Comprehensive Abortion Care Pilot Project in Tigray, Ethiopia

FINAL REPORT
Tigray Regional Health Bureau (TRHB) is the semi-autonomous public health administrative body for the region of Tigray, Ethiopia. The Bureau is responsible for developing region-specific policy, implementing federal and regional public health programs, and overseeing all health service delivery.

Venture Strategies Innovations (VSI) is a California-based nonprofit organization committed to improving women’s health in developing countries by creating access to effective and affordable technologies on a large scale. VSI’s innovative approach involves partnerships that build upon existing infrastructure, resources and markets. VSI focuses on reducing barriers to access and enhancing human capacity to bring about sustainable improvements in health.

Bixby Center for Population, Health, and Sustainability is a research center located at the University of California, Berkeley (UCB) School of Public Health. The Center is dedicated to developing innovations to improve reproductive health in resource-poor settings, including reliable health information systems, local access to essential technologies, and guidelines for prioritizing interventions to maximize health impact. The Center assists in the implementation of maternal health programs and seeks to improve the health outcomes of the world’s poorest and most vulnerable women and their families.

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Most importantly, we wish to thank the women and communities in Tigray for welcoming us, participating in the project, and sharing their experiences.

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Emma Nesper, Amy Grossman
Executive Summary

With the second largest population in sub-Saharan Africa, high fertility rates and low contraceptive use, increasing access to both safe abortion services and modern methods of contraception in Ethiopia could significantly reduce the burden of maternal deaths, an estimated 32% of which result from unsafe abortion. Medication abortion (MA), especially with misoprostol alone, has the potential to increase access to safe abortion services and increase quality of care in places where the skills and equipment necessary to provide manual vacuum aspiration (MVA) or supply of mifepristone are not available. Expanding services to include lower levels of health facility and provider by training in safe abortion provision also has the potential to increase women’s access to these services, especially in rural areas.

Venture Strategies Innovations, the Bixby Center for Population, Health and Sustainability at the University of California, Berkeley and the Tigray Regional Health Bureau in Northern Ethiopia collaborated on a pilot project to increase access to comprehensive abortion care (CAC) services. The ultimate goal of this project was to contribute to a reduction of morbidity and mortality due to unsafe abortion. More specifically, a primary objective of the project was to demonstrate that CAC services can be provided at all levels of the health care system through the development and implementation of service delivery guidelines and medical protocols for all levels of providers and facilities, from regional hospitals to community health posts staffed by low-level health extension workers (HEWs). In addition, the project aimed to increase access to CAC services through the introduction of medication methods of uterine evacuation, particularly the use of misoprostol.

The pilot project was undertaken in three areas of the Tigray region: Mekele town (Mekele woreda, Southern Zone), Adigrat town (Ganta Afeshum woreda, in Eastern Zone), and the woreda of Kola Tembien in Central Zone. The CAC project was introduced in four hospitals, nine health centers and 20 health posts. Pilot project health centers and hospitals provided the full range of CAC services from July 2009 through September 2010, whereas implementation of the project at the health post level comprised two phases. During Phase 1 (July through December 2009), HEWs assessed gestational age and referred women for CAC services, and during Phase 2 (January through December 2010) HEWs completed additional training and provided safe termination and treatment of incomplete abortion. At all facility levels, providers trained in the project conducted exit interviews with women when they returned for a follow-up visit.

A total of 4,354 women sought safe abortion services at pilot sites between July 2009 and December 2010. At all facility levels, the majority of these women sought safe termination. Providers at all facilities most commonly used medication methods for safe termination (94%). Health posts and health centers used medication methods to treat over three-quarters of incomplete abortion cases. However, at hospitals, surgical methods were more commonly used for treatment of incomplete abortion: MVA was used in half (51%) of the cases of incomplete abortion and an additional 13% underwent evacuation and curettage.

In exit interviews most women seeking safe abortion services reported that their pregnancy was unplanned (83%), either wanting to get pregnant at a later date or not wanting to get pregnant at all. This finding illustrates that there is a large unmet need for family planning in these communities.
Nurses and midwives provided the majority of abortion-related services at both health centers and hospitals, while HEWs provided all services at health posts. More women who were initially treated at lower-level facilities returned for follow-up. Providers at health posts and health centers successfully referred clients according to medical protocols on uterine size and complications. Completion rates for safe termination were high for the two medication methods, (90% for mifepristone-misoprostol and 82% for misoprostol alone), but slightly lower than the completion rate for manual and surgical methods. There were no maternal deaths during the project.

