

## A Systemic Approach to Evaluate Nursing Practice of AMTSL Protocol

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### Abstract

**Introduction:** An evaluative survey was carried out for the assessment of practice of AMTSL (Active Management of Third Stage of Labor) protocol, as recommended by WHO (World Health Organization), as well as to determine the gap in ongoing practice.

**Objective:** This present study was conducted to assess the practice of AMTSL protocol by nursing personnel and to find out the gap between ongoing practices and practices recommended by WHO.

**Methods:** Evaluative Survey research design was selected for this study. This study was carried out in selected hospitals, West Bengal, India. Participants were nursing personnel, working in different labor unit in selected hospitals. Among them 53 nursing personnel were selected as subject sample and 159 deliveries, conducted by the subjects were selected as event sample. Non-probability convenience sampling technique was adopted for sampling. Semi-Structured Interview Schedule and Structured Observation Rating Scale were used for data collection.

**Results:** The findings revealed that 57.81% participants were practicing Step I administration of uterotonics, whereas 73.18% participants were practicing Step II controlled cord traction and only 30.15% participants were practicing Step III uterine massage, following WHO recommended AMTSL protocol. It also revealed that, 42.19% gap present in practicing Step I, 26.82% gap present in practicing in Step II and maximum 69.85% gap present in Step III, between ongoing practice of AMTSL protocol by nursing personnel and the practices of AMTSL protocol, as recommended by WHO.

**Conclusion:** This article is intended to help administrators and policy makers who are involved in planning, directing or evaluating the programs, protocols, personnel, products, institutions or systems.

**Keywords:** Active management; Third stage of labor; Active Management of Third Stage of Labor (AMTSL); Clinical practice assessment

### Introduction

Postpartum hemorrhage (PPH) accounts for a substantial proportion of maternal deaths in developing countries, accounting for up to 50% total number of deaths compared with 25% of mortality worldwide [1-3]. However in high resource countries, maternal death as a result of postpartum hemorrhage is rare, although severe blood loss can result in significant morbidity [4,5]. Latest figures reported in literatures regarding maternal deaths due to PPH accounts for 38% in India [6]. There are two distinct approaches to the clinical management of the third stage of labor: expectant and active management. However, a third approach is sometimes used that consists of a combination of components of both expectant and active management: this has been referred to as 'mixed management' or the 'piecemeal approach' [7]. To prevent maternal mortality and morbidity due to PPH, Active Management of Third Stage of Labor (AMTSL) protocol is reported cost effective [8,9] and is superior to expectant management in reducing the blood loss and prevent up to 60% of PPH [10-14] when practiced by skilled birth attendants [15]. It is reported that despite the global recommendations to adopt the active management of third stage of labor [16], even if qualified professional delivers such care, this practice is still not broadly developed and implemented, even in the reference hospitals in Brazil and many other countries and the level of adherence to the guidelines seems to be low in the studied areas [17,18] as recommended by World Health Organization (WHO) and practiced widely in India as current training guidance for SBAs promotes practice of AMTSL protocol [19]. Routine use of AMTSL for all vaginal singleton births in health facilities is recommended by the International Federation of Gynecology and Obstetrics (FIGO),

International Confederation of Midwives (ICM) and World Health organization (WHO) [10]. The components of AMTSL according to FIGO-ICM includes use of a uterotonic immediately following delivery of the fetus, controlled cord traction and fundal massage immediately after delivery of the placenta [16,20]. Revised guidelines by WHO in 2012 recommend palpation of the uterus every 15 minutes for 2 hours to assess the tone [21].

The AMTSL was introduced to reduce PPH and if all components are followed, as recommended by WHO it can save lives in countries where women are more likely to be poorly nourished or severely anemic. The arbitrary blood loss is 500 ml after delivery in developing countries like India. In well-nourished women, some consider that, in general, there is little impact from a blood loss of 500 mL [22], but in women in low-income countries who may be poorly nourished and anemic, this loss can cause considerable morbidity or mortality [23,24]. WHO has estimated that prevalence of anemia in developed and developing countries in pregnant women is 14% in developed and 51% in developing countries and 65-75% in India [25]. Stanton et al. studied the transmission of AMTSL in seven low-income countries for

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prevention of PPH. They undertook observation of vaginal births and a review of national policy documents. They concluded that the use of oxytocic agents, but not the correct implementation of AMTSL (merely 0.5% to 32%), is almost universal [26].

