MAISHA QUALITY OF MATERNAL AND NEWBORN CARE STUDY

KEY FINDINGS: PREVENTION OF POSTPARTUM HEMORRHAGE
2010–2012
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Key Findings:
Prevention and Management of Postpartum Hemorrhage

BACKGROUND

Postpartum hemorrhage (PPH) is a major cause of maternal mortality in the developing world, leading to nearly 33% of maternal deaths in Africa [1]. PPH is defined as blood loss of 500 ml or more within 24 hours after birth. For many years, active management of the third stage of labor (AMTSL) has been the recommended intervention to prevent PPH. AMTSL has three main components: (1) administration of a uterotonic drug within one minute of birth (the “relaxed” definition is within three minutes of birth), (2) delivery of the placenta by controlled cord traction (CCT), and (3) uterine massage. In 2012 the World Health Organization (WHO) revised its guidelines to emphasize one of the components: the provision of the uterotonic in the third stage of labor, preferably with oxytocin (10 IU by IM/IV)[2]. While uterine massage and CCT are still indicated, they are not necessarily recommended for every delivery.

In Tanzania, 27% of maternal deaths result from PPH [3]. In 2008, the Tanzanian Ministry of Health and Social Welfare (MOHSW) adopted AMTSL for PPH prevention. This intervention has subsequently been scaled up by the Ministry and implementing partners, including the MAISHA program. The MOHSW is now updating job aids for maternal and newborn care, including one on universal use of AMTSL with oxytocin. Uterine massage is to be performed only when the uterus is not contracted (with or without bleeding).

THE MAISHA PROGRAM

The Mothers and Infants, Safe, Healthy, Alive (MAISHA) program in Tanzania is a USAID-funded program led by Jhpiego, an affiliate of Johns Hopkins University. The program works with the Ministry of Health and Social Welfare (MOHSW) to improve the quality of maternal and newborn care in Tanzania. Since 2008, MAISHA has trained health care providers in basic emergency obstetric and newborn care (BEmONC), promoted supportive supervision of BEmONC in health care facilities, facilitated quality improvement for maternal and newborn health in facilities, and supported improvements to national health information systems for maternal and newborn health. MAISHA has trained and provided quality improvement support to more than 1,593 providers and supervisors from 251 facilities nationwide.

In 2010 the MAISHA program conducted a Quality of Care (QoC) study to gather baseline information on the quality of maternal and newborn care in the facilities that MAISHA supported in the first two years of the program. The study, conducted in 12 regions of Tanzania, used direct observations of maternity and antenatal care clients to assess the quality of services provided to women and their newborns. In 2012, after roughly two years of intervention in these facilities, the assessment was conducted again to document changes in the quality of care due to the MAISHA program.

MAISHA Program in the QoC Facilities

The MAISHA program was active in all facilities in the two-year intervention period, and program components included training of health care providers in BEmONC (one to two providers trained per facility), quality improvement (assessed annually), and supportive
supervision from MAISHA and district health management teams (one to four visits per year, with an average of two). The mean length of implementation of the MAISHA program in these facilities was 25 months, with a range of 17 to 41 months.

METHODOLOGY OF THE QOC STUDY
The QoC study used the same methodology and sampling approach in 2010 and 2012, combining observations of women in the maternity ward during labor and delivery, observations of antenatal care consultations, inventories and record reviews, and health worker knowledge assessments. The numbers of facilities and observations made in each year of the study are shown in Table 1. Specific methods included the following:

- A team of national maternal and newborn health experts underwent clinical updates, training, and orientation to the study tools.
- Data collection teams visited the facilities and observed all deliveries occurring during the two- to three-day period (or as many as possible at regional hospitals).
- Data were entered into smartphones (2010) and tablets (2012).
- Performance of the three components of AMTSL was observed and noted using the standardized checklist: provision of a uterotonic (oxytocin, ergometrine, or misoprostol), with correct timing (within one or three minutes of delivery); controlled cord traction; and uterine massage immediately follow placenta delivery.

