



Active Management of the Third Stage of Labor

Data Obtained from
Home Deliveries in
the Cirebon District

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Prevention of Postpartum
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Executive Summary

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 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. 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, therefore we did an assessment on AMTSL practices to identify major barriers to its use in Indonesia. Observation of AMTSL practices was carried out in hospitals for international comparability with other countries. The hospital observation was supplemented with home-based delivery observation. The aim of the home-based delivery observation was to assess how AMTSL is practiced by trained village midwives in Cirebon district. Specifically, the study asks:

1. In what proportion of home-based deliveries in Cirebon district is AMTSL used?
2. Could a single provider as village midwife practice AMTSL in home-based delivery according to ICM/FIGO standard?
3. What practices are in place that do not conform with ICM/FIGO definition of AMTSL?

To answer these questions, a district-representative sample of home-based deliveries was observed. Village midwives were interviewed to assess their knowledge on storage of uterotonic drugs and logistics. The methods of uterotonic drug storage were observed to assess how well they store the drugs.

The results of the study show that oxytocin was used during the third stage of labor in all home-based deliveries in the sample. Use of AMTSL according to the ICM/FIGO definition was observed in 75 percent of deliveries, whereas using the Asuhan Persalinan Normal (APN) or Normal Delivery Care course definition (use of oxytocin within two minutes of birth), correct AMTSL was observed in 85 percent of deliveries. If the definition of AMTSL is relaxed to allow for administration of the uterotonic drug within three minutes of delivery of the fetus, the proportion receiving AMTSL increases to 89 percent. Our data suggest that about three in four deliveries benefit from correct AMTSL practices, but its use seems somewhat random. The AMTSL component with the least compliance is the time for administration of uterotonic drugs; about one-fourth of the midwives gave the oxytocin injection in two to three minutes after delivery of the fetus.

In APN, the suggested time for administration of the uterotonic drug is two minutes or less.

The situation regarding drugs and supplies was found to be satisfactory in most but not all village midwives in the sample, with an average stock of uterotonic drugs sufficient for approximately one to three months across all midwives. However, in four of the 104 village midwives visited, there was history of no stock of oxytocin in the last three months.

Selected key recommendations resulting from this study are summarized below:

1. Update the Standard Treatment Guidelines to comply with the ICM/FIGO recommendations for AMTSL regarding the timing of the administration of the uterotonic drug.
2. Provide refresher training on AMTSL for village midwives in Cirebon district, especially in timing of uterotonic administration.
3. Provide AMTSL training for village midwives in other districts, as the study showed that village midwives were able to practice the ICM/FIGO standard of AMTSL.
4. Improve village midwives' knowledge and practices on storage of uterotonic drugs.
5. Add a column to labor and delivery logbooks to monitor the use of AMTSL.
6. Implement clinical audits focused on AMTSL.

In summary, AMTSL has been well practiced by village midwives in Cirebon district, with between 70 and 85 percent of births benefiting from this practice. Yet, there is substantial room for improvement. Given that there are numerous village midwives implementing this practice correctly, these providers constitute an important resource that can be used to expand the practice to additional providers and to facilities in regions where AMTSL is not the norm.

1. Background

Postpartum hemorrhage is one of the world's leading causes of maternal mortality. The World Health Organization (WHO) has estimated that 31 percent of maternal mortality in Asia is caused by postpartum hemorrhage³. Maternal mortality remains one of the most serious health problems in Indonesia. The 2002 to 2003 Demographic & Health Survey (IDHS) reported a maternal mortality ratio (MMR) of 307/100,000 live births. The previous (1997) IDHS showed a MMR of 334/100,000, suggesting no significant change in the MMR. A 2002 mortality study by the Indonesian National Institute of Health and Development (NIHRD) showed that 77 percent of maternal deaths were due to direct causes. Of these direct causes, the main causes were: postpartum hemorrhage (33 percent); pre-eclampsia (25 percent); infection (12 percent); unsafe abortion (5 percent); and prolonged labor (5 percent).

