Active Management of the Third Stage of Labor

Data obtained from National Health Network Hospitals In Honduras

July to August, 2006

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About POPPHI

POPPHI is a USAID-funded, five-year project focusing on the reduction of postpartum hemorrhage, the single most important cause of maternal deaths worldwide. The POPPHI project is led by PATH and includes four partners: RTI International, EngenderHealth, the International Federation of Gynecology and Obstetrics (FIGO), and the International Confederation of Midwives (ICM).

Commitment to Health: The Central American Federation of Associations and Societies of Obstetricians and Gynecologists

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Acronyms

AMTSL	Active management of the third stage of labor
SGOH	Society of Gynecology and Obstetrics of Honduras (Sociedad de Ginecología y Obstetricia de Honduras)
COMIN-FECASOG	Central American Federation of the Associations and Societies of Gynecologists and Obstetricians
FIGO	International Federation of Obstetricians and Gynecologists
ICM	International Confederation of Midwives
IM	Intramuscular injection
IV	Intravenous injection
MOH	Ministry of Public Health (Ministerio de Salud Pública; Secretaría de Salud)
POPPHI	Prevention of Postpartum Hemorrhage Initiative
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Postpartum hemorrhage is of the world's leading causes of maternal mortality. Active management of the third stage of labor (AMTSL) is a feasible and inexpensive intervention that can help save thousands of women's lives. AMTSL involves three basic procedures: the use of a uterotonic agent (preferably oxytocin) within one minute following the delivery of the baby, delivery of the placenta with controlled cord traction, and massage of the uterus after delivery of the placenta, with palpation of the uterus to assess the need for continued massage for the two-hour period following delivery of the placenta. Based on conclusive evidence from clinical trials, the International Confederation of Midwives (ICM) and the International Federation of Gynecology and Obstetrics (FIGO) issued a joint statement in 2003 stating that every woman should be offered AMTSL as a means of reducing the incidence of postpartum hemorrhage.[1] The World Health Organization (WHO) Making Pregnancy Safer Technical Update on Prevention of Postpartum Haemorrhage by AMTSL recommends that "AMTSL should be practiced by all skilled attendants at every birth to prevent postpartum haemorrhage."[2]

Currently, very little is known about the actual practice of AMTSL. The aim of this study is to provide ministries of health and their international partners with the descriptive information necessary to assess AMTSL practices and identify major barriers to its use. Specifically, the study asks:

1. In what proportion of deliveries is AMTSL used nationally?
2. What practices are in place that do not conform with the FIGO/ICM definition of AMTSL?
3. What are the facility- and policy-level barriers and facilitators to the use of AMTSL?

To answer these questions, a nationally-representative sample of facility-based deliveries was observed; clinical care guidelines, the Essential Drug List and medical and midwifery school curricula were reviewed; the central pharmaceutical storage site, as well as pharmacies in health facilities selected for the study, were visited; and interviews were conducted with hospital directors and pharmacists.

The results of this study show that oxytocin was used during the third and fourth stages of labor in 96 percent of the observed deliveries. The third stage of labor begins with the birth of the baby and ends with the delivery of the placenta, and the fourth stage of labor is the first postpartum hour, which begins after the delivery of the placenta. The use of AMTSL as defined by FIGO/ICM was applied in 4.5 percent of all observed deliveries. AMTSL use varied considerably from one region to another, with nearly all use concentrated in the Atlantico coastal region. Several factors explain the low use of AMTSL relative to the nearly universal use of oxytocin during the third and fourth stages of labor. These factors include: administration of oxytocin following delivery of the placenta versus following delivery of the baby; a delay in the administration of oxytocin when it is administered after the delivery of the baby, lack of controlled cord traction, the lack of uterine massage applied immediately after delivery of the placenta, and a particularly low practice of palpation of the uterus following the delivery of the placenta to assess the need for continued massage. Clearly, attention is needed to address nearly all of the components of correct use of AMTSL.

This study also documented four potentially-harmful practices during the third and fourth stages of labor. These include: the application of fundal pressure while awaiting the placenta, uterine massage following delivery of the baby, application of cord traction without previous administration of a uterotonic, and application of cord traction without manual support of the uterus. In Honduras, the first three of these practices were observed in 30 to 50 percent of deliveries. Rarely was cord traction applied without prior administration of a uterotonic (4 percent), since 96 percent of deliveries received a uterotonic during the third stage of labor.

The policy environment in Honduras is mixed in its support of AMTSL. Both oxytocin and ergometrine are on the Essential Drug List, and the recently revised National Guidelines for Neonatal Maternal Health from 2005 describe in detail the components of AMTSL. However, these guidelines have not been disseminated broadly, as was evidenced by facilities with outdated guidelines. Equally important, the pre- and in-service curricula for doctors and nurses do not currently include AMTSL nor do the training materials for residents in obstetrics and gynecology.

There are no general recommendations regarding storage of uterotonic drugs in the national guidelines, and this contributes to the inconsistencies in storage conditions observed at the national level.

Regarding the availability of uterotonic drugs, the central warehouse for pharmaceuticals for the Ministry of Public Health had an adequate stock of oxytocin and ergometreine, both of which were being stored in temperatures ranging from 2 to 8° C. However, the recommendations regarding storage temperature varied substantially by manufacturer, which merits further discussion among Ministry planners. Not surprisingly, at the facility level, these drugs were stored at varying temperatures up to 25°C, though none was observed to be stored at room temperature. Stockouts of oxytocin during the three-month period before the survey were documented in approximately 10 percent of health facilities.

Recommendations

The key recommendations arrived at during the development of this study are summarized below:

Policies

1. The *Norma Nacional de Atención de Salud Materno Neonatal 2005* (National Guidelines for Neonatal Maternal Health 2005) must be available at all times for health providers in all hospitals nationwide.
2. The definition and application of all AMTSL components must be disseminated in all hospital centers and to each health provider to emphasize the use of this practice.

3. A standard curriculum needs to be developed for training undergraduate medical and nursing students, postgraduate students in gynecology and obstetrics, as well as for schools in charge of training health personnel.
4. Create a mechanism to communicate the need to include AMTSL to every initiative and non-governmental reproductive health program in the country.

Health Providers/Practices

5. Identify the providers who do not have the correct knowledge and skills to provide AMTSL and those who have knowledge and skills but do not practice AMTSL. Use the following interventions, as appropriate:
    a. Provide hands-on, practice-based AMTSL training for health care providers in all the country's public network hospital units for those not skilled in the practice of AMTSL.
    b. Identify barriers, including motivation, that impede use of AMTSL, and address these barriers with behavior change interventions
6. Standardize the curriculum used for training different health providers in AMTSL and ensure that it is competency-based.
7. Implement a training plan in AMTSL at the national level for standardized and competency-based in-service training of health care providers at the different health units.
8. Print posters that describe each AMTSL component, and disseminate them to all delivery rooms nationwide.

