INTRODUCTION

Much progress has been made over the last decade in improving child survival in Ethiopia. According to the preliminary report of the 2011 Ethiopian Demographic and Health Survey (EDHS), under-five mortality was reduced 28% from the 2005 EDHS figures, from 123 to 88 deaths per 1,000 live births. Infant mortality was reduced 23%, from 77 to 68 deaths per 1,000 live births. Yet neonatal mortality rates showed a modest 5% reduction, from 39 to 37 deaths per 1,000 live births. The maternal mortality ratio was 676 maternal deaths per 100,000 live births for the seven year period preceding the survey. This ratio is not significantly different from those reported in the 2005 EDHS and the 2000 EDHS. Furthermore, only 34% of women received antenatal care (ANC) from a skilled provider and 8.7% from Health Extension Worker (HEW), and 10% had a skilled provider at delivery, in part because more than 90% of women give birth at home. As a result, an estimated 22,000 women and 100,000 newborns die from complications related to childbirth each year. Many of these deaths occur within 48 hours after birth and could be averted with access to basic health care.

In response, the Government of Ethiopia has recently developed the Road Map for Accelerating the Reduction of Maternal and Newborn Morbidity and Mortality in Ethiopia and updated the National Reproductive Health Strategy. Yet at the current rate of progress, it will not meet its target of reducing the neonatal mortality rate to 18 per 1,000 births by 2015. To contribute to this effort, under the leadership of the Ethiopian Federal Ministry of Health (FMoH), the Maternal and Newborn Health in Ethiopia Partnership (MaNHEP) has continued working to strengthen implementation of the Health Extension Program by building skills of frontline health workers (FLW) and developing the systems needed to deliver quality maternal and newborn health care.

MaNHEP, which works in six districts in Amhara and Oromia Regions, is funded by the Bill & Melinda Gates Foundation and led by Emory University, in collaboration with John Snow Research and Training Inc. (JSI R&T), University Research Co., LLC (URC), and Addis Ababa University.

This newsletter reports on activities that occurred from January 2012 through March 2012.

COMMUNITY MATERNAL AND NEWBORN HEALTH (CMNH) AND QUALITY IMPROVEMENT (QI) ACTIVITIES

CMNH Birth Audit

What is it?

A Birth Audit is a narrative collection of the experiences from birth to 48 hours, as given by a woman and her family caregivers who are present for the birth. The collection of this information helps to identify which CMNH care practices are reportedly taking place and informs focused CMNH training needs. The project randomly samples 10% of births registered at health posts in the project area every quarter. The trained Maternal and Newborn Health (MNH) specialists and woreda coaches collect the birth audit data at home or health posts.

The first round of the Audit

The first round of the Birth Audit was conducted during January and February, 2012. The data collectors included births which occurred from October – December 2011. Of the sampled 151 cases, 141 (93.4%) mothers were interviewed, along with their family teams.

Results: Birth Preparations

Ninety seven percent of mothers reported that they visited the health facility for ANC at least once, whereas 46% of mothers reported having received ANC at least four times. After the first ANC, the project expects mothers to attend four CMNH meetings. The Audit showed that of all registered births, 95% of mothers attended the meeting by themselves or with a family team at least once. However, 62% of them completed

![Figure 1. Materials prepared for birth by Mothers and family team](image-url)

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Razor Blade</td>
<td>91%</td>
</tr>
<tr>
<td>Food and drink</td>
<td>91%</td>
</tr>
<tr>
<td>Cord tie</td>
<td>89%</td>
</tr>
<tr>
<td>Clean clothes</td>
<td>89%</td>
</tr>
<tr>
<td>Placenta container</td>
<td>74%</td>
</tr>
<tr>
<td>Soap</td>
<td>66%</td>
</tr>
<tr>
<td>Plastic sheet</td>
<td>50%</td>
</tr>
</tbody>
</table>

This newsletter reports on activities that occurred from January 2012 through March 2012.
the fourth CMNH meeting. Following the meeting, 59.6% of mothers identified helpers, 83% of mothers set money aside for potential referral, and 59% of mothers plan for any kind of transport. As part of birth preparation, 91% and 89% of mothers prepared a razor blade and cord tie, respectively.