Most of these causes of maternal death could be managed by simple and cost-effective drugs and procedures.⁴ Active management of the third stage of labor (AMTSL) is a highly-effective procedure for the prevention of post partum hemorrhage and could help save hundreds of thousand 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.⁵

This definition is supported by the International Federation of Gynecology and Obstetrics (FIGO), the International Confederation of Midwives (ICM), and the World Health Organization (WHO). This definition differs from the original research protocol in the frequently cited Bristol⁶ and Hinchingsbrooke⁷ trials as these original protocols include immediate cord clamping but do not include massage of the uterus.

Clinical trials in developed countries have shown that the use of AMTSL, in contrast to physiologic management of the third stage of labor—in which oxytocic drugs are not used and the placenta separates spontaneously (delivered by gravity and maternal effort)—significantly reduces postpartum hemorrhage. When compared to AMTSL, the use of physiologic management has a higher rate of postpartum hemorrhage and severe postpartum hemorrhage, the need for blood transfusion, the need for 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.⁸

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.⁹

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 Health¹⁰ 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, a survey designed to understand the current AMTSL practices in Indonesia was conducted. This survey is a part of ten-country study which focuses on policy, provider-related factors, and supplies and logistics related to the management of the third stage of labor. Observation of AMTSL practices was conducted in hospitals to make the information comparable across countries. Nevertheless, an additional survey on AMTSL practices in home deliveries by village midwives was conducted in Cirebon District, as most of deliveries in Indonesia occur at home. This report describes the results of this survey on AMTSL practices in home deliveries in Cirebon District. The results of the survey on AMTSL practices in hospitals were reported separately.

The hospital and home-based AMTSL practices survey shared a common framework as shown in Figure 1. When viewed together, these components provide important insights on routine use of AMTSL .

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. In addition, effective leaders from national or international agencies may have been able to influence national policies, such as the inclusion of uterotonic drugs in the essential drug list and the content of country-specific formularies, and the content of the curriculum for regarding AMTSL for health care providers. In turn, such training may influence facility-based policies and behavioral expectations.

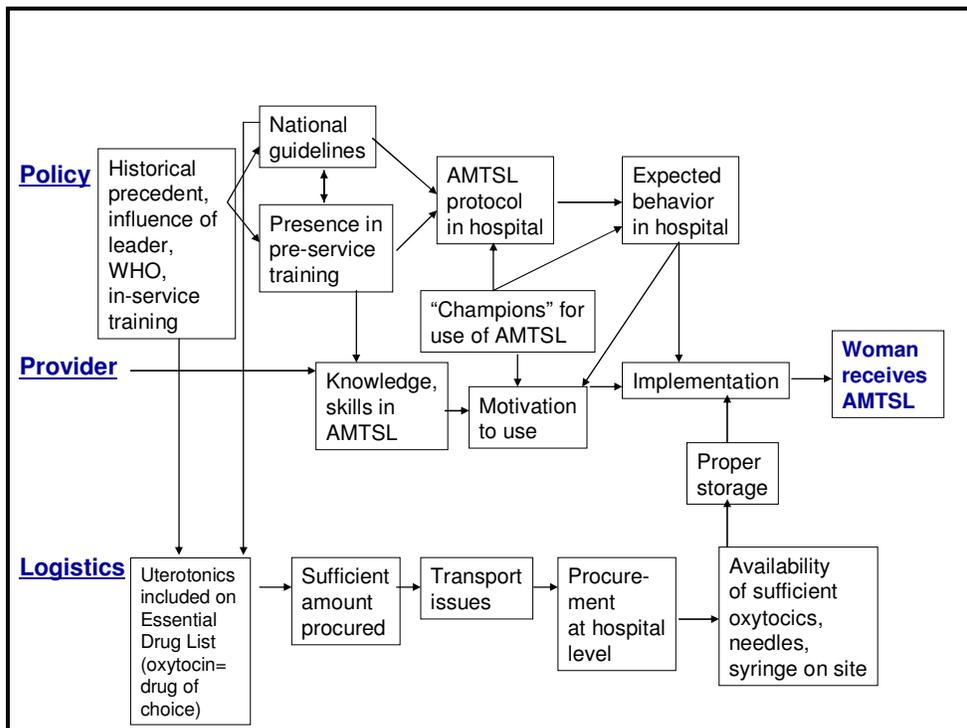
Provider-related factors

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 implies appropriate conditions during transport and storage to ensure the use of chemically-active drugs and safe, sterile needles and syringes.