Logistics

9. Review and update the procedures for the procurement and distribution of uterotonic drugs, particularly oxytocin and ergometrine, to make sure that all hospitals have adequate supplies of the drugs in order to provide AMTSL to all women during delivery.
10. Update the Essential Drug List to include misoprostol as a uterotonic drug to make it available at all national hospitals. Note that it is already included in the *Norma Nacional de Atención.*

Monitoring and Evaluation

11. Create an evaluation system for hospitals that frequently monitor the application of AMTSL. Regional and local authorities must receive training in AMTSL and the practice should be included as a hospital quality indicator.
12. Add a column or space to the birth registry books indicating if AMTSL was applied to each assisted delivery.
13. Implement clinical audits focused on AMTSL use.

In summary, AMTSL has very low use in Honduras, with less than 5 percent of health providers using the procedure correctly. With adequate supplies of uterotonic drugs at the national level,

efforts must be focused on training and attitude of the health providers to increase its use. Much work lies ahead, and the adoption and consistent use of AMTSL nationwide will have direct implications on the reduction of the country's maternal mortality ratio.

1. Background

Postpartum hemorrhage is one of the world's leading causes of maternal mortality. Active management of the third stage of labor (AMTSL) is a feasible and inexpensive intervention that can help save thousands of women's lives.

AMTSL involves three main components:

- The use of a uterotonic agent within one minute following the birth of the baby.
- Delivery of the placenta with controlled cord traction.
- Massage of the uterus after delivery of the placenta.

This definition is supported by the International Federation of Gynecology and Obstetrics (FIGO), the International Confederation of Midwives (ICM)[1] and the World Health Organization (WHO).[2] This definition differs from the original research protocol in the Bristol[3] and Hinchingbrooke[4] trials, because the original protocols include immediate cord clamping and did not include massage of the uterus. The FIGO/ICM joint statement and *Managing Complications in Pregnancy and Childbirth*,[5] produced by the WHO, do not include immediate cord clamping.

Clinical trials in developed countries have shown that the use of AMTSL significantly reduces postpartum hemorrhage, in contrast to physiologic management of the third stage of labor where oxytocic drugs are not used and the placenta separates spontaneously and is delivered by gravity and maternal effort. When compared to AMTSL, the use of physiologic management has a higher rate of postpartum hemorrhage and severe postpartum hemorrhage, greater need for blood transfusion and therapeutic oxytocics, and a longer duration of the third stage of labor. A Cochrane review of these trials concludes by recommending AMTSL for all women delivering in a hospital and anticipating the vaginal birth of a single infant.[6]

Endorsement and use of AMTSL

Based on this body of evidence, ICM and FIGO issued a joint statement in November 2003 stating that every woman should be offered AMTSL "as a means of reducing the incidence of postpartum hemorrhage due to uterine atony."[1] The inclusion of AMTSL in the WHO evidence-based manual *Managing Complications in Pregnancy and Childbirth* also attests to the international acceptance of this practice as the standard of care.[5]

Evidence regarding adoption of this practice, however, is limited. Evaluations of donor-funded projects incorporating AMTSL tend to be limited to reporting on the numbers of providers trained and the percent achieving competence following training. Apart from anecdotal information, a 2003 article by the Global Network for Perinatal and Reproductive Health[7] offers a limited glimpse into the adoption of this practice. Their results, based on an evaluation of 15 university-based referral obstetric centers in developed and developing countries, show substantial variation between and within hospitals. Overall, only 25 percent of observed deliveries included AMTSL. Only one (in Dublin, Ireland) consistently used all three components of the practice. Variation in the prophylactic use of oxytocic drugs ranged from 0 to 100 percent; the practice of controlled cord traction ranged from 13 to 100 percent; and the

number of women who received additional doses of oxytocin during the third stage of labor ranged from 5 to 100 percent. There is insufficient evidence for drawing conclusions about the effectiveness of this practice in its altered states. These results do suggest, however, that the use of AMTSL is quite low, and, where it is practiced, the definition varies within and between countries.[7]

Since 1997, the Safe Motherhood Initiative has stated that maternal mortality is an issue of health infrastructure. AMTSL is a highly measurable, evidence-based, life-saving aspect of this health infrastructure. Given that postpartum hemorrhage is a leading cause of maternal death in many countries with high maternal mortality, there is an important and urgent need for information from these countries on current practices regarding AMTSL.

About this study

As a complement to work undertaken by the Global Network for Perinatal and Reproductive Health, these surveys have been carried out to advance understanding of current AMTSL practices in East Africa (Ethiopia and Tanzania), West Africa (Benin), Asia (Indonesia), and Central America (El Salvador, Guatemala, Honduras, and Nicaragua). Surveys are underway in Uganda and Ghana. This report focuses on Honduras, where maternal mortality is estimated at 108 per 100,000 live births according to data obtained from the General Health Surveillance Authority (*Dirección General de Vigilancia de la Salud)*, with postpartum hemorrhage as the leading cause of maternal death, followed by hypertensive disease of pregnancy. The percent of births delivered in public health facilities is 61 percent, with an additional five percent occurring in private-sector institutions,[8] suggesting that nearly two-thirds of births that take place in a facility could potentially benefit from AMTSL.

The ten country AMSL surveys focus on policy, provider-related factors, and supplies and logistics. When viewed together, these components provide important insights on routine use of AMTSL (Figure 1.1).

Policy

At the national level, a number of influences determine the priority given to AMTSL. For example, given that AMTSL has been a standard of care in the United Kingdom (UK) for many years, some researchers have hypothesized that AMTSL is more common in former UK colonies and among providers who have trained in the UK. Likewise, effective leaders from national or international agencies may have been able to influence national policies, the inclusion of drugs in the essential drug list and country formulary, and health provider education regarding AMTSL. In turn, such training may influence facility-based policies and behavioral expectations.

