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Pathfinder INTERNATIONAL
A GLOBAL LEADER IN SEXUAL AND REPRODUCTIVE HEALTH

JSI
John Snow, Inc.

Integrated Family Health Program

INTEGRATED FAMILY HEALTH PROGRAM (IFHP)

Assessment of Maternal & Newborn Health Interventions in Learning Woredas of Amhara, Oromia, SNNP, and Tigray Regions of Ethiopia

August 2014
Addis Ababa, Ethiopia

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Acknowledgements

The Integrated Family Health Program (IFHP) is USAID's flagship bilateral family and community health program in Ethiopia. IFHP aims to provide an integrated package of services to improve the health of rural families, especially mothers, newborns, and children. IFHP is implemented by Pathfinder International and John Snow, Inc. (JSI), in partnership with local entities.

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Acronyms

AMTSL.....Active Management of Third Stage of Labor

ANC .....Antenatal Care

BC .....Behavior Change

BEmONC.....Basic Emergency Obstetric and Newborn Care

CBNC.....Community Based Newborn Care

CHP.....Community Health Post

CHW .....Community Health Workers

CSO .....Civil Society Organization

EDHS .....Ethiopian Demographic and Health Survey

ENC.....Essential Newborn Care

FANC .....Focused Antenatal Care

FGD .....Focus Group Discussion

GoE .....Government of Ethiopia

HEW .....Health Extension Worker

HC .....Health Center

HDA .....Health Development Army

HEP..... .....Health Extension Program

HIV .....Human Immunodeficiency Virus

HMIS..... .....Health Management Information System

IV.....Intravenous

KII .....Key Informant Interview

LAFP .....Long-acting Family Planning

MDG.....Millennium Development Goal

MNCH..... Maternal, Newborn & Child Health

MNH .....Maternal and Newborn Health

M & E: .....Monitoring and Evaluation

PAC .....Post Abortion Care

PHCU .....Primary Health Care Unit

PMTCT .....Prevention of Mother-to-child Transmission

PNC .....Postnatal Care

PPH .....Postpartum Hemorrhage

RHB .....Regional Health Bureau

SARA.....Service Availability & Readiness Assessment

SNNPR. .....Southern Nation and Nationalities Peoples Region

SPSS.....Statistical Package for Social Studies

TBA .....Traditional Birth Attendants

UNFPA .....United Nations Population Fund

USAID .....States Agency for International Development

WHO .....World Health Organization

WSU .....Women Service Users

ZHD .....Zonal Health Department

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Executive Summary

This *Assessment of Maternal and Newborn Health (MNH) Interventions in 20 Learning districts*[1] *of Amhara, Oromia, SNNP, and Tigray Regions of Ethiopia* demonstrates that MNH programmatic strategies adopted over the last three years via the Government of Ethiopia-Integrated Family Health Program (GOE-IFHP) collaboration in learning districts have led to tremendous progress for all key indicators of service availability, use, and quality. Specific indicators include current levels of skilled delivery service utilization, interventions that positively contribute to skilled delivery uptake, changes in community awareness, and potential program expansion and scalability. As compared with baseline data from 2011, quantitative and qualitative data from this study show marked improvements in the access and quality of MNH services and increased uptake of skilled delivery services. The assessment also identified persistent gaps and areas that need concerted effort.

This cross-sectional assessment used quantitative methods in all health facilities of the learning districts and qualitative methods in one district per zone for each of the four program regions. With support from IFHP, data were collected by an outside consultant who used the WHO-adapted Service Availability and Readiness Assessment survey tool. Key indicators were selected from the GOE health management information system (HMIS) were: ANC1, ANC4, skilled deliveries, one prenatal care (PNC) visit, family planning services, Penta3, and pregnant women tested for HIV. In addition, qualitative data were collected from 32 community-level focus group discussions and 69 key informant interviews. Data from annual random follow-up visits of IFHP also were used in the analysis.

HMIS data have shown increases in key MNH indicators in the learning districts from baseline to endline: ANC 1st visit by 30 percentage points (66% to 96%); skilled birth attendance by 9 percentage points (24% to 33%); and one PNC visit by 23 percentage points (41 % to 64%).

Core program strengths identified in learning districts include a focus on continuous quality improvement and supportive supervision; success of basic emergency obstetric and newborn care (BEmONC) training and follow-up for provider skills-building; and infrastructure, equipment, and supply improvements. Although not universal, positive staff attitudes were noted, as were positive changes in respectful and culturally sensitive maternity care. Client transportation to health facilities, while improved, still presents challenges. While availability of maternal health commodities has improved significantly, stockouts are still a problem, with 25% of facilities lacking key life-saving essential medicines at the time of the study. With rapid scale-up of the program, the MNH supply chain is vulnerable and requires immediate attention. Another issue in need of special attention is consistent application of essential newborn care (ENC) in health facilities.

The study demonstrated the importance of health extension workers (HEWs), women health development army (HDA) leaders, and one-to-five networks in the dissemination of key MNH messages. Focus groups noted that gaps remain and highlighted the importance of continually building community awareness and links between facilities and the community. Demand for health facility services is increasing as people become more aware of the importance of skilled delivery.

These findings show that service provider skill and facility readiness to client-centered and friendly services, coupled with demand-side interventions, contribute to improved MNH service uptake. The assessment shows that the GOE-IFHP MNH intervention has improved access to and quality of MNH services in the learning districts. The study validates that training alone is not sufficient, and underscores the value of simultaneous interventions including BEmONC training, facility upgrades, availing essential equipment and supplies, supportive supervision and skills reinforcement, and respectful care initiatives. This comprehensive approach, with special attention to addressing weaknesses and gap areas, guides the way from expansion to scale.

This study demonstrates that progress is being made in the IFHP-supported pilot areas, and that, overall, current strategies are sound and will guide expansion to national scale. Nevertheless, as measured by the study, routine data, and focus groups, there are gaps in services, quality, and acceptability. Government and partners must continually refine ways to reach the goal of reducing maternal mortality and morbidity through quality MNH care and facility-based deliveries. The following recommendations emerged from this study:

1. **Coordination and partnership:** Quality MNH interventions will continue to benefit from long-term GOE and stakeholder commitment and careful planning.

1 The equivalent of district in the Ethiopian context is Woreda.

2. **ANC and pregnancy planning:** Focus on early ANC and contingency support for women near their due dates.

3. **Skilled delivery:** Prioritize supply chain strengthening of life-saving MNH drugs, supplies, and equipment (vacuum extractors, magnesium sulfate, oxytocin, and misoprostol); aim for 100% availability at all times.

4. **3.1.** Another measure that could improve skilled delivery services is expanding delivery room space and equipment to accommodate more than two deliveries at a time in high-volume facilities. Also, incorporating active management of third stage of labor (AMTSL) in the HMIS would improve tracking of skilled deliveries.

5. **Postnatal care:** Postnatal care services should be strengthened through improved data collection, supportive supervision, and community outreach.

6. **Newborn care:** Ensure all ENC components are implemented at health centers and incorporate a formal ENC data recording mechanism in the HMIS system.

7. **Respectful care:** Respectful care and cultural sensitivity needs to be a part of training and supportive supervision protocols for health staff and managers at all levels.

8. **Transportation:** Transportation planning should focus on maintenance, improved planning around delivery timing, and providing community mechanisms to ensure that poorer community members can access and afford transportation to and from the health facility.

9. **Behavior change:** Effective BC approaches should be used to reinforce messages routinely conveyed by HEWs and other community health agents.

Introduction

MNH context in Ethiopia

In response to unacceptably high maternal mortality, the Government of Ethiopia is taking measures to reduce maternal mortality (1, 2). A 20-year Health Sector Development Program (HSDP) divided in four 5-year plans has provided clear guidance on the country's health sector response to diverse health-related goals, including reduction of maternal mortality. HSDP III introduced the flagship Health Extension Program (HEP). HSDP IV intensified the implementation of this program and others to achieve global commitment to reducing maternal mortality from 590/100,000 to 267/100,000, and increasing skilled birth attendance from 18.5% to 62% by 2015 (3, 2).

Approximately 39,000 rural and urban health extension workers were trained and deployed to complement these efforts and other health priority needs of the country (4, 5). Health extension workers spend three-quarters of their time on health-promoting activities in communities and referring women and other clients to the nearest health facility for clinical services (6). They are also expected to mentor women health development army (HDA) leaders in villages to serve as role models, thereby contributing to health service provision within the village.

In addition, constructing health facilities and equipping these facilities with appropriate supplies and equipment has been a focus of interventions (4, 5). A recent study documented improvements for both mothers and newborns in connection to deployment of health extension workers at the community and household levels (7). Recent global estimates have also documented that Ethiopia is making progress toward meeting global MDG targets for maternal health (1).

Despite dramatic gains, reducing maternal mortality and morbidity remains an enormous challenge in Ethiopia. Major determinants of continued maternal mortality in Ethiopia are attributed to limited awareness of health services, limited access to reproductive and maternal health services, limited health facility capacity, poor educational status of women, and other demographic and cultural factors (7, 8, and 9).

Demand-side barriers to the use of available maternal health services in Ethiopia have resulted in a low rate of institutional deliveries (10, 11, and 1). According to the Ethiopian Demographic and Health Survey (DHS) 2011, 60% of women did not consider that delivering in health facility is necessary, and 30% of women felt delivering in health facility is not customary. These opinions tend to be more prevalent among women in rural than urban areas (12).

A review of available information on antenatal care (ANC) attendance shows that about 43% of Ethiopian women receive at least one ANC visit and 19% women receive at least four ANC visits (12). In both cases, ANC achievement in Ethiopia is below contemporary regional ANC attendance reporting in the region (13, 14, 15). Lack of awareness, lack of feeling ill as an indicator of early pregnancy, work overload, and lack of time, and confidence in traditional birth attendants were found to hinder the decision to seek ANC (16). It is widely documented that women who reside in urban settings or have reached at least the secondary level of formal education tend to attend more ANC visits (10, 17, 8, 9).

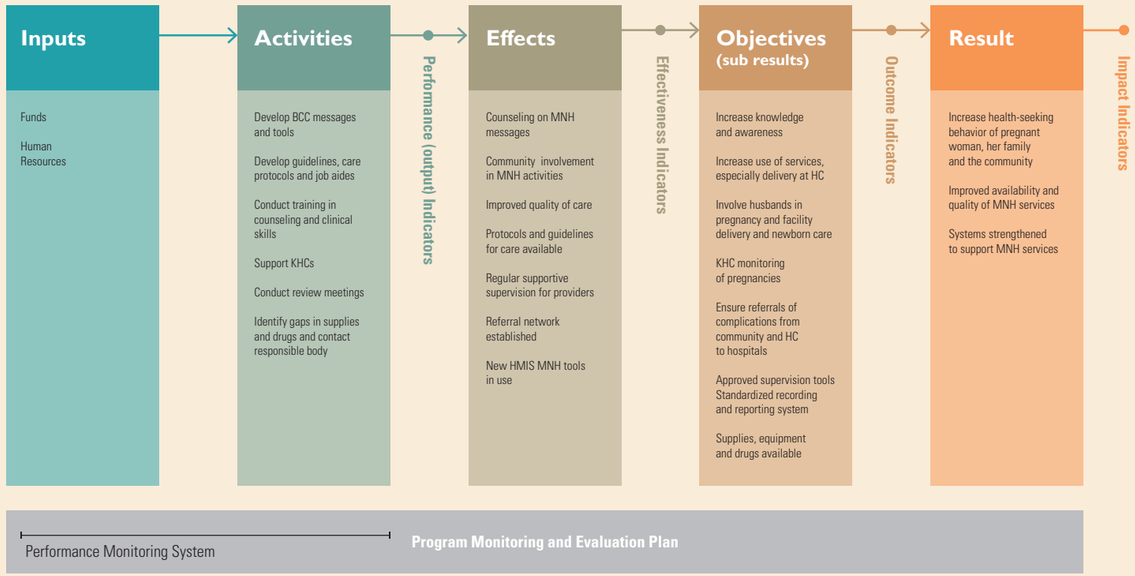
The 2011 Ethiopian DHS documented that assisted delivery by skilled attendants in Ethiopia is 10% (12), which is low compared to Ghana, 57% (18); Zimbabwe, 65% (19); and Kenya, 43% (20). A recent mini-DHS conducted in 2014 showed an improvement of 15% in the skilled birth attendance rate. Similar studies in Oromia-Holeta and Dodota (22) and Northwest Ethiopia (23) have documented improved ANC, delivery, and postnatal service coverage since the 2011 Ethiopia DHS.

Integrated Family Health Program

The Integrated Family Health Program (IFHP), funded by USAID, supports implementation of comprehensive maternal and newborn health interventions by Government of Ethiopia health programs at all health sector levels in Amhara, Tigray, SNNP, and Oromia regions. Improving maternal and newborn health (MNH) services is one of the priorities of Ethiopia's Federal Ministry of Health (FMOH) and regional health bureaus (RHBs). IFHP supports this national agenda by working to improve the skill of birth attendants, to ensure continuous supply of consumables and equipment, and to increase community awareness and action. Community-level interventions increase demand and utilization of maternal health services including antenatal care (ANC), facility-based deliveries, and postnatal/postpartum care. Facility-level support builds the capacity of health facilities and providers to provide high-quality maternal health services. Managerial-level support is provided to district, regional, and zonal offices to strengthen systems for providing supervision and monitoring performance.

The comprehensive MNH intervention was originally implemented beginning in March 2011 in five districts per region as a start-up "learning" implementation phase. In the learning phase, per the initial agreement between IFHP and the RHB, a total of 12 primary health care units (PHCUs) were selected for MNH intervention in October 2010. IFHP and Jhpiego-Ethiopia agreed on joint partnership for the MNH intervention to support the public sector. Following the signed MOU, Jhpiego was funded by IFHP to contribute its experience on maternal health intervention, particularly basic emergency obstetric and newborn care (BEmONC) training, while the other components of comprehensive MNH intervention to the public sector were primarily undertaken by IFHP. The IFHP MNH program and M&E Framework (Figure 1 below) articulates IFHP inputs, activities, outcomes, and results that have affected change in the maternal health landscape and had a public health impact on women, children, and families.

Figure 1. IFHP MNH program and M&E framework



After almost one year of program implementation, the public health system saw improved access and utilization of skilled delivery service in start-up sites. At the encouragement of the FMOH, the intervention was expanded to a total of 96 PHCUs in 20 districts across the four regions. The MNH intervention baseline assessment was conducted in early March 2011.

IFHP has continued to support implementation of this comprehensive maternal and newborn health intervention in the 20 selected districts of Amhara, Tigray, SNNPR, and Oromia regions. Operational districts were selected based on the following criteria: receptiveness to the comprehensive approach; presence of health care providers for attending delivery service; presence of health facility for providing comprehensive emergency obstetrics and newborn care (CEmONC) within 50 to 100 km, and past performance in providing maternal health services. Table 1 elaborates selected zones and districts. The learning phase was implemented beginning in October 2010 and by the end of 2011 the program was fully functional in all catchment areas of the PHCUs in the 20 IFHP learning districts.

Table 1: Selected MNH zones and districts

Region	Zone	districts
Amhara	East Gojam	Awabal, Debay Tilatgin, Dejen, Enemay, Machakel
Oromia	Arsi	Digelu Tijo, Dodota, Limo Bilbillo, Munesa, Sirre
SNNP	Wolaita	Bolosso Sore, Damot Galae, Damot Pulassa, Damot Woydae, Offa
Tigray	Central	Adwa Town, Adwa Geter, Ahferom, Mereb Lekhe, Worei Lekhe

During the learning phase, the GOE looked at results of the existing efforts of IFHP and several other partners and determined that in order to make rapid headway in reducing maternal mortality, all women should be encouraged to deliver in health facilities. Additional factors in their strategic thinking were improved general primary health care, increased numbers of trained midwives (through a special government initiative), and community involvement. Thus the government made the decision to move ahead immediately to generalized coverage of BEmONC, CBNC, and other initiatives. IFHP and other partners have worked hard to meet this new demand.

Assessment purpose and objectives

Purpose

The purpose of the IFHP MNH assessment is to demonstrate the effectiveness of supply-side MNH interventions that focus on the availability and quality of MNH services, as accompanied by demand-side, community-based service promotion through existing health system structures such as the HEP. These findings show that service provider readiness, coupled with demand-side interventions that focus on client-centered friendly services, contribute to improved MNH service uptake. The study findings provide evidence that recent efforts by GOE and IFHP to improve MNH services are working, but consistent and sustainable support is needed.

This assessment provides data to compare with the IFHP MNH baseline results to better understand current access and use of MNH health services in the intervention districts; evaluate change in service delivery uptake in IFHP catchment areas; document service use determinants and barriers; and make evidence-based actionable recommendations. This assessment defined skilled delivery using the following definition: "Skilled deliveries" are attended by a skilled attendant—"an accredited health professional who possesses the knowledge and a defined set of cognitive and practical skills that enable the individual to provide safe and effective health care during childbirth to women and their infants in the home, health center, and hospital settings. Skilled attendants include midwives, doctors, and nurses with midwifery and life-saving skills. This definition excludes traditional birth attendants whether trained or not" (WHO, 2006).