Figure 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 and provide policymakers with the information they need to promote skilled attendance at birth. A third aim of this study is to produce tools and a method that others could employ to document the current practice of AMTSL.

The study's specific research questions are as follows:

1. For what proportion of home deliveries is AMTSL used in Cirebon district? Which components of AMTSL (e.g., prophylactic use of oxytocic agents, controlled cord traction, fundal massage) are practiced, and how consistently are they practiced?
4. Which uterotonic drug (e.g., oxytocin, ergometrine, or a prostaglandin) is used? How is it stored?
5. Do village midwives have 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 a supplement to facility-based AMTSL practices survey. The development of facility-based ATMSL practices study was a participatory process which 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 a planning workshop in El Salvador in February 2006 to further refine the protocol and questionnaires before the beginning of data collection in El Salvador, Honduras, Nicaragua, Guatemala, and Indonesia. The protocol and questionnaires used in this study were a modification of the protocol and questionnaire used in the facility-based AMTSL study.

Sample design

A district representative sample of approximately 100 home-based deliveries was required to meet the study objectives described in Chapter 1. Sample size calculations assumed an AMTSL prevalence of 30 percent, precision of 10 percent, and confidence level of 95 percent.

As this study was conducted in one district, it will not represent all home-based deliveries in Indonesia. The situation regarding home-based deliveries (such as local policy, logistics, and providers' skills) varies between districts in Indonesia and about 60 percent of village midwives in Cirebon district had been trained in normal delivery care or the APN course. Therefore, the result may not be applicable to other districts, but it can show that well-trained village midwives can practice AMTSL in home-based deliveries.

Three trained midwives were hired for one month to observe 100 home deliveries. Each observer was responsible for a specific area and was ready at any time to go to any home where a delivery was occurring. A field supervisor was responsible to ensure that the observers went to the homes where deliveries were occurring. This supervisor coordinated with all village midwives in Cirebon district; therefore, before the village midwife went to a client's home, she called him, informing him of the address of her client. Then, the supervisor would ask the observers to go to that home to observe the AMTSL practices. In a one-month observation period, we were able to observe 104 home-based deliveries.

Questionnaire development

There are three types of questionnaires for the hospital-based AMTSL practices survey: (1) national-level questionnaire, (2) facility-level questionnaire, and (3) observation of delivery questionnaire. This study used a modified observation delivery questionnaire.

The observation of deliveries 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 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 homes.

Ethical Review

Prior to the data collection, the study protocol was submitted to and approved by the Ethical Review Board of The School of Public Health, University of Indonesia. No personal identifiers were recorded.

Training for data collectors

A team of three midwives was recruited to administer the observation of deliveries questionnaire for village midwives. The country coordinator, assisted by one obstetrician and three midwives, provided a three-day training (August 2 to 4, 2006) in Jakarta. The training involved lectures, a CD-based visual presentation on AMTSL, demonstrations and practice using an anatomical model, and field practice that provided an opportunity for pretesting the questionnaires and supervised experience for the data collectors. Based on the pretest results, the investigators made minor modifications to the questionnaires before beginning the fieldwork.

Fieldwork

The country coordinator accompanied by MOH staff visited Cirebon district in advance to get permission for the village midwives to participate in the study. A meeting with all midwife coordinators was held to inform them about this study and to get permission to observe the village midwives in their areas. Three observers and one field supervisor conducted the fieldwork from August to September 2006.

Data entry and analysis

Using Epi Info (version 6), the team adapted data-entry programs developed for the global study for use in Indonesia. Two School of Public Health students did double data entry and assisted the data cleaning process, which was led by PATH's staff. Final data cleaning was accomplished through a team effort during a data analysis workshop held at Baltimore, MD from December 11 to 19, 2006. The team carried out the data analysis using STATA 9 statistical software.

3. Findings regarding drug supply and storage

Procurement and Logistics

All village midwives had oxytocin at the time of observation, but ergometrine was only available with 84 percent of the village midwives at the time of observation, and none had misoprostol. Almost all of them (95 percent) purchased oxytocin and ergometrine from the local pharmacy. The average purchase price for oxytocin was Rp. 3,500 (US\$ 0.38) and for ergometrine was Rp 4,100 (US\$ 0.46) per ampoule.