## Significance

‘What is already known about the topic?’

- Active Management of Third Stage of Labor (AMTSL) protocol as recommended by World Health Organization (WHO) is practiced worldwide by the nursing personnel during conducting normal vaginal deliveries.

‘What this paper adds?’

This paper provides information regarding:

- Assessment of practice of Active Management of Third Stage of Labor (AMTSL) protocol as recommended by World Health Organization (WHO) by the nursing personnel.
- Identification of gap between the ongoing practice and recommended practice of Active Management of Third Stage of Labor (AMTSL) protocol by World Health Organization (WHO).

## Materials and Methods

### Research approach and research design

In the present study, Evaluative Survey Approach & Evaluative Survey research design was selected to accomplish the objectives of the study.

### Research questions (objectives of the study)

The objectives are to assess the practice of Active Management of Third Stage of Labor (AMTSL) protocol by nursing personnel and to find out the gap between ongoing practices and the practices recommended by WHO (World health Organization) in selected hospitals, West Bengal, India.

### Settings and sample

Based on feasibility of conducting the study, easy access and familiarity of settings and administrative approval from various levels of staffs, the study settings were selected. A number of three study centers were randomly selected, using lottery method, from primary, secondary and tertiary levels of government hospitals each, of Murshidabad district, West Bengal, India.

The study design involved administration of semi-structured interview schedule by the investigator to obtain socio-demographic data from the participants, in addition to observe the practices of AMTSL protocol by the participants in the clinical situation. Non-probability convenience sampling technique was adapted to select subject sample and event sample in this study. Nursing personnel, who were working in labor unit of selected hospitals during the period of data collection, were selected as subject sample and consecutive three singleton, non-instrumental vaginal deliveries, conducted by them on a day, were treated as event sample. Initially a list of registered nursing personnel who were working in labor unit was prepared. Those nursing personnel who were present during that data collection period, from the list were selected as subject sample. Total numbers of subject sample were 53 and event sample were 159 for this study.

## Inclusion criteria

The followings were considered as inclusion criteria while selecting samples for the present study:

- Only registered nurse-midwives.
- Nursing personnel who were working in labor unit.
- Nursing personnel who were available and present during the data collection period.
- Nursing personnel who were willing to participate in the study.

## Data collection tools and techniques

Semi-Structured Interview Schedule and Structured Observation Rating Scale were used for data collection. At first, Tool I - Semi Structured Interview Schedule was developed based on review of research and non-research literature, respected experts' valuable opinion and discussion to obtain socio demographic data of participants, which may directly or indirectly influence their practices. During the period of data collection Semi Structured Interview Schedule was administered to the participants which included 7 (seven) questions, about their age, type of hospital where they are working, professional qualification, total years of experience, total years of experience in labor unit, additional professional courses done on Obstetrical nursing, and in-service education or workshop attended on intra-natal care.

After that, Tool II - Structured Observation Rating Scale was developed to assess the practice of Active Management of Third Stage of Labor protocol by the participants. This four point rating scale comprised of three steps of AMTSL protocol and each step consisted of several sub-steps. The first step Administration of Uterotonics consisted of a number of four (4) sub-steps. The second step was Controlled Cord Traction consisted of a number of sixteen (16) sub-steps. The third step was Uterine Massage comprised of a number of ten (10) sub-steps. All steps were rated at 4 point rating scale, where - If steps are performed proficiently that means steps are performed correctly in proper sequence and precisely without hesitation or need for any assistance will score maximum number that is 4. If steps are competently performed that means step are performed correctly in proper sequence but lacks precision, and/or needed to assist or remind in a minor way will score 3. If the practices needs improvement that means steps are not performed correctly and/or out of sequence or is omitted will score 2. If the practices are not observed that means steps are not performed by participant during observation will score the minimum that is 1. The maximum score in the rating scale was 4 and minimum was 1, for each step. The participants were rated according to their performances or practices.

During the period of data collection, the researcher was stationed in the delivery room from 08:00 to 16:00, observing and collecting data on the practice of AMTSL protocol performed by the nursing personnel during the third stage of labor, for singleton, non-instrumental vaginal deliveries. The time was selected for data collection, as nursing personnel works in shifts and the shift corresponding to the time from 08:00 to 16:00 was selected for convenience. Participants were aware of the researcher's observation at the time of practice of AMTSL protocol. The researcher used a stopwatch to note the time of uterotonic administration; and the time of cord clamping and cutting. The researcher also noted whether uterine massage and controlled cord traction (CCT) were performed. The percentage of women for whom AMTSL was performed correctly by the nursing personnel, was determined by the four point structured observation rating scale.