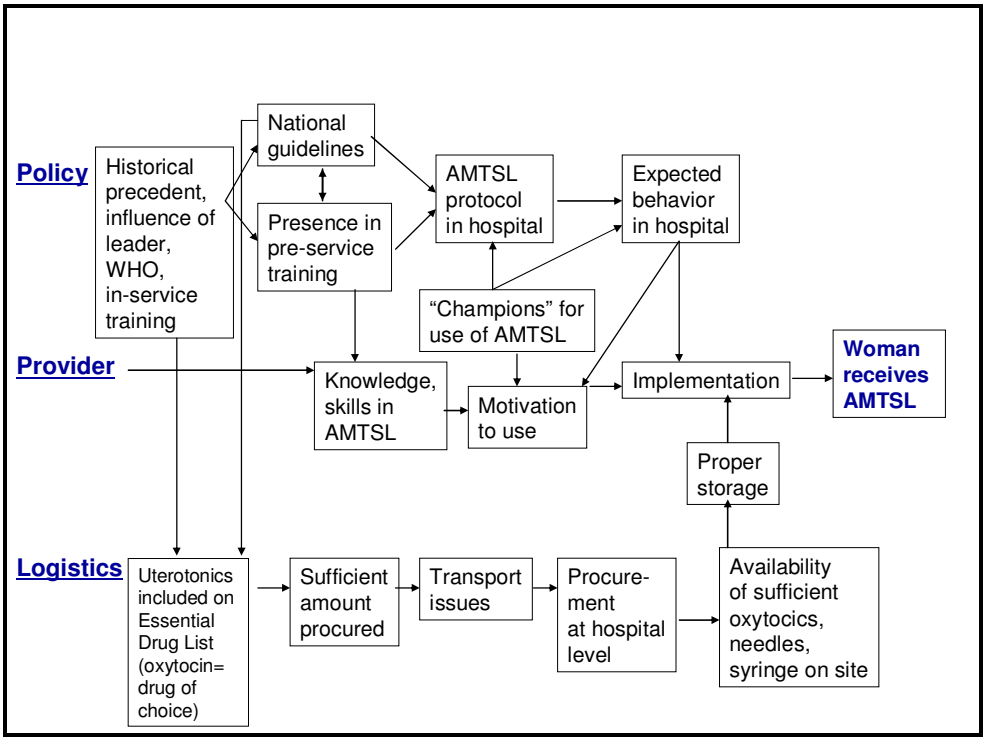
Provider-related factors

The knowledge and skills required to perform AMTSL are essential for routine use of the practice. Provider motivation, which is influenced by facility-based behavioral expectations, also is key.

Supplies and logistics

The sufficient availability of high-quality uterotonic drugs, needles, and syringes at national and local levels is essential for routine use of AMTSL. Effective use of AMTSL also requires appropriate conditions during transport and storage to ensure the use of chemically-active drugs and safe, sterile needles and syringes.

Figure 1.1 Determinants of the routine use of AMTSL.



The aim of this study is to provide ministries of health (MOHs) and their international partners with the descriptive information necessary to assess AMTSL practices and identify major barriers to its use. The findings will inform interventions that improve adoption and implementation of AMTSL.

The study's specific research questions are as follows:

1. For what proportion of deliveries is AMTSL used at a national level? Which components of AMTSL (e.g., prophylactic use of oxytocic agents, controlled cord traction, and fundal massage) are practiced, and how consistently are they practiced?
2. Is AMTSL formally promoted in the Standard Treatment Guidelines (STGs) in each country at national and/or facility levels? If so, since when? How is AMTSL defined in the standards?
3. How is the need for AMTSL drugs quantified at national and facility levels?

4. Which uterotonic drug (e.g., oxytocin, ergometrine, or a prostaglandin) is used? How is it stored?
5. At the facility level, is enough oxytocin available to allow for routine use of AMTSL?
6. What are the major barriers to correct use of AMTSL, as defined by WHO and FIGO/ICM in their joint statement on prevention of postpartum hemorrhage?

2. Methods

This study is part of a multiple country study to assess use of AMTSL among facility-based deliveries. The development of the study was a participatory process that involved an initial expert meeting in Washington, DC in May 2005 to elicit feedback on the draft protocol, a planning workshop in Nairobi, Kenya in July 2005 for the first two country studies, and planning workshops in Panama and El Salvador in January and February 2006 with representatives of the Central American Federation of the Associations and Societies of Gynecologists and Obstetricians (COMIN-FECASOG) to further refine the protocol and questionnaires before the beginning of data collection in El Salvador, Honduras, Nicaragua, and Guatemala.

Before collecting data, the protocol for the study was submitted and approved by the *Secretaría de Salud* (Ministry of Public Health) of Honduras. After this approval, the protocol was submitted to the Committee for Human Research of the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. Informed consent for this study consisted in explaining it and obtaining approval from women admitted to delivery rooms. Personal identifiers were not recorded. The Johns Hopkins Committee on Human Research determined the protocol to be exempt from review for research on human subjects because personal identifiers were not collected and because the procedures observed are considered standards of care. PATH deferred to Johns Hopkins School of Public Health for review. The MOH in Honduras did not consider review by local ethics committees to be necessary for this study.

Questionnaire development

The processes and outcomes identified in the conceptual framework for the study (Figure 1) determined the content and number of questionnaires required for the study. In all, three questionnaires were developed:

- **National-level questionnaire.** This questionnaire was designed to capture the policy environment for AMTSL. It includes questions regarding the content of the essential drug list, standard treatment guidelines, pre-service training curricula, procurement practices for uterotonic drugs, and storage conditions for uterotonic drugs at the central pharmaceutical storage site. Completing this questionnaire required document review, interviews with MOH staff and other policymakers, and a visit to the pharmaceutical storage site. The study's country coordinator conducted the national-level questionnaire.
- **Facility-level questionnaire.** This questionnaire was designed to capture the policy environment at the individual facility level. It includes questions on the availability of an Essential Drug List and clinical guidelines in the facility, provision of in-service training (including AMTSL), the cost of uterotonic drugs to the facility and to patients, access to the facility pharmacy, procurement practices for uterotonic drugs, and supply and storage conditions at the facility. Completing this questionnaire required interviews with hospital administrators and the pharmacist and a visit to the facility pharmacy. One of the two members of the data-collection team completed this questionnaire during his/her visit to selected facilities.

- **Observation-of-deliveries questionnaire.** This questionnaire was designed to document provider practices during the third stage of labor and the first 30 minutes of the fourth stage of labor for all vaginal deliveries. It was based on the questionnaire used in the study by Festin et al.[7] The questionnaire documents the availability of uterotonic drugs and other supplies in the labor and delivery unit as well as storage conditions for uterotonic drugs. Members of the data collection team completed the questionnaire, which required observing deliveries, during their visit to selected facilities.

Training for data collectors

A group of eight data collectors were trained to observe deliveries in selected health facilities. The team was made up of six general practitioners and two professional nurses. The country coordinator, assisted by a gynecologist, carried out the three-day training session between July 26 and 28, 2006 in Tegucigalpa, Honduras. The training involved lectures, a visual CD-ROM presentation on AMTSL, demonstrations and practice using an anatomical model, and field practice that provided an opportunity to pretest the questionnaires and supervise the observers. Following the pretest, minor modifications were made to the questionnaires before beginning on-site work.

Sample Design

A nationally-representative sample of approximately 200 facility-based deliveries was required to meet the aim of the study described in the methodology section. Sample size calculations assumed a prevalence of 30 percent, a 90 percent response rate, and a design effect of two. Due to budgetary and logistical concerns, the sample was restricted to public facilities. Honduras has 25 public hospitals, and they were all selected for this study. Therefore, all the country's geographical areas are represented.

A team of two observers visited each selected hospital for two days. Each observer observed all deliveries that took place over an eight-hour period during the first and second day. This allowed us to have a continuous daily (7 a.m. to 11 p.m.) observation period for two days. Given that all selected hospitals had at least two deliveries per day, the anticipated sample size was approximately 340 deliveries. A total of 221 deliveries were observed.