The mean months of stock on hand was one for oxytocin (range: zero to eight months) and 3.3 for ergometrine (range 0 to 33 months). There were four village midwives with a history of stockouts of oxytocin, and one village midwife with zero stock for ergometrine in the last three months. The most common reason for stockout was order was not requested on time.

Storage conditions for uterotonic drugs at village midwives home

Most (95 percent) of the village midwives knew that oxytocin should be stored in temperature less than 30°C, but only 59 percent of them correctly mentioned that ergometrine should be stored at 2 to 8°C. Around 87 percent of the village midwives mentioned that oxytocin should be stored in a dark place or away from direct sunlight, and 65 percent mentioned the same storage condition for ergometrine.

Most of the storage conditions found in 104 village midwives' home visited comply with FIGO/ICM recommendations for oxytocin, all stored ergometrine in the dark or away from direct sunlight as recommended, but only 38 percent of those who had ergometrine stored ergometrine correctly at 2 to 8°C. and. Table 3.1 shows the village midwives' knowledge and actual storage conditions found in the 100 village midwives' home.

Table 3.1 Village midwives knowledge and actual storage condition uterotonic drugs

	Uterotonic drugs	
	% of village midwives with oxytocin N=104	% of village midwives with ergometrine n=104
Knowledge of storage temperature:		
2-8 °C	84.6	58.7
<15 °C	9.6	9.6
15-25 °C	1.0	7.7
Others	4.8	7.7
Not available	0.0	16.3
Knowledge of light conditions:		
Do not know	7.7	9.6
	86.5	63.5

Store away from light	5.8	10.6
Others	0.0	16.3
Not available		
Storage temperature which drug is actually stored:		
2-8 °C	57.7	37.5
<15 °C	9.6	9.6
15-25 °C	23.1	23.1
Others	9.6	13.5
Not available	0.0	16.3

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) the correct use of AMTSL; (4) practices in use of the individual components of AMTSL; (5) the observation of potentially-harmful practices; and (6) the occurrence of postpartum hemorrhage.

Characteristics of the sample

The study team observed a total of 104 deliveries by 104 village midwives in Cirebon district. Table 4.1 describes the characteristics of the midwives and women associated with these deliveries.

More than half of the midwives were between 30 and 39 years old, and three-quarters of them had graduated from one year of midwifery training. Almost all midwives have been working for six years or more as village midwives with delivery load between one and ten deliveries per month, and almost half of them have delivered one to five deliveries per month. Almost all midwives have received training on AMTSL while they were in midwifery training/school, and 65 percent of them have also received training on standard normal delivery care (APN training) which included AMTSL.

Most of the observed women were between 20 and 34 years age, and 40 percent of the observed deliveries occurred among primiparous women. No women received any uterotonic drugs prior to the third stage of labor, either for induction or augmentation.

Table 4.1 Percent distribution of observed deliveries by characteristics of the village midwives and the women

	%	n
Midwife'ss characteristics		
Age (years)		
20-24	3.8	4
25-29	11.5	12
30-34	41.4	43
35-39	25.0	26
40-44	6.7	7
>44	11.5	12
Education		
1 year midwifery training	73.1	76
3 years midwifery school	26.9	28
Deliveries/month		
1-5	47.1	49
6-10	40.4	42
>10	12.5	13
How long has been working as village midwives (years)		
< 1	6.7	7
1-5	9.6	10
6-10	19.2	20
11-15	43.3	45
>15	21.2	22
Trained in normal delivery care (Asuhan Persalinan Normal/APN)		
Yes	64.4	67
No	35.6	37
Trained in AMTSL other than APN		
Yes	15.4	16
No	84.6	88
Received AMTSL training while in midwifery training/school		
Yes	88.5	92
No	11.5	12
Women's characteristics		
Mother's age (years)		
<20	6.7	7
20-34	86.5	90

35+	6.7	7
Parity		
0	43.3	45
1	32.7	34
2	11.5	12
>2	12.5	13

Use of uterotonic drugs

In this sample of observed deliveries, all women were given a uterotonic drug during the third or fourth stage of labor. Oxytocin was used in all deliveries; 95 percent of women received only oxytocin, and 5 percent of the women received oxytocin and ergometrine.