Women treated with medication methods were more likely to experience side effects compared with those treated with MVA or surgical methods, although side effects were generally transient and self-limiting. In general, most women found the side effects to be acceptable, regardless of the treatment method. Client satisfaction was very high, with most women (99%) rating their overall experience as “good”. The vast majority of women (91%) stated that they would choose to have the procedure in the same level facility in which they received treatment.

Both provider and client reports showed that the vast majority (over 85%) of women received family planning counseling. Most women were provided a long-acting method of contraception—injection—which is known to be one of the most desired contraceptive methods in the area. Women who received treatment at health posts and health centers were more likely to report leaving with contraception.

In providing care to a total of 4,354 women over the course of 18 months, this pilot project demonstrated that quality CAC services can be provided at all levels of the health care system, down to the health post level. Women were very satisfied with their providers, services received, treatment method, and facilities. HEWs demonstrated that they could effectively and safely treat women for CAC services, understanding their capacity to treat clients at the health post level and referring women to higher level facilities if they did not have the resources or skills to treat them. In addition, at health centers and hospitals nurses provided the bulk of abortion-related services, which were uncomplicated and early in pregnancy. Shifting these cases to nurses, which are easily handled if medication methods are available, reserves higher level providers for complicated cases and conserves human and financial resources within the health care system. The wide acceptance and rapid adoption of medication methods demonstrates the role of misoprostol in increasing access to CAC services for women where MVA or surgical methods are not available.

Given the preliminary results of this pilot project we strongly recommend that medication methods for safe pregnancy termination and treatment of incomplete abortion be scaled up throughout Ethiopia, at all levels of the health system. The technical guidelines for safe abortion service provision should be updated to expand the role of HEWs to include early first trimester termination and treatment of incomplete abortion, and to include misoprostol-alone regimens in addition to the established mifepristone-misoprostol MA regimen. These updated guidelines should be disseminated to all key stakeholders and providers of safe abortion services so they can be implemented and services expanded. Additional effort needs to be made to educate women and communities about how to prevent unwanted pregnancy, the consequences of unsafe abortion, and the availability of safe abortion services. To ensure that CAC services are brought to scale, supply of drugs (i.e. mifepristone and misoprostol), MVA equipment, family planning methods, and other supplies (e.g. pregnancy tests) need to be in constant supply necessary to meet demand.
<table>
<thead>
<tr>
<th>Acronyms and Local Terms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAC</td>
<td>Comprehensive abortion care</td>
</tr>
<tr>
<td>D&amp;C</td>
<td>Dilation and curettage</td>
</tr>
<tr>
<td>E&amp;C</td>
<td>Evacuation and curettage</td>
</tr>
<tr>
<td>DMPA</td>
<td>Depo medroxyprogesterone acetate</td>
</tr>
<tr>
<td>FMOH</td>
<td>Federal Ministry of Health</td>
</tr>
<tr>
<td>HEW</td>
<td>Health Extension Worker</td>
</tr>
<tr>
<td>Kebele</td>
<td>Amharic for “neighborhood,” the smallest administrative unit of Ethiopia, a neighborhood or a localized and delimited group of people. Each kebele consists of at least five hundred families, or the equivalent of 3,500 to 4,000 persons.</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and evaluation</td>
</tr>
<tr>
<td>MA</td>
<td>Medication abortion</td>
</tr>
<tr>
<td>MVA</td>
<td>Manual vacuum aspiration</td>
</tr>
<tr>
<td>PPH</td>
<td>Postpartum hemorrhage</td>
</tr>
<tr>
<td>TFR</td>
<td>Total fertility rate</td>
</tr>
<tr>
<td>TRHB</td>
<td>Tigray Regional Health Bureau</td>
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<td>UCB</td>
<td>University of California, Berkeley</td>
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<td>VSI</td>
<td>Venture Strategies Innovations</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>Woreda</td>
<td>An administrative division of Ethiopia (managed by a local government), equivalent to a district in other countries. Woredas are composed of a number of kebele and are typically collected together into zones.</td>
</tr>
</tbody>
</table>
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1. Introduction