To ensure a nationally-representative sample of deliveries, weights were calculated for use during analysis. When the number of deliveries observed in a facility over the two-day period is not proportional to the reported annual number of deliveries in that facility, weights will correct for this over- or under-representation. The weighted number of observed deliveries is 221. All of the tables in this report show weighted values for n.

Fieldwork

Four teams of two observers carried out the fieldwork from July 31 to August 19, 2006. Their activities consisted of contacting hospital authorities and conducting the observations and interviews previously described.

Data entry and analysis

The study team adapted the data entry programs developed for the global survey to the finalized Honduran questionnaire. An experienced EpiInfo (version 3.3.2) programmer performed all data entry using independent double data entry and initiated the preliminary data cleaning process. The final data cleaning was carried out during an analysis workshop held in Baltimore, Maryland from December 11 to 19, 2006. The team carried out the data analysis using STATA 9.1 software.

3. Findings regarding national- and facility-level policies and logistics

The national-level policy environment

This chapter summarizes information describing the policy environment and logistical support for AMTSL at the national and facility-levels.

National Standard Treatment Guidelines

The study team reviewed the National Norms for Maternal-Neonatal Care (*Norma Nacional de Atención-Salud Materna Neonatal)*, which were published in 2005 by the Secretariat of Health in Honduras, with support from USAID, JHPIEGO, and WHO. These norms clearly define the use AMTSL and all of its components and meet the criteria outlined for correct use by FIGO/ICM. This information is contained in a specific chapter on postpartum hemorrhage which also discusses the use of ergometrine and misoprostol as second-line drugs for AMTSL use.

Essential Drug List

Oxytocin and ergometrine are registered in Honduras and included on the Essential Drug List. Misoprostol is not included on the Essential Drug List as a uterotonic, though it is included for peptic ulcer. Given its uterotonic qualities, the two largest hospitals in Honduras are authorized to request misoprostol for uterotonic purposes from the central drug warehouse.

Availability and storage of uterotonic drugs

Adequate amounts of oxytocin and ergometrine were observed at the central warehouse, the drugs were stored at between 2 and 8° C, as recommended by some manufacturers. However, recommendations for storage of these drugs varied by manufacturer, with some recommending less than 15° C, some less than 25° C, and in one case, “in a storeroom”. None of the manufacturers gave recommendations regarding the light conditions for storage of oxytocin or ergometrine. Testing of the active ingredient, the pH, and sterility is conducted on a sample of drugs upon receipt at the central warehouse.

Pre-service training in AMTSL

The curricula for medical and nursing schools do not currently mention AMTSL nor does the curriculum for postgraduate residents specializing in gynecology and obstetrics.

The facility-level policy environment

For each of the 25 health facilities selected in the sample, the data collectors interviewed the director of the health facility or other responsible staff and the pharmacist and visited the pharmacy to record the availability and storage conditions of uterotonic drugs. The results of these visits are summarized below.

Availability of clinical guidelines specific to AMTSL

A variety of different clinical guidelines were available in the health facilities visited for this sample. See Table 3.1. Some facilities had a copy of the national norms, some had a copy of norms that were out of date, and some had a copy of the WHO manual: *Managing Complications in Pregnancy and Childbirth*. Overall, 76 percent of health facilities had clinical guidelines available at the time of the visit. However, only about half of the facilities had guidelines which specifically mention AMTSL and all of its components.

Table 3.1. Percent of health facilities with available protocols, clinical guidelines, or obstetric care standards that include AMTSL

Type of facility	Protocols, clinical guidelines, or obstetric care standards are available (%)	Protocols, obstetric care guidelines include AMTSL (%)	Oxytocin mentioned as the drug of choice for AMTSL (%)	Controlled cord traction is mentioned or defined (%)	Uterine massage of the fundus is mentioned and specified (%)	n of health facilities
National/central hospital	66.7	33.3	33.3	33.3	33.3	3
Regional/provincial hospital	83.3	50.0	50.0	50.0	50.0	6
District hospital	75.0	56.3	56.3	56.3	56.3	16
Total %	76.0	52.0	52.0	52.0	52.0	25

Accessibility of the pharmacy and pharmaceuticals at the facility level

All of the health facilities visited had pharmacies located within the health facility. All of the facilities procure oxytocin, and nearly all (96 percent) of these facilities had oxytocin in stock at the time of the visit. Eighty percent of facilities procure ergometrine, and 68 percent of facilities had ergometrine available at the time of the visit. Most facilities reported that the procurement quantity for both drugs was determined by previous consumption. See Table 3.2.

The average price to the facility per ampoule of oxytocin was 2.03 Honduran lempiras (HNL) (US$0.10) and 7.5 HNL (US$0.37) for ergometrine. Some problems with the supply of uterotonic drugs were noted but seem limited to a small percentage of facilities. For example, 12 percent of facilities reported a stockout of oxytocin with the last three months, with four percent lasting for less than 15 days and eight percent lasting 15 days or more. In contrast, eight percent of facilities reported having a stock of oxytocin sufficient for one year or more based on their current levels of consumption. Twelve percent of facilities reported a stock of ergometrine sufficient for one year or more.

Table 3.2 Uterotonic procurement, availability, and cost

	% of facilities n = 25	
	Oxytocin (%)	**Ergometrine (%)**
Facilities which normally procure uterotonic drugs	100.0	80.0
% of facilities with a uterotonic drug available at the time of visit	96.0	68.0
Method for determining quantity to procure		
Based on previous consumption	68.0	52.0
Determined by the central level	32.0	28.0
Other	0.0	0.0
Does not procure drug	0.0	20.0
Average cost in US$ per ampoule/tablet	$0.10	$0.37
Average cost in HNL per ampoule/tablet	2.02 HNL	7.5 HNL
Availability of stock		
< 1 month	32.0	8.0
1-2 months	28.0	16.0
3-4 months	16.0	8.0
5-8 months	12.0	4.0
12+ months	8.0	24.0
Drug not available at time of visit	4.0	32.0
Missing data	0.0	8.0
Number of days of stockout		
0 days	88.0	Data not available
1-15 days	4.0	
15+ days	8.0	

Storage conditions for uterotonic drugs at the facility level

Given that uterotonic drugs at the central warehouse were found to be provided by a variety of different manufacturers, with varying recommendations about storage requirements, it was not surprising that the same was documented at the facility level. Actual storage temperatures and light conditions also varied at the facility level, though the data collectors did not see oxytocin or ergometrine being stored at room temperature, nor in direct sunlight, in any of the facility pharmacies. About half (48 percent) of facilities stored oxytocin and a third (32 percent) stored ergometrine between 2 to 8ºC. Eighty-four percent of facilities stored oxytocin in darkness and 60 percent of facilities stored ergometrine in darkness. See Table 3.3.