Results: Pregnant mothers experience while giving birth
As reported by mothers and their caregivers, 88% of births took place at home, but 19% of mothers notified their labor to HEWs when it started. Only 11% and 7% of mothers received care from HEWs and midwives/nurses at birth, respectively. It was also reported that birth attendants tried to prevent infection by preparing a clean place (88%), clean helpers (70%), and clean women (72%). Furthermore, mothers were asked what the attendants looked for and what they advised while attending the labor. During labor, the majority of mothers were checked for too much bleeding and also checked for birth delay (55% and 50%, respectively). In addition, 62% of mothers walked and changed position and 80% drank liquids when they were in labor. For facilitating the delivery of placenta, 36% of mothers were in semi-sit position, 43% of mothers passed urine, 60% waited for the placenta to deliver spontaneously. Moreover, 46% of mothers massaged the uterus to decrease bleeding and nearly all of the mothers (97%) took misoprostol after the placenta was born.

Results: Care given just after birth
Mothers were also asked what kinds of action they took after their babies were born. The Audit revealed that 86% of mothers cover the head and body of the baby to keep the baby warm, 60% of mothers wiped the baby’s nose and mouth to help it breathe, and nearly 62% of mothers kept the cord dry and clean. The majority of the mothers (87%) started breast feeding within one hour of birth, 79% of mothers were giving only breast to their babies, and 54% used good position and had good attachment. Moreover, 31% of mothers checked the baby for too early/small baby, and 56% of mothers checked for poor sucking.

<table>
<thead>
<tr>
<th>Help baby birth</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wipe nose and mouth</td>
<td>60%</td>
</tr>
<tr>
<td>Rub back</td>
<td>32%</td>
</tr>
<tr>
<td>Check for breathing</td>
<td>59%</td>
</tr>
<tr>
<td>Check for color</td>
<td>23%</td>
</tr>
<tr>
<td>Check crying</td>
<td>65%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cord care</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay tying</td>
<td>56%</td>
</tr>
<tr>
<td>Cut with clean tool</td>
<td>75%</td>
</tr>
<tr>
<td>Keep dry</td>
<td>62%</td>
</tr>
<tr>
<td>Keep clean</td>
<td>62%</td>
</tr>
</tbody>
</table>

Results: Post Natal Care (PNC)
Nearly all of the interviewed mothers had one PNC visit. In addition, 89% of them had this visit within 2 days. The majority of PNC visits (95%) took place at home, and HEWs delivered the service to 73% of mothers.

Outcome of the interventions
98.6% of newborns were alive at the time of the interview.

Learning Sessions
Mini Learning Session - 2
The second mini learning session was conducted in each project woreda during the months of January and February, 2012. Five representatives from each site/kebele, all coaches, and the heads of the woreda health and administrative offices participated in the session. Woreda level performance
for each improvement area was presented and discussed in a large group setting, and participants led small group discussions in order to:

- List/rank the change ideas tested in each improvement area;
- Plan the implementation/integration of successful approaches to pregnancy identification and registration into ongoing programming; and
- Address challenges to making improvements in labor/birth notification, PNC visits, and the reporting of births and deaths.

Specific outcomes of the discussions are mentioned in the following care area descriptions.

**Learning Session - 4**

The fourth learning session was a joint session for the two regions to share lessons on the implementation of MNH care at the community level across all project sites. A total of 172 participants attended learning session four from February 16 to 17, 2012. Comprising this number were two representatives from each site/kebele, all coaches, heads of woreda health and administrative offices, and representatives from zonal and regional health offices. Activities during the learning session included:

- **Performance review:** Overall performance in each improvement area, examples and lessons from successful sites, and potential challenges were presented and discussed.
- **Poster presentation:** Each participant viewed and discussed two woreda posters, one from each region. Participants observed the similarities and differences in each woreda, looked for opportunities for improvement, drew lessons, and discussed challenges and suggested recommendations.
- **Small group discussion:** Participants held group discussions on the four improvement areas. The groups reviewed ranked lists of ideas, discussed similarities and differences in each woreda and region, and planned out how to integrate successful ideas into ongoing programming and how to address challenging improvement areas such as labor/birth notification and PNC followup.
- **Introduction of new improvement areas:** Improving use of Misoprostol and referral were introduced as additional improvement areas for next activity period.