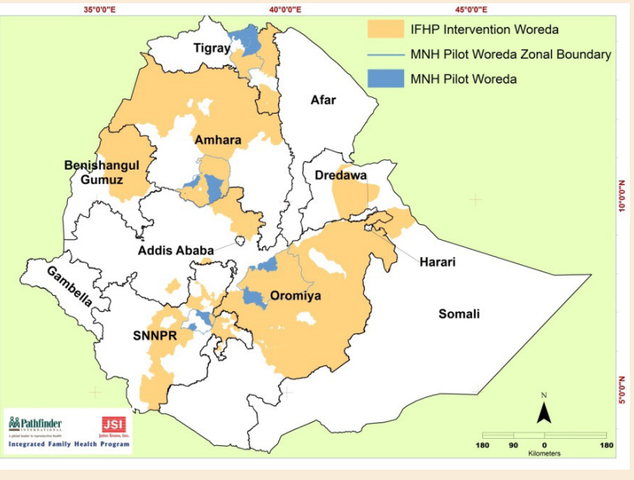
To date, the GOE has lead national and international public health progress in maternal and newborn health goals. The findings of this study show how IFHP has been a part of that process and progress. The results, lessons, and recommendations herein are intended to inform the work of everyone committed to supporting the GOE's MNH goals. In this regard, IFHP makes specific recommendations based on this assessment's results, in the short, medium, and long-term for the GOE and as well as for USAID and the wider donor community. This assessment presents evidence that the IFHP-MNH interventions have contributed to improved access and quality of MNH services in program health facility catchment areas. These findings will inform future work in maternal and newborn health service delivery for Ethiopians from national to the community levels. IFHP is proud to work with the Ministry of Health at all levels to ensure that quality MNH services are accessible within a well-integrated reproductive and child health service delivery system.

Objectives

- Determine current levels of skilled delivery service utilization in intervention areas and compare to baseline estimates.
- Identify key MNH interventions or combinations of interventions, describe how they are provided, and explain how they contribute to skilled delivery service utilization.
- Identify lessons learned in the implementation of improved maternal health services.
- Determine scalability and feasibility of expanding high-quality maternal health interventions throughout Ethiopia.
- Describe improvements in levels of community awareness of maternal health services in the study areas.

2. Methodology

Figure 2: IFHP intervention and pilot districts



This assessment applied a cross-sectional study design and focused on staff at regional, zonal, district, and health center levels, and community-level health service beneficiaries. Primary data collection methods included a quantitative health facility assessment, and qualitative interviews with focus groups and key informants in each region. IFHP endline survey data, key MNH indicators from the HMIS for the intervention period, and data from IFHP's random follow-up visits are included.

Assessment setting

From 2011 to 2013, a package of maternal and neonatal health care interventions was introduced in 96 health centers distributed in one zone each in Amhara, Oromia, SNNP, and Tigray regions. Figure 2 defines the intervention and pilot learning districts that were supported by IFHP, all of which were included in this assessment.

Data sources and sampling

- **Health facility assessment:** A blanket sample design included all 96 health centers in the 20 districts of the IFHP maternal health program catchment area.2 The assessment was administered by independent consultants to staff at health centers supported by IFHP's maternal and neonatal health interventions (Table 2). Health facility readiness was assessed in terms of human and materials/supply capacity building by incorporating aspects of the WHO Health Facility Assessment tool.

- **Focus group discussions:** Given that residents in the district sample pool in focal zones reported the same cultural and socio-economic features, one district per zone, per region was selected. One high-and one low-performing health center in each district was selected based on the key MNH HMIS indicators mentioned above. Two catchment kebeles under these two selected health centers were randomly selected to generate additional information on factors affecting maternal and neonatal health care-seeking behavior. Insights and data were collected through 32 community-level focus group discussions (FGDs) with women who had delivered at a health facility in the 12 months preceding the survey, and separately, with husbands of women who have delivered in last 12 months, regardless of location. FGDs were conducted in randomly selected kebeles under the health facility districts (Table 2). Inclusion was based on one's last child being delivered at a health facility. Themes of interest included determinants of maternal health service utilization such as awareness of maternal health problems and services, access to maternal health services, and barriers to utilization of available services. FGD participants were selected through snowball sampling and invited to participate through community communication channels, such as HEWs who knew of women who had recently delivered and other community leaders.

- **Key informant interviews:** A total of 69 key informant interviews were conducted at management and community levels. Fifteen in-depth interviews were conducted with health managers at zonal, regional, and health facility levels to better understand which MNH services are working well and which need improvement; to comment on the experience of working with IFHP; and to discuss sustainability of IFHP interventions (Table 2). The interviews with zonal and regional managers were designed to obtain the respondent's perspective on the current state of MNH service delivery in terms of successes, challenges, roles of MNH stakeholders, sustainability and scalability of activities, and lessons learned. Interviews with health facility managers sought information on the role of IFHP and district staff in improving MNH service provision and uptake. Interviews with management were intentionally administered by independent, non-IFHP staff. Community-level key informants also included 18 religious and cultural community opinion leaders and 36 women whose last delivery was at home (i.e., skilled delivery service non-users) (Table 2). Individual interviews were conducted instead of FGDs with these women because of sensitivity of reasons for delivering at home. HEWs helped discretely arrange interviews with women who had delivered at home by contacting them in advance to gauge their interest in survey participation. Many women declined to participate. Maternal and newborn focal persons at the various managerial levels were selected based on their positions.

- **HMIS MNH indicators:** IFHP routinely tracks the following key MNH indicators from the GOE HMIS system: ANC1, ANC4, skilled delivery, one post-natal care visit, family planning services received, Penta3 vaccine, and pregnant women tested for HIV. These indicators were integrated into the overall analysis of service provision and uptake.

- **IFHP random follow-up visit data:** In addition to routine supportive follow-up visits, IFHP conducts a large series of random follow-up visits once a year. The objective of the random follow up is to monitor outcomes of health interventions in IFHP target areas and verify in an unbiased way through a random sample, the trends, successes, and challenges noted by routine sources. Each annual random follow-up visit is conducted using a cross-sectional study design in four major target regions (Amhara, Oromia, SNNP, and Tigray). A total of 128 WorHOs, 256 health centers (HCs), 512 health posts (HPs), and 2,560 households were randomly sampled. IFHP designed a follow-up visit reporting format with the regions to report data back to the project. Domains include completing action points from the previous visit; basic equipment and supply conditions; facility conditions; ability to provide specific services; service quality; ability to manage complications; and functional referral systems. These data are used to identify overall successes, gaps, and to make recommendations for facility and higher-level management action.

- **IFHP endline survey data:** The 2013 IFHP endline survey was conducted as a cross-sectional household survey with two-stage cluster sample design in IFHP's four major target regions (Amhara, Oromia, SNNP, and Tigray). The survey included three study groups: women between 15-49 years, children 0-11 months, and children 12-23 months. The analyzed dataset for this assessment was generated from the IFHP endline survey by matching households located in the MNH pilot districts.

2 These catchment areas are "learning districts" selected by IFHP in April 2010 in consultation with the FMOH to be the initial implementation districts of the IFHP BEmONC training package.

Table 2: Data collection methods, by data source

Study setting	Data source	Collection method	Total # of groups or individual participants	Measurement highlights and themes
Regional health bureau (RHB)	MNH focal person	Key informant interview (KII)	3 (unavailable in Amhara)	Lessons from IFHP MNH intervention; key points for scalability and sustainability planning; perceptions of partnership with IFHP's MNH project.
Zonal health department (ZHD)	MNH focal person	KII	4	Lessons from IFHP MNH intervention; key points for scalability and sustainability planning; perceptions of partnership with IFHP's MNH project.
Health centers	HC Director	KII	8	Lessons from IFHP MNH intervention; key points for scalability and sustainability planning; perceptions of partnership with IFHP's MNH project.
Health centers	Case team head in-charge of department (laboratory technician, pharmacist, midwives)	Survey tool	96 surveys completed	Capacity of health facility (HR, equipment, commodities, supplies); service delivery coverage (ANC, skilled delivery, PNC); post abortion care; alternative opportunities for women delivering at health center.
Community	Women who delivered at HC in last 12 months	FGDs	16	Awareness of MNH problems and services; reasons for choosing delivery with support from skilled attendants; factors affecting utilization of skilled delivery service; desired improvements.
Community	Women who delivered at home in last 12 months of their recent birth	KII	36	Awareness of MNH problems and services; reasons for choosing home delivery; factors affecting utilization of skilled delivery service; desired improvements.
Community	Partners of women who have delivered anywhere in last 12 months	FGDs	16	Awareness of MNH problems; role and type of support men provide to women during pregnancy, delivery, and postpartum; factors affecting utilization of skilled delivery service; desired improvements.
Community	Opinion leaders, TBAs, religious leaders	KII	18	Awareness of MNH problems and services; factors affecting utilization of skilled delivery service; desired improvements.
IFHP	Available routine program data at IFHP level	Document review	Recent routine follow-up visit data; IFHP household endline assessment; HMIS MNH data	Changes against baseline and over specified time frame.

Data collection techniques

Data were collected using a health facility survey tool adapted from the WHO Service Availability and Readiness Assessment (SARA) (52) that was developed in consultation with regional MNH IFHP teams and JSI and Pathfinder International staff, as were other qualitative data collection guides and tools. IFHP staff pre-tested all tools and guides in the field. Facilities and districts that participated in the pre-test were then excluded from the main study sample. Independent consultants Mirgo Family consulting PLC were contracted to review the sample design, select and train data collectors, and lead the data collection to ensure study integrity. IFHP's M&E officer accompanied the consultant team throughout the data collection, and IFHP regional and district staff provided scheduling and logistical support. The consultants recruited research assistants based on previous health facility and community data collection experience and command of local language. The consultant and IFHP staff trained data collectors on the objectives of the study, data collection tools, ethical considerations, and respectfully collecting and treatment of study data.

Data quality and completeness

The quality of survey data from health centers was ensured through daily random checks of tools for completeness and consistency by supervisors in the field. Teams also met daily to discuss issues and shared findings with other data collection teams. When data collection was completed, data was entered to check internal completeness and consistency.

Analysis

Data collection and cleaning, analysis, and synthesis were led by the consulting team with input from IFHP. Data analysis and synthesis were guided by the three conventional delays affecting maternal health care (24): 1) delay in decision to seek care (e.g., access to information, community support, economics); 2) delay in reaching care (e.g., economics, transport); and 3) delay in treatment due to level of health facilities readiness to provide services (number and mix of health professionals; availability of essential medicines and such amenities as water, power, sanitation; referral efficacy).

Box 1: MNH service themes explored in assessment:

Health facility

- Availability
- Quality
- Access
- Utilization

Community

- Awareness of services and health issues
- Reasons for service use and non-use
- Sources of health information and community support

Health managers

- Successes and ongoing issues
- Sustainability and scalability

Quantitative data were compared with baseline data collected in the same sites at the beginning of the MNH interventions.3 Health facility survey data were entered and cleaned by an independent consultant into a Microsoft Access database and in consultation with IFHP M&E staff. Data were analyzed with SPSS version 20 by the independent consultant and the IFHP M&E team. Frequencies and percentages were analyzed for changes in health facility readiness since baseline (Annex 1).

Qualitative data were recorded and supported by hand-written notes. Data were transcribed from local language into English by independent transcription teams in consultation with the data collectors. The lead consultant and independent analysis team read the transcriptions twice to identify and annex by the following themes: awareness of problems during pregnancy, delivery, and postpartum; factors affecting facility use and non-use; barriers to use; sources of information; and service satisfaction (Box 1).

Quotes representing prevalent as well as unique views substantiate summary findings. The IFHP team then processed all qualitative data and summaries in NVivo 10 qualitative analysis software

3 The original BEmONC baseline included only 87 facilities, with 8 more facilities added to the MNH intervention and included in the endline assessment to total 95 facilities. Baseline data were collected by IFHP in March 2011 in each MNH learning district prior to MNH implementation.

to gain a full understanding of responses, run qualitative analytics such as frequency of topics by respondent, and establish an accessible dataset for future programmatic decision making. Quantitative and qualitative findings were referenced against other documents available to IFHP—including country-level surveys (e.g. DHS), previous case studies and facility reviews—to facilitate analysis and recommendations.

Ethical considerations

Ethical review and approval for this study were completed prior to data collection. The study proposal was presented to the four regional health bureaus with a request to provide a supporting letter to carry out the study. Following internal procedures, each region provided its own letter of support to carry out the assessment. At zonal level, health sector heads were briefed on study objectives and in turn wrote letters to the health centers and catchment kebeles to support the assessment. At the operational level, research participants were briefed on the purpose of the study and told that the data would be used to improve public health interventions. Participants were assured that no personal identifying information would be used in analysis or reporting for any purpose, and that data from the focus group would be used generally to improve maternal and child health services. All interviewees were informed that participation was voluntary and that they could end participation at any time without consequence. During FGDs, participants were given water and roasted cereal (qollo), as some of them travelled long distances to take part in the discussion. All participants were thanked for their time, but no incentives were given.

Assessment limitations

In a country as dynamic and active in public health development as Ethiopia, public health successes are shared. IFHP is honored to have a significant role in advancing the GOE's public health goals. This study was designed to measure IFHP contributions in MNH within the framework of public health actors in Ethiopia, especially the GOE. Findings reflect the reality of a health system in development. This assessment measured health center capacity, but some capacity issues such as staffing levels and staff turnover that are outside the scope of IFHP have an impact on how services are delivered.

In some communities, HEWs were hesitant to provide information about women who had recently delivered, especially those who had not done so in the presence of skilled attendants. IFHP saw this as a sign that HEWs take their work and the people they care for seriously.

It should also be noted that a case-comparison model was not possible for the IFHP MNH intervention, and for good reason. IFHP intended to measure program success against non-intervention facilities. However, after the initial IFHP MNH learning phase, the GOE took the MNH intervention to scale in facilities throughout the country, which made drawing comparisons in a case-comparison study more challenging. IFHP considers this action a success in GOE's initiative to improve MNH services in Ethiopia, and IFHP will continue to support such efforts.

This report provides evidence of changes in key MNH indicators in operational areas and is not meant as a comparison of regions. Finally, although the title of the assessment highlights maternal and newborn health, only few indicators (i.e., ENC and PNC) relate to newborn care within the scope of this intervention.

3. Results

Findings of this assessment are presented below in sequences of characteristics of participants and health facilities included in the survey. Key findings are summarized according to determinants of maternal health service utilization. Findings include information on awareness creating efforts, perceived community level awareness and access, and utilization of maternal health services. The changes observed during the intervention period are assessed by comparing the baseline and endline values using percentage point changes.

Characteristics of assessment participants

The 95 health centers included in this assessment cover an estimated 27,600 individuals per facility catchment area for a total of 2.64 million people. Health centers have a mean number of six beds per facility, and most had five functional community health posts (CHPs) extending from the health facilities, which is consistent with the GOE planning. Health facility staff respondents included on-duty facility in-charge, midwives, lab, and pharmacy staff.

As shown in Table 3, FGDs were conducted with women and their partners who had experienced birth in health facilities or at home within the last 12 months. Participants at the community level share similar characteristics in terms of level of educational accomplishments and age. No FGD respondent had higher than a 12th-grade education. Most males had upper-middle to lower high school educations, while most female had higher elementary to lower-middle school education levels. Female ages ranged from early 20s to late 30s, while male respondents tended to be in their later 20s to lower 50s. Key informants included community opinion leaders, health facility managers and health managers at different levels. Opinion leaders and fathers tended to be older than women who delivered either at home or at facility level. Most opinion leaders also attended elementary school and/or religious education, and nearly 75% of women and their partners were found to have at least elementary level education.

Table 3: Respondent demographic summary

Summary of Age and Education Level of Health Facility Users and Non-Users by Region

	Female users		Female non-users		Husband FGD Participants*	
	Age**	Education level***	Age**	Education level***	Age**	Education level***
Amhara	29	0	25	0	35	1
Oromia	26	3	27	3	42	2
SNNPR	24	2	27	1	29	3
Tigray	29	2	24	2	42	2
Overall	**27**	**2**	**25**	**1**	**37**	**2**

* 'Male users' are husbands/partners of women who use health facilities.
**Age is the average age of all respondents.
***Education level is a calculated average of codes for education of all respondents. Education level is coded based on highest ever education as follows: Code 0 if no formal education/cannot read or write; Code 1 if can read and write OR religious education; Code 2 if grades 1-5; Code 3 if grades 6-8; Code 4 if grades 9-10; Code 5 if grade above 10—including 11, 12, 10+.

Determinants of maternal and newborn service utilization

While the centerpiece of the IFHP MNH intervention is the health facility, the findings in this report are presented to reflect the logic of the three delays: delay in decision making, delay in accessing care, and delay in treatment at the facility.

Since the baseline assessment, IFHP intervention facilities have improved awareness of services, access to and coverage of services in key indicator areas, and readiness to provide high-quality MNH services. These improvements also affect the results apart from specific MNCH inputs.

Figure 3 illustrates improvements in quality across IFHP-supported facilities, where quality is measured through five components: service availability, right information, confidential service, client-friendly, and skilled staff. It is clear that while services have been consistently available, the four other factors that contribute to improved MNH health service seeking and utilization have shown remarkable change since baseline. MNH service provision with competent & skilled providers has improved (from 66% to 100%); staff now have correct information displayed and available to clients (15% to 52%); and provide confidential services (82% to 98%) in a client-friendly[4] manner and environment (21% to 63%) that offers the full package of MNH services (97% to 99%).