Table 3.3. Percent distribution of uterotonic drugs by recommended and actual storage conditions and procurement procedures

	% of facilities n=25	
	Oxytocin (%)	**Ergometrine (%)**
% of facilities with uterotonic drugs available at time of visit	96.0	68.0
Manufacturer recommended storage temperature:		
2-8°C	32.0	40.0
<15°C	4.0	4.0
15-25°C	60.0	16.0
None at time of visit	4.0	32.0
Missing data	0.0	8.0
Manufacturer recommended lighting:		
Not indicated	28.0	16.0
Away from direct light	68.0	52.0
None at time of visit	4.0	32.0
Actual storage temperature:		
2-8°C	48.0	32.0
<15°C	8.0	4.0
15-25°C	40.0	32.0
None at time of visit	4.0	32.0
Actual light conditions:		
Darkness	84.0	60.0
Away from direct light	12.0	8.0
None available at time of visit	4.0	32.0

In-service training at the facility level

In the 12 months preceding the study, 36 percent of the selected health facilities provided in-service training on AMTSL for medical doctors, 44 percent for nurses, and 16 percent for

traditional birth attendants. However, since the training materials for AMTSL are not standardized, it is not possible to comment on the content or quality of these training activities.

4. Findings regarding the management of the third stage of labor

The principle objectives of this study were to measure the use of AMTSL according to FIGO/ICM criteria and to measure current practices regarding the management of the third and fourth stages of labor outside of this definition. This section describes the management of the third and fourth stages of labor by focusing on (1) the overall use of uterotonic drugs; (2) the timing, mode of administration, and dose of these drugs; (3) practices in use of the individual components of AMTSL; (4) the correct use of AMTSL; and (5) the observation of potentially-harmful practices.

Study sample

The study team observed a total of 221 deliveries in 25 health facilities. Table 4.1 describes the characteristics of the facilities and women associated with these deliveries. As described in Chapter 2, the numbers (n's) in all tables in this report are weighted.

The large majority of observed deliveries were more or less equally distributed between provincial and district hospitals (40 percent and 45 percent, respectively). Fifteen percent of deliveries were in the central referral hospital. Three-quarters of the deliveries took place in health facilities with fewer than 3,000 deliveries annually. All geographic regions of Honduras are represented, with 40 percent of deliveries in facilities in the central, east, and south regions and 41 percent in the north and west regions. Approximately one-fifth took place in Atlantico region.

More than two-thirds of the deliveries were attended by a physician, with two percent by obstetricians, 17 percent by general practitioners or other physicians (including residents), and 40 percent by Social Service physicians (eighth year medical students providing community service for one year). Professional and auxiliary nurses were responsible for slightly less than one-third of deliveries (29 percent). Virtually all observed deliveries were assisted by more than one provider (99 percent) (data not shown).

Approximately one-third of deliveries (36 percent) were to women under the age of 20, and 41 percent were first deliveries. Very few (5 percent) of the observed deliveries were to high-parity women. The use of uterotonic drugs is very common in Honduras. 42.8 percent of deliveries received a uterotonic during the second stage of labor (10.5 percent for induction and 32.3 percent for augmentation). Virtually all deliveries (96 percent) received oxytocin during the third or fourth stages of labor.

Table 4.1. Percent distribution of observed deliveries by characteristics of the health facility and the woman

Characteristics of the facility	%	n	Characteristics of the woman	%	n
Type of facility			**Woman's age (years)**		
Central referral hospital	14.5	32	<20	35.6	79
Regional/provincial hospital	40.0	89	20-34	57.9	128
			35+	6.5	14
District hospital	45.5	100			
Deliveries per year			**Parity**		
<3000	74.3	164	0	41.8	92
3001-4000	9.5	21	1	27.5	61
> 4000	16.2	36	2-4	25.5	56
			> 5	5.2	12
Region			**Time of birth**		
Central, East, South	39.8	88	3 pm to 11 pm	44.5	98
North, West	40.8	90	7 am to 3 pm	55.5	123
Atlantic	19.4	43			
Provider qualification			**Received uterotonic drug prior to 3rd stage of labor for:**		
Obstetrician	1.8	4			
General practitioner/resident	17.2	38			
Nurse	29.0	63	Induction	10.5	23
Medical Intern	12.0	27	Augmentation	32.3	71
Social Service doctor	40.0	89	Spontaneous, no drugs before 3rd stage of labor	57.2	127
Academic –Non academic			**Received uterotonic drug during 3rd / 4th stage of labor for:**		
Academic	9.5	21			
Non-academic	90.5	200			
			Oxytocin only	95.5	211
			Oxytocin and ergometrine	0.1	0
			No uterotonic	4.4	10
TOTAL	**100.0**	**221**	**TOTAL**	**100.0**	**221**

Components of AMTSL

This section of the report describes the use of the various components of AMTSL among observed deliveries. It also describes the practice of AMTSL as defined by FIGO/ICM, which includes all of the following components:

1. Administration of 10 IU of oxytocin (the drug of choice) via intramuscular (IM) injection within one minute of the delivery of the baby. Where oxytocin is not available, 0.2 mg of ergometrine administered via IM injection is recommended
2. Controlled cord traction (gentle traction of the cord with manual support to the uterus).
3. Immediate uterine massage following delivery of the placenta and palpation of the uterus to assess the need for continued massage every 15 minutes for two hours following delivery. For logistical ease, we have defined correct uterine massage as immediate massage following

delivery of the placenta, followed by palpation of the uterus every 15 minutes for the first 30 minutes after delivery of the placenta.

Correct use of uterotonic drugs for AMTSL

The first component of AMTSL is the correct use of uterotonic drugs. Four criteria must be met for the correct use of a uterotonic drug. These are:

1. Correct mode of administration: the uterotonic drug should be administered IM. If the woman has been induced or augmented, administration via IM injection, intravenous drip, or intravenous push are also considered correct.
2. Correct dose: 10 IU of oxytocin or 0.2mg of ergometrine.
3. Correct stage of labor: uterotonic is to be administered following the delivery of the baby.
4. Correct timing: uterotonic is to be administered within one minute following the delivery of the baby.

Table 4.2 describes the four criteria that constitute correct use of a uterotonic for AMTSL purposes. In this case, oxytocin was the only uterotonic used. Although 96 percent of all observed deliveries received oxytocin during the third or fourth stages of labor, only about half were administered the drug following delivery of the baby, as is recommended for AMTSL purposes. Forty-three percent of deliveries received the uterotonic during or following delivery of the placenta. One-quarter of deliveries received the uterotonic within one minute of delivery of the baby. Expanding the criteria for correct timing of administration of the uterotonic to within three minutes of delivery of the baby did not change this percentage. The mode of administration and dose of oxytocin appear to pose much less of a problem. More than three-quarters of deliveries met the criteria for correct mode of administration, and 87 percent received the correct dose of oxytocin.