One key lesson learned was that holding sessions with participants from different regions helps to have a cross-regional experience and influences the implementation of activities in other regions.

**Follow-up of Health Extension Worker Clinical Update**

**Overall,** HEWs’ ability to correctly perform key CMNH actions increased by around 50% following the clinical update (Figure 3).

Strengthening FLW’s capacity to provide MNH services around the time of birth is a key MaNHEP objective. While the majority of HEWs in project sites were trained in the FMOH’s one-month Safe and Clean Birth and Newborn Care curriculum, many did not feel confident to attend deliveries in their kebeles due to a lack of hands-on training with laboring mothers. Thus, a tailored gap-filling clinical update on safe and clean birth and newborn care was provided for the HEWs from the project kebeles.

In March, 2012, post post-training testing was conducted with a total of 30 HEWs in Oromiya and Amhara regions in order to assess retention of knowledge and skills from the gap-filling clinical update. HEWs were tested on two topics: 1) Prevent Problems after Baby is Born: First and Other Actions; and 2) Helping Babies Breathe. HEWs demonstrated strong retention of knowledge, scoring on average, above 80% and 70% for First and Other Actions and Helping Babies Breathe, respectively. As expected, post post-training testing scores were slightly lower than immediate post-training scores, although HEWs in both regions demonstrated knowledge far above pre-training scores for both topics. For First and Other Actions, Oromia HEW scores increased from 55% of care steps correctly performed during the pre-test to 100%.

![Figure 3. HEW Clinical Update Pre-, Post-, and Post Post-testing in Amhara and Oromiya Regions, Ethiopia (Pre-test N=83; Post-test N=83; Post post-test N=30)](image-url)
81% correctly performed five months following training, and Amhara HEW scores increased from 56% to 85% (Figure 3). Improvements were even more dramatic for Helping Babies Breathe. Oromiya HEW scores increased from 30% to 70% from the pre-test and post post-tests, respectively, while Amhara HEW scores increased from 38% to 74%.

Annual Review Meeting

After completing the second year of project implementation, the MaNHEP project team held a review meeting from March 15 to 16, 2012. A total of 35 participants attended the meeting, drawing from the FMoH, Oromia Regional Health Bureau, Addis Ababa University, Project Advisory Committee members from the US and Ethiopia, and international and national staff members of Emory University, JSI R&T, and URC.

The objectives of the meeting were to: review progress against our deliverables through February 2012; discuss key challenges and lessons learned during the past year; and determine the priority focus areas for the coming year. The expected outcome of the meeting was to set priority directions for MaNHEP in the upcoming year.

During the meeting, the participants shared last year’s accomplishments, success factors, and challenges and then planned for the coming year. After the official opening of the meeting by Dr. Lynn Sibley, the participants started by sharing their experiences. There was a time for storytelling, during which HEWs, health center (HC) and woreda coaches, and MNH Specialists shared their inspiring stories on how mothers and their newborns were saved by the community volunteers and the HEWs. The sharing time was followed by presentations, which included an overview of MaNHEP in the last year, the new Primary Health Care unit structure, and what it looks like.

Following these discussions, group poster presentations were made. Featured were presentations on achievements of key interventions, including: CMNH Meetings including Birth Audit, Collaborative Quality Improvement, Behavior Change Communication, and the HEW gap-filling clinical update. The presentations were discussed in plenary, and discussions focused on opportunities to use the new Health Extension Program structure, as well as the need to utilize the FMoH’s Community Health Information Management System.

Throughout the discussions held at the meeting, it was clear that project’s achievements are encouraging and that the strategies used have proven effective. However, to consider scale up, it was agreed that exploring the existing government structures and aligning MaNHEP interventions with them is of paramount importance. The group discussions have helped the team to develop a common understanding and envision some of the interventions that can be easily aligned in these structures. Moreover, the group discussions and plenary sessions outlined ways of supporting government priorities, engaging government at all levels, engaging people in new areas, capacity building, and messaging improvement.

Finally, Dr. Sibley closed the workshop by highlighting priority areas for the upcoming year. Dr. Sibley pointed out that our project’s aim is to create a scalable model for CMNH that is owned, operated, and managed by the government of Ethiopia, removing ourselves from the equation through the transition. She also highlighted that we should continue to deliberately engage locals at both the federal and regional levels, so that they begin to own, lead, and implement the model themselves.