4 Client friendly service in this assessment included the following parameters:

a. Facilities offering culturally acceptable ceremonies such as coffee or porridge ceremony

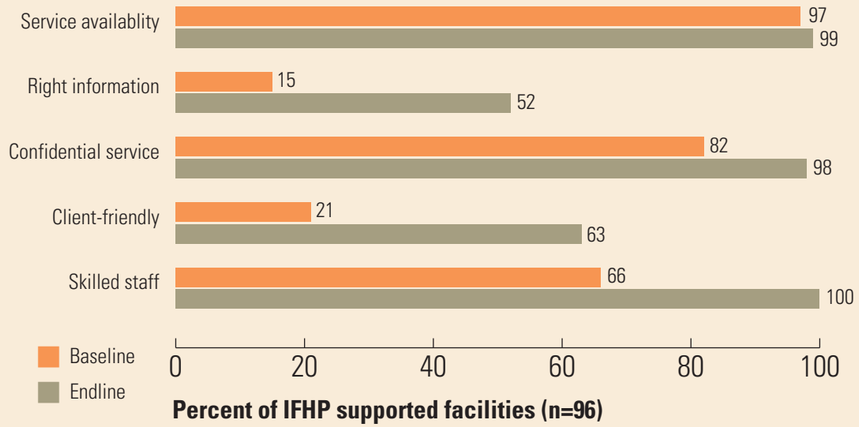
b. Facilities showing the delivery room during ANC visit.

c. Facilities allowing family members to be with her during labor

d. Facilities allowing preferred mode of giving births by the client/ proving alternative birthing options and

e. Facilities explaining procedures and taking informed consent.

Figure 3: Percentage of IFHP supported health centers providing high-quality health services



Community-level respondents reported a perceived reduction in the frequency and intensity of pregnancy-related problems due to greater awareness of and access to quality MNH care. One opinion leader said that "…problems related to pregnancy, delivery, and afterwards are not as serious as few years ago. This is due to the fact that women are informed of the problems and what to do about them and community members feel responsible to escort her to the CHW" The impact is also psychological: Husbands described the reduced worry they and the community feel when their wives are in labor at health facilities versus in the community, and how labor and delivery used to hold assumptions of death rather than hope of life.

Decisions to seek care and MNH awareness

Awareness of MNH services and complications

Respondents tended to agree that pregnant women need to visit health centers during pregnancy and for delivery. Qualitative data from the community show improvements in the level of awareness about maternal health due to HEW involvement. "Previously, we got information from traditional birth attendants (TBAs) who guided us on what to do when we encountered problems. Now we are getting more information on problems associated with pregnancy and what to do when complications occur. Yet, such information is not yet equally appreciated by the public at large" (FGD, WSU-Woliata, SNNPR).

Endline MNH facility survey data show an increase from baseline of 37 percentage points, or 2.5 times of health centers displaying the right information about pregnancy danger signs, birth preparedness, and focused antenatal care (FANC). Qualitative data on community awareness of issues related to maternal and newborn health-seeking by women, their partners, and opinion leaders show that irrespective of region, the majority of respondents were aware of maternal health problems related to pregnancy, delivery, and postpartum, and MNH service availability. "Previously (before 2004 Ethiopian calendar [2011]), only kebele administrators were knowledgeable, but now all community members know about these problems because kebele[5] administrators and HEWs are teaching the community about these problems. If we should compare, women are more knowledgeable than others because they have the experience." (Amhara, FGD participant)

Female non-users were more difficult to include in the study because home deliveries are becoming less acceptable in the community. Indeed, some respondents mentioned fear of being reprimanded by community leaders, or shamed in the community for delivering at home. Female user respondents also spoke about non-users as "uneducated." These comments suggest at best a culture of peer accountability to help one's neighbor deliver in a facility, and at worst a growing stigma and shaming environment for those who are unable or choose to deliver at home.

Perhaps unsurprisingly, most male and female respondents claimed to have better knowledge than the other on maternal health issues and services. Many respondents mentioned shared decision-making to seek care, as well as family involvement. All

5 Kebele is the smallest administrative unit in Ethiopia and is equivalent to "ward" that has about 1,000 households and an estimated population of 5,000.

community-level respondent types mentioned examples of pregnancy complications and situations in which skilled care is favorable to home care. These included pregnancy symptom and labor pain management, labor and delivery assistance and referral, and hemorrhage avoidance and control (Table 4).

Table 4: Perceived maternal health problems associated with pregnancy, delivery, and postpartum

Pregnancy	Delivery	Postpartum
Loss of appetite	Bleeding	Cramps/abdominal pain
Vomiting	Prolonged labor	Bleeding
Swelling of leg	Retained placenta	Inadequate food
Bleeding	Death	Exposure to elements
Dizziness/ weakness	Inappropriate fetal position	
Heavy workload	Pain	
Abortion	Torn vagina	

Respondents mentioned specific areas in which awareness is important, including the value of ANC visits in early pregnancy; the benefits of institutional delivery, expected due date, and signs associated with labor and complications. "Having previous experience with the health facility determines the decision to use [the facility] for birth. A mother who didn't visit a health center before or who didn't attended 'follow up' [ANC] during her pregnancy could make incorrect assumptions that make her deliver at home" (FGD, woman user, Wolaita, SNNPR). Many male and female respondents, users and non-users, mentioned ANC as key to estimating due dates and preparing finances and travel for delivery. Even non-users mentioned that when able to get to a health facility, services offered would be helpful and safer than home delivery should complications, especially fetal positioning, preventing and treating post-partum hemorrhage (PPH), and retained placenta, arise. "She might not deliver, she might bleed, labor might be extended, the placenta might remain in, there might be a lack of blood, there might be raised blood pressure…and the HEWs are the ones who help them when they face problems in the process." (Woman non-user, Oromia).

Although many male and female respondents recognize the importance of ANC and skilled delivery, some cultural norms are barriers to care seeking. "Some mothers believe that labor will be prolonged and the evil eye will attack a woman if she is exposed to someone out of the family. So women want to ensure their privacy during labor and delivery" (FGD, WSU-Central Zone, Tigray). Several female respondents, when referring either to themselves or speaking about other women, mentioned personal bodily privacy as an important factor affecting attending ANC visits and seeking institutional delivery from an unknown or male provider. A few women mentioned hearing about disrespectful client treatment where "…delivery attendants at health facility will tie our legs and hands to a delivery couch and take away all our clothes during delivery. That is shame to a mother." . This was not a prevalent view, and hopefully is not a common practice. Several female users mentioned that the women in their communities who deliver at home tend to have lower education levels than users. This observation was supported by the non-user demographic characteristics in this assessment (Table 3).

Other factors affecting the decision to seek care

Findings show that a woman's decision to utilize a health facility is compromised by her concern relating to leaving children without support. Health professionals, particularly in Arsi, Oromia and East Gojam, Amhara indicated that mothers are often uncomfortable leaving children behind to pursue health services. This is because fathers travel with women to health facilities and children and livestock remain at home. "Mothers are kept for long by the health center [for about a month or longer] since expected date of delivery is not known. Imagine husband and some family members stay with her at the health center or travel in between. This would endanger children and animals at home." (Woman user, E.Gojam, Amhara).

Information sources

HEWs, the 1-to-5 network, 1-30 health development army, and kebele leaders were consistently identified as community MNH information sources. Respondents discussed that during the last few years, women have become more engaged in small and large group discussions that include maternal health. Neighbors, kebele administrators, and other government employees were mentioned as information sources. "Well, our source of information is mainly HEWs. They are teaching us what could happen, what we should do, and what we should avoid concerning pregnancy and delivery. They also inform the leaders for 1-to-5 groups and development armies. Then, these leaders will inform members of the community under their jurisdiction. If information is provided individually during HEW home visits, we may internalize messages given. Mere advice on the need to deliver at health facility may not be convincing"' (Woman user, Wolita-SNNPR).

There are also suggestions that everyone in the community should contribute to improved awareness. "I think we should actively participate in every meeting that is organized to educate the community. Furthermore, we should share what we learned with our wife and colleagues" (Husband, E. Gojam-Amara). Respondents go on to highlight the perennial public health issue of turning awareness into action. "We get advice from HEWs and 1-to-5 networks. However, doing what they say remains a problem since often timing of labor can't be predicted" (Woman service user, central zone, Tigray). These findings suggest that community networks to improve awareness and inculcate positive health-seeking behavior among neighbors are active. The challenge is to translate communication into behavior. The findings suggest that despite improved awareness, cultural norms limit institutional deliveries.

Access to health facilities

It is clear from focus groups that there are a number of cultural, logistical, and systems barriers to women accessing health facilities for delivery in a timely way. Nevertheless, focus groups also indicate that community members are talking about institutional deliveries and many are planning for them, which is a positive change.

Even with high community awareness of services, individual decisions to seek care must be supported by mechanisms to ensure that clients can reach health facilities that are open and able to accept clients in a timely manner. Nearly all IFHP MNH intervention health centers (97%) reported that they provide delivery services at any time of day or night. Health facility access has improved with emergency transport options such as ambulances (84%) and other escort vehicle options (15%). Health facilities are also receiving (44%) and providing (74%) feedback from referred clients through formal reporting forms, letters, or by phone. It was commonly argued that health workers fail to predict due dates accurately, when normal full-term delivery could be anywhere from two weeks before to two weeks after the predicted due date. Nevertheless, the failure to know one's due date was stated often as major factor for home delivery. "She has to go the health facility where she starts the ANC, and check her delivery date so staff there can support her there to deliver in the hospital so that there is no bleeding and the fetus is in good health" (FGD woman user, Arsi, Oromia).

All health centers (100%) reported providing free maternal health service care, and 96% of facilities reported implementing health care finance reform, which allows individual PHCUs to collect fees for many curative services and apply those funds to needed supplies, drugs, and other essential free services. These results are important in light of the fact that some respondents mentioned "… concern about cost of service affecting the decision to go to health facility" (Woman non-user, Arsi, Oromia).

Despite free services, financial barriers remain in arranging transport to and from the health center, especially at urgent times like sudden onset of labor or danger signs, as well as keeping contingency funding for necessary supplies and accommodation in cases of prolonged labor far from home. Many respondents mentioned transport as a key to their ability to deliver at a health facility. Facility survey data show that 84% of the health centers have access to vehicle ambulances. Additionally, 15% of the health centers report having vehicles other than officially designated ambulances to provide transportation service if needed. Official GOE policy is that all ambulance transportation of pregnant women is free. Still, one husband summarized what others also shared: "I think if the health center is very close to our village, women will have better access. The health center is somehow far, and the cost of transportation is unbearable." (East Gojam, Amhara). Women in Tigray's central zone mentioned that some ambulance drivers select passengers based on ability to pay, and so do not serve all women equally. "… when we call the ambulance, the driver asks if the family are farmers, businesspeople, or government employees." (Woman user, Wolaita, SNNPR, Central Zone, Tigray).

At the community level, two types of ambulances are used, including motor vehicles at the district office or health facility, and mobile stretchers called "dinks" or "cultural ambulances." Cultural ambulances are stretchers or reclined chairs that must be carried by two to four people, requiring strength and coordination. However, access to cultural ambulances depends on community connections as well as funding. When trying to access either type, one respondent mentioned, "Since I am not an edir (community group) member I couldn't I get the service of the cultural ambulance. We have tried to use the cart and it's costly and he said to us three hundred birr." (Female user, Arsi, Oromia). "Those who are at great distance use the 'dink' and walk two to three hours. When they reach the heath facility, there they can be referred to the next higher level at that time. They use the contract cars, which are expensive. When the ambulance is functional, the ambulance goes to the village and brings the client. Unfortunately, the service of the ambulance was stopped." (Female user, Arsi, Oromia).

Accessing either type of transportation requires coordination, often described by husbands, women, and managers alike as a pro-

cess that can present delays. Vehicle ambulances typically require communication with the driver, often by phone, and driver availability, vehicle functionality, and fuel availability–all things that are out of the client's control. "At the onset of labor, people start to call for the ambulance, which may not be available for various reasons including poor telephone connection, no access road, or the ambulance being engaged in other activities…this is frustrating for members of the community." (HC representatives, Wolaita, SNNPR, Central Zone Tigray, and Arsi, Oromia).

Participants also mention that ambulances bring women to the facility but do not return them to their village. "Discharged 'early' women find it difficult to get home without being exposed to wind and sun" (Husband, Central Zone Tigray). It was often mentioned that normally after delivery, women are expected to stay inside to avoid exposure to wind. Participants in Central Zone, Tigray Wolaita, SNNPR and Arsi, Oromia argued that discharge time after delivery is very fast which gives women a lot of discomfort especially when there is no transportation service to get them back home.

Many women who delivered at home mentioned that home delivery was not their choice but situations compelled. All women who delivered at home irrespective of where they resided (zonal differences) attributed home delivery to 'sudden onset of labor.' One participant said that, "I could not do anything than deliver at home since my labor was sudden and intense. It was quite smooth with minor support from my neighbor." Another woman pointed out that, "It was not my choice to deliver at home but it was due to the incorrect prediction of the date of birth. So, I delivered at home since I couldn't reach the health facility. As a result I was denied FAFA flour (food aid) for three cycles. I know this is to motivate institutional delivery but it is unfair to be denied the opportunity to benefit from support since it was not my mistake." A female participant who delivered at home said, "I delivered at home because I called the ambulance and driver did not pick his phone. The HEW was not around since it was a weekend. There was no alternative, so I delivered at home without any problem."

Facility readiness to provide maternal and neonatal health services

IFHP's interventions to improve availability of high-quality MNH services have focused on health facilities and their staff after clients have decided to seek services and arrived at the health facility. MNH Endline results show improvements in health center readiness to provide high-quality services, where quality of services was measured in terms of availability, affordability, equity, and friendliness to clients. There have been dramatic gains in both staffing and staff training in the intervention period. These improvements indicate the level of GOE and USAID commitment to sustainably build the capacity of health professionals to provide high-quality maternal health services. Availability of supplies and equipment essential for delivery also has improved, as demonstrated by supplies available at the time of the health facility survey.

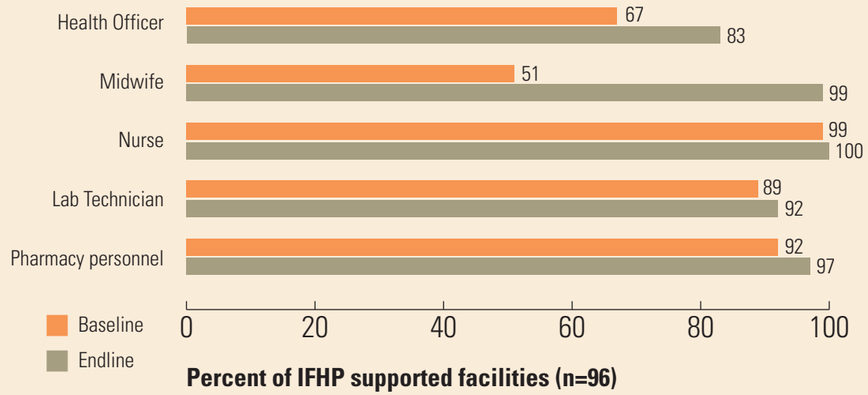
Results on maternal and neonatal health service uptakes and provision were measured in terms of key MNH indicators from the HMIS on first ANC visits (ANC 1), skilled delivery, and PNC, and facility data on readiness to provide complete active management of the third stage of labor (AMTSL) and essential newborn care, and rejecting non-recommended practices.

In addition to assisting the GOE in equipping facilities, IFHP supported measures to make health facilities more client-friendly. Qualitative data from community respondents show that many women and families go to health facilities because they believe they will receive competent health care for urgent and routine health needs, and to feel safe and provide peace of mind during labor, delivery, and postpartum. Given that client-friendliness is part of the framework for quality services, respondent opinions about making facilities more home-like is important. Indeed, the facility survey data show that client-friendly service components have improved.

Type and mix of health professionals working in health centers

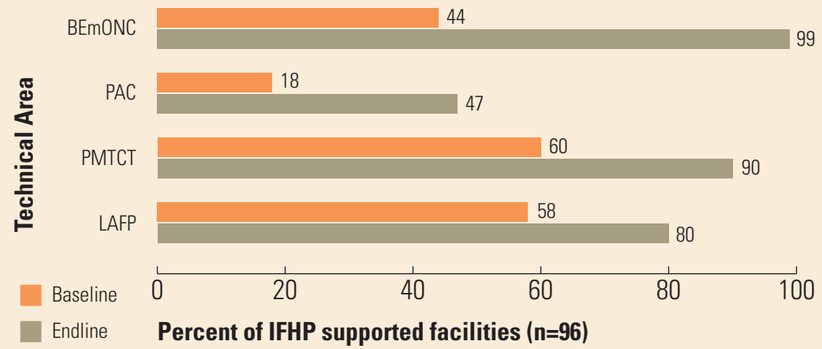
During the intervention, the number of IFHP supported health centers with adequate staffing increased from 60% to 90%, and are comprised of health officers (83%), midwives (99%), nurses (100%), lab technicians (92%), and pharmacy professionals (97%). Figure 4 shows how staffing numbers for each type of health professional steadily increased since baseline. The most notable change was the increase in the number of midwives, from 51% to 99%. This increase reflects the GOE's prioritization of midwife training.