1.1 BACKGROUND

1.1.1 Maternal Health and Abortion in Ethiopia

Every year, nearly 47,000 maternal deaths and hundreds of thousands of disabilities occur globally as a result of unsafe abortion (Singh et al., 2009). Nearly all of these deaths and disabilities (97%) occur in developing countries (Grimes et al., 2006). Unsafe abortions are common in many countries where abortion is highly restricted; however abortion-related deaths also occur in countries with fewer restrictions on abortion, such as Ethiopia, where unsafe abortion accounts for approximately 32% of maternal deaths in the country (Gebrehiwot and Liabsuetrakul 2008).

In 2005 the Ethiopia Demographic and Health Survey found that the total fertility rate (TFR) was 5.4; the TFR in the rural areas was 6.0, two and half times higher than that in the urban areas (2.4). In addition, only 9.7% of women of reproductive age were currently using any modern contraceptive method and the unmet need for family planning was approximately 34% (Central Statistical Agency [Ethiopia] and ORC Macro 2006). Low levels of contraceptive use can lead to high levels of unintended pregnancy: in 2008, 42% of all pregnancies in Ethiopia were unintended (Guttmacher, 2010). That same year, an estimated 382,500 induced abortions were performed in Ethiopia, and only approximately 42% were safe procedures.

Comprehensive reproductive health care is still out of reach for many women, particularly those in rural areas. With the second largest population in sub-Saharan Africa, high fertility and low contraceptive use, increasing access to both safe abortion services and modern methods of contraception could contribute to a significant reduction in the burden of maternal deaths in Ethiopia. To reduce the morbidity and mortality associated with unsafe abortion, the full range of abortion-related services should be provided to women, including safe termination and treatment of incomplete abortion, as well as modern contraception post-procedure.

Recognizing the contributing role of abortion to maternal morbidity and mortality in Ethiopia, the government has taken several critical steps in recent years. The Ethiopian Criminal Code of 2005 authorizes and ensures increased access to safe abortion services for women in the cases of: pregnancies resulting from rape or incest; pregnancy in a woman who is under the age of 18; when the health or life of the woman or fetus are in danger; fetal abnormalities; women with physical or mental disabilities; and minors who are physically or psychologically unable to raise a child. According to the revised code, a woman’s statement of rape, incest or being under age is adequate to provide safe abortion services.

Further, the Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia (Ministry of Health, Federal Democratic Republic of Ethiopia, 2006), an official interpretation of the law on safe abortion services, sanction trained health providers, including doctors, health officers, midwives, clinical nurses and public health nurses, at multiple levels of the health care system to provide comprehensive abortion care services, particularly in the first trimester of gestation. Second trimester termination of pregnancy up to 28 weeks gestation may be provided at the district or zonal hospital level by health care providers.
workers—general practitioners and obstetrician/gynecologists—trained in uterine evacuation. Evidence suggests that since the liberalization of the abortion law in 2005, progress has been made in Ethiopian health facilities improving the quality of safe abortion services offered; however, significant challenges remain, including the implementation of medication abortion (MA) as a safe and viable alternative to surgical methods (Alemayehu et al., 2009).

1.1.2 Medication Methods of Uterine Evacuation: Potential to Expand Abortion-related Services
Medication abortion (MA) is the induction or completion of an abortion using pharmaceutical drugs instead of surgical or suction methods. MA is safe, has a high success rate, and can be used both early and late in pregnancy. There are two drug regimens for safe termination: mifepristone-misoprostol and misoprostol alone. A review of 1,000 cases at a hospital in the United Kingdom has demonstrated a 97.1% success rate with mifepristone and misoprostol for MA (Ashok et al., 2004). Few studies have demonstrated the completion rate of MA regimens in Africa, but in hospitals, the success rate could be assumed to be close to that of facility settings in developed countries. Misoprostol alone has been shown to be 85 to 90% effective for induced abortion of pregnancies less than 12 weeks of gestation when used vaginally (Faundes et al., 2007; van Hertzen et al., 2007). Misoprostol can also be used alone to treat incomplete abortion, and is as effective as manual vacuum aspiration (MVA) for this indication (Bique et al., 2007; Shwekerela et al., 2007; Dao et al., 2009; Weeks et al., 2005).