Table 1. Numbers of facilities and observations in the Tanzania QoC study, 2010 and 2012

<table>
<thead>
<tr>
<th></th>
<th>Regional hospitals assessed</th>
<th>Health centers and dispensaries assessed</th>
<th>Labor and delivery observations in hospitals</th>
<th>Labor and delivery observations in dispensaries and health centers</th>
<th>Total labor and deliveries observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>12</td>
<td>40</td>
<td>195</td>
<td>294</td>
<td>489</td>
</tr>
<tr>
<td>2012</td>
<td>12</td>
<td>38</td>
<td>341</td>
<td>214</td>
<td>555</td>
</tr>
</tbody>
</table>

RESULTS
Active Management of the Third Stage Labor (AMTSL)
Figure 1 presents the proportion of observed deliveries in which individual steps of AMTSL were performed correctly in 2010 and 2012. On all components of AMTSL, significant increases occurred at lower-level health facilities between the baseline and endline studies. While the overall proportion of mothers receiving a uterotonic within one minute showed only a slight increase (2%) between 2010 and 2012 (data not shown), a huge increase (47%) occurred at lower-level facilities ($p < .0002$). Performance of CCT improved at both levels of facilities, with greater improvement at the lower-level health facilities (16%, $p < 0.0002$). Uterine massage following delivery of the placenta improved by 27% between baseline and endline (data not shown); again, the improvement was most pronounced at lower-level facilities, where a 41% increase was found.

* The WHO guidance on AMTSL was revised between the two rounds of QoC, so the original AMTSL measurements were used to preserve continuity.
Figure 1: Observed hospital and health center deliveries with components of AMTSL

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of any uterotonic within 1 minute</td>
<td>54%</td>
<td>50%</td>
<td>67%</td>
<td>60%</td>
<td>83%</td>
<td>80%</td>
<td>92%</td>
<td>93%</td>
</tr>
<tr>
<td>Provision of any uterotonic within 3 minutes</td>
<td>50%</td>
<td>50%</td>
<td>83%</td>
<td>80%</td>
<td>92%</td>
<td>93%</td>
<td>66%</td>
<td>66%</td>
</tr>
<tr>
<td>Controlled cord traction</td>
<td>78%</td>
<td>78%</td>
<td>93%</td>
<td>93%</td>
<td>93%</td>
<td>93%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>Uterine massage</td>
<td>63%</td>
<td>60%</td>
<td>88%</td>
<td>91%</td>
<td>88%</td>
<td>91%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Hospitals | Health centers/Dispensaries

Figure 2 presents the percentage of deliveries in which AMTSL was performed correctly using the “relaxed” definition (any uterotonic provided within three minutes, CCT, and uterine massage). The performance of AMTSL (based on the relaxed definition) increased by 19%, from 41% to 60% of deliveries, between 2010 and 2012 ($p < 0.00001$). The highest increase was seen in lower-level health facilities, where use of AMTSL increased by 47% ($p < 0.0002$). By comparison, a much more modest improvement (5%) was found in hospitals.

Figure 2: Observed deliveries with correct provision of AMTSL by relaxed definition

Figure 3 shows the percentage of deliveries in which the correct steps in AMTSL with any uterotonic were performed. In 2012, 75% of women were administered a uterotonic within three minutes of birth.

Figure 3. Observed deliveries with correct provision of each component of AMTSL, relaxed and standard definition
**Type of Uterotonic**

Figure 4 shows the type of uterotonic used in the deliveries observed at baseline and endline. Oxytocin, which was already used in 91% of deliveries in 2010, was used virtually universally in the deliveries observed in 2012.

**Figure 4. Type of uterotonic used, 2010 and 2012**

![Uterotonic Usage Chart]

**Uterotonic Availability**

In both 2010 and 2012, an inventory of available uterotonics was conducted in the maternity wards, and medication was deemed to be available if it was observed in the delivery room with at least one valid dose. Table 2 shows the availability of each type of uterotonic in the facilities on the day of the inventory visit. Overall, oxytocin availability increased by more than a third (34%, p = .001). Because the availability of ergometrine (the second-choice uterotonic) dropped by 43% and the availability of misoprostol dropped by 14%, it appears that there has been a major shift toward the use of the MOHSH-recommended uterotonic for the management of PPH.