Table 4.2. Percent distribution of deliveries by correct use of oxytocin for AMTSL purposes

Components of the use of oxytocin for AMTSL purposes	% of deliveries 95% confidence intervals	n of deliveries
Any use of oxytocin during the 3rd or 4th stages of labor	95.6 (86.0-98.8)	211
No use of a uterotonic during the 3rd or 4th stages of labor	4.4	10
Correct administration of oxytocin for AMTSL purposes	76.9 (61.2-87.6)	170
Incorrect administration	18.6	41
Not used	4.5	10
Correct dose of oxytocin for AMTSL purposes (10 IU)	87.3 (72.3-94.7)	193
2, 3, or 5 IU	6.3	14

20, 25, or 30 IU	2.2	5
Not used	4.5	10
Administration of oxytocin at correct stage of labor (after delivery of the baby)	51.4 (33.3-69.2)	114
During delivery of the baby	0.9	2
During delivery of the placenta	10.4	23
After delivery of the placenta	32.6	72
Not used	4.5	10
Correct timing at which oxytocin was administered (≤1 minute)	25.1 (13.8-41.2)	55
Incorrect timing/ no information	70.4	156
Not used	4.5	10

Controlled cord traction and uterine massage

Controlled cord traction was used in 44 percent of observed deliveries, fundal massage immediately following delivery of the placenta was used in 39 percent, and fundal massage, plus palpation at least twice during the 30 minutes following delivery of the placenta was used in only six percent of observed deliveries. The fact that fewer than one in two deliveries receive immediate massage following delivery of the placenta, and one in 17 deliveries receive this massage followed by palpation to assess the need for continued massage suggests very low surveillance of postpartum women in Honduran hospitals. See Table 4.3. Few differences were shown by characteristic of the facility and woman (data not shown).

Table 4.3. Percent of deliveries with controlled cord traction and uterine massage following delivery of the placenta

Additional components of AMTSL	% of deliveries 95% confidence intervals N=221
Controlled cord traction	44.4 (33.2-56.3)
Immediate uterine massage following delivery of placenta	38.7 (24.3-55.5)
Immediate uterine massage following delivery of placenta plus palpation every 15 minutes for 30 minutes	6.1 (2.1-16.4)

Use of AMTSL

The results of this study show that only four percent (95 percent confidence intervals, 1.2 to14.8 percent) of public facility-based deliveries in Honduras benefit from AMTSL. Relaxing the definition to include the administration of oxytocin within three minutes instead of one minute after the delivery of the baby had no effect on the percent of deliveries with AMTSL. See Table 4.4.

Table 4.4. Percent of observed deliveries with correct AMTSL use

	% with Correct AMTSL use (<=1 min)
Percentage (95% CI)	4.5 (1.2-14.8)
n of deliveries	221

As a means of identifying where efforts are most needed to improve compliance with the FIGO/ICM definition of AMTSL, Figure 4.1 shows the percentage of observed deliveries during which a uterotonic was given during the third or fourth stage of labor in the left-most column (96 percent). Each column to the right shows the percentage of deliveries having received a uterotonic, plus one additional component of AMTSL. This figure clearly shows that infrequent administration of a uterotonic during the third stage of labor, administration of the uterotonic at greater than one minute following delivery of the baby, and lack of both controlled cord traction and immediate massage and palpation following delivery of the placenta are the components responsible for the very low use of AMTSL in Honduran facilities. In summary, several practices need to be emphasized to improve correct use of AMTSL.

Figure 4.1 Percent of deliveries with use of a uterotonic drug during the third or fourth stage of labor, plus additional components of AMTSL

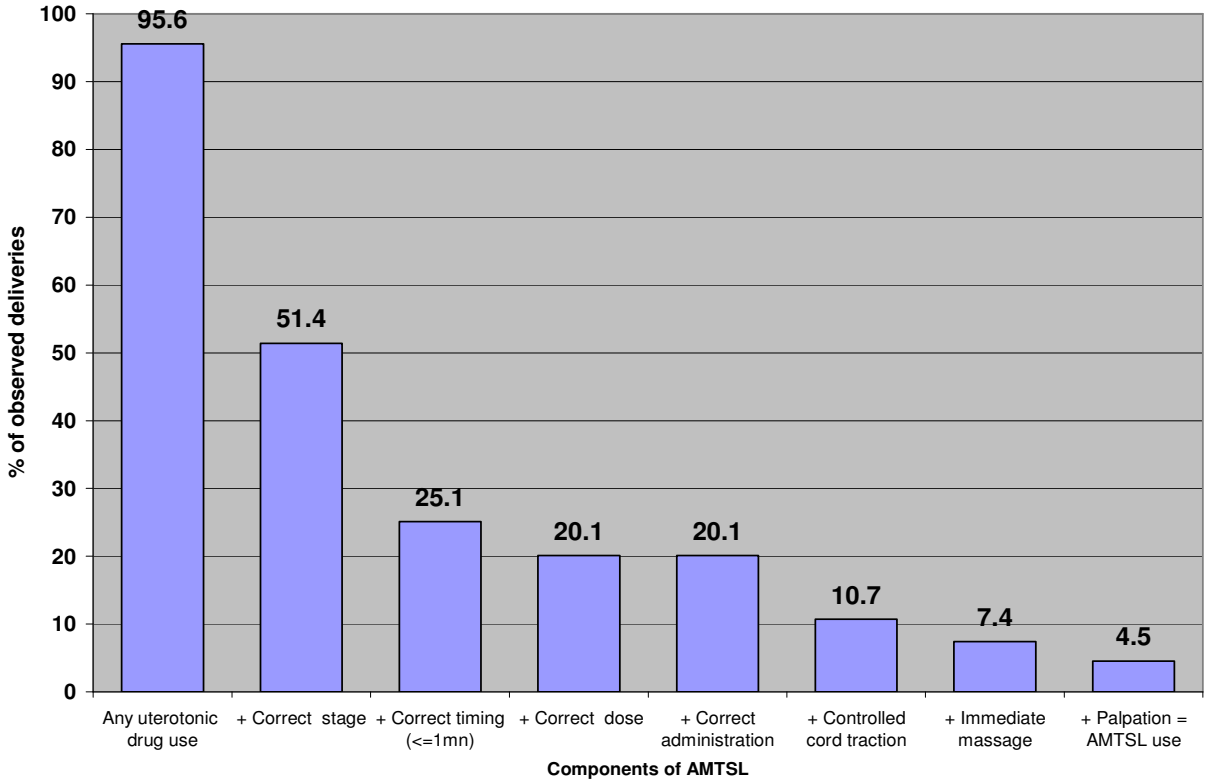


Table 4.5 shows the percentage of observed deliveries with correct use of AMTSL by selected characteristics of the facility and the woman. The table shows that virtually all AMTSL use in Honduras is being done in regional/provincial hospitals, although only ten percent of deliveries in regional/provincial hospitals receive AMTSL. Furthermore, the use of AMTSL appears to be restricted to the Atlantico region; 18 percent of observed deliveries in the Atlantico region showed correct use of AMTSL, with only two percent of deliveries in the Central, East and South regions, and none in the North and West.