Medication abortion has the potential to increase access to safe abortion services and increase quality of care. Some women prefer MA because it is less invasive than surgical methods, offers more privacy and autonomy, and is often perceived as more natural than surgical abortion. In a number of studies when women were given a choice of either MA or surgical abortion, they often chose MA and the majority of women reported satisfaction with the method (Winikoff, 1995; Akin, Kocoglu, & Akin, 2005). Health centers and hospitals may have limited access to MVA equipment, making MA an essential treatment option for assisting women in reaching their desired fertility. Evidence from other studies reinforces the importance of making a variety of methods available to address women’s individual circumstances, such as preference for a quicker procedure, pain management, and privacy (Mitchell et al., 2010). Further, it has been estimated that the implementation of MA with misoprostol could save up to 2,551 lives per year in Ethiopia (Baggaley et al., 2010).

Additionally, misoprostol alone regimens may be more feasible in some settings as the drug may be more readily available (e.g. if registered in the country for another indication). Having the option of using misoprostol alone is especially important when and if stock-outs of mifepristone occur. In addition, since misoprostol can be used to treat incomplete abortion and miscarriage, providers and facilities without MVA capacity can also offer this life-saving service. Misoprostol has a significant role to play in expanding safe abortion services to lower levels of the health care system by increasing access for women who would otherwise have difficulties reaching zonal or district hospitals or health centers.

1.1.3 Health Extension Workers: Potential to Increase Access to Abortion-related Services
Though the abortion law in Ethiopia has been liberalized, women still face challenges in obtaining abortion-related services. Women may live far from health centers and hospitals and their only health services may be provided at health posts staffed by health extension workers (HEWs), the lowest level government health workers. The HEW program began in Ethiopia in 2003, and was developed as part of a larger Health Extension Program that aimed to bring primary health care services to the village
(kebele) level. The goal was to increase coverage of health services by providing a staffed health post to serve approximately 5,000 people, and the program has been credited with increasing the coverage of publicly funded health care from 61% in 2003 to 87% in 2007 (Wakabi, 2008). Close to 34,000 HEWs have now been trained in Ethiopia and are currently working at approximately 15,000 health posts (UNICEF, 2010). HEWs are women who have a minimum of a tenth grade education; they are at least 18 years old and are recruited from the communities in which they will serve. They must complete one year of training at a Technical and Vocational Education Training School operated by the Ministry of Education (Pathfinder International, 2008). HEWs have basic skills in clean delivery, essential newborn care, and recognition and referral of maternal and newborn complications (Ministry of Finance and Economic Development, Federal Democratic Republic of Ethiopia, 2010).

According to the Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia (FMOH 2006), the role of HEWs in safe abortion services is restricted to referring women for abortion-related care. Building the capacity of HEWs by empowering them with the skills and authority to provide certain abortion-related services (such as misoprostol for first trimester safe termination and treatment of incomplete abortion) may be the only means of reaching women living in rural areas with this essential care is. Health researchers have called for HEWs to be trained in Comprehensive Abortion Care (CAC) in order to reduce deaths from unsafe abortion (Koblinsky et al., 2010).

HEWs have demonstrated their ability to provide services in other areas of maternal health. Further, evidence suggests that communities are generally satisfied with the services that HEWs provide (Negusse et al., 2007). An external evaluation of a community maternal health intervention demonstrated that HEWs can safely provide misoprostol for the prevention of postpartum hemorrhage (PPH) at both home and health post deliveries (Community-Level Prevention of Postpartum Hemorrhage: The Role of Misoprostol, 2008). The introduction of misoprostol increased the community’s willingness to seek delivery care from the HEWs and enhanced collaboration between the HEWs and traditional birth attendants. This PPH management program demonstrated that HEWs have the capacity to provide both public health and clinical services with proper training and support, and women are willing to utilize the HEWs as a main source for their health care needs.

1.2 PARTNERSHIPS
The CAC Pilot Project in Tigray, Ethiopia was a collaboration of the Tigray Regional Health Bureau, VSI and the Bixby Center for Population, Health and Sustainability at the University of California, Berkeley.

Tigray Regional Health Bureau (TRHB) is the semi-autonomous public health administrative body for the region of Tigray, Ethiopia. The Bureau is responsible for developing region-specific policy, implementing federal and regional public health programs, and overseeing all health service delivery. TRHB provided tremendous assistance to the development and implementation of the project.