Harvest Meeting

On March 21-22, 2012, a Harvest Meeting was held in Adama, Ethiopia with MaNHEP staff, advisors, Woreda Health Office (WorHO) and HC coaches, and HEWs to determine what areas of the MaNHEP package were ready for spread. The meeting was led by Lloyd Provost, an expert in the field of QI. The Harvest Meeting was designed so that the team could conduct in-depth analysis of the available data from international literature, project data from birth audits and run charts, and share the experience and expertise of those who have been implementing MaNHEP interventions. Small groups of participants held in-depth discussions on the CMNH package and the community level processes of care. The key conclusion of the CMNH package discussion was that the CMNH Family Meetings and Take Action Cards complement the health education content of FMoH’s Family Health Card by providing essential knowledge and skills for prevention of postpartum hemorrhage (PPH) including misoprostol, immediate maternal and newborn care at birth, and newborn resuscitation. These skills are necessary to reduce mortality. MaNHEP will work with the FMoH, Regional Health Bureau (RHB), and WorHO to find efficient ways to integrate the CMNH Family Meetings and practice into the new Health Extension Program structure. The discussion of community level processes focused on change ideas and results of QI teams, including which were most effective, building on the ranking from the mini-learning session and grouping from regional learning session. After groups had narrowed down key changes to be spread, they created an initial grouping of change ideas into change concepts, looking at how change ideas may have a similar approach. Following the Harvest Meeting, all of the advice and recommendations of participants will be used to develop a change package for both processes of care and the CMNH package. The MaNHEP team will continue to work closely with FMoH, RHB and WorHO to develop a strategy for the spreading of this content within the new structure.
BEHAVIOR CHANGE COMMUNICATION (BCC) ACTIVITIES

Mobile video shows aiming to educate, sensitize, and mobilize the target community for CMNH services and to encourage the adoption of positive behaviors with regard to birth-related issues were staged in selected Amhara and Oromiya regions. More than 28,400 people from 23 kebeles in Amhara and 30 kebeles in Oromiya attended the show in January and February 2012.

Figure 4. Number of Mobile video Show attendants by target group

In the past, the husband never been in the home when the women start labor, but now we have learned a lot about the care needed for laboring mothers, so I promised and committed to be with my wife and also to teach other men.

– Participant from Kuyu woreda –

How was it implemented?

Before the staging of the shows began, public announcements were made in rural kebeles, and show facilitators made short introductions about the role of the film. In preparation for screening, poem contest winners were pre-selected by kebele teams - primarily comprised of kebele leaders and HEWs - based on preset criteria (e.g., originality, flow of information, content, and correctness of the information as related to maternal and neonatal issues). Based on the criteria, three selected poems were presented in each kebele, and winners were awarded promotional items such as t-shirts, capes, hand torches, and certificates. Across both regions, a total of 162 poems were presented.

In our community, decision makers are usually men, so knowledge of women about birth preparation, danger signs and ANC is not enough. Thus, involvement of men to change this practice and try to create awareness through different opportunities is necessary.

– Participant from Mecha woreda –

Following the shows, participants were asked to reflect upon their views, and focus group discussions were conducted.
PROGRESS ON SELECTED INDICATORS

Pregnancy Identification and ANC Registration

Teams have reached a high and sustained level of performance for pregnancy identification and ANC registration. On average the teams have identified over 81.6% of expected pregnancies. As of February 2012, 83.5% of newly identified pregnant women have registered for ANC. Results have been sustained for several months within a normal variation. The teams are now exploring how to integrate these efforts into all routine activities of the kebeles, including the new Health Extension Program structure, for greater efficiency and sustainability.

Over 16 months, 14,738 pregnant women identified. This figure is 81.6% of the expected pregnancies. The median for number of pregnant women identified is 897 (Figure 5).

The percentage of identified pregnant women who were registered/received a first ANC visit increased from 38% in November 2010 to 83.5% by February 2012 (Figure 6).

Figure 5. Number of newly identified pregnant women (November 2010 – February 2012)*

* After the initial baseline of all pregnant women previously unrecorded was captured, the number of only newly pregnant women tapers off into a steady state across time, as shown in the chart.