Figure 4: Percentage of IFHP supported health centers with key health staff, by type



The GOE package of MNH services implemented at PHCUs supported by IFHP aims to deliver comprehensive reproductive health care, including emergency and routine delivery care, postabortion care, HIV counseling and testing for pregnant women, and provision of and counseling for long-acting family planning methods. At baseline, many facilities did not have staff trained in any of these areas. IFHP worked with the FMOH to develop curricula and train providers in these components, and then incorporate aspects from these areas into routine supportive supervision visit tools. At endline IFHP supported health centers reported significant improvements in staff trained in BEmONC (99%), PMTCT (90%) and LAFP (80%). While only 47% of facilities report trained professionals in PAC, this nevertheless represents a significant (1.5 times or more) increase (18% to 47%) since baseline (Figure 5).

Figure 5: Percentage of IFHP supported health centers with health staff trained, by topic



When interviewed, health center respondents tended to discuss the ongoing need for BEmONC training due to staff turnover and refresher training for already trained staff. Health professionals also described their interest in continued BEmONC trainings (Oromia RHD; Tigray HC, Tigray ZHD.) Community-level users had generally positive things to say about the staffing and health facilities.

Some users shared disappointing experiences with health staff that demonstrate the ongoing need to train and mentor health staff so that client treatment becomes an incentive to seek services instead of a barrier. "Some [providers] are arrogant and do not even know what a laboring woman goes through. At home we are cared for and people are around you with supporting hands." (Women user, Central Zone Tigray). "Once a woman is admitted to health facility, providers do not closely follow her. They do not show a welcoming gesture and often they leave the mothers alone." (Partner, Central Zone Tigray). Although this view was not widespread, it was also noted that such concern is assumed to be more common for poor and rural women. "Professionals dis-

criminate in treatment of women from rural areas." (Women user, Wolaita, SNNPR). No health system in the world is immune to provider bias in treatment of poor or disadvantaged women, but its elimination must be an important goal for all health programs.

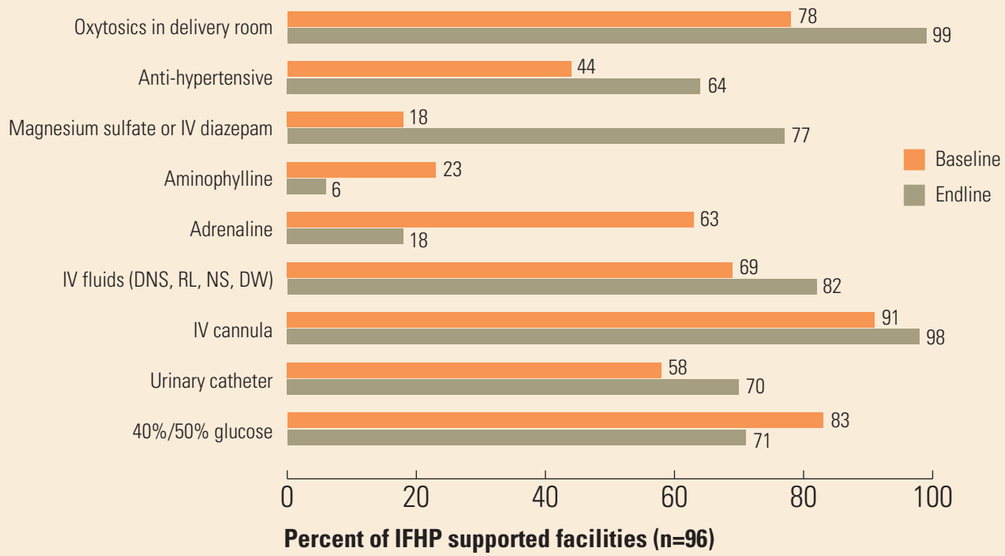
One woman non-user mentioned that she went to health center with pain, but was sent back and had to deliver at home. She said that, "I went to health center to deliver there and I had a feeling that I would deliver that very day. However, I was told that I would not deliver for five more days. I had to return back home since I do not have a relative to stay with in town. Upon arrival at home, I delivered without any problem. For me, this shows that health professionals lack proper knowledge."

One woman said, "I was misled by the health extension worker who told me wrong date of delivery. She told me that I would deliver 19 ± 5 days later but I delivered on the 7th day on my way to the health post." Since predicting delivery dates is an inexact science even in the most advanced Western hospitals, there is perhaps room for client education on this subject. When a woman and her relatives realize the potential timing of labor, they can plan appropriately. But many logistical arrangements must come together for her to arrive at the health center on time.

Essential delivery supplies and equipment

At the time of the health facility survey, the majority of health centers were equipped with supplies and medical equipment necessary to provide maternal health services. However, nearly 75% of the health centers were not equipped with other basics such as running water, functioning toilets near the delivery area, or an appropriate refrigerator or cold box. About one-third of the health centers were found to lack essential delivery drugs, equipment, and supplies such as urinary catheters, BP apparatuses, IV cannula and adhesive tape, and adult stethoscopes (Figure 6). Health centers with other basic furniture, supplies and equipment, such as delivery couches, storage cupboards, fetoscopes and IV stands, has reached well over 90% (Annex 1).

Figure 6: Percentage of IFHP supported health centers with essential delivery drugs, supplies, and equipment



Data on availability of essential drugs and supplies for labor and delivery show that proportion of health facilities with drugs and supplies such as anti-hypertensive, magnesium sulfate, and urinary catheter has increased since baseline. Most notable is the triple increase in anti-convulsant magnesium sulfate and/or IV diazepam, from 18% to 77%. However, more health centers were found to have 40%/50% dextrose, adrenaline, and aminophylline at baseline than end line. Only 3% of health centers have a complete supply of every essential delivery item.

Health centers equipped with a functioning vacuum extractor to assist delivery have increased to 53% as compared to only 30% at baseline, showing an overall 76% increase. Table 5 highlights the major increase from baseline in the percent of health facilities with basic delivery sets (108%) and resuscitation packs (three times).

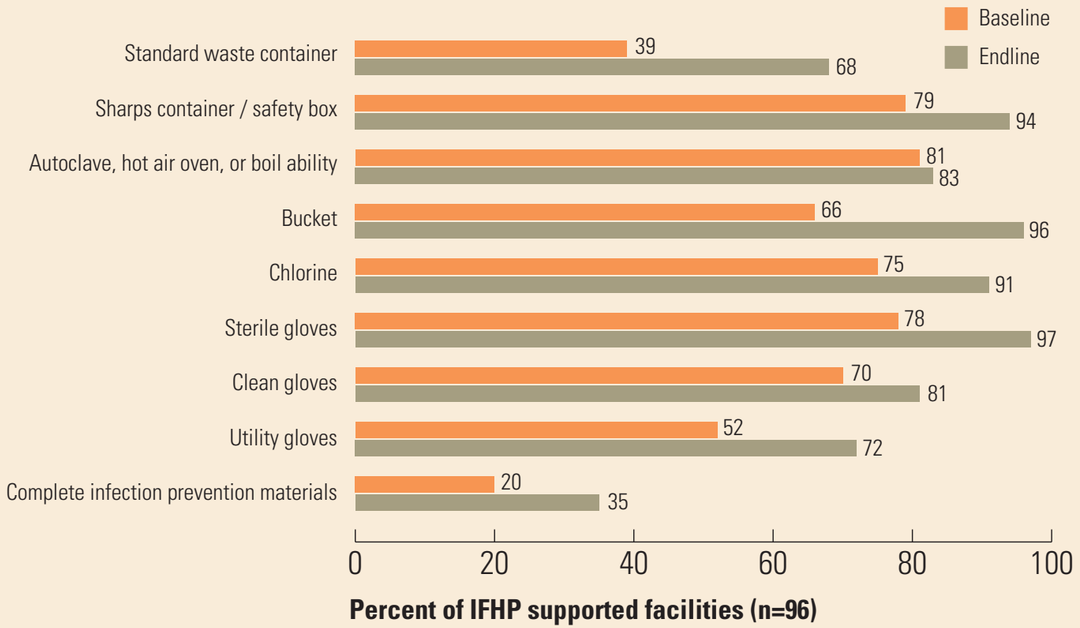
Table 5: Proportion of health centers with delivery sets, basic neonatal resuscitation packs and emergency delivery drugs/supplies at base line and endline

Type of delivery sets	Baseline	Endline
2+ scissors	84	96
2+ clamps OR cord ties	85	98
2+ clean, dry blankets or towels	53	82
2+ needle holder	74	93
2+ container for placenta	60	91
Basic delivery sets	39	75
Vacuum extractor with cup	29.9	52.6
Basic neonatal resuscitation packs		
Mucus extractor OR suction catheter OR suction apparatus	30	98
Infant face masks	35	95
Ventilator bag	47	96
Basic neonatal resuscitation packs	25	94

Other supplies and equipment for delivery services

Data on availability of infection prevention materials indicated that 35% of health centers had complete basic infection prevention supplies and personal protective barriers. While availability of each item increased from between 3% to 75% since baseline, chief missing items at endline were standard waste containers (32%), utility gloves (28%), and sterilization capacity with an autoclave or boiling (17%) (Figure 7).

Figure 7: Percentage of IFHP supported health centers with essential infection prevention materials, by item



Even though the facility data show the majority of health facilities are well equipped, the qualitative data show how care seeking can be affected, especially in remote areas where maintaining supply and consistent electricity, water, and telecom services is more challenging. "Our health center is new and remote where there is no mobile network, water, electric power, or road" (Heath center, Central zone-Tigray). "After the mothers reach the health center for delivery, lack of essential equipment and infrastructure (electricity, water supply) affect service delivery. We try to help laboring women with hand torches (for light)." (Health worker, E. Gojam, Amhara).

Client-friendly services and facilities

In addition to the packages of interventions to improve maternal and newborn health service utilization, data indicate that health care staff efforts have improved client comfort and friendliness of the facilities. Currently, more than 86% of the health centers involved in the study hold culturally significant events, such as the coffee ceremony during labor and porridge preparation after delivery. They also allow relatives to remain in delivery room and encourage women to choose and change delivery positions. Although comparison of health centers on adoption of such initiatives is difficult due to limitations of baseline data, available data show that the percent of health centers that offer women a choice of birthing position is 3.5 times higher than baseline (increase from 22% to 99%). Similarly, health centers that allow relatives to remain in the delivery room have increased by 29% (from 62% to 80%).

Photo by Mirgissa Kaba

Grain collected for porridge Sire Health Center, Oromia,

Health centers, in collaboration with community leaders, are mobilizing support from the community to improve client-friendly services in the health centers. Qualitative data show that all participants recognize improvements in service utilization at health centers that made efforts to be places where birth can be celebrated. All women users said that the coffee and especially the porridge ceremony for mothers, family, and neighbors was motivating. As testament, community members have contributed grains for porridge to be sold to cover the cost of grains and sugar. "There are no problems at the health center. I returned home with pleasure because health care providers prepared coffee and porridge after I gave birth to my child." (Women user, E. Gojam).

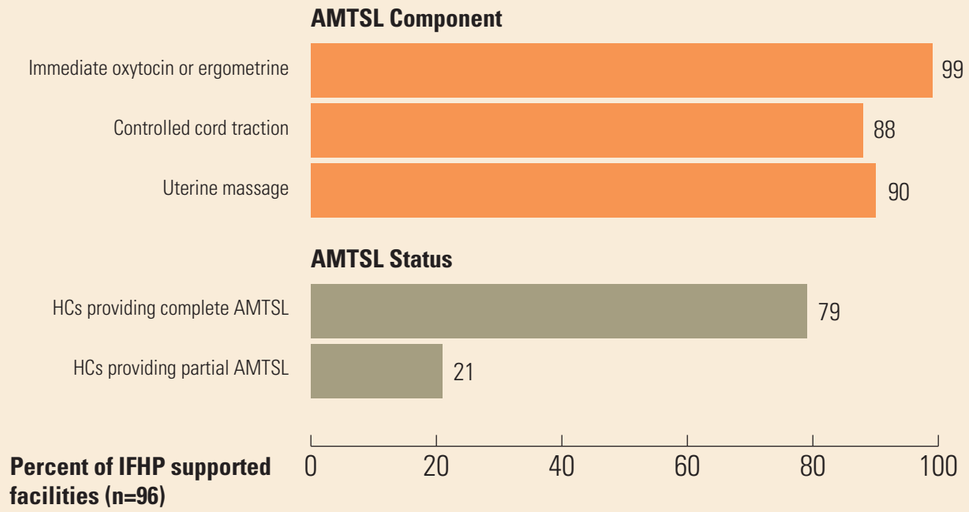
Selected maternal and newborn health services practices at health centers

IFHP's MNH interventions aimed to support the GOE to increase staff capacity and facility readiness to provide the basic package of MNH services. This includes AMTSL and ENC as part of BEmONC.

Active management of third stage of labor (AMTSL)

Since this survey was not designed to observe provider actions in real or simulated situations, AMTSL and ENC were measured by providers reporting the basic components and facilities being equipped to be able to provide the services. The data show that 99% of health centers report being able to provide one or more of the three AMTSL components, with 79% of the health centers able to provide complete AMTSL (Figure 8).

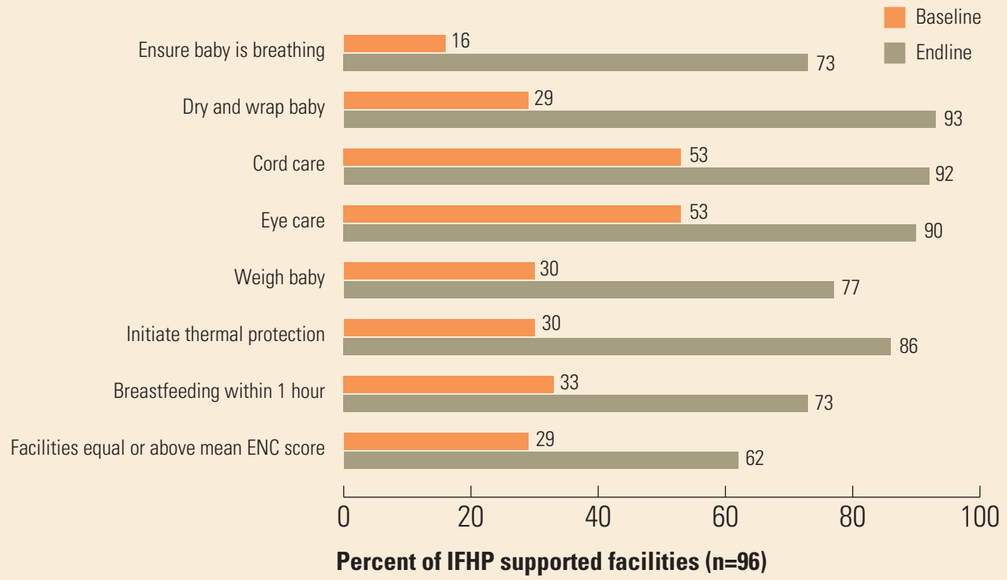
Figure 8: Percentage of IFHP supported health centers reporting and equipped to provide AMTSL, by component and provision status



Essential Newborn Care (ENC)

Since the survey was not based on provider observations, ENC coverage was analysed for reporting of individual ENC components. Reported provision of each component increased by two-to-three times since baseline. However, the number of facilities reporting all components was still very low. In order to make sense of how facilities compared to others, the mean score of components present at health facilities was calculated first. At baseline, this mean was 4 of 7 items, and at endline, the mean was reported at 7 of 7 items available. The mean was then compared to individual facility data to identify the number of facilities scoring at or above the mean at baseline (29%) and endline (62%). In short, at endline 62% of IFHP supported health centers reported providing complete ENC (Figure 9).

Figure 9: Percentage of IFHP supported health centers providing essential newborn care, by component

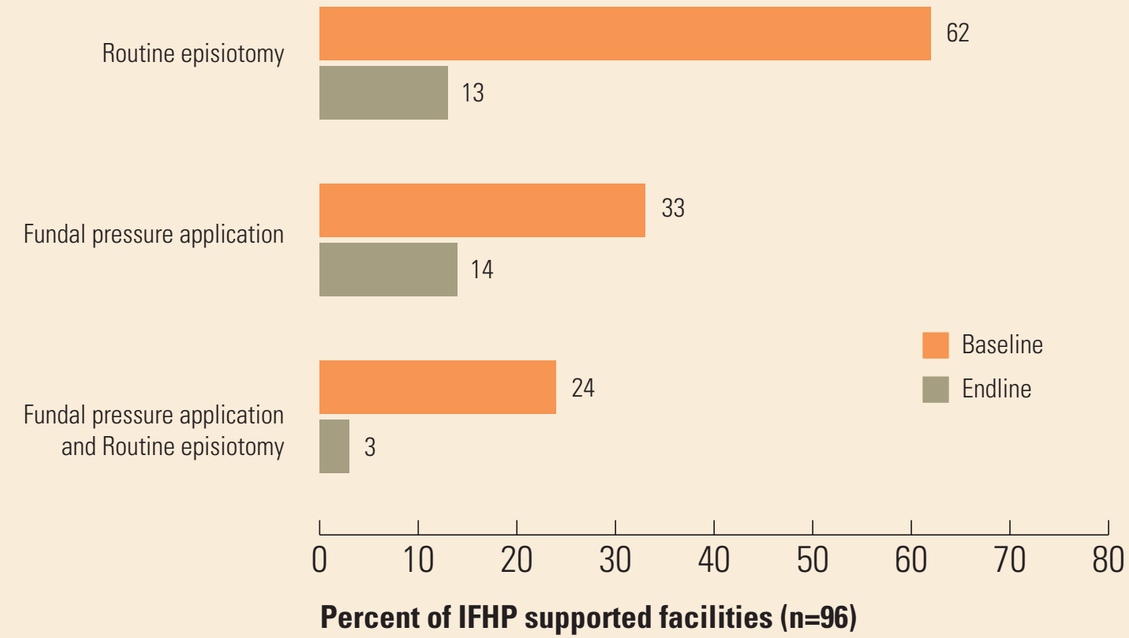


Non-recommended practices

Part of health center training has been to cease application of non-recommended delivery practices, including fundal pressure on the fetus and routine episiotomy. The dramatic reported decline in these practices is quite encouraging, although it must be noted that these are reported data only, and future surveys that may directly assess provider actions during deliveries should aim to record the occurrence of these practices.