Venture Strategies Innovations (VSI) is a California-based nonprofit organization committed to improving women’s health in developing countries by creating access to effective and affordable technologies on a large scale. VSI’s innovative approach involves partnerships that build upon existing infrastructure, resources, and markets. VSI focuses on reducing barriers to access and enhancing human capacity to bring about sustainable improvements in health. VSI provided financial and technical support to this project, including the development of data collection tools, training materials, monitoring and evaluation design, and management of the data analysis.
Bixby Center for Population, Health, and Sustainability is a research center located at the University of California, Berkeley (UCB) School of Public Health. The Center is dedicated to developing innovations to improve reproductive health in resource-poor settings, including reliable health information systems, local access to essential technologies, and guidelines for prioritizing interventions to maximize health impact. The Center assists in the implementation of maternal health programs and seeks to improve the health outcomes of the world’s poorest and most vulnerable women and their families. With VSI, the Center provides technical assistance to this project.

These partners have previously successfully completed two community-based maternal health projects in the Tigray region, the project to provide misoprostol for prevention of postpartum hemorrhage referenced above and another to pilot the distribution of depo medroxyprogesterone acetate (DMPA) by community-level health workers, including HEWs and community-based reproductive health agents (Prata et al., 2009).

1.3 GOALS AND OBJECTIVES
The overall goals of this project were to provide empirical evidence to inform the development of service and clinical guidelines for the provision of CAC services in Ethiopia and to contribute to a reduction in morbidity and mortality due to unsafe abortion.

In line with these goals, the specific objectives were to:

- Demonstrate that CAC services can be provided at all levels of the health care system;
- Establish the guidelines for CAC service provision by level of health care facility (i.e. hospital, health center and health post);
- Establish the guidelines for CAC service provision by level of provider (i.e. high-, mid- and low-level providers, including HEWs);
- Establish a referral system for integration of CAC services at different levels;
- Assess the level of acceptability of the CAC project and client satisfaction; and
- Identify patterns of postabortion contraceptive uptake, contraceptive method choice, and barriers to method use.

The results from this project will elucidate how providing CAC services at multiple levels of the health care system can and should function, increase women’s access to safe abortion-related services, and inform decision-makers on determining appropriate levels of facilities and providers to provide CAC services.

2. Methods

2.1 STRATEGY AND DESIGN
This pilot project introduced comprehensive abortion care (CAC) into all levels of the health care system – health post, health center and hospital – at select health facilities in three zones of the Tigray region in Ethiopia. The strategies to assure a successful integration of comprehensive abortion services at every level of the health system include:

- Development of service delivery guidelines and medical protocols by level of health care provider and health facility for safe abortion services;
– Training of all providers, including HEWs, in pilot health facilities to integrate the components of CAC at the health post, health center and hospital levels;
– Provision of safe abortion services, including safe termination and treatment of incomplete abortion, at all levels of the health care system by a variety of cadres of health providers;
– Postabortion contraceptive services for all women seeking safe abortion services, including counseling, provision of all available methods, and referrals; and
– Establishment of clear referral linkages at every level.

### 2.2 LOCATION, PARTICIPANTS AND PROJECT TIMELINE

The pilot project was undertaken in three areas of the Tigray region: Mekele town (Mekele woreda, Southern Zone), Adigrat town (Ganta Afeshum woreda, Eastern Zone), and Kola Tembien woreda in Central Zone (Figure 1). The CAC pilot was introduced in four hospitals (one each in the towns of Adigrat and Abiy Adi and two in Mekele), nine health centers (five in Mekele, one in Adigrat town, and three in Kola Tembien), and 20 health posts (all in Kola Tembien).