Figure 6. Cumulative percent of newly identified pregnant women who registered/received first ANC (November 2010 – February 2012)
Established conventions for interpreting run charts show that sites have made statistically significant improvements in registration/receipt of first ANC visit. This demonstrates that a fundamental shift in the performance of the process used to identify and register pregnant women for ANC has occurred. The chart shows a trend for continued improvement.

**CMNH Family Meeting Attendance and Care Delivery**

About 42% of identified pregnant women had attended CMNH Family Meetings by the end of February 2012. Of those reported births, 87.6% completed all four CMNH meetings before birth by February 2012 compared to 65.4% in March 2011 (Figure 7).

As with registration/receipt of ANC, CMNH Family Meeting exposure shows a trend towards increasing coverage. This improvement area will receive emphasis in the coming months to improve coverage. While tracking coverage of CMNH Family Meetings is important, equally important is understanding the extent to which CMNH Family Meetings have led to improved care in and around the time of birth. To this end, MaNHEP has recently instituted Birth Audits (described previously) to capture the completeness of care provided during labor, birth and the early postnatal period. Every three months, 10% of delivered women are randomly selected from each kebele Health Post Master List. MaNHEP MNH Specialists conduct the Birth Audits.

**Figure 7.** Cumulative percent of identified pregnant women who attended CMNH meetings 1, 2, 3, 4 (March 2011 – February 2012)
**Labor/Birth Notification & PNC Visit by HEW Within Two Days**

By the end of February 2012, 42.2% of expected births were reported. Of reported births, 84.5% were notified to HEWs within 2 days of labor/birth and 82.4% were visited by HEWs within two days after delivery. PNC visits by HEWs within two days of after birth increased from 1.4% of expected births in November 2010 to 34.8% by February 2012 (Figure 8).

Local ideas outlined in the previous section for labor/birth notification resulted in initial improvements in PNC coverage, with the data showing a shift in the performance of the process. However, coverage has plateaued in the last year at around 35% of mothers receiving a PNC visit within two days of delivery. MaNHEP, woreda and HC coaches are working closely with Guide Teams and QI Teams to identify barriers and possible solutions to improve coverage.

Barriers identified thus far include:

- HEWs may not be in the Health Post to be notified of labor or delivery;
- Mothers and families may be unable to properly estimate the due date of the pregnant mother;
- Mothers having their first baby often give birth in their maternal home, outside of the project area;
- Mothers and families do not feel the need to report a normal birth; and
- It is customary that only family and immediate neighbors are first informed of births, not HEWs.

The January Mini-Learning Sessions focused on gaining a better understanding on what happens around the time of birth and developing ideas for ensuring the HEW is informed. Using cell phones appears to be a viable strategy for notification, as most Guide Team members possess cell phones with the HEWs’ phone numbers, and most community members know a neighbor with a cell phone. Harnessing the new Health Extension Program Health Development Army’s one-to-five network is another strategy for improving notification.

As with CMNH Family Meeting attendance, labor and birth notification will receive emphasis in the coming months. Local ideas that have led to the results to-date have been outlined in past newsletters, such as assigning an individual to find and inform the HEW when labor begins, by walking, riding, and/or cell phone communication with the HEW. In addition, HEWs have been informing communities of their location through notifications on Health Post doors. Because labor/birth notification to a HEW is closely linked with a PNC visit by a HEW within two days of delivery, the challenges and potential solutions for both improvement areas are similar. These are discussed further in the following section on PNC.

**Figure 8.** Percent of delivered women (of expected births, FMoH estimate) whose delivery was notified to a HEW within two days of labor/birth and who were visited by HEW within 2 days of birth (November 2010 – February 2012)
Maturity Index
The average QI team maturity index for the month of February 2012 was 2.83 out of 5 (Figure 9).

The maturity index is used to monitor progress in team maturity as they work through different stages of improvement and care steps, and it is assessed every month with a scale of one to five. In the month of February 2012, the average score for all 51 QI teams was 2.83. This figure indicates modest improvement where successful change ideas are implemented for at least one care step and testing changes for at least two additional care steps has begun. [Most of the teams are implementing ideas for the first two care steps and testing for additional three care steps.]

