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THE APPRAISAL OF THE TECHNICAL UPDATE "PREVENTION OF POSTPARTUM HAEMORRHAGE BY ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR" (2006)

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Summary

The WHO technical update ”Prevention of Postpartum Haemorrhage by Active Management of the Third Stage of Labour” was published in 2006. This document was mainly created on the basis of Cochrane review (2000) [1].

The main goal of the document is to give recommendations for practitioners how to prevent postpartum haemorrhage (PPH) in the third stage of labour. Nowadays the most effective approach is active management of the third stage of labour (AMTSL). It should be used by skilled attendants.

Postpartum haemorrhage is one of the leading causes of maternal death worldwide; it occurs in about 10.5% of births and accounts for over 130 000 maternal deaths annually [2]. The most cases of PPH occur within 24 hours after delivery. Over the years there have been two strategies of management the third stage of labour: AMTSL and “expectant management” (EM). The primary aim of active management is to reduce postpartum blood loss as a preventive intervention.

The authors of the document emphasize that it’s necessary to take into account some points, such as: all methods of haemorrhage measurements are usually imprecise; the tolerance to blood loss depends on initial hemoglobin level; in some cases slow bleeding during the long period of time cancan be underestimated and lead to severe shock; the evaluation of risk factors during pregnancy doesn’t help to prevent PPH.

One of the main causes of PPH is uterine atony. According to the data of Prendiville W.J. et al. [1] AMTSL reduces the occurrence of severe PPH by approximately 60–70%. The uterotonic component of AMTSL seems to be important for the reduction in blood loss after delivery. The medicine of choice is oxytocin because of its stability during the storage.

AMTSL consists of three steps:

- The first one is administration a dose of 10 IU of oxytocin intramuscularly after baby birth. After that the newborn should come in contact with mother skin-to-skin as soon as possible.
- The second step begins after early cord clamp. Controlled cord traction (CCT) was introduced with aim to facilitate the delivering of the placenta once the uterus contracts. The potential maternal risks associated with CCT are the risk for the uterus to be pulled into the vagina and for the cord to tear off from the placenta. Traction is applied in a continuous, downward manner only when the uterus is well contracted. Cord traction is applied during active management only when countertraction is applied. Countertraction is performed by trapping the body of the uterus above the symphysis pubis. After 30 to 40 seconds, relax the tension and wait for the next contraction to repeat the maneuver. It’s necessary to support the placenta, using a gentle up and downward movement or a twisting action to slowly deliver the membranes. The placenta and membranes are examined for completeness and abnormalities.
- The third component is immediate massage after the placenta delivers. The fundus of the uterus can be felt through the wall of the abdomen. Gentle massage helps "rub up" a sustained contraction and thus reduces the amount of blood loss. This procedure has to be repeated every 15 min during the two hours after labour.

If the bleeding doesn’t stop next steps should be done according to the protocol “PPH management”.

The objective of this appraisal is to evaluate the MPS Technical Update (2006) with a view to determining the value of the recommendations in prevention PPH and its applicability in the professional environment.

List of abbreviations

AMTSL	Active management of third stage of labour
CCT	Control cord traction
EM	Expectant management
FIGO	International Federation of Obstetrician an Gynecologist
ICM	International Conference of Midwives
MPS	Making Pregnancy Safer (WHO Department)
PPH	Postpartum haemorrhage
RCT	Randomized clinical trial

L	liter
g	gram
kg	kilogram
mg	milligram
mcg	microgram

Literature search

EVIDENCE: Medline, PubMed, the Cochrane Database of Systematic Reviews and BMJ Clinical Evidence were searched for relevant articles, with concentration on randomized controlled trials (RCTs), systematic reviews, and clinical practice guidelines published between 1955 and 2010.