These data suggest that nurses were more likely than other cadres to use AMTSL; 13 percent of deliveries by nurses had AMTSL versus four percent by obstetricians, general practitioners, and residents. Likewise, the data also suggest that deliveries in facilities that provided AMTSL in-service training for nurses were more likely to have received AMTSL than deliveries in facilities without such training. Regarding AMTSL use by characteristics of the woman, there is a slight suggestion that high-risk women, that is, nulliparous or young women, are more likely to receive AMTSL than others. However, due to the limited sample size, these differences by provider qualification, history of in-service AMTSL training, age and parity of the woman are not statistically significant.

Table 4.5. Percent of observed deliveries with AMTSL use by characteristics of the facility and the woman

Facility characteristics	AMTSL %	n	Characteristics of woman	%	n
Type of facility			**Woman's age (years)**		
Central referral hospital	1.9	32	<20	9.8	79
Regional/provincial hospital	10.4	89	20-34	2.2	128
			35+	0.0	14
District hospital	0.0	100	p-value	0.1538	
p-value	0.0412				
Deliveries per year			**Parity**		
<3000	5.6	164	0	8.6	92
3001-4000	0.0	21	1	2.5	61
> 4000	1.7	36	2-4	0.5	56
p-value	0.5771		> 5	0.0	12
			p-value	0.2223	
Region			**Time of birth**		
Central East South	2.4	88	3 pm to 11 pm	1.6	98
North West	0.0	90	7 am to 3 pm	6.8	123
Atlantic	18.0	43	p-value	0.2234	
p-value	0.0008				
Provider qualification					
Obstetrician/general practitioner/resident	4.3	42			
Nurse	12.7	63			
Medical Intern	0.0	27			
Social Service doctor	0.0	89			
p-value	0.2557				

In-service training on AMTSL *was* provided for nurses	8.2	93			
In-service training on AMTSL *was not* provided for nurses	1.7	125			
p-value	0.3303				
In-service training on AMTSL *was* provided for doctors	0.0	70			
In-service training on AMTSL *was not* provided for doctors	9.8	151			
p-value	0.2697				
In-service training on AMTSL *was* provided for traditional birth attendants	0.0	29			
In-service training on AMTSL *was not* provided for traditional birth attendants	5.1	192			
p-value	0.5887				
Total	4.4	221	Total	4.4	221

Patterns of cord clamping

Immediate cord clamping is not an element of the FIGO/ICM definition of AMTSL. WHO has recently recommended delayed cord clamping for the benefit of the newborn. Debate on the best timing for cord clamping for maximum benefit of mother and baby persists. Table 4.6 shows that cord clamping in less than 1 minute of delivery is the norm in Honduran health facilities, with 96 percent of observed deliveries having the cord clamped in one minute or less of delivery of the baby.

Table 4.6. Percent distribution of the duration between delivery of the baby and cord clamping

Time	% of deliveries	n
< 1 minute	87.6	194
1 minute	8.5	19
2 minutes	3.6	8
5 minutes	0.3	0
Total	100.0	211

Duration of the third stage of labor

The duration of the third stage of labor varies depending on how it is managed. Table 4.7 shows the average duration of the third stage of labor by whether the correct use of AMTSL was practiced. When AMTSL was used, the average duration of the third stage of labor was 5.24 minutes (95 percent confidence interval, 4.48 to 6.00). Without correct use of AMTSL, the third stage lasted 6.83 minutes, on average (95 percent confidence interval, 5.50-8.17).

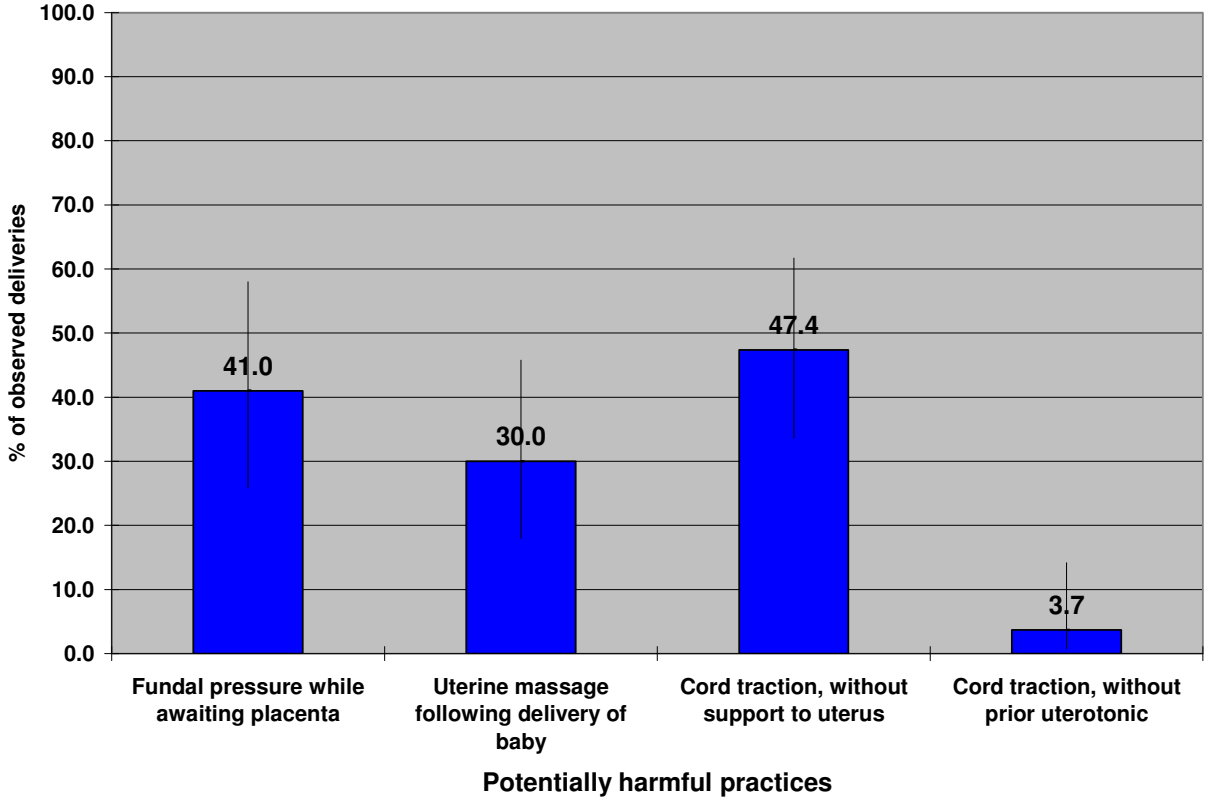
Table 4.7. Average duration of the third stage of labor by AMTSL use

AMTSL use	Average duration (in minutes) of the 3rd stage of labor	95% confidence interval	n of deliveries
Correct AMTSL use (≤1 min)	5.24 minutes	4.48-6.00	10
Without correct use of AMTSL	6.83 minutes	5.50-8.17	211

Potentially-harmful practices

In addition to documenting AMTSL use, data from this study also identified four practices considered potentially harmful. These practices include the application of fundal pressure while awaiting the placenta, uterine massage following delivery of the baby, application of cord traction without manual support of the uterus, and application of cord traction without previous administration of a uterotonic. All of these practices can increase the risk of postpartum hemorrhage or cause problems such as uterine inversion. As shown in Figure 4.2, these practices are fairly common in Honduran facilities. In 41 percent of deliveries, uterine pressure was applied while awaiting delivery of the placenta, and in 30 percent, uterine massage was applied while awaiting delivery of the placenta. In nearly half of all observed deliveries (48 percent), cord traction applied without manual support to the uterus. Rarely was cord traction applied without previous administration of a uterotonic drug, as 96 percent of all deliveries received oxytocin.