At baseline, 24% of facilities were both conducting routing episiotomies and applying fundal pressure, while only 3% were at endline (Figure 10). Although reporting of both practices has dropped, 13% of providers report conducting episiotomies routinely, and 14% apply fundal pressure.

Figure 10: Percentage of IFHP supported health centers reporting conducting non-recommended practices, by practice

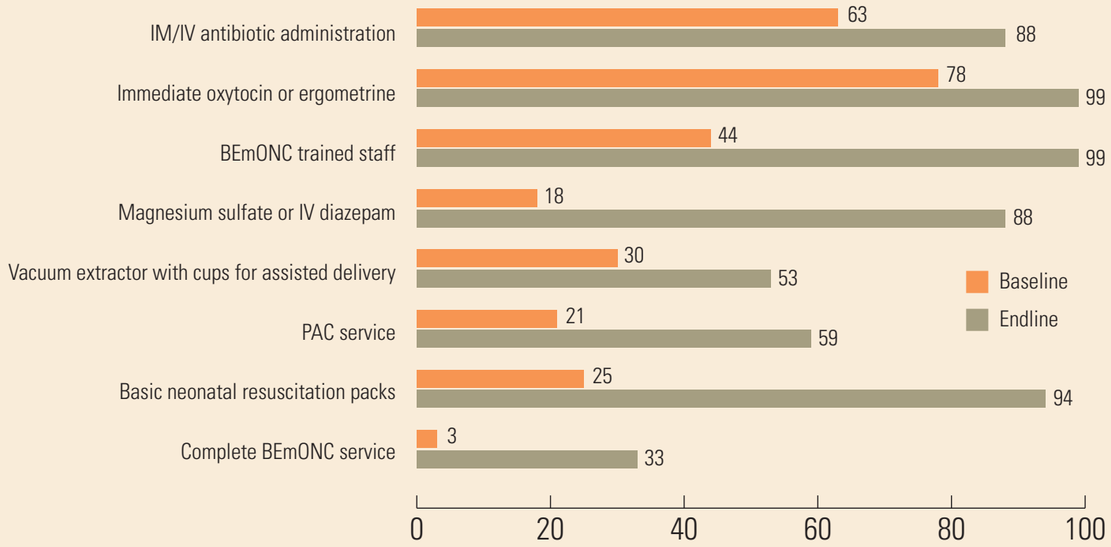


Implementation of BEmONC components

The assessment measured BEmONC by asking health center staff about facility and service delivery indicators that proxy BEmONC component indicators. These indicators were not explicitly labeled as BEmONC-essential and were woven throughout the assessment, in part to mitigate the response bias of simply regurgitating BEmONC components when asked. These indicators were then aggregated to determine whether health centers had the capacity to implement BEmONC. Nearly 100% of the health centers currently report having BEmONC-trained health professionals on staff. A nearly equal percentage of health centers are stocked to be able to administer immediate oxytocin OR ergometrine, and have basic neonatal resuscitation packs. However, relatively few health centers were equipped with vacuum extractors complete with the appropriate cup or plastic vacuum apparatus (52.6%). Many health centers also had limited PAC services for removal of retained products or conceptus tissue (41%).

As compared to the baseline, in which 3% of the health centers reported complete BEmONC component readiness, at endline 33% of the health centers reported complete readiness for BEmONC. Although this illustrates an improvement in the percentage of health centers reporting complete BEmONC readiness, more than two-thirds of health centers are not reporting implementing complete BEmONC (Figure 11).

Figure 11: Percentage of IFHP supported health centers able to provide BEmONC service, by component



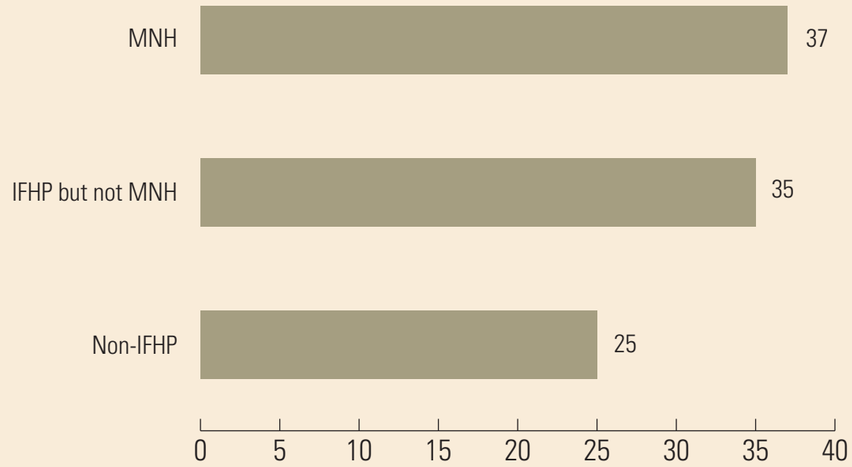
Maternal health service packages and their utilization rates at HCs

MNH services

All health centers reported the provision of some aspect of the package of maternal health services, including ANC, skilled delivery, PNC, PAC, ENC, and family planning. More than 95% of the health centers reported availability of ANC and delivery services at any time of the day, and 97% of health centers reported providing delivery services free of charge. Current coverage data on the package of maternal health services show that 100% of the health centers report providing FANC. IFHP 2013 random follow-up visit data show that 90% of IFHP facilities received FANC training, but only 76% of the sampled facilities actually offered FANC (40).

All key GOE MNH service coverage indicators monitored by IFHP increased significantly since baseline. The percentage of women who reported attending at least one ANC visit increased by 45% (from 66% to 96%). Forty-seven percent (47%) of women were found to have completed at least four ANC visits. Skilled deliveries have increased by 40% (from 24% to 33%), and postnatal care visits increased by 54% (41% to 64%) (Figure12). IFHP 2013 random follow-up visit data showed that 93% of all IFHP facilities offer PNC services, suggesting that facilities actually have the capability to achieve at least one PNC for more than 54% of births, as these endline data show (40). Other service use coverage for family planning and HIV testing for pregnant women have no baseline comparison data, and are 67% and 80%, respectively. Similarly, the IFHP endline survey data showed a significant increase in skilled delivery in the MNH pilot districts.

Figure 12: Skilled delivery coverage, IFHP endline survey



Qualitative respondents noted the change in uptake of services. "The great change we noticed during the last one year was the number of women delivering in a health facility. For example, I was handed two nights in hospital and I saw that there were twenty women delivering at the hospital." (SNNP, male).

Figure 13: Key MNH service delivery indicators in IFHP supported health centers in 12 months prior to survey: first ANC visit, skilled deliveries, one PNC visit

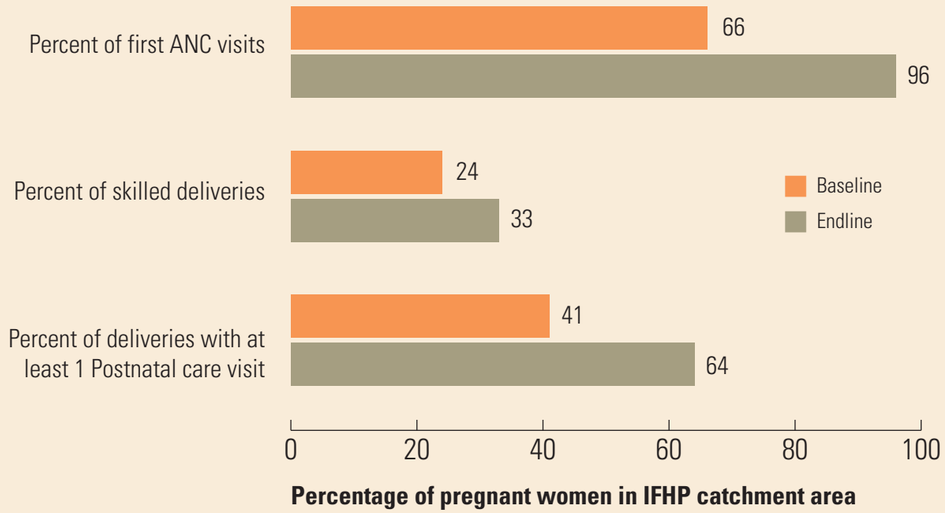
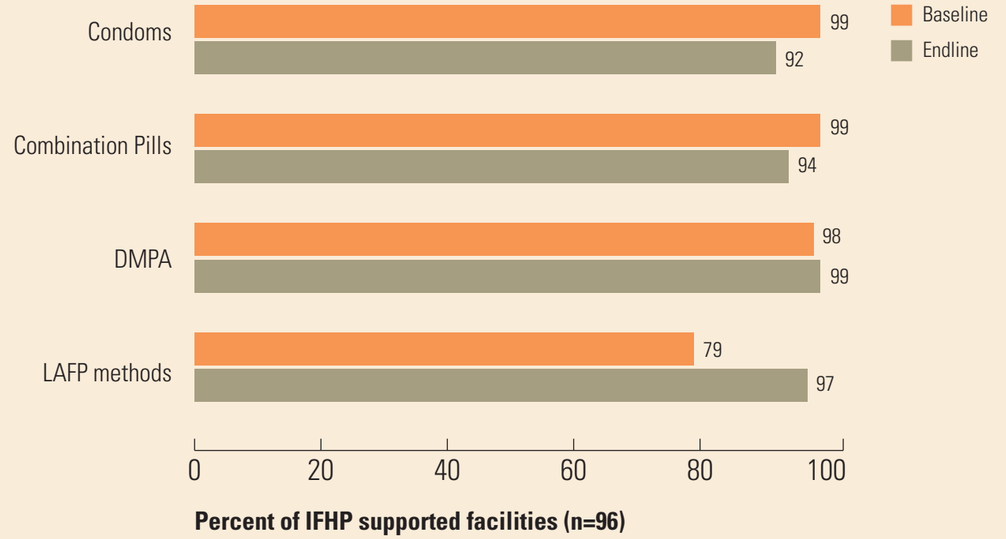


Figure 14: Percentage of IFHP supported health centers providing family planning services, by method



Family planning services

Data show that 59% of the health centers provide PAC services. Of these, 23% provide the services in a room separate from the delivery room. Eighty percent (80%) of the health centers provide PAC services free of charge. There are variations in the proportion of PAC-ready health centers with complete availability of materials and supplies. Data show that even though some of the materials for PAC are the same as for delivery, facilities need to be better equipped with dedicated PAC service space, equipment, and supplies. Currently, 59% have PAC gynacoid tables, 61% have dedicated PAC light sources, 83% have vacuum aspirator/syringes, and 85% have flexible cannula.

Family planning services are provided by all IFHP-supported health centers. These services include both short and long-acting methods. Forty-seven percent (47%) of the health centers provide family planning services in a separate room and 92% report providing the services during all working hours. The data show that 40% of the health centers provide progestin-only pills, while nearly 90% of the health centers provide condoms, combination pills, and Depo Provera (DMPA). Health centers with long-acting permanent methods (LAPMs) available have increased from 79% to 95% (Figure 14). While IUDs are provided at 72% of the health centers, implants such as Implanon and Jadelle are provided by 94% and 92% of the health centers, respectively.

Sustainability, ownership, and scalability of maternal and neonatal health service provision

IFHP is fortunate to have implemented its MNH activities in a supportive political environment. Having already taken the BEmONC interventions to scale, the GOE demonstrated its commitment to reducing maternal and infant mortality in Ethiopia. IFHP activities have helped the GOE to meet these goals, and we will continue to do so with evidence-based, actionable recommendations. To the extent possible, IFHP will implement these recommendations through its own programming in the remaining project period. Meanwhile, we will continue to support GOE's successes with our community counterparts and stakeholders.

As key informants, zonal, regional and health facility in-charge staff discussed successes and ongoing challenges to sustainability and scalability. Overwhelmingly, respondents noted how IFHP's model and mandate to work within government structures, with government staff at all levels, has contributed to lasting change in health service management and delivery, and a strengthened health system. IFHP's "activities are in line with government strategies and organization," and that there is a desire to scale up and sustain documentation and supervision techniques (ZHD, Tigray). Managers discussed that IFHP's training government health employees in service delivery, and developing the capacity of woreda, regional and zonal levels in managing health staff. A regional manager in SNNPR discussed the lack of consistent resources needed to sustain supportive supervision. The human capacity and the initiative exist, but consistent budget is needed to ensure transport to carry out site visits (RHB, SNNPR). However, some managers expressed concern about access to quality trainings for new staff, and refresher training for current staff (RHB, Oromia). Community level sensitization meetings were recognized as already being the most scalable and sustainable activities, in part due to HEWs and the HDA. They "enable the community to own the MNH activities which are scalable because they are not cost intensive and we have the structure to implement this through health extension workers and health development army."(ZHD, Amhara)

4. Discussion

The Government of Ethiopia is committed to improving maternal health as one of the six priority area of its reproductive health strategy (5). As such, the GOE has invested significant resources toward improving community awareness on maternal, neonatal, and child health; increasing access to health facilities; and strengthening the health system with human resources, equipment, and supplies (32, 3, and 4). This assessment found evidence of improvements in all the three sets of factors that threaten the lives of women, newborns, and the family at large.

Findings from this assessment illustrate overall increases in health service readiness and availability, as well as increased service utilization. Lessons from the data include understanding supply provision issues and cultural determinants of health-seeking behavior. Positive overall, these findings reflect the reality of most surveys: plenty of work remains to be done. Scaling and sustaining these interventions is an evolving challenge that must be addressed at all levels of Ethiopia's health system.

Qualitative data on awareness of maternal health problems and available services show that while stakeholders are generally aware of service availability and when to seek them, getting to a health center is not as easy as simply knowing about the services and deciding to take action (32, 22, 33, 23, and 34). Frequently mentioned barriers such as emergency transport infrastructure and economics highlight that not all MNH decisions are directly related to health.

The data show that information sources about maternal health problems and services tend to be HEWs, one-to-five networks, women's health development army leaders and, at times, kebele leaders. Community leaders are taking responsibility of improving the level of awareness of maternal and neonatal health. Nonetheless, it was not clear if these groups have the relevant knowledge and skills to build awareness on the specific themes discussed. Community leaders may be better positioned to explain the severe health implications which result from failure to use available services. Some qualitative respondents also mentioned that peer accountability in the community may be evolving into stigma as a result of punishment and fines for home delivery.

Access to health facilities has been recognized as one of the major factors affecting utilization of health services. Although women could access antenatal care within their village, delivery service requires women to travel far from home. Often such distances can be unbearable for pregnant women (35). More importantly, seeking delivery service far from home may entail leaving children and animals behind. Because women are their caretakers, this compromises the well-being of the household (36).

This study also showed that ANC attendance is high, as compared to the number of women who delivered in facilities. This finding aligns with the Ethiopia DHS 2011 re-analysis outcome, which showed that institutional delivery increases with ANC attendance, where institutional delivery was found to range from a low of 3.3% among those who did not attend ANC to 35.2% among those who attended four ANC services (37).

Although access to health facilities has improved with availability of on call vehicle and cultural ambulances, institutional delivery is compromised by a number of factors outside the MNH intervention, including inconsistent telecommunications networks, expense of transport, timely response of an ambulance driver, and a women's inability to leave children alone. Given that calls often are made after the onset of labor and connections are poor, most women end up delivering at home regardless of their reported interest in delivering at health facilities. These issues call for MNH intervention planning to involve advocacy components to affect change.

Readiness of health facilities in terms of human resources and availability of supplies and equipment present a major barrier to maternal health service utilization. From this assessment it was clear that more health centers are well staffed with competent health care providers generally equipped with supplies and drugs to provide delivery services. However major issues remain in terms of supply chain management of essential drugs like magnesium sulfate, oxytocin, anti hypertensives and consistent attention is needed to ensure that facilities remain appropriately staffed and equipped – especially where .innovative, life-saving MNH interventions, such as misoprostol, PPH prevention garments, and chlorhexidine are not available. The proportion of health centers with health officers, midwives, nurses, lab technicians, and pharmacy personnel has increased. This justifies endeavors to equip health facilities with a relevant mix of providers. Currently, 99% of the health centers have BEmONC-trained health professionals against 44% at baseline. Similarly, more health centers have health professionals trained in PAC, PMTCT, and LAFP (39). Such health professional capacity building is a sustainable approach to ensuring a high staff skill level.

The assessment findings illustrate that health centers with availability of essential delivery supplies, drugs, and equipment are fewer than health centers with supplies, drugs, and equipment like 40%/50% glucose, adrenaline, aminophylline, and oxytosins in labor and delivery, than at baseline. This problem evidently has to do with prepositioning capacity of health centers and the Pharmaceutical Funding and Supply Agency's (PFSA) timely provision of such supplies and drugs.

With such a mix of trained providers and drugs and supplies, heath centers were found to provide a package of integrated services for improved maternal health. This package includes ANC, delivery, PNC, postabortion care, family planning, and essential neonatal care. Health centers have taken initiatives to improve friendliness by making support that women feel at home at the health facility. This includes organization of coffee ceremonies, providing porridge, allowing women to choose birthing positions, and allowing relatives to attend the delivery, which may have contributed to improved maternal health service utilization.