**Figure 1: Sites of CAC project, Tigray region, Ethiopia**

Health centers and hospitals began providing the full range of CAC services in July 2009, and data collection was completed at the end of September 2010 (15 months total). Health posts began referring clients in July 2009, and began providing safe abortion services in January 2010. Data collection was complete at the health post level in the end of December 2010 (18 months total). This difference in implementation schedules occurred because HEWs at health posts underwent an initial period of assessment (to determine that they could accurately determine a woman’s uterine size), which lasted from July to December 2009. As such, HEWs at the health posts did not begin offering services until January 2010 (see Figure 2 for complete project timeline).
Figure 2: CAC pilot project timeline

<table>
<thead>
<tr>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>May – June: Training of all providers</td>
<td>July: VSI monitoring and evaluation visit</td>
<td>February – April: Data analysis and report writing</td>
</tr>
<tr>
<td><strong>July 2009 – September 2010:</strong> Health centers and hospitals service provision</td>
<td><strong>February:</strong> External evaluation</td>
<td></td>
</tr>
<tr>
<td>July – December: HEWs assess clients and refer for treatment</td>
<td>January: Additional HEW clinical training</td>
<td>January – December: Duration of service provision</td>
</tr>
</tbody>
</table>

2.3 ORGANIZATIONAL STRUCTURE

The program managers were Dr. Amanuel Gessessew, Consultant and Associate Professor in Gynecology and Obstetrics at Mekele University, College of Health Sciences, Ayder Referral Hospital in Mekele and Dr. Ndola Prata, Associate Professor in Residence at University of California, Berkeley School of Public Health, Scientific Director of the UCB Bixby Center, and Medical and Programs Director of VSI. A program advisory committee provided oversight to the program managers and the management team drawing upon their respective fields of expertise. In addition, both the VSI-USA and VSI-Ethiopia staff provided support to the coordination and logistics of the project. The organizational structure is shown in Figure 3.

Figure 3: Organizational structure of the CAC pilot project
2.4 DEVELOPMENT OF MEDICAL PROTOCOLS

In the context of this pilot project, each level of the health care system was able to offer CAC services (Figure 4).

**Figure 4: Summary of CAC services, according to medical protocol**

<table>
<thead>
<tr>
<th>Service</th>
<th>Health Post</th>
<th>Health Center</th>
<th>Hospital</th>
</tr>
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<tbody>
<tr>
<td>Safe termination ≤ 9 weeks</td>
<td>✖</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Safe termination ≤ 12 weeks</td>
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</tr>
<tr>
<td>Treatment of incomplete abortion &lt; 12 weeks</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Second trimester uterine evacuation (abortion &amp; incomplete abortion)</td>
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<td>✓</td>
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<td>Contraceptive services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Referral for services or complicated cases</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**X** Service introduced as part of the pilot project

**✓** Services per the *Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia*

According to the existing *Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia*, safe abortion services offered at the health post level are limited to referral for abortion-related services and family planning services. This pilot project expanded the role of the health post in provision of safe abortion services by including safe termination with misoprostol alone for a uterine size equivalent to nine weeks or less gestation and treatment of incomplete abortion with misoprostol up to 12 weeks without any signs of complications. Women were referred to a higher level facility if they were greater than nine weeks gestation and sought safe termination, had complications, or if misoprostol alone was insufficient for treatment of incomplete abortion (see Figure 5). The capacity of HEWs to provide safe abortion services hinged on their ability to accurately assess uterine size and refer appropriately, so they received additional training, practical sessions, and assessment in these skills (as described in section 2.5.1 below).
According to the Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia, health centers should provide vacuum aspiration for either safe termination or treatment of incomplete abortion up to 12 completed weeks of pregnancy and MA with mifepristone-misoprostol up to nine completed weeks of pregnancy. This pilot project expanded the abortion-related services at health centers to include MA up to 12 weeks gestation with either misoprostol alone or mifepristone-misoprostol. In accordance with the guidelines, health center staff referred women to hospitals if they sought safe termination and were greater than 12 weeks gestation, had complications, or if further treatment was needed.

All methods of uterine evacuation were available at hospitals for pregnancy termination or treatment of incomplete abortion (MA with misoprostol alone or mifepristone-misoprostol, MVA, and other methods of uterine evacuation), and were available to women up to 28 weeks gestation.

At every level, all women were counseled on family planning and offered their choice of methods after the procedure. Refer to Appendix: Service Delivery Guidelines for more detailed information.

2.5 TRAINING STRUCTURE
Training for the CAC pilot project began in late May 2009. This training covered project management and service delivery for all personnel involved in the pilot project. All project staff and all participating service providers (including HEWs) participated in a three-day project management training. Mid-level providers, general practitioners, and obstetrician/gynecologists received an additional three days of
service delivery training. For some, it was refresher training, and for others it was their first exposure to both MVA and MA.