To identify the most relevant scientific papers the following search strategies were applied: PubMed http://www.ncbi.nlm.nih.gov/pubmed

active[All Fields] AND ("organization and administration"[MeSH Terms] OR ("organization"[All Fields] AND "administration"[All Fields]) OR "organization and administration"[All Fields] OR "management"[All Fields]) AND ("labour stage, third"[MeSH Terms] OR ("labour"[All Fields] AND "stage"[All Fields] AND "third"[All Fields]) OR "third labor stage"[All Fields] OR ("third"[All Fields] AND "stage"[All Fields] AND "labour"[All Fields]) OR "third stage of labor"[All Fields]) was found 170 relevant documents

Printed books, articles, manuals and guidelines

Non-English literature (Russian, Ukrainian)

Data gathering from other course participants (I express my thanks to Dr. *Mohammed Ali Elhassein* - UNFPA, Khartoum, Sudan, Dr. *David Ntirushwa* - Department of Obstetrics and Gynecology, Rwinkwavu Hospital, Ministry of Health, Kigali, Rwanda, Dr. *Nkunda Kasongo Vundamina* - REPRONET-Africa, Lusaka, Zambia, Dr *Cristian Jesam* - Instituto Chileno de Medicina Reproductiva (ICMER), Santiago, Chile)

The first publications related to AMTSL were published in the middle of 50th in the last century [3,4]. Since that time administration of the oxytocic drugs has become commonplace. The umbilical cord traction has not been widely adopted in the practice. There were two patterns of uterotonic administration: after anterior shoulder delivery or after placenta delivery. The implementation of only one component of AMTSL has shown its efficacy [5]. In the 70's CCT was included in the common practice of AMTSL [6,7]. At the same time the data about uterine inversion after CCT appeared in publications [8].

But the first randomized clinical trial (RCT) was carried out in 1988 [9]. AMTSL includes prophylactic oxytocic, cord clamping before placental delivery, and CCT. In the Bristol third stage trial has been proved that AMTSL reduces incidence of PPH and shortens the third stage. Some further investigations confirmed this result [10,11]. In 90's the choice of the most appropriate uterotonic was in focus. There are a lot of investigations dedicated to comparison of oxytocin versus ergometrine, the choice of optimal time, dosage and route of administration [12-19].

The second large research was the Hinchingbrooke RCT in 1998 [20]. In this trial AMTSL consisted of prophylactic oxytocic within 2 min of baby's birth, immediate cutting and clamping of the cord, delivery of placenta by controlled cord traction or maternal effort. The authors recommended including AMTSL in the clinical guideline.

In 2000 meta-analysis of five RCTs "Active versus expectant management in the third stage of labour" was published in Cochrane Library [21]. AMTSL involves administration of a prophylactic oxytocic before delivery of the placenta, and usually early cord clamping and cutting, and CCT.

This time the idea to replace oxytocin to prostaglandins had the most scientific interest [22-35]. However, it was established that neither intramuscular prostaglandins nor misoprostol are preferable to conventional injectable uterotonics as part of the AMTSL especially for low-risk

women. But in situations where oxytocin and/or ergometrine are not consistently and appropriately used during the third stage of labor, misoprostol should be considered for inclusion in the AMTSL protocol. The combination of oxytocin and ergometrine has shown a non-high effectiveness [36].

Because of a wide implementation of CCT in obstetrician practice, certain sporadic publications about uterine inversion became available [37].

Two components of the AMTSL were included in the WHO guideline "Care in Normal Birth, a practical guide" (1996) [38]. This guide supported administration of uterotonic immediately with the delivery of the anterior shoulder, or after delivery of the baby, early cord clamping and CCT.

In 2000 the WHO guideline "Managing complications in pregnancy and childbirth: a guide for midwives and doctors" was out [39]. It was the first WHO document which specified three components of AMTSL. In spite of lack of strong evidence in time about uterine massage, this step was included for the first time These interventions was supported by the 2004 joint statement of the International Confederation of Midwives (ICM) and the International Federation of Gynaecologists (FIGO) [40].

In 2003 the WHO published the first edition of the guideline "Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice" [41]. In this guideline two interventions in the third stage of labour were recommended: administration of 10 units oxytocin intramuscularly and CCT. All these intervention were not identified in the text of the guideline as AMTSL. The second edition of this guideline was published in 2006 without revision.