The aggregate jump in first ANC visits (66% to 96%) is a remarkable, shared achievement, and is fairly consistent among the regions. However, data quality for fourth ANC visits is not as consistent, with HMIS data only available from 2 of 4 regions. IFHP random follow-up visit data, gathered from all intervention areas, suggest that about 14% of women are getting four or more ANC visits, which is consistent with other recent findings (23). Reliable ANC4 reporting is hampered mostly by potential for double counting of client visits registers for the ANC1 and gap in capturing previous ANC visits provided by HEWs at the HC so that women shall be registered as one visit even if they were having 4 visits at health post. In addition to this most pregnant mothers tend to book their visit in later months of pregnancy (6-7 months of pregnancy) due to different reasons so that they would not complete all the 4 visits.

Institutional delivery increased from 24% at baseline to 33% at endline. Routine follow-up data as well as IFHP endline data have documented institutional delivery to be 32% (39, 40), which is comparable to findings from this study. Recent data on institutional delivery have documented high (62%) institutional delivery in Holeta (4) and low (4%) institution delivery in one district of Tigray (33). Although such studies show inconsistencies in the current state of ANC and delivery service coverage, the high and low service coverage reported may not tell the whole story. The larger nationwide Ethiopian DHS report provides a relatively broader picture in which ANC, institutional delivery, and PNC service coverage were reported to be 34%, 10%, and 6% respectively. Thus, maternal health service coverage based on data generated from multiple settings is encouraging. The most recent mini Ethiopian DHS of 2014 showed ANC coverage of 40% and a skilled birth attendance rate of 15%.

Family planning service utilization was found to be high. Specifically, provision of LAFP services has increased from 79% to 97% of the health centers. However, the fact that services are available may not warrant service use. Routine data from IFHP have also documented that use of modern family planning services has increased only 2% between 2012 and 2013 (40). Because data on use of such services was not collected at the baseline, changes between baseline and endline could not be determined. Yet current availability of these services is a step forward.

5. Key Findings

The GOE-IFHP maternal and newborn health intervention supports efforts to improve maternal health service utilization in IFHP MNH districts. IFHP promotes awareness of maternal health issues, services, and choices at the community level, thus creating demand for quality facility-based services. IFHP helps build health workers' capacity to provide high-quality services and reduce barriers to facility access. IFHP's support is comprehensive, with community-level interventions enabling health facilities with supportive supervision, and training on BEmONC, PAC, LAFP, and PMTCT, and more. Support is provided in the context of integrated health care, which is understood to have far reaching implications for the future of maternal health service provision.

This assessment has generated a wide range of data from communities on awareness of and access to MNH services, and from health facilities on capacity to meet demand for those services. Detailed baseline and endline comparisons are summarized in Annex 1, while findings related to the assessment objectives are highlighted below.

1. The GOE-IFHP health systems strengthening approach and collaboration is working and is valued by PHCU staff as well as MOH offices at all levels.

2. All **five key areas** of health service quality in IFHP-assisted health facilities studied showed significant improvement from baseline. **1)** MNH service provision with competent and skilled providers has improved (from 66% to 100%); **2)** staff have correct information displayed and available for clients (15% to 52%); **3)** to provide confidential services (82% to 98%); **4)** in a client-friendly manner and environment (21% to 63%); **5)** in facilities providing the full package of MNH services (97% to 99%).

3. Key MNH service uptake indicators have increased as follows:

   a. First ANC visit: 66% to 96% (30% increase)

   b. Skilled delivery: 24% to 33% (9% increase)

   c. First PNC visit: 41% to 64% (23% increase)

4. Providers in IFHP-assisted facilities are all trained in essential newborn care (ENC). Disappointingly, at the time of the study, only 62% of facilities mentioned consistently providing *most* ENC components.

5. Nearly 100% of the health facilities have trained professionals with BEmONC. Despite this, only a third of the health centers studied were found to provide the *complete* set of BEmONC services. A large part of this underperformance is due to lack of essential life-saving medical supplies and drugs such as oxytocin and magnesium sulfate and equipment such as vacuum extractors.

6. Assessment results show broad male and female awareness of health services and the benefits of delivering at a health facility. However, the first two delays–deciding to seek services and reaching a health facility in time—persist as access barriers. Though 84% of facilities report having access to functional ambulances and 15% to other vehicles, accessing transportation in time for delivery and returning home postpartum was mentioned by community and managerial respondents as a major issue.

7. Health managers at all levels noted that with continued coordination at all levels of the health system, the package of MNH services promoted at IFHP-supported sites can be scaled if there is increased investment in service quality and drug supplies, including consistent and systematized health facility staff support and greatly improved supply chain management.

8. Community-level respondents reported HEWs, one-to-five, HDAs, and radio as key maternal and child health information sources. Peer accountability was mentioned as a strong influence on decisions to deliver in a health facility, likely as a result of recent GOE communication campaigns.

Lessons from the GOE-IFHP Partnership and Approach

This study took a broad look at MNH services provided in the IFHP-assisted MNH learning districts in four regions. A study objective was to document and evaluate the program approach in the learning districts to determine whether it was viable at scale. Another objective (for IFHP) was to determine the usefulness and "value added" of IFHP technical support in advancing MNH in supported sites, especially as viewed by GOE health personnel. IFHP and GOE staff in the field will use these observations and lessons to guide improvements as the MNH program expands to scale.

Lesson 1: Continued GOE health personnel support is needed to guarantee the success of the GOE-IFHP MNH approach to quality improvement and service uptake.

Qualitative data collected from health personnel at health center, zonal health department, and regional health bureau levels highlight that they have internalized lessons from IFHP technical support, for example the comprehensive approach to service provision. Many respondents discussed the benefits of the comprehensive IFHP support models of training health professionals, building health facility capacity, and supporting community mobilization.

"Utilization of insecticide-treated nets, construction of latrines at households, maintaining personal hygiene, and improving health-seeking behavior are all contributing to improved maternal health service use." (Health center head, Wolaita, SNNPR).

Lesson 2: Community-level systems strongly affect demand for health services.

Respondents indicated that the GOE's strategy guidance and support from local entities have contributed to improved maternal health service utilization.

"Collaboration between the health development army, the one-to-five networks, and HEWs at kebele level, and the community at large were instrumental for the improved maternal health service uptake" (Health center head, Central Zone, Tigray).

Lesson 3: MNH approaches are best implemented through a comprehensive, integrated approach.

This assessment illustrates that a comprehensive, integrated approach to maternal health response yields compelling results. Demand creation, provision of the range of services (ANC, institutional delivery, PNC, PAC, PMTCT and ENC, as well as short- and long-acting family planning) improves maternal health service utilization.

"IFHP introduced integrated services with a life cycle approach (neonates, adolescents, youth, and mothers) with different services at all levels. Such an approach to service delivery at different levels reinforces the other and contributes to quality services." (Regional health bureau, Oromia).

Lesson 4: Quality MNH services depend on a strong supply chain management and referral networks.

Facility "readiness" to provide MNH services depends on improved community awareness, availability of supplies, and defined referral linkages. Essential MNH medicines and supplies are the link to improvements in care, especially treatment of obstetric emergencies.

"Continuous availability of supplies and availing adequate resources for maternal health service provision played important role in improving maternal service uptake." (Health center head, E. Gojam)

Lesson 5: Increased community awareness about early ANC visits will produce better results.

ANC visits, especially the first, are opportunities for health care workers to develop a relationship with expectant mothers, fathers, and families and to discuss birth preparedness and danger signs. Increasing awareness of first trimester pregnancy signs will address the issue of later-term first ANC visits, and reduce the gap between first and fourth ANC visits. Early ANC visits also help with due date estimation. A common complaint by women service users is the perceived lack of concrete information on due dates and lack of provider knowledge on this topic. This worry about inaccurate due dates was mentioned as a reason for home delivery.

Lesson 6: Skilled deliveries depend on equipment and reliable essential drug supply.

Consistent availability of functional equipment and essential drugs remains an issue that can undermine the success of all other facility and community interventions. This includes equipment maintenance, repair, and re-supply, strengthening supply chain systems and drug storage, and ensuring security of equipment and drugs.

Lesson 7: Postnatal care successes can be better documented if M&E systems are improved.

HEWs are the key to success in the GOE model, but data reporting systems on PNC may be more reliably linked to the health facilities and district offices to ensure the frequency and quality of visits. Moreover, the care provided in the first 6-8 hours after delivery in cases of institutional delivery is a recommended part of the first PNC visit.

Lesson 8: Quality newborn care requires consistency and expanded awareness within and beyond the health facility.

Healthy babies in facilities require more consistent quality of newborn care. Health care staff must apply all ENC steps in all cases. The journey from the health facility to home is a risky time for newborns, and preparation for the journey is a key opportunity for staff to educate parents and supporters.

Lesson 9: Supportive supervision and on-the-job training/mentoring ensure that new practices are implemented consistently.

Results show not only the value of training, but also how necessary consistent follow-up is to reinforce practices, support staff, and understand what providers experience. Respondents at all levels discussed additional benefits to the BEmONC training, in particular.

"Training has improved staff self-confidence in provision of maternal health services (HC head, Wolaita, SNNPR).

"Training provided at health facilities with close follow-up has improved quality of service and service coverage" (Regional health bureau, Amhara region).

"On-the-job training of HEWs and service providers on MNH services has contributed to improved institutional deliveries." (Health center head, Arsi, Oromia).

"IFHP is providing quality training to our staff, which has contributed to improved maternal health service use." (Zonal health department, E. Gojam, Amhara).

Lesson 10: Strong government policies favoring facility deliveries need to be accompanied by respectful care efforts and cultural sensitivity.

GOE policies have prioritized health facility deliveries. To have maximum effective in creating demand for health services, these policies must be accompanied by practices centered on respectful care, as well as cultural and gender sensitivity. Families will also support facility attendance if maternity waiting areas are improved and male involvement is valued and encouraged.

Lesson 11: Transport, community coordination persistently affects health facility access for poor and remote families.

While ambulance and vehicle provision at district and facility levels has improved transport availability, many people reported transport as a persistent barrier to accessing health services. Reasons are inconsistent availability of operational vehicles, unreliable communication with drivers, and lack of funds. Lack of return transport also was reported as a deterrent to leaving home for delivery.

Lesson 12: BC components are missed opportunities to reach AYRH through youth-friendly messaging.

Extending the project's reach to adolescents/youth by providing youth-friendly MNH services is an important component of the comprehensive approach to maternal health service provision. This is particularly important for young girls, who are vulnerable to early marriage and motherhood. Very young mothers are automatically "high risk."

Lesson 13: Strong GOE partnership, community involvement and ownership, and partner commitment underlie MNH intervention success and sustainability.

Qualitative results reflect that IFHP's model of close partnership with the GOE has contributed to improved service provision as well as strong community communication mechanisms. Data from RHBs emphasized IFHP's commitment to providing technical support, packages of integrated services, and consistent, ongoing supportive supervision for improved institutional deliveries.

"IFHP staff commitment to maternal health service provision is high. They are closely working with us to meet the objective of the project." (Zonal health departments, Arsi, Oromia, Wolaita and SNNPR)

Lesson 14: Facilities need to be upgraded and maintained to accommodate the high demand for facility delivery.

As comprehensive MNH interventions are implemented, health facilities should be in a better position to accommodate more deliveries simultaneously and more postdelivery rooms.

7. Recommendations

This study demonstrates that progress is being made in the IFHP-supported pilot areas, and that overall, current strategies are sound and point the way to expansion to national scale. Nevertheless, as measured by the study and routine data and noted by focus group participants, gaps remain in services, quality, and acceptability. Government and partners must continually refine ways to reduce maternal mortality and morbidity through quality MNH care and facility-based deliveries. The following recommendations emerged from this study:

9. **Coordination and partnership: Quality MNH interventions will continue to benefit from long- term GOE and stakeholder commitment as well as careful planning.** Emphasis must be placed on local health sector and community ownership, along with scalability and sustainability of interventions. The MOH and partners have already prioritized MNH interventions in health plans. To overcome challenges and expand services, continual attention must be paid to incremental improvements in quality and sensitivity to client perspectives. Programmatic strategies and interventions must be adaptable to changing contexts and circumstances.

10. **ANC and pregnancy planning: Focus on early ANC and contingency support for women near their due dates.** Improved early ANC care communication through HEWs supported by PHCU staff can increase first ANC visits and close the gap of fourth ANC visits. Continue to seek solutions for women who need to travel long distances to reach services before their due date and for other transportation issues that focus groups highlighted. Waiting homes near health centers where mothers can await their child's birth have advantages and disadvantages, but could be explored.

11. **Skilled delivery: Prioritize supply chain strengthening for life-saving MNH drugs and supplies and equipment (i.e. vacuum extractor, magnesium sulfate, oxytocin, and misoprostol), aiming for 100% availability at all times.** Emphasize MNH supply chain and cold chain in pre- and in-service training, support visits, and on emergency supply mechanisms in the case of stockouts. Continue to build capacities of regional, district, and health facility staff to pre-position essential supplies, drugs, and equipment, and maintain equipment at the facility level. Misoprostol availability should be scaled up at health facilities as back up in case of oxytocin stockouts and management of PPH. In areas where women have low access to health facilities for delivery, supplying misoprostol to HEWs could be an interim life-saving measure.

12. Other measures that could improve skilled delivery services include **expanding delivery room space and equipment** to accommodate more than two deliveries at a time in high volume facilities. Also, gaps remain in services, quality, and acceptability, along with gaps in tracking of skilled deliveries.

13. **Postnatal care: Postnatal care services should be strengthened through improved data collection, supportive supervision, and community outreach.** Because most PNC visits happen outside health centers, reinforcing the feedback data loop by HEWs to health facilities and incorporating PNC in supportive supervision will improve coverage.

14. **Newborn care: Ensure that all ENC components are conducted at health centers, and incorporate a formal ENC data recording mechanism in HMIS.** PHCUs should strengthen awareness of thermal protection, such as early skin-to-skin contact. Staff should prepare the mother and baby for safe transport home and talk with community support providers about thermal care, breastfeeding, cord care, and danger signs. Planned neonatal care efforts in the community, supervised by HEWs, should proceed rapidly and link with PHC facilities.

15. **Respectful care: Respectful care and cultural sensitivity must be part of training and supportive supervision protocols for health staff and managers at all levels.** This must begin with BEmONC training and continue through supportive supervision at all levels. Strong policies on skilled deliveries are more likely to influence behavior in health facilities that practice respectful care, are culturally sensitive, and establish a family-friendly environment. Respectful care should be provided regardless of a woman's social status or education. Coffee (96%) and porridge ceremonies (83%) are already offered at most IFHP-supported facilities, and this is a positive development. Another part of respectful care is client comfort and hygiene. Women cannot be expected to deliver in facilities that are not at least as clean as their own homes. As with coffee ceremonies, careful planning and local resources can make sure that linens, beds, and the delivery environment are consistently clean and attractive. In addition to offering family-friendly services, health facilities should publicize them by inviting the public to visit with the health center and get to know its staff and the services they offer.

16. **Transportation: Transportation planning should focus on maintenance, improved coordination with time of delivery, and mechanisms to ensure that poorer community members are able to access and afford transportation to and from the health facility.** Although many on-call ambulances are now available, communication infrastructure and at times driver attitudes delay transport in time for safe delivery. Families hesitate to take advantage of transport to facilities because of difficulties and expense returning home. Innovative approaches, especially community-led solutions, should be attempted. PHCUs should include review of transportation arrangements and difficulties to and from health facilities as part of supportive supervision and planning.

17. **Health systems strengthening: The GOE-IFHP model of capacity building for improved health systems should be used for future MNH health planning. Connections between regional, district, and health facility staff and links to community health leaders and clients are sustainable strengths of the IFHP partnership model.** Tools like supportive supervision checklists and protocols should be used for consistent reporting, data use, and feedback to health facilities.

18. **Behavior change: New strategies for behavior change (BC) are needed to improve maternal and newborn health (MNH) and counter misinformation and ongoing mistrust of the health system.** BC efforts should reinforce messages already conveyed by HEWs and other community health agents. There should be more emphasis on and funding for BC related to MNH. Additionally, BC directed at providers could improve the standard of care.