**Table 2. Availability of uterotonics on the day of the visit**

<table>
<thead>
<tr>
<th>Uterotonic</th>
<th>2010 Hospitals</th>
<th>2010 Health centers</th>
<th>2012 Hospitals</th>
<th>2012 Health centers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>11</td>
<td>92</td>
<td>20</td>
<td>53</td>
</tr>
<tr>
<td>Ergometrine</td>
<td>4</td>
<td>33</td>
<td>25</td>
<td>66</td>
</tr>
<tr>
<td>Misoprostol</td>
<td>5</td>
<td>42</td>
<td>12</td>
<td>32</td>
</tr>
</tbody>
</table>

**Management of PPH**

Very few actual cases of women with PPH and of providers managing PPH were observed during the study, and the number of cases observed was lower in 2012 (four cases out of 555 women observed) than in 2010 (10 cases out of 489 women observed). Although these numbers are too small for statistical comparison, it is encouraging to note that observed cases of PPH declined and that the decline may be due in part to prevention of PPH activities and achievements in these facilities. Management of the four cases in 2012 (three cases during childbirth; one postpartum) was successful; oxytocin was given to all four women to manage bleeding and manual removal of the placenta was performed in two cases. However, only one of the two women with manual removal of the placenta was given antibiotics as recommended, and only one of the four women had her hemoglobin/hematocrit checked after management.
DISCUSSION

The use of AMTSL increased in health facilities following the MAISHA program intervention, particularly in the lower-level health facilities.

Given that WHO has confirmed that using a uterotonic is the most critical part of AMTSL for preventing death due to hemorrhage, it is encouraging that 100% of the women observed in this study received a uterotonic. It is also encouraging that use of oxytocin was practically universal at endline, with the availability of oxytocin increasing in the facilities. In addition to oxytocin specifically, the availability of any uterotonic increased by 14% between 2010 and 2012. Study findings also suggest a shift in the availability of oxytocin compared to other uterotonic, which is in line with MOHSW policy and global recommendations.

There was little change between 2010 and 2012 in the timing of uterotonic administration, indicating a need to ensure that uterotonics are prepared and administered very soon after delivery. With close to universal use, the timing of administration appears to be the next important area to work on. Close to one-fourth (22%) of the women observed received a uterotonic after three minutes, and they might have received the uterotonic after the placenta was delivered. While later administration does not cause harm, it does reduce the main benefit of the uterotonic (preventing blood loss) and might also indicate that CCT was performed before provision of the drug.

Continued efforts are needed in Tanzania to reduce maternal mortality due to PPH. The MAISHA program, with its focus on mentoring and supervision of AMSTL, appears to have had positive results, but improvements were most evident at the lower-level facilities. Quality improvement efforts focusing on regional hospitals may need to be modified in the future.

Guidelines and job aids, currently under development by the MOHSW, should be available at all facilities, and periodic refresher in-service trainings will assist in increasing or maintaining providers’ skills and knowledge. In addition, providers may be more motivated to offer AMTSL to all women at the time of birth if they are required to document its use (or at least administration of a uterotonic) in a formal hospital reporting/monitoring system.

To build on the apparent increase in the availability of oxytocin in the health facilities in the study, efforts to ensure a constant supply of all three uterotonics at all health facilities in Tanzania should continue. The importance of uterotonics in preventing PPH is receiving global attention through the United Nations Commission on Life-Saving Commodities, which has included oxytocin and misoprostol on its list of lifesaving maternal health drugs [4]. Ergometrine and misoprostol should also be available at all facilities for other uses, such as administration after manual removal of placenta and to manage ongoing excessive bleeding.

RECOMMENDATIONS

The following recommendations are based on the findings of the study, and aimed at MOHSW and all other key stakeholders in maternal and newborn service delivery.

- Ensure that AMTSL is taught and that competency is assessed within pre-service education programs for nurse-midwives, doctors, and the equivalent cadres of maternity service providers.
- Improve preparations for birth; oxytocin injections should be ready when a woman is about to deliver.
- Support providers in managing the sequencing of events within “the golden minute” at birth and integration of AMTSL with immediate newborn care activities.
• Ensure a continuous supply of quality oxytocin. Maintain the cold chain for oxytocin and remember that potency is reduced if oxytocin is exposed to heat for long periods of time. Maintain stock of oxytocin throughout the year.

• Ensure that job aids and service delivery guidelines for PPH are available and that all staff are competent in managing this potentially serious complication.

ACKNOWLEDGMENTS

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REFERENCES