Table 4.2 presents the distribution of observed deliveries by the timing, mode, and dose of uterotonic administration during the third and fourth stages of labor. Almost all uterotonics were administered following the delivery of the fetus though intramuscular injection. Ten IU of oxytocin was administered in almost all deliveries (96 percent), and the rest was received 11 to 20 IU of oxytocin. Almost 80 percent of the village midwives gave an oxytocin injection within one minute after delivery of the fetus. This figure showed a high compliance to FIGO/ICM standard of uterotonic drug dosage and timing.

Drug, timing, mode, and dose	%	N
Drug		
Oxytocin only	95.2	99
Oxytocin and ergometrine	4.8	5
Timing of administration		
During delivery of the fetus	0.0	0
After delivery of the fetus	99.0	103
During delivery of the placenta	0.0	0
After delivery of the placenta	1.0	1
Mode of administration		
Intramuscular	100.0	104
Intravenous push/injection	0.0	0
Intravenous drip	0.0	0
Timing of administration		
≤ 1.0 minute	79.0	82
1.1-2.0 minutes	13.3	14
2.1-3.0 minutes	7.7	8
Dosage of oxytocin		
10 IU	96.2	100
11-20 IU	3.8	4
Dosage of ergometrine (n=5)		
0.2 mg	80.0	4
0.4 mg	20.0	1

Use of AMTSL

The study used three definitions of AMTSL:

- **Definition A** is the FIGO/ICM definition, which involves administration of 10 IU of oxytocin/ 0.2 mg. ergometrine within one minute following the delivery of the fetus,

controlled cord traction, and immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.

- **Definition B** is the APN definition currently used in policy and curricula in Indonesia, which involves administration of 10 IU of oxytocin/ 0.2 mg. ergometrine within two minutes following the delivery of the fetus, controlled cord traction, and immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.
- **Definition C** is the time adjusted FIGO/ICM definition, which involves administration of 10 IU of oxytocin/ 0.2 mg. ergometrine within three minutes following the delivery of the fetus, controlled cord traction, immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.

Definition A is the strictest of the three definitions and reflects all aspects of the FIGO/ICM definition. Definition B and C is more flexible and extends the timing of the uterotonic to within two and three minutes of the delivery of the fetus. Table 4.3 provides the percentage of observed deliveries using all three definitions of AMTSL by background characteristics. Overall, 75 percent (95 percent confidence interval: 69 percent to 84 percent) of observed deliveries received AMTSL following the strict version of the FIGO/ICM definition. The percentage increases to 85 percent (95 percent confidence interval: 78 percent to 92 percent) when using APN standard, and increases to 89 percent (95 percent confidence interval: 83 percent to 95 percent) when using the definition allowing administration of oxytocin within three minutes of delivery of the fetus. There is a little variation in the use of AMTSL across the characteristics of both women and village midwives.

Table 4.2. Percentage of AMTSL use by characteristics of the village midwives and the woman

	AMTSL			n
	Definition A (%)	Definition B (%)	Definition C (%)	
Total	75.0	84.5	88.5	104
95% CI	68.5-83.5	77.6-91.7	83.2-94.7	
Age of women				
<20 years	85.7	100.0	100.0	7
20-34 years	73.3	86.7	82.2	90
35+ years	85.7	100.0	100.0	7
p value	0.609	0.348	0.230	
Parity				
0	71.1	86.7	82.2	45
1	73.5	85.3	82.4	34
2	83.3	91.7	91.7	12
>2	84.6	100.0	92.3	13
p value	0.685	0.514	0.710	
Village midwives age				
20-29 years	75.0	87.5	93.8	16
30-39 years	79.1	87.0	89.9	69
>= 40 years	57.9	73.7	79.0	19
p value	0.151	0.344	0.324	
Village midwives education				
1 year training program	75.0	84.2	88.2	76
3 years midwifery academy	75.0	85.7	89.3	28
p value	1.000	0.850	0.873	
Delivery/month				
1-5	71.4	81.6	87.8	49
6-10	76.2	85.7	88.1	42
>10	84.6	92.3	92.3	13
p value	0.605	0.617	0.897	
How long has been working as village midwife				
< 1 year	85.7	85.7	85.7	7
1-5 years	80.0	80.0	90.0	10
6-10 years	70.0	80.0	85.0	20
11-15 years	77.8	84.4	86.7	45
>15 years	68.2	90.9	95.4	22
p value	0.816	0.883	0.826	
Pre-service AMTSL training				
Yes	76.1	83.7	88.0	92
No	66.7	91.7	91.7	12
P value	0.478	0.472	0.712	
In-service AMTSL training				
Any in-service AMTSL training				
Yes	75.7	84.9	88.9	99
No	60.0	80.0	80.0	5
p value	0.427	0.769	0.544	
Normal delivery care (APN) training				
Yes	81.3	86.6	87.5	67
No	73.9	81.1	88.6	37
p value	0.530	0.458	0.896	