Figure 4.2. Percent of deliveries with potentially harmful practices and 95 percent confidence intervals



5. Conclusions and recommendations

This study documented practices during the third stage of labor and puerperium in a representative sample to show what occurs in national public hospitals during deliveries. The results demonstrated that almost all women received uterotonic drugs during the third or fourth stage of labor at the national level (96 percent). Oxytocin was the uterotonic drug used in all observed deliveries where a uterotonic was administered.

The use of AMTSL according to the FIGO/ICM recommendations was observed in 4.5 percent of all observed deliveries. There are a number of factors for the low use of AMTSL when compared to the general use of oxytocin. Those factors are: administration of oxytocin following delivery of the placenta (versus following delivery of the baby), a delay in the administration of oxytocin after delivery of the baby, the lack of controlled cord traction, the lack of uterine massage immediately after the delivery of the placenta, and, in particular, the lack of palpation of the uterus to assess for the continued need for massage. Clearly, attention is needed to address nearly all of the components of correct use of AMTSL. Although the use of AMTSL was low in Honduras, use did vary significantly across geographic regions; virtually all use of AMTSL was restricted to the Atlantico region, where 18 percent of deliveries received AMTSL. Only two percent of deliveries across the Central, East, and South regions received AMTSL and no deliveries in the North and West.

This study also documented four potentially-harmful practices during the third and fourth stages of labor. These include: the application of fundal pressure while awaiting the placenta, uterine massage following delivery of the baby, application of cord traction without previous administration of a uterotonic, and application of cord traction without manual support of the uterus. In Honduras, the first three of these practices were observed in 30 to 50 percent of deliveries. Rarely was cord traction applied without prior administration of a uterotonic (4 percent) since 96 percent of deliveries received a uterotonic during the third or fourth stages of labor.

To assess the policy environment for AMTSL, this study examined the content of national Standard Treatment Guidelines, the content of the curricula for pre- and in-service training for doctors, nurses, and residents, and the Essential Drug List. The study team also visited the national pharmaceutical warehouse, as well as the pharmacies in each of the health facilities in the sample.

Standard Treatment Guidelines, known in Honduras as National Norms for Maternal-Neonatal Care (*Norma Nacional de Atención-Salud Materna Neonatal),* were updated in 2005. These guidelines describe all the components of AMTSL explicitly. There is a chapter in the guidelines that deals specifically with postpartum hemorrhage. In this chapter, oxytocin is considered the first-line drug for AMTSL use, without mention of second- or third-line drugs for preventive purposes. At the facility level, however, a variety of different guidelines are available. In some cases, WHO's manual, *Managing Complications in Pregnancy and Childbirth*, which also describes all components of AMTSL included in the FIGO/ICM definition, was available. In other facilities, outdated manuals which do not promote the use of AMTSL are still in use.

Although updated guidelines that promote AMTSL are now available in Honduras, AMTSL is not emphasized in the pre-service and in-service curricula for medical and nursing students, nor for residents specializing in obstetrics and gynecology.

Both oxytocin and ergometrine are included as uterotonic drugs on the Essential Drug List. Misoprostol is not included as a uterotonic on the Essential Drug List, and its use is restricted to two hospitals. Adequate amounts of oxytocin and ergometrine were available at the central warehouse and both uterotonic drugs were stored at 2 to 8°C. However, it was noted that the recommendations regarding storage temperatures varied substantially by manufacturer. Consequently, it was not surprising that at the facility level, these drugs were stored at varying temperatures up to 25°C, but none was observed to be stored at room temperature. Stockouts of oxytocin during the three-month period before the survey were documented in approximately ten percent of health facilities.

Recommendations

Based on the results of this study, the team proposes the following recommendations:

Policies

1. Ensure the availability of the *Norma Nacional de Atención de Salud Materno Neonatal 2005* (National Guidelines for Neonatal Maternal Health 2005) at all times for health providers in all hospitals nationwide.
2. Disseminate the definition and promote application of all AMTSL components in all hospital centers and to each health provider to emphasize the use of this practice.
3. Develop a standard curriculum for training undergraduate medical and nursing students, postgraduate students in gynecology and obstetrics, as well as for schools in charge of training health personnel.
4. Create a mechanism to communicate the need to include AMTSL to every initiative and non-governmental reproductive health program in the country.

Health Providers/Practices

5. Identify the providers who do not have the correct knowledge and skills to provide AMTSL and those who have knowledge and skills but just don't practice AMTSL. Use the following interventions, as appropriate:
    a. Provide hands-on, practice-based AMTSL training for health care providers in all the country's public network hospital units for those not skilled in the practice of AMTSL.
    b. Identify barriers, including motivation, that impede use of AMTSL and address these barriers with behavior change interventions.

6. Standardize a competency-based curriculum to use for training different health providers in AMTSL.
7. Implement a training plan in AMTSL at the national level for standardized and competency-based in-service training of health care providers at the different health units.
8. Print posters that describe each AMTSL component and disseminate them to all delivery rooms nationwide.

Logistics

9. Review and update the procedures for the procurement and distribution of uterotonic drugs, particularly oxytocin and ergometrine, to make sure that all hospitals have adequate supplies of the drugs in order to apply AMTSL to all women during delivery.
10. Update the Essential Drug List to include misoprostol as a uterotonic drug to make it available at all national hospitals, considering that it is already included in the Norma Nacional de Atención.

Monitoring and Evaluation

11. Create an evaluation system for hospitals that frequently monitor the application of AMTSL. Regional and local authorities must receive training in AMTSL, and the practice should be included as a hospital quality indicator.
12. Add a column or space to the birth registry books indicating if AMTSL was applied to each assisted delivery.
13. Implement clinical audits focused on AMTSL use.

To sum up, AMTSL has very low use in Honduras, with less than 5 percent of health providers using the procedure correctly. With adequate supplies of uterotonic drugs at the national level, efforts must be focused on training and attitude of the health providers to increase its use. Much work lies ahead, and the adoption and consistent use of AMTSL nationwide will have direct implications on the reduction of our maternal mortality ratio..

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