In 2006 Department Making pregnancy safer (MPS) published technical update of the guideline "Managing complications in pregnancy and childbirth: a guide for midwives and doctors" - "Prevention Of Postpartum Haemorrhage By Active Management Of the Third Stage Of Labour" [42]. In this update some revisions of the first component were included: oxytocin is only one uterotonic for AMTSL without any alternative medicines, a skilled attendant should provide skin-to-skin contact as soon as possible. In the end of document a link to another WHO guideline which can give information about PPH was added.

In 2007 the next guideline "WHO recommendations for the prevention of postpartum haemorrhage" strongly recommends to offer AMTSL to all women by skilled attendants [43]. The recommendations in this guide are based on the available evidence for various interventions for the different components of active management of the third stage of labour. Moreover, the interventions are evaluated for their effects on priority outcomes, namely reduction of maternal mortality, decrease in maternal morbidity (blood loss of 1L or more and use of blood transfusion) as well as use of additional uterotonics. Important adverse effects of uterotonic drugs, such as manual removal of the placenta, are also considered. Ergometrine administration was offered as an alternative if oxytocin is not available. The guideline doesn't support misoprostol or carboprost administration instead of oxytocin. In contrast to previous document, the authors don't insist on early clamping. Moreover, immediate clamping and cutting of the umbilical cord can decrease the red blood cells number an infant receives aborning by more than 50%. Waiting until 2 – 3 minutes after baby's birth was recommended. Delayed clamping and cutting of the umbilical cord is helpful to both term and preterm babies. No recommendation was given about the uterine massage. But according to the Cochrane Database of Systematic Reviews (2008) [44] uterine massage is advised to prevent PPH. The second edition of this guide was out in 2009.

In 2009 "WHO Statement regarding the use of misoprostol for postpartum haemorrhage prevention and treatment" [45] recommended that the trained health worker should offer 600 micrograms of misoprostol orally immediately after the birth of the baby, if personnel can't offer AMTSL.

On the basis of WHO guidelines some countries developed their recommendations. Thus, The Society of Obstetricians and Gynaecologists of Canada national guideline [46] supports all statements of the WHO recommendation of PPH prevention (2007). The USA national guidelines [47] support three steps of AMTSL which was described in the MPS technical update (2006). Royal College of obstetricians and gynaecologists in the United Kingdom supports the AMTSL in its guideline [48].

Over last few years investigators have obtained the first result about how AMTSL works in low-income countries [49-64]. The existing strategies to prevent and treat PPH, there is a need for simple, non-expensive techniques which can be applied in low-resourced settings to prevent or treat PPH [64]. But despite these expectations, developing countries have not targeted decreasing postpartum haemorrhage as an achievable goal; there is little use of AMTSL, and policies regarding such management often conflict.

Ukraine and Russian Federation implemented tree components of the AMTSL in their national guidelines "Management of Normal Labour". But the most part Russian and Ukrainian scientific publications have negative attitude towards AMTSL [65,66].

Thus, the term "AMTSL" is used for a combination of various interventions with different effects and side-effects. The occurrence of serious but rare complications (cardiac complications, inversion of the uterus, etc.) cannot be studied in RCTs, but might nevertheless be of major importance if and when active management is recommended for large populations. Serious doubts are justified about the CCT as a routine procedure.

The WHO document appraisal

1. Scope and purpose of the document

The MPS technical update reviewed the evidence base for each of the components of AMTSL. Formulation of the recommendations is sufficiently rigorous and based on evaluation of the best evidence available in 2006. This document specify the target group for AMTSL as women in third stage of labour.

2. Stakeholder involvement

The document was developed by MPS Department of the WHO. It doesn't contain information about what kind of professionals were involved. But the baseline document [39] notes that it was reviewed and endorsed by the ICM and FIGO.

The users of this document are skilled attendants. But the definition of a skilled attendant is absent. It is specify in the following guide [43]. "Skilled attendants are health professionals who have been educated and trained to proficiency in

skills needed to manage normal labour and delivery, recognize the onset of complications, perform essential interventions, start treatment and supervise the referral of mother and baby for interventions that are beyond their competence or are not possible in the particular setting".

The information about piloting of the technical update wasn't found.