Patterns of cord clamping

Immediate cord clamping is not an element of the FIGO/ICM definition of AMTSL, and debate on the best timing for cord clamping for maximum benefit of mother and baby persists. Table 4.3 shows that cord clamping in less than or equal to one minute of delivery is the norm in home-based deliveries attended by village midwives in Cirebon. The cord was clamped within one minute of fetal delivery in 86 percent of observed deliveries. The remaining deliveries had the cord clamped in less than two minutes, and a small percentage had the cord clamped in three minutes or more.

Table 4.3. Percent distribution of time elapsed between delivery and cord clamping.

Time	% of subjects	n
< 1 minute	14.4	15
1 minute	72.0	75
2 minutes	9.6	10
3 minutes	1.9	2
> 3 minutes	1.9	2
Total	100.0	104

Controlled cord traction, immediate uterine massage

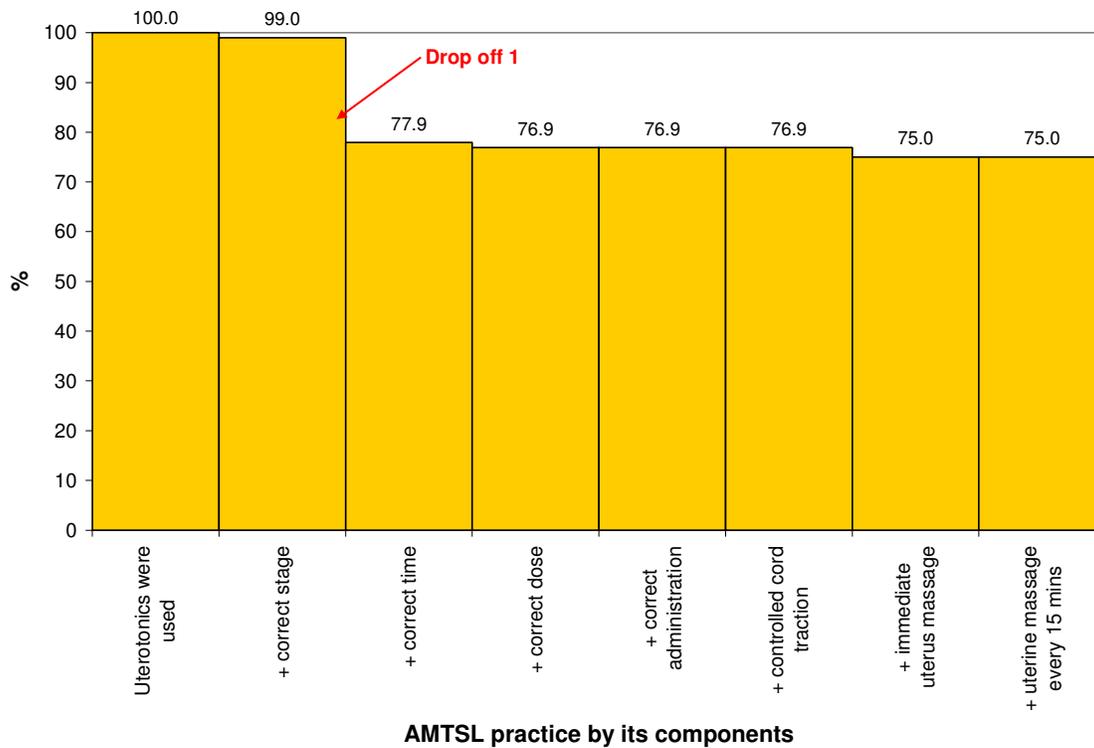
Controlled cord traction, which includes gentle traction of the cord and manual support of the uterus, was practiced in 100 percent of observed deliveries. Overall, all deliveries benefited from uterine massage immediately following delivery of the placenta, and 94 percent benefited from uterine massage every 15 minutes.

