxytocin² 	<ul style="list-style-type: none"> • Effective 2–3 minutes after injection • Minimal side effects • Can be used in all women • Reduces length of third stage of labor • Inexpensive
Ergometrine (IM injection)	<ul style="list-style-type: none"> • Store between 2°C and 8°C (36°F and 46°F) • Protect from light and freezing 	<ul style="list-style-type: none"> • Inexpensive • Effects last 2–4 hours • Contraindicated in women with pre-eclampsia, eclampsia, or high blood pressure • Effective 6–7 minutes after injection • Can cause nausea and vomiting • Requires stringent handling and storage conditions
Syntometrine (IM injection)	<ul style="list-style-type: none"> • Store between 2°C and 8°C (36°F and 46°F) • Protect from light and freezing 	<ul style="list-style-type: none"> • Combined effect of rapid action of oxytocin and sustained action of ergometrine; relatively more expensive than oxytocin and misoprostol but less expensive than prostaglandins • Contraindicated in women with pre-eclampsia, eclampsia, or high blood pressure • Can cause nausea and vomiting • Requires stringent handling and storage conditions
Prostaglandins (IM injection)	<ul style="list-style-type: none"> • Store between 2°C and 8°C (36°F and 46°F) 	<ul style="list-style-type: none"> • Can be used if first-line oxytocics are ineffective • Much more expensive than oxytocin • Significant side effects include diarrhea, vomiting, and abdominal pain • Contraindicated in women with active cardiac, pulmonary, renal, or hepatic disease
Misoprostol (oral tablet)	<ul style="list-style-type: none"> • Store at room temperature in a closed container 	<ul style="list-style-type: none"> • Additional clinical studies to provide more information on its use are ongoing

Note: IM = intramuscular.

² H. V. Hogerzeil, G. J. A. Walker, and M. J. de Goeje. *Stability of Injectable Oxytocics in Tropical Climates: Results of Field Surveys and Simulation Studies on Ergometrine, Methylethergometrine and Oxytocin*, WHO/DAP/93.6 (Geneva: World Health Organization, 1993).