3. Document development

According to the reference list, this document is based on the systematic review [1]. The baseline guide doesn't contain any information about search methods, criteria for selecting the evidence or methods used for formulating the recommendations.

Some aspects related to health benefits and risks were taken into account in the recommendation but none of following: oxytocin side effect and uterine inversion. Probably, the document should have emphasized that several widespread harmful practices, such as uterine massage following delivery of the baby, application of fundal pressure while awaiting the placenta, application of cord traction

without manual support of the uterus, and application of cord traction without previous administration of a uterotonic, may increase the risk of PPH or cause problems such as uterine inversion.

Only two out of three interventions (uterotonic administration and CCT) of the AMTSL have strong supporting evidence in 2006. The first systematic review supporting uterine massage was revealed in 2008 [44].

This document was provided with some application tools. In 2008 Reproductive Health Library of the WHO (issue №11) produced the videofilm about AMTSL. But the episode about the action before oxytocin administration was totally misunderstanding among ob/gyn students who saw this film. They evaluated abdomen palpation for another baby's exclusion as a uterine massage after baby's delivery. Probably, this misunderstanding could lead to increase PPH.

Some of the recommendations in MPS technical update are unclear, for example, the time of clamping or alternative uterotonics. In the baseline guide it is defined that cord has to be clamped within one minute after delivery. In the update notes that "just prior to performing cord traction clamp the cord…" But does it means that delayed clamping is possible? Despite providing strong

evidence that oxytocin is a preferred drug the update doesn't clearly disclaim or support information about ergometrine as alternative drug which is contained in baseline guide.

Formulation of the key recommendations is easy for understanding and practical.

The technical update doesn't provide information about peer review or testing but the initial guide stated that it was supported by IMC and FIGO.

4. Applicability

This document isn't widely known in Ukrainian professional environment. The baseline guide [39] had Russian edition, not update version. Taking into account this WHO document, the Ukrainian Ministry of Public Health developed a national guideline "Management of Normal Labour" in 2008 which included three components of AMTSL.

This procedure, though supported by Ministry of Public Health, Ukraine, still receives much opposition from health care providers because of the misunderstanding of CCT methodology.

The first attempt to implement AMTSL was undertaken in Ukraine in 2003. First national guideline (The order N 582, http://www.moz.gov.ua/ua/main/docs/?docID=9612) "Management of Normal Labour" included CCT as a part of management of the third stage of labour. But for the first time AMSTL was recommended in the update version of national guideline in 2008 (The order N 624 http://www.moz.gov.ua/ua/main/docs/?docID=15186).

Since 2004 the number of PPH decreased in rural areas of Donetsk region from 14,5 per 1000 birth to 11,2 per 1000 birth due to AMSTL implementation. But at the same period of time in the regional perinatal centers we had a negative trend in PPH (from 13,3 per 1000 birth to 18,3 per 1000 birth) because, probably, of some obstacles caused by mismanagement of the AMSTL.

The updating national guideline is based on review WHO document (2006) and it's in concordance with it. There are two ways of the third stage management in Ukraine: AMSTL and EM. Both of them are possible according to national guideline. But some important features from WHO guideline were lost. In the Ukrainian national guideline there is not a single note that CCT must be undertaken only after the presence of placental separation signs. The absence of this information led to the increase in the number of inversions of uterus. As a result some midwives and obstetricians have negative attitude to this practice. National guideline gives the right of choice to a woman what kind of the third stage management will be chosen. But in real life this choice completely depends on doctor's attitude to AMSTL. This omission makes a barrier to implement AMSTL which is recommended by WHO. To use terminology like "physiological", "classical", "traditional" management instead of EM creates negative attitude towards AMTSL among patients. They interpret AMTSL like non-physiological and non-traditional.

Thus, statement on presence of placenta separation signs before applying CCT needs to be incorporated in national guideline description for effective promotion of AMTSL. The second step should be evaluation of skills on AMTSL among midwives and obstetricians.

Conclusion

The MPS Technical Update "Prevention Of Postpartum Haemorrhage By Active Management Of the Third Stage Of Labour" is the document of high quality and based on the best evidence available in 2006. Implementation of the recommendations in the guidelines can help to decrease of PPH worldwide.

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