Uterotonic drugs and overall use of AMTSL

The study team was surprised to find that correct use of AMTSL was so high in this study, given that the village midwife is a single provider attending the delivery and the birth was at home. The use of uterotonic drugs was universal; all village midwives gave oxytocin injection to all home deliveries during the third stage, and most of them gave it within one minute of delivery of the fetus. Controlled cord traction, immediate uterine massage, and uterine massage every 15 minutes were almost universally practiced in all deliveries.

To isolate which practice or practices are responsible for the drop of correct use of AMTSL, Figure 4.1 shows the practice by the individual components of AMTSL. A uterotonic was given during the third or fourth stage of labor to all deliveries; nearly all deliveries (99 percent) received a uterotonic after delivery of the fetus. After adding the time criteria, only about 78 percent of all deliveries received a uterotonic in less or equal to one minute after delivery of the fetus, reflecting a substantial decrease. When correct dosage was added, the percentage dropped a little to 77 percent. Another small decrease is shown when controlled cord traction and immediate uterine massage are added. Palpation every 15 minutes for the first 30 minutes did not cause any decrease, resulting in the overall use of AMTSL at 75 percent. Thus, timing within one minute of the delivery of the fetus appears to be the practices most in need of improvement.

Figure 4.1 Percent and 95% confidence interval of deliveries with use of uterotonic drugs (oxytocin and ergometrine) and AMTSL



Duration of the third stage of labor

Table 4.4 presents the time elapsed between the delivery of the fetus and the placenta. The average duration of the third stage of labor among deliveries in which AMTSL was used was 5.8 minutes, compared to 7.3 minutes among deliveries in which AMTSL was not used. Using the APN standard or a more relaxed time requirement for oxytocin administration, the difference between deliveries with and without AMTSL use is 6.4 and 7.1 minutes. The difference is statistically significant only for the strict definition of AMTSL.

Table 4.4. Average duration of the third stage of labor among deliveries, with and without use of AMTSL

Use of AMTSL	Average duration of third stage of labor	95% confidence intervals	N	P value
Definition A:				
Administration of 10 IU of oxytocin/ 0.2 mg. ergometrine <u>within one minute</u> following the delivery of the fetus, controlled cord traction, and immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.				
Use of AMTSL	6.19 minutes	5.07–7.32	78	0.848

Non-use of AMTSL	6.00 minutes	5.35–6.67	26	
Definition B:				
Administration of 10 IU of oxytocin/ergometrine <u>within two minutes</u> following the delivery of the fetus, controlled cord traction, and immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.				
Use of AMTSL	6.14 minutes	5.14-7.13	88	0.966
Non-use of AMTSL	6.19 minutes	5.12-7.26	16	
Definition C :				
Administration of 10 IU of oxytocin/ergometrine <u>within three minutes</u> following the delivery of the fetus, controlled cord traction, and immediate uterine massage following delivery of the placenta and palpation of uterus every 15 minutes.				
Use of AMTSL	6.15 minutes	5.20–7.11	92	0.960
Non-use of AMTSL	6.08 minutes	4.74–7.42	12	

Postpartum hemorrhage

The occurrence of postpartum hemorrhage in this study was measured qualitatively, using a definition of two sheets full of blood after delivery of the fetus, as observed by the data collector. In general, postpartum hemorrhage occurred in 2 of 104 deliveries. These two cases occurred in deliveries without correct AMTSL practices according to the FIGO/ICM definition or the APN definition.

5. Conclusions and recommendations

This study documented practices during the third and fourth stages of labor in a district representative sample of home-based, vaginal births in Cirebon. The results show that 100 percent of such births receive a uterotonic drug during the third or fourth stages of labor. Oxytocin was used in all of the deliveries, with a small percentage of them using a combination of oxytocin and ergometrine.