As the QI Teams’ performance plateaus, so does their maturity score. As the teams find new ways of addressing challenges to ensuring all women and newborns receive care in time, every time, their ability to problem solve and improve and their maturity scores will continue to improve.

Misoprostol to Prevent Postpartum Hemorrhage
Of all deliveries reported by February 2012, 62.9% of women received Misoprostol immediately after birth of the placenta. This figure varied considerably by region: Amhara (31.9%), Oromia (93%).

When estimated births are used as the denominator, the percentages are: Overall (26.6%), Amhara (12.4%), Oromia (42.8%) (Figure 10).

In June 2010, the Food, Medicine and Health Care Administration Authority of Ethiopia approved registration of misoprostol tablets for use in preventing and managing PPH, which contributes to about 7% of maternal deaths. Due to the large difference in misoprostol use in the project areas, MaNHEP is conducting a study to better understand what is currently happening with regards to the policy, administration, operations, and outcomes of the national misoprostol program in Amhara and Oromia Regions.

With FMoH approval, the supplemental study will begin in May 2012. Findings will be shared with all stakeholders and will hopefully contribute to improved policy and programming to advance misoprostol to prevent PPH in Amhara region.
OTHER SUCCESSES AND LESSONS

A number of other improvements have been identified in the implementation of project interventions, including:

• Data usage: The skill of using data for decision-making among various community members and government partners working at district level is improved.
• Inclusion of documented best practices: While the government trains the Health Development Army, it is including best practices documented by the project.
• Ownership of the project: In the absence of the MaNHEP MNH specialists, WorHO and HC staff members are running the implementation in certain woredas.

Lessons learned include:

• Holding sessions with participants from different regions helps to have a cross-regional experience and influences the implementation of activities in other regions.

CHALLENGES

• Turnover of woreda administrators and WorHO heads;
• HEWs absent from their health posts for personal reasons and frequent meetings; and
• Strong local norms for homebirth and not notifying the HEW of labor and birth in the absence of maternal and newborn complications.

LOOKING AHEAD TO THE NEXT PERIOD

• Emphasis on Family Meetings and labor/birth notification: CMNH Family Meeting coverage and labor/birth notification to HEWs will be emphasized.
• Introduction of new change processes: New concepts, such as use of Misoprostol and Referral, were introduced at learning sessions and will be followed-up by MNH specialists and coaches in their respective kebeles (April – May, 2012).
• World Public Health Congress: All regional and central level program staff will attend the World Public Health Congress meeting in Addis Ababa (April 23 to 27, 2012).
• Preparation for Test Spread: A total of 72 new kebeles were selected by woreda leaders to be considered for test spread. Planning for spread within the new sites will begin May – June 2012. The preparation includes, but is not limited to the development of implementation mechanisms, preparation of packages, revision of training materials, and preparation of training and demonstration materials (April – mid May 2012). Initial planning and orientation for zonal health departments and RHBs will begin at the end of May 2012.
• Revision of BCC intervention modality: The revision will be made in consultation with in-country and US-based staff to accommodate and gear efforts towards the addressing of lagging project indicators for CMNH Family Meeting and labor/birth notification (April 2012).
• Message dissemination at selected market places: Selected companies will present street shows at market places where residents in the neighboring kebele can be reached (May 2012).
• Misoprostol supplemental study: Both the qualitative and quantitative components of the study will be started during the first week of May 2012.
• Birth Audit: The second round of the audit will be conducted by MNH specialists and coaches (April – May, 2012).
• Verbal autopsy qualitative survey in both Amhara and Oromia regions will be finalized (May – June, 2012)
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                                 Telaahun Tekla

GLOSSARY

ANC  Antenatal Care
BCC  Behavior Change Communications
CMNH  Community Maternal and Newborn Health
EDHS  Ethiopian Demographic and Health Survey
FMoH  Federal Ministry of Health
HEW  Health Extension Worker
HC  Health Center
JSI R&T  John Snow Research & Training Inc.
MaNHEP Maternal and Newborn Health in Ethiopia Partnership
MNH  Maternal and Newborn Health
PNC  First Postnatal Care Visit
PPH  Postpartum Hemorrhage
QI  Quality Improvement
RHB  Regional Health Bureau
URC  University Research Co., LLC
WorHO  Woreda Health Office

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