### Institutional review board approval

The study was approved by Institutional Ethics Committee, Institute of Post Graduate Medical Education & Research (IPGME&R) Research Oversight Committee, SSKM hospital campus, Kolkata, West Bengal, India. Informed written consent was taken from each participant.

### Statistical Analysis and Results

Sample Characteristics	Frequency	Percentage (%)
Age (in years)		
25-29	29	54.71
30-34	16	30.18
≥ 35	8	15.09
Type of Professional Qualification		
Diploma Nurse (GNM)	50	94.33
Graduate Nurse (B.Sc. (Hons.) Nursing/B.Sc. Nursing/Post Basic B.Sc. Nursing)	3	5.66
Additional professional courses done on obstetrical nursing		
Yes	36	67.92
No	17	32.07
In-service education or workshop attended on intra-natal care		
Yes	Nil	-
No	53	100

**Table 1:** Frequency and percentage distribution of nursing personnel according to their Age, type of professional qualification, additional professional courses done on obstetrical nursing and In-service education or workshop attended on intra-natal care (n=53).

Sample Characteristics	Frequency	Percentage (%)
Type of hospital		
Primary level care hospital	17	32.07
Secondary level care hospital	18	33.96
Tertiary level care hospital	18	33.96
Total years of experience (in years)		
<5	22	41.5
5-10	19	35.84
>10	11	20.75
Total years of experience in labour unit (in years)		
<5	33	62.26
5-10	14	26.41
>10	6	11.32

**Table 2:** Frequency and percentage distribute on of nursing personnel according to the type of hospital where they are working, their total years of experience and their total years of experience in labor unit (n=53).

Area	Maximum possible score for each step	Score range	Mean ± SD	Percentage (%)
Step I: Administration of uterotonics	16	8-10.67	9.25 ± 0.61	57.81
Step II: Controlled cord traction	64	33-54	46.84 ± 3.73	73.18
Step III: Uterine massage	40	12-12.33	12.06 ± 0.48	30.15

n<sub>E</sub> = event sample

**Table 3:** Score range, Mean score and percentage distribution showing area wise total observed ongoing practice scores of 3 consecutive observation of active management of third stage of labour protocol by nursing personnel (n=53, n<sub>E</sub>=159)

Area	Maximum possible score	Mean score of observation	Mean percentage (%)	Mean percentage difference (%)
Step I Administration of uterotonics	16	9.25	57.81	42.19
Step II Controlled cord traction	64	46.84	73.18	26.82
Step III Uterine massage	40	12.06	30.15	69.85

sn<sub>E</sub>=event sample

**Table 4:** Mean, mean percentage, mean percentage difference showing area wise total gap of ongoing practices of Active Management of Third Stage of Labor by nursing personnel and practices recommended by WHO (n=53, n<sub>E</sub>=159)

Analysis and interpretation of findings were based on the data collected through Semi Structured Interview Schedule and Structured Observation Rating Scale, from 53 nursing personnel and 159 events, performed by them. Categorical data are reported as percentages; continuous variables were compared using medians, standard deviations, or ranges. In Table 1, among 53 participants majority 29 (54.71%) belonged to the 25-29 years of age group and among them 50 (94.33%) were diploma (GNM) nurse. Majority of the respondents 18 (33.96%) were working in both primary and secondary level care hospitals respectively. From Table 2, it was found that 22 (41.50%) participants had less than 5 years of working experience, whereas 33 (62.26%) had less than five years of working experience in labor unit. Notable 36 (67.92%) respondents had done additional professional courses on obstetrical nursing. No respondents had attended any in-service education / workshop on intra-natal care.

Preliminary analysis revealed, Mean observed score for the step I: administration of uterotonics in AMTSL protocol by the nursing personnel is 9.25 with a SD of 0.61, which is showing maximum number of (57.81%) nursing personnel are practicing this step, where the variation in practice of administration of uterotonics is very less, as shown in Table 3. It also revealed that mean observed score for the step II: controlled cord traction in AMTSL protocol by the nursing personnel is 46.84 with a SD of 3.73, which is showing maximum number of (73.18%) nursing personnel are practicing this step, where the variation in practicing control cord traction is maximum, as shown in Table 3. This study has also depicted that mean observed score for the step III: uterine massage in AMTSL protocol by the nursing personnel is 12.06 with a SD of 0.48, which is showing maximum number of (30.15%) nursing personnel are practicing this step, where the variation in practice of administration of uterotonics is very less, as shown in Table 3. It shows maximum number of nursing personnel are not practicing this step III in AMTSL protocol.