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Annexes

Annex 1: Base and endline data for maternal health service uptake by specific indicators and regions

Findings on maternal health service uptake	Baseline					Endline				
Basic characteristics of HCS	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
# of health centers	23	13	25	26	87	28	13	27	27	95
Mean catchment population of HC	21,718	36,163	26,663	24,306	26,071	24,162	38,756	28,197	25,201	27,601
Available materials and facilities in HCs										
Mean no. beds per HC	4	4	5	8	6	4	4	6	8	6
Access to functional ambulance					NA	48	84.6	100	100	83.7
Access to other functional vehicles					NA	17.9	7.7	11.1	18.5	14.7
Maternal death review mechanism in place	0.0	0.0	12.0	19.2	9.2	32.1	53.8	66.7	88.9	61.1
HC financial procedures related to maternal health service provision										
Implement health care finance reform					NA	96.4	76.9	100	100	95.8
					NA	n=27	n=10	n=27	n=27	n=91
Health care financing reform started in the last 12 months					NA	25.9	10	7.4	11.1	14.3
Health care financing reform started in the last 1-3 years					NA	63	40	66.7	33.3	52.7
Health care financing reform started before 3 years					NA	11.1	50	25.9	55.6	33
HCs providing free maternal health service					NA	100	100	100	100	100
HCs providing free PAC service					NA	75	100	68.4	92.9	80.4
HCs providing free prescribed drugs for pregnant women	78.3	38.5	80	84.6	74.7	100	92.3	92.6	100	96.8
HCs providing free maternal health services and drugs for pregnant women					NA	100	92.3	92.6	100	96.8

% of health centers with defined type of health professional	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Health officer	56.5	76.9	64.0	73.1	66.7	78.6	84.6	85.2	85.2	83.2
No stated provider	43.5	23.1	36.0	26.9	33.3	21.4	15.4	14.8	14.8	16.8
1 provider	52.2	46.2	48.0	61.5	52.9	53.6	76.9	51.9	40.7	52.6
2 or more providers	4.3	30.8	16.5	11.5	13.8	25.0	7.7	33.3	44.4	30.5
Midwives	17.4	97.9	16.0	100	50.6	96.4	100	100	100	98.9
No stated provider	82.6	2.1	84.0	0.0	49.4	3.6	0.0	0.0	0.0	1.1
1 provider	17.4	61.5	4.0	46.2	28.7	14.3	7.7	29.6	0.0	13.7
2 or more providers	0.0	15.4	12.0	53.8	21.8	82.1	92.3	70.4	100.0	85.3
Nurses	100	100	96	100	99	100	100	100	100	100
No stated provider	0.0	0.0	4.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
1 provider	0.0	0.0	8.0	3.8	3.4	0.0	0.0	0.0	0.0	0.0
2 or more providers	100	100	88	96	95	100	100	100	100	100
Lab technician	91.3	100	80	88.5	88.5	78.6	100	100	92.6	91.6
No stated provider	8.7	0.0	20.0	11.5	11.5	21.4	0.0	0.0	7.4	8.4
1 provider	60.9	76.9	48.0	57.7	58.6	35.7	53.8	3.7	40.7	30.5
2 or more providers	30.4	23.1	32.0	30.8	29.9	42.9	46.2	96.3	51.9	61.1
Pharmacy personnel	95.7	77	92	96	92.0	88.9	100	100	100	96.8
No stated provider	4.3	23.1	8.0	3.8	8.0	11.1	0.0	0.0	0.0	3.2
1 provider	65.2	53.8	52.0	88.5	66.7	51.9	46.2	11.1	3.7	25.5
2 or more providers	30.4	23.1	40.0	7.7	25.3	37.0	53.8	88.9	96.3	71.3
HWs trained in BEmONC	52.2	31	8	77	43.7	96.4	100	100	100	98.9
No stated provider	47.8	69.2	92.0	23.1	56.3	3.6	0.0	0.0	0.0	1.1
1 provider	39.1	7.7	4.0	42.3	25.3	7.1	7.7	0.0	3.7	4.2
2 or more providers	13.0	23.1	4	34.6	18.4	89.3	92.3	100	96.3	94.7
HWs trained on PAC	8.7	30.8	8.0	30.8	18.4	25.9	69.2	63.0	40.7	46.8
No stated provider	91.3	69.2	92.0	69.2	81.6	74.1	30.8	37.0	59.3	53.2
1 provider	8.7	7.7	8.0	19.2	11.5	11.1	38.5	63.0	11.1	29.8
2 or more providers	0.0	23.1	0.0	11.5	6.9	14.8	30.8	0.0	29.6	17.0
HWs trained on PMTCT	73.9	84.6	20.0	73	59.8	82.1	84.6	88.9	100	89.5
No stated provider	26.1	15.4	80.0	26.9	40.2	17.9	15.4	11.1	0.0	10.5
1 provider	26.1	30.8	12.0	11.5	18.4	7.1	30.8	22.2	11.1	15.8
2 or more providers	47.8	53.8	8.0	61.5	41.4	75.0	53.8	66.7	88.9	73.7
HWs trained in LAFP methods	60.9	76.9	28	73.1	57.5	59.3	92.3	100	74.1	79.8
No stated provider	39.1	23.1	72.0	26.9	42.5	40.7	7.7	0.0	25.9	20.2
1 provider	21.7	46.2	20.0	15.4	23.0	22.2	38.5	11.1	22.2	21.3
2 or more providers	39.1	30.8	8.0	57.7	34.5	37.0	53.8	88.9	51.9	58.5
% of health centers with minimum staffing (old standard)	0.0	7.7	4.0	3.8	3.4	50.0	76.9	59.3	77.8	64.2
% of health centers with minimum staffing (new standard)	0.0	0.0	4.0	0.0	1.1	7.1	0.0	11.1	14.8	9.5

% of health centers with client-friendly services	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Coffee ceremony during delivery					NA	96.4	100	96.3	92.6	95.8
Offer porridge ceremony after delivery					NA	64.3	84.6	85.2	100	83.2
Allow support people in delivery room	78.3	61.5	48	61.5	62.1	92.9	76.9	66.7	81.5	80
Allow alternative birthing position	30.4	23.1	30	15.4	21.8	100	100	96.3	100	98.9
Showing clients delivery area during ANC visits					NA	82.1	46.2	81.5	66.7	72.6
Explain procedures to clients before applied					NA	96.3	92.2	100	92.6	95.7
Mean score of health centers with friendly service					NA	5	5	5	5	5
% of health centers providing client-friendly services equal or above the mean score					NA	85.7	76.9	88.9	88.9	86.3
% of health centers providing client-friendly services below the mean score					NA	14.3	23.1	11.1	11.1	13.7
% of health centers providing client-friendly delivery services					NA					
Delivery room separate from ANC					NA	92.9	100	96.3	100	96.8
Prepared place for alternative birthing					NA	46.4	15.4	76.9	70.4	57.4
Family members or partners allowed in delivery room	78.3	61.5	48	61.5	62.1	92.9	92.3	74.1	96.3	88.4

Maternal health service coverage (last 12 months)	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
ANC 1	70.1	67.1	92.1	47.1	65.7	93.4	88.6	103.8	93.7	95.5
ANC 4					NA	42.9		51.1		47.2
Skilled delivery	14.7	20.8	59.9	13.1	23.6	31.7	24.0	31.5	39.7	33.1
PNC 1	52	37	69.1	18.2	40.9	76.1	49.7	66.3	54.6	64.0
FP service					NA	93.2	63.6	61.8	44.5	66.5
Penta 3					NA	89.6	90.8	91.4	83.8	88.6
Pregnant women tested for HIV					NA	69.6	93.3	82.7	94.0	80.0

% of health centers providing ANC services	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
FANC type	91.3	100	100	92.3	95.4	100	100	100	100	100
Traditional type					NA	0	0	0	0	0
Service available all mornings					NA	0	0	0	7.4	2.1
Service available the entire day	95.7	84.6	60	76.9	78.2	100	100	100	92.6	97.9

% of health centers with type of ANC services provided	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E.Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
HIV testing service					NA	100	100	100	100	100
HIV testing in ANC room	91.3	38.5	24	23.1	43.7	96.4	100	96.3	96.3	96.8
PMTCT service (any option)	91.3	69.2	84	84.6	83.9	100	61.5	88.9	92.6	89.5
ART treatment service	4.3	15.4	16	38.5	19.5	71.4	30.8	51.9	77.8	62.1
STI screening and treatment	95.7	76.9	72	65.4	77	64.3	38.5	70.4	85.2	68.4
Screening for other diseases	95.7	100	52	84.6	80.5	75	69.2	96.3	88.9	84.2
Counseling on pregnancy danger signs, birth preparedness, and complication readiness	82.6	46.2	84	80.8	77	100	92.3	100	100	98.9
Counseling on what to do if danger signs occur	82.6	46.2	84	80.8	77	96.4	100	100	96.3	97.9
Facilities that provide TT	100	100	84	92.3	93.1	89.3	92.3	96.3	100	94.7
Provide fefol or iron sulfate	95.7	692	84	84.6	85.1	82.1	69.2	92.6	85.2	84.2
Provide anithelminthics	17.4	53.8	24	30.8	28.7	92.9	92.3	77.8	81.5	85.3
Provide complete ANC services (7 criteria met)	0	30.8	8	0	6.9	39.3	30.8	59.3	59.3	49.5

% of health centers with ANC protocols, forms, and materials	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
ANC cards (completed in last 3 months)	78.3	53.8	80	73.1	73.6	100	53.8	81.5	100	88.4
ANC register (with entries in last 3 months)	95.7	53.8	100	96.2	90.8	100	100	100	100	100
PMTCT monthly summary reporting form	60.9	46.2	60	80.8	64.4	35.7	0	37	88.9	46.3
Poster of pregnancy danger signs in ANC	52.2	38.5	20	65.4	44.8	100	100	100	96.3	98.9
Poster of birth preparedness in ANC	65.2	23.1	20	61.5	44.8	96.4	92.3	100	85.2	93.7
Poster of FANC	56.5	38.5	28	61.5	47.1	82.1	84.6	100	92.6	90.5
Lab request form (standard format)	60.9	23.1	20	65.4	44.8	57.1	30.8	63	66.7	57.9
Prescription slip	60.9	46.2	20	65.4	48.3	64.3	15.4	59.3	92.6	64.2

HC ANC referral characteristics	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Receive information on referred ANC clients					NA	59.3	7.7	23.1	66.7	44.1
Receive information on referred ANC clients by phone					NA	37.5	0	66.7	5.6	26.8
Receive information on referred ANC clients by formal letter/ referral paper					NA	56.2	0	16.7	94.4	65.9
Receive information on referred ANC clients from mothers/clients					NA	6.2	100	16.7	0	7.3
HCs provide referral feedback to lower level					NA	100	30.8	80.8	63.6	75.3
Feedback by phone					NA	0	0	23.8	7.1	9
Feedback by formal letter/ referral paper					NA	89.3	100	57.1	92.9	80.6
Feedback through mothers/ clients					NA	10.7	0	0	0	4.5
Feedback during supervision					NA	0	0	19	0	6

% of health centers with ANC essential furniture, equipment, and supplies	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Furniture										
Table and at least 2 chairs	91.3	100	80.0	88.5	88.5	92.9	100	92.6	100	95.8
At least 1 examination couch	82.6	100	96.0	84.6	89.7	100	100	100	100	100
With basic furniture	78.3	100	80	84.6	83.9	92.9	100	92.6	100	95.8
Supplies										
At least 1 weighing scale	87.0	100	92.0	88.5	90.8	100	100	92.6	100	97.9
At least 1 measuring tape	73.9	38.5	76.0	69.2	67.8	60.7	76.9	59.3	74.1	66.3
At least 1 cover screen	26.1	38.5	72.0	46.2	47.1	53.6	61.5	55.6	63	57.9
At least 1 sharps container/ safety box	82.6	76.9	100	88.5	88.5	92.9	100	92.6	92.6	93.7
At least 1 chlorine bleach	43.5	15.4	76.0	65.4	55.2	96.4	76.9	81.5	100	90.5
At least 1 dustbin	56.5	61.5	36.0	84.6	59.8	89.3	69.2	66.7	100	83.2
At least 1 container for contaminated water	21.7	7.7	64.0	46.2	39.1	10.7	15.4	14.8	11.1	12.6
At least 1 working pipe (running water for washing)	13.0	15.4	44.0	34.6	28.7	7.1	0	14.8	14.8	10.5
Supplies equal or above mean score	43.5	23.1	76	76.9	59.8	75	69.2	74.1	85.2	76.8
Supplies below mean score	56.5	76.9	24	23.1	40.2	25	30.8	25.9	14.8	23.2
Medical equipment										
At least 1 blood pressure cuff	87.0	100	96.0	84.6	90.8	78.6	23.1	88.9	88.9	76.8
At least 1 thermometer	73.9	46.2	84.0	76.9	73.6	71.4	38.5	48.1	66.7	58.9
At least 1 stethoscope	91.3	92.3	100	88.5	93.1	89.3	46.2	96.3	85.2	84.2
At least 1 fetoscope	91.3	100	96.0	88.5	93.1	100	76.9	100	96.3	95.8
At least 1 HIV rapid test kits	87.0	84.6	96.0	84.6	88.5	92.9	100	96.3	96.3	95.8
Medical equipment equal or above mean score	65.2	38.5	76	69.2	65.5	92.9	23.1	88.9	81.5	78.9
Medical equipment below mean score	34.1	61.5	24	30.8	34.5	7.1	76.9	11.1	18.5	21.1

% of HCs providing delivery services	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
HCs with delivery service during working hours					NA	3.6	0	7.4	0	3.2
HCs with delivery service anytime	100	100	100	96.2	98.9	96.4	100	92.6	100	96.8
HCs with visible delivery job aid	34.8	7.7	28	53.8	34.5	71.4	75	66.7	81.5	73.4
HCs using delivery registry during last month	43.5	84.6	56	88.5	66.7	100	100	100	100	100
HCs using routine partograph	39.1	23.1	48	73.1	49.4	89.3	15.4	81.5	85.2	75.8

% of health centers providing AMTSL	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Immediate oxytocin OR ergometrine					NA	96.4	100	100	100	98.9
Controlled cord traction					NA	96.4	84.6	77.8	92.6	88.4
Uterine massage					NA	85.7	76.9	88.9	100	89.5
Provide complete AMTSL					NA	78.6	69.2	70.4	92.6	78.9
Provide partial AMTSL					NA	21.4	30.8	29.6	7.4	21
Provide no AMTSL					NA	0.0	0.0	0.0	0.0	0.0

% of health centers providing ENC	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Ensure baby is breathing	17.4	30.8	12.0	11.5	16.1	64.3	69.2	74.1	81.5	72.6
Dry and wrap baby	30.4	38.5	16.0	34.6	28.7	85.7	92.3	96.3	96.3	92.6
Care for umbilical cord	60.9	38.5	24.0	80.8	52.9	89.3	92.3	85.2	100	91.6
Give eye prophylaxis	47.8	53.8	40.0	69.2	52.9	85.7	92.3	96.3	85.2	89.5
Weigh baby	47.8	30.8	12.0	30.8	29.9	64.3	100	81.5	74.1	76.8
Initiate thermal protection	43.5	38.5	24.0	19.2	29.9	75	69.2	96.3	96.3	86.3
Initiate breastfeeding within one hour	47.8	30.8	32.0	23.1	33.3	82.1	92.3	70.4	55.6	72.6
Mean score for ENC service	4	4	4	4	4	7	7	7	7	7
Providing ENC services equal or above the mean score	21.7	30.8	20.0	42.3	28.7	42.9	76.9	63.0	74.1	62.1
Providing ENC services below the mean score	78.3	69.2	80.0	57.0	71.3	57.1	23.1	37.0	25.9	37.9
Evaluate/examine newborn in the first hour					NA	21.4	61.5	40.7	11.1	29.5

% of health centers that conduct un-recommended delivery practices	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Practice fundal pressure application	39.1	7.7	56	19.2	33.3	21.4	7.7	22.2	0.0	13.7
Practice routine episiotomy	65.2	76.9	72	42.3	62.1	14.8	0.0	25.9	3.7	12.8

HC delivery referral characteristics	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Receive information on referred clients					NA	50	23.1	14.8	66.7	41.1
Receive information by phone					NA	50	66.7	100	0	33.3
Receive information by formal letter/ referral paper					NA	35.7	0	0	100	59
Receive information from referred mothers/clients					NA	14.3	33.3	0	0	7.7
Give feedback on referred client to lower level					NA	96	8.3	81.5	75	73.8
Feedback by phone					NA	4.2	100	31.8	33.3	22
Feedback by formal letter/ referral paper					NA	91.7	0	54.5	66.7	71.2
Feedback by during supervision					NA	4.2	0	13.6	0	6.8

% of health centers with delivery essential furniture, equipment, and supplies	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Furniture										
Delivery coach	52.2	69.2	96.0	88.5	78.2	100	100	92.6	100	97.9
Washable plastic cover for coach	52.2	69.2	96.0	88.5	78.2	85.7	84.6	40.7	96.3	75.8
Storage cupboard	26.1	76.9	52.0	61.5	51.7	89.3	76.9	96.3	92.6	90.5
Privacy screen	39.1	38.5	76.0	38.5	49.4	67.9	53.8	81.5	59.3	67.4
Basic furniture					NA	53.6	30.8	33.3	55.6	45.3
Supplies										
Running water for washing OR water for flushing	13.0	61.5	28.0	30.8	29.9	28.6	46.2	33.3	14.8	28.4
Functioning toilet near delivery area	21.7	46.2	80.0	46.2	49.4	14.3	30.8	25.9	33.3	25.3
Refrigerator or cold box (temp under 8C)	4.3	0.0	84.0	38.5	36.8	21.4	0.0	22.2	40.7	24.2
Temperature regulation chart completed as of date of visit					NA	21.4	0.0	22.2	11.1	15.8
Light source (examination light, hand torch)	4.3	0.0	84.0	38.5	36.8	75.0	30.8	55.6	96.3	69.5
Basic supplies					NA	0.0	0.0	3.7	0.0	1.1
Medical equipment										
Urinary catheter	65.2	46.2	44.0	69.2	57.5	89.3	76.9	37.0	77.8	69.5
Urinary catheter drainage bag					NA	28.6	0.0	25.9	37.0	26.3
IV cannula	95.7	76.9	100.0	84.6	90.8	100.0	92.3	96.3	100.0	97.9
Vaginal speculum: small, medium, or large	8.7	38.5	40.0	53.8	35.6	75.0	84.6	88.9	74.1	80.0
Adult stethoscope	34.8	46.2	8.0	23.1	25.3	64.3	61.5	77.8	48.1	63.2
BP apparatus	26.1	38.5	36.0	61.5	41.4	50.0	38.5	74.1	37.0	51.6
Fetoscope	17.4	15.4	8.0	23.1	16.1	89.3	100.0	88.9	88.9	90.5
IV stand	65.2	92.3	96.0	88.5	85.1	89.3	92.3	96.3	92.6	92.6
Trolley for instrument	43.5	38.5	88.0	65.4	62.1	82.1	92.3	92.6	96.3	90.5
Adult ambubag and adult mask	34.8	46.2	20.0	38.5	33.3	64.3	69.2	48.1	77.8	64.2
Bedpan	43.5	46.2	96.0	76.9	69.0	64.3	84.6	77.8	81.5	75.8
Basic medical equipment					NA	3.6	0.0	3.7	7.4	4.2