Use of AMTSL according to the recommendations of FIGO/ICM was observed in 75 percent of deliveries. A factor that accounted for the drop of AMTSL practice is the timing of administration of oxytocin following the delivery of the fetus. This condition is understandable, since most of village midwives in Cirebon were trained using Normal Delivery Care Guidelines (Asuhan Persalinan Normal/APN) which uses two minutes instead of one minute as the standard of administration of uterotonic drug after delivery of the fetus. If the definition of AMTSL is relaxed to allow administration of the uterotonic drug within the first two minutes (as opposed to one minute) following delivery of the fetus, 85 percent of deliveries received AMTSL correctly. The use of AMTSL does not vary by characteristics of the mother or characteristics of the provider, suggesting that providers are not restricting the practice of AMTSL to high-risk women.

In Indonesia, the policy environment is supportive of AMTSL. At the national level, the Standard Treatment Guidelines include postpartum hemorrhage, and provide recommendations regarding its prevention that differ only slightly from the FIGO/ICM definition of AMTSL; that is, it recommends administration of the of the uterotonic drug within two, as opposed to one minute. The use of two minutes instead of a one-minute standard is due to experts' concern about the difficulty in applying the standard to the village midwives, as they are single providers attending home-based deliveries. Nevertheless, this study shows that the one-minute standard as stated in the FIGO/ICM recommendation is possible to apply to a single trained provider in home-based delivery.

Regarding drugs and supplies, the mean months of stock on hand within drug storage was one month for oxytocin (range: zero to eight months) and three months for ergometrine (range: zero to 33 months). But, four village midwives had histories of no stock of oxytocin, and one village midwife had a history of no stock of ergometrine in the last three months. The stock-out periods ranged from zero to three days, with the reason for stockout order was not requested on time.

The storage of uterotonic drugs is less problematic for oxytocin than for ergometrine. Most of the village midwives know the correct temperature and light conditions for oxytocin, whereas only 58 percent of them correctly recommend appropriate storage temperature for ergometrine. Regardless of the knowledge, almost all midwives stored oxytocin under correct conditions, but only 38 percent of them stored ergometrine at the correct temperature.

Based on the findings from this national study, the study team proposes the following recommendations.

Recommendations:

Policy

1. Update Standard Treatment Guidelines to comply with the FIGO/ICM recommendations for AMTSL regarding the timing of the administration of the uterotonic drug.

Providers/practice

2. Develop a plan to improve the administration of the uterotonic drug within one minute of the delivery of the baby.
3. Train village midwives in other districts to practice AMTSL, since this study shows that they are able to comply to AMTSL according to FIGO/ICM standard.

Logistics

4. Review and update procedures for procurement and distribution of uterotonic drugs, particularly oxytocin, to ensure that all village midwives have adequate supplies of oxytocin to provide AMTSL to all women having a vaginal birth.
5. Improve drug storage conditions for the village midwife, especially for ergometrine.

Monitoring and evaluation

6. Develop a grading system for the village midwife that monitors the routine use of AMTSL.
7. Train the supervisor (coordinating midwife) of the village midwife in AMTSL, and include AMTSL in supervision as an indicator of quality performance.
8. Add a column to labor and delivery logbooks to monitor the use of AMTSL.
9. Implement clinical audits focused on AMTSL.

In summary, AMTSL has been well applied by village midwives in Cirebon district, with between 69 and 84 percent of births benefiting from this practice. Yet, there is still room for improvement. Given that there are numerous providers implementing this practice correctly, these providers constitute an important resource that can be used to expand the practice of AMSTL to additional providers and to facilities in regions where AMTSL is not yet the norm.

¹ ICM and FIGO. *Joint statement: management of the third stage of labour to prevent postpartum haemorrhage*. [joint statement] 2003.

² WHO. MPS Technical Update on Prevention of Postpartum Haemorrhage by AMTSL. October 2006. Available at: http://www.who.int/making_pregnancy_safer/publications/PPH_TechUpdate2.pdf.

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- ¹⁰ Festin MR, Lumbiganon P, Tolosa J, Finney K, Ba-Thike K, Chipato T, et al. International survey on variations in practice of the management of the third stage of labour. *Bulletin of the World Health Organization*. 2003; 81:286–291.