This study also revealed that, there is 42.19% gap present in practice of step I: administration of uterotonics; 26.82% gap present in practice of step II: controlled cord traction; and maximum 69.85% gap present in practice of step III: uterine massage, between ongoing practices of AMTSL protocol and the practices recommended by WHO, as shown in Table 4.

### Discussion

This finding is consistent with previous reports and is concerning because AMTSL is a practice that has been recommended globally for reducing PPH but that has consistently been shown not to be implemented in practice.

A qualitative study was conducted by Schack et al. to find out the challenges experienced, during implementation of AMTSL protocol in Ghana [18]. In this study, twelve in-depth interviews were conducted with labor ward midwives who all had previous training in AMTSL. The interviews took place in 2011 at three hospitals in Accra Metropolis and data was analyzed using qualitative latent content analysis in Ghana. Main finding was that the third step of AMTSL, uterine massage, was not implemented, even though the general attitude towards AMTSL was positive. Thus, despite regular training sessions, the midwives did not follow the Ghanaian national guidelines, which is consistent with results from the present study.

Another study conducted by Smith et al. to investigate current knowledge and practice regarding AMTSL in midwifery practices and obstetric departments in Netherlands [27]. Among midwifery practices (528) and all obstetric departments (91) in the Netherlands, the response was 87.5% while administering prophylactic uterotonics was seen as a component AMTSL by virtually all respondents; 96.1% of midwives and 98.8% of obstetricians. Cord clamping was found as a component of AMTSL by 87.4% of midwives and by 88.1% of obstetricians. Uterine massage was only seen as a component of AMTSL by 10% of the midwives and 20.2% of the obstetricians. Midwifery practices routinely administer oxytocin in 60.1% of births. Obstetric departments do so in 97.6% ( $p < 0.01$ ). So, this study finding also supports the present study findings.

Another study conducted by Bimbashi Astral et al. to evaluate the obstetrician practice during third stage of labor in a large maternity hospital in Albania [28]. Result shows that prophylactic uterotonic was administered for 87% of births. For 85% of births (132/156) cord clamping was within 20 seconds, and for all babies it was within 50 seconds. Controlled cord traction was used for 49% (76/156) of births. 78% Obstetrician was using active management of third stage of labor always or usually and 22% always or usually using physiological care. This study finding also supports the present study findings.

The findings of the present study are supported by another descriptive study was conducted by Mfinanga et al. in 29 hospitals of Tanzania to describe the practice of AMTSL [29]. Results demonstrated that correct practice of AMTSL was observed only in 7% of the deliveries. Out of 106 health care providers only 9% made correct statements regarding all the components of AMTSL. Study suggested that, knowledge and practice of health care providers in AMTSL was very low and standard treatment guidelines were not updated on correct AMTSL practice.

## Limitations

As the results of the present study was based on the data, collected from the study participants, who were present during data collection period. The number of sample may be too low to generalize the findings to the large population and Random sampling was not done as the data collection period was not sufficient. In addition, strong controlled situation were not available during collection of data. Some environmental factors like sounds, noise and light of the labor unit might have affected the data. So, further studies are needed to confirm these results across a larger sample using probability sampling.

## Implications

This article has implications to clinical practice, nursing education, nursing administration and nursing research.

## Conclusion

In developing country like India, where PPH is one of the major

contributing factors of maternal death, can be prevented largely by practicing WHO recommended AMTSL protocol. From the results of the present study, it seems that ongoing practice of Active Management of Third Stage of Labor (AMTSL) protocol by nursing personnel are low. Notable gap is found in practicing Step III, that is Uterine massage is not practiced by most of the nursing personnel as a part of AMTSL protocol as recommended by WHO. Therefore, specific nursing intervention strategies, in-service trainings and refresher courses are needed to improve the nursing performance. Based on the present study results, future work can include assessment of knowledge and attitude towards practicing AMTSL protocol of nursing personnel to improve adoption and implementation of clinical guidelines of AMTSL, as recommended by World Health Organization.

## Conflict of Interest

The authors have no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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