% of health centers with assisted delivery equipment	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Vacuum extractor with cup or plastic vacuum apparatus	13.0	53.8	28.0	34.6	29.9	46.4	38.5	81.5	37.0	52.6

% of health centers with infection prevention materials and supplies	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Utility gloves	60.9	46.2	40.0	57.7	51.7	67.9	69.2	66.7	81.5	71.6
Clean gloves	56.5	53.8	84.0	76.9	70.1	92.9	61.5	66.7	92.6	81.1
Sterile gloves	69.6	61.5	92.0	80.8	78.2	100	84.6	96.3	100	96.8
Chlorine	60.9	61.5	88.0	80.8	74.7	96.4	76.9	81.5	100	90.5
Bucket	60.9	46.2	76.0	69.2	65.5	96.4	100.0	88.9	100	95.8
Autoclave, hot air oven, or ability to boil water	87.0	84.6	92.0	61.5	80.5	71.4	76.9	96.3	85.2	83.2
Sharps container/safety box	39.1	76.9	100.0	96.2	79.3	100.0	84.6	96.3	88.9	93.7
Container for contaminated towels/wastes	56.5	15.4	20.0	53.8	39.1	67.9	69.2	51.9	85.2	68.4
Basic infection prevention materials and supplies					NA	35.7	23.1	22.2	51.9	34.7

% of health centers with personal protective wear	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Gown					NA	57.1	84.6	92.6	88.9	80.0
Apron					NA	92.9	84.6	96.3	92.6	92.6
Goggles					NA	75.0	100.0	92.6	81.5	85.3
Boots					NA	96.4	84.6	92.6	96.3	93.7
Mask					NA	67.9	84.6	74.1	70.4	72.6
Hat or cap					NA	25.0	69.2	66.7	37.0	46.3
Basic personal protective wear					NA	14.3	53.8	55.6	25.9	34.7

% of health centers with delivery sets	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
2+ scissors	78.3	61.5	88.0	96.2	83.9	100	100	85.2	100	95.8
2+ clamps OR cord ties	65	69	96.0	100	85.1	100	100	92.6	100	97.9
2+ clean, dry blankets or towels	56.5	23.1	88.0	30.8	52.9	96.4	46.2	74.1	92.6	82.1
2+ needle holder	34.8	61.5	96.0	92.3	73.6	92.9	92.3	85.2	100.0	92.6
2+ container for placenta	21.7	38.5	92.0	73.1	59.8	92.9	76.9	88.9	96.3	90.5
Basic delivery sets	13.0	23.1	80.0	30.8	39.1	82.1	38.5	70.4	88.9	74.7

% of health centers with basic neonatal resuscitation packs	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E.Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Mucus extractor OR suction catheter OR suction apparatus	8.7	0.0	44.0	50.0	29.9	100	92.3	96.3	100	97.9
Infant face masks	17.4	23.1	44.0	46.2	34.5	89.3	92.3	96.3	100	94.7
Ventilatory bag	30.4	23.1	52.0	69.2	47.1	96.4	84.6	96.3	100	95.8
Basic neonatal resuscitation packs	8.7	0.0	40.0	38.5	25.3	89.3	84.6	96.3	100	93.7

% of health centers with emergency delivery drugs and supplies	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
IV fluids										
DNS solution					NA	57.1	0.0	14.8	44	33.7
Ringer lactate infusion (Lr)					NA	85.7	69.2	29.6	81	66.3
Sodium chloride					NA	50.0	30.8	33.3	52	43.2
Dextrose in water (D/W)					NA	28.6	0.0	7.4	41	22.1
IV fluids (DNS, RL, NS, DW)	60.9	0	100	80	69.0	92.9	92.3	55.6	92.6	82.1
Drugs and supplies										
40%/50% glucose	91.3	69.2	92.0	73.1	82.8	71.4	38.5	74.1	81.5	70.5
Adrenaline	52.2	7.7	96.0	69.2	63.2	39.3	7.7	3.7	15	17.9
Aminophylline	21.7	7.7	16.0	38.5	23.0	10.7	0.0	3.7	8	6.4
IV ampicillin	26.1	7.7	76.0	50	44.8	67.9	38.5	0.0	15	29.5
Crystalline penicillin	30.4	7.7	72.0	46	43.7	14.3	7.7	0.0	4	6.3
Gentamycin	43.5	7.7	96.0	73	62.1	64.3	23.1	11.1	59	42.1
Anti-hypertensive	43.5	76.9	12.0	57.7	43.7	96.4	76.9	18.5	70.4	64.2
Magnesium sulfate OR IV diazepam	0.0	7.7	24.0	35	18.4	82.1	69.2	74.1	78	76.8
Oxytosins (cold storage 8C)	82.6	84.6	72.0	76.9	78.2	96.4	100	100	100	98.9

% of health centers providing PNC	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Provide PNC services	91.3	76.9	100	100	94.3	100	100	100	96.3	98.9
	n=21	*n=10*	*n=25*	*n=26*	*n=82*	*n=28*	*n=13*	*n=27*	*n=26*	*n=94*
HCs using PNC registry	19.0	20.0	76.0	69.2	52.4	100	76.9	74.1	96.2	88.3
PNC partner support	47.6	30.0	40.0	73.1	51.2	82.1	100.0	88.9	96.2	90.4
HCs with visible poster on PNC danger signs	0.0	0.0	16.0	34.6	15.9	35.7	7.7	29.6	26.9	27.7

% of health centers providing PNC service components	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E.Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Hygiene counseling	0.0	10.0	28.0	46.2	24.4	60.7	84.6	77.8	92.3	77.7
Maternal nutrition counseling	14.3	30.0	32.0	46.2	31.7	57.1	84.6	70.4	88.5	73.4
Newborn feeding counseling	100.0	90.0	100.0	100.0	98.8	60.7	100.0	85.2	96.2	83.0
Counseling on exclusive breastfeeding for 6 months	100.0	60.0	92	88.5	89.0	82.1	92.3	100	96.2	92.6
Counseling on breast milk substitute for HIV + mothers	4.8	0.0	0.0	7.7	3.7	14.3	30.8	7.4	34.6	20.2
Counseling on family planning					NA	92.9	84.6	81.5	88.5	87.2
Counseling on maternal danger signs	66.7	90.0	84.0	100.0	85.4	78.6	76.9	59.3	96.2	77.7
Counseling on newborn danger signs	66.7	90.0	84.0	100.0	85.4	64.3	69.2	44.4	92.3	67.0
Counseling on immunization	52.4	50.0	36.0	69.2	52.4	71.4	84.6	92.6	76.9	80.9
Facilities providing iron/fefol	0.0	0.0	0.0	3.8	1.2	17.9	38.5	3.7	3.8	12.8
Mean score for provision of PNC services	5.0	5.0	7.0	8.0	7.0	8.0	7.0	8.0	7.0	8.0
Provision of PNC service equal or above the mean score	4.8	10.0	28.0	69.2	32.9	42.9	76.9	48.1	92.3	62.8
Provision of PNC services below mean score	95.2	90.0	72.0	30.8	67.1	57.1	23.1	51.9	7.7	37.2

% of health centers with postabortion care services	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Provide PAC service	4.3	23.1	16.0	38.5	20.7	57.1	53.8	70.4	51.9	58.9
	n=1	*n=3*	*n=4*	*n=10*	*n=18*	*n=16*	*n=7*	*n=19*	*n=14*	*n=56*
Provide PAC in separate room	0.0	66.7	25.0	60.0	50.0	12.5	0.0	15.8	57.1	23.2

% of health centers with PAC service components	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Running water source	0.0	66.7	25.0	50.0	44.4	44.4	25.0	26.3	21.4	28.3
Gynecoid table for procedures	0.0	100.0	0.0	40.0	38.9	33.3	50.0	78.9	50.0	58.7
Stool for provider	0.0	100.0	0.0	40.0	38.9	44.4	100.0	36.8	64.3	52.2
Light source	0.0	33.3	50.0	70.0	55.6	77.8	25.0	52.6	71.4	60.9
Vacuum aspirators/syringes	100.0	66.7	25.0	80.0	66.7	50.0	100.0	89.5	92.9	83.0
Flexible cannulae 4-6mm OR 7-12mm	100.0	66.7	25.0	60.0	55.6	66.7	100.0	84.2	92.9	84.8
Silicone lubricant (for O-ring) OR other oil					NA	55.6	75.0	63.2	92.9	71.7

% of health centers with family planning services	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Provide FP service	52.2	38.5	36.0	42.3	42.5	100	100	100	100	100
Provide FP service in separate room	52.2	38.5	36.0	42.3	42.5	71.4	46.2	33.3	37.0	47.4
Provide FP service on all working days	95.7	100.0	100.0	96.2	97.7	96.4	100.0	77.8	96.3	91.6
Provide condoms	95.7	100.0	100.0	100.0	98.9	89.3	100.0	88.9	92.6	91.6
Provide combination pills	95.7	100.0	100.0	100.0	98.9	92.9	100.0	88.9	96.3	93.7
Provide progestin-only pills					NA	46.4	76.9	33.3	22.2	40.0
Provide DMPA	91.3	100.0	100.0	100.0	97.7	100.0	100.0	100.0	96.3	98.9

% of health centers with LAFP methods	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Implanon					NA	96.4	92.3	92.6	92.6	93.7
Jadelle					NA	71.4	84.6	100.0	74.1	82.1
IUCD					NA	42.9	76.9	100.0	70.4	71.6
Provide LAFP methods	56.5	92.3	76.0	96.2	79.3	96.4	92.3	100.0	96.3	96.8

% of health centers with laboratory service	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E.Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Hemoglobin/hematocrit lab service	13.0	46.2	20.0	61.5	34.5	32.1	69.2	33.3	74.1	49.5
Blood group and RH lab service	52.2	53.8	20.0	57.7	44.8	75.0	76.9	66.7	81.5	74.7
Blood film lab service	43.5	46.2	72.0	53.8	55.2	78.6	38.5	92.6	88.9	80.0
Syphilis screening (e.g., VDRL) lab service	21.7	15.4	8.0	38.5	21.8	60.7	46.2	11.1	70.4	47.4
Urinalysis and microscopy lab service	34.8	61.5	56.0	61.5	52.9	75.0	53.8	81.5	85.2	76.8
HIV screening test lab service	73.9	46.2	92.0	73.1	74.7	78.6	76.9	81.5	85.2	81.1
HIV STAT pack test lab service	30.4	53.8	92.0	65.4	62.1	75.0	84.6	88.9	85.2	83.2

% of health centers with pharmacy service	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total	E. Gojam/ Amhara	Arsi/ Oromia	Wolaita/ SNNPR	Central Zone/ Tigray	Total
Provide pharmacy service					NA	100	100	100	100	100
Provide pharmacy service during working hours on all working days	78.3	69.2	88.0	26.9	64.4	100.0	100.0	92.6	100.0	97.9
Fefol OR iron	0.0	0.0	0.0	3.8	1.1	71.4	46.2	33.3	81.5	60.0
Anthelminthic (mebendazole)	91.3	76.9	96.0	73.1	85.1	96.4	92.3	81.5	100.0	92.6
Coartem	87.0	30.8	80.0	84.6	75.9	92.9	23.1	88.9	100.0	84.2
IV cannula	95.7	76.9	100.0	84.6	90.8	100.0	92.3	96.3	100.0	97.9
Dextrose in normal saline (DNS)	87.0	38.5	100.0	76.9	80.5	85.7	15.4	51.9	51.9	56.8
40%/50% glucose	91.3	69.2	92.0	73.1	82.8	71.4	38.5	74.1	81.5	70.5
Normal saline	91.3	84.6	96.0	80.8	88.5	85.7	61.5	59.3	74.1	71.6
IV ampicillin	60.9	15.4	76.0	50.0	55.2	71.4	23.1	18.5	14.8	33.7
Crystalline penicillin	56.5	46.2	72.0	46.2	56.3	75.0	61.5	25.9	59.3	54.7
IV chloramphenicol	13.0	38.5	80.0	46.2	46.0	35.7	38.5	63.0	48.1	47.4
IV gentamycin	82.6	84.6	100.0	65.4	82.8	96.4	46.2	70.4	74.1	75.8
Anti-hypertensive	43.5	76.9	12.0	57.7	43.7	96.4	76.9	18.5	70.4	64.2
Magnesium sulfate OR IV diazepam	0.0	7.7	24.0	35	18.4	82.1	69.2	74.1	78	76.8
Urinary catheter	65.2	46.2	44.0	69.2	57.5	89.3	76.9	37.0	77.8	69.5
Ceftriaxone					NA	89.3	61.5	55.6	59.3	67.4
ORS	87.0	84.6	100.0	92.3	92.0	96.4	100.0	92.6	100.0	96.8
Oxytosins (cold storage 8C)	82.6	84.6	72.0	76.9	78.2	96.4	100	100	100	98.9
OPV (cold storage 8C)	78.3	76.9	72.0	92.3	80.5	10.7	30.8	63.0	96.3	52.6
BCG (cold storage 8C)	78.3	76.9	72.0	92.3	80.5	3.6	30.8	55.6	96.3	48.4
Pharmacy services mean score	6	6	6	7	6.0	7	5	6	8	7
Pharmacy services with equal or above mean score	73.9	46.2	68.0	73.1	67.8	85.7	46.2	48.1	100.0	73.7
Pharmacy services with below mean score	26.1	53.8	32.0	26.9	32.2	14.3	53.8	51.9	0.0	26.3

% of health centers providing PMTCT services

HIV testing service					NA	100	100	100	100	100
HIV testing in ANC room	91.3	38.5	24	23.1	43.7	96.4	100	96.3	96.3	96.8
Facility with PMTCT guideline	60.9	38.5	40.0	76.9	56.3	78.6	15.4	29.6	96.3	61.1
HIV post-test counseling in privacy	87.0	61.5	76.0	92.3	81.6	39.3	69.2	48.1	100	63.2
At least 1 HIV rapid test kits	87.0	84.6	96.0	84.6	88.5	92.9	100	96.3	96.3	95.8
PMTCT service (any option)	91.3	69.2	84	84.6	83.9	100	61.5	88.9	92.6	89.5
At least 1 HIV medications in stock	34.4	30.8	20.0	46.2	32.2	67.9	15.4	40.7	51.9	48.4
HIV screening test LAB service	73.9	46.2	92.0	73.1	74.7	78.6	76.9	81.5	85.2	81.1
HIV STAT pack test LAB service	30.4	53.8	92.0	65.4	62.1	75.0	84.6	88.9	85.2	83.2
PMTCT service mean score	6	4	5	5	5	7.3	6.2	6.7	8.0	7.1
PMTCT service provision equal or above mean score	65.2	30.8	40.0	53.8	49.4	71.4	46.2	63.0	88.9	70.9
PMTCT service provision below mean score	34.8	69.2	60.0	46.2	50.6	28.6	53.8	37.0	11.1	29.5

% of health centers providing BEmONC services

IM/IV administration of antibiotics	43.5	7.7	100.0	73.1	63.2	100.0	76.9	85.2	85.2	88.4
Immediate oxytocin OR ergometrine	82.6	84.6	72.0	76.9	78.2	96.4	100	100	100	98.9
HWs trained on BEmONC	52.2	30.8	8.0	76.9	43.7	96.4	100	100	100	98.9
Magnesium sulfate OR IV diazepam	0.0	7.7	24.0	34.6	18.4	96.4	92.3	85.2	81.5	88.4
Vacuum extractor with cup or plastic vacuum apparatus	13.0	53.8	28.0	34.6	29.9	46.4	38.5	81.5	37.0	52.6
PAC service (removal of retained products of conceptus tissue)	4.3	23.1	16.0	38.5	20.7	57.1	53.8	70.4	51.9	58.9
Basic neonatal resuscitation packs	8.7	0.0	40.0	38.5	25.3	89.3	84.6	96.3	100.0	93.7
Complete BEmONC service	0.0	0.0	4.0	7.7	3.4	32.1	30.0	48.1	18.5	32.6
Facilities with partial BEmONC service	100	100	96.0	92.3	96.6	67.9	69.2	51.9	81.5	67.4

John Snow, Inc.
44 Farnsworth Street
Boston, MA 02210
617-482-9485
www.jsi.com
jsiinfo@jsi.com

IFHP/Addis Ababa
Nefasilk Lafto Sub-City
Kebele 05
Haji Kelifa Sabit Building
P.O. Box 1392 Code 1110
Addis Ababa, Ethiopia
Phone: 251.113.20.35.01
Fax: 251.113.320.3572

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