HEWs continued service delivery training for an additional eight days after the project management sessions. This training covered history-taking with special emphasis on calculation of uterine size in weeks gestation from last menstrual period; general physical examination; estimation of uterine size by abdominal palpation and vaginal examination; complications of abortion; and all aspects of medication abortion, including counseling, administration of misoprostol, and monitoring and management of side effects. The HEWs participated in role plays and skill tests using anatomical models; they also observed direct service provision in rotations at the Mekele Marie Stopes International clinic.

A total of 73 providers were initially trained to provide services in the project, including 21 nurses, nine clinical officers, three medical doctors, and 40 HEWs. However, there was high turnover of project staff throughout the project, resulting in the on-the-job training of new staff in providing medication methods of abortion. New providers were trained on-the-job by the program manager.

2.5.1 Additional Clinical Training for HEWs

Before the HEWs were able to provide misoprostol for safe termination and treatment of incomplete abortion, their ability to consistently and accurately determine uterine size needed to be evaluated.

HEW provision of CAC services was implemented in two phases to continually monitor and evaluate their ability to provide safe abortion services.

- **Phase 1**: HEWs assessed clients presenting for safe abortion services, including determination of uterine size in weeks gestation, and then referred clients to a health center or hospital to verify the uterine size and receive treatment. The purpose of this phase was to assess HEWs’ ability to determine uterine size, an integral part of being able to provide safe abortion services.

- **Phase 2**: HEWs provided safe termination and treatment of incomplete abortion with misoprostol, referring clients per clinical protocols.

In the original project protocol, Phase 1 was to be implemented for the first three months of the project (July to September 2009), when mid-level or higher providers would review HEW-referred client records to assess HEWs’ ability to determine uterine size by comparing their assessment to the assessment of a mid- or higher-level provider.

However, the number of women presenting for safe abortion services at the health post level was not adequate to sufficiently assess the HEWs’ ability to determine uterine size after three months. The project management team decided to extend Phase 1 until December 2009 (a total of six months), when HEWs participating in the project were brought to a central hospital with a high abortion case load,
retrained in determination of uterine size and medication methods of uterine evacuation, and assessed for their ability to determine uterine size. Twenty HEWs (one from each health post) attended a 15-day training that included both theory and practical sessions. These HEWs were from the same initial cohort that had been trained in May 2009; the full cohort of 40 HEWs was not brought back for this training because it was not feasible for both HEWs from each health post to leave the health post for 15 days. HEWs logged more than 100 hours of practical training in determination of uterine size and use of medication abortion methods.

The final examination consisted of determining uterine size by history and physical examination for three clients of different uterine size (two above 10 weeks and one below 10 weeks). All 20 HEWs were able to determine the uterine size correctly and were certified by the program manager to provide clinical abortion-related services. At the conclusion of the training, it was stressed that if they had any problem or doubt in determination of uterine size, they should refer the client. During the training, each HEW also provided MA to at least one client, providing a continuum of care from assessment through post-procedure monitoring. At the end of January 2010, having completed this training, HEWs began providing safe termination and treatment of incomplete abortion with misoprostol (see Figure 6 for timeline of HEW activities).

Figure 6: Timeline of HEW activities in CAC pilot project

2.7 DATA COLLECTION AND MANAGEMENT
All women seeking CAC services had their clinical service-related information recorded on a client record developed for this project, the Service Delivery Form. All women who presented for CAC services were told to return for a follow-up visit within 14 days of service provision. Clinical follow-up assessment and treatment information was also recorded in the Service Delivery Form.

Women were asked if they would be willing to participate in an exit interview when they returned to the facility. Women were asked a short series of questions about their experience with their specific procedure, as well as their satisfaction with the services provided by the facility and provider in the Exit Interview Questionnaire, which was administered by a provider who did not give care to the client at either the initial or follow-up visit.

Woreda (zonal) coordinators collected the forms on a regular basis, and forwarded them to Dr. Amanuel Gessessew, then to the VSI-Ethiopia office, from which the forms were sent by mail to the VSI office in Anaheim, California. The VSI monitoring and evaluation (M&E) team conducted the review, management and data analysis. Any answers written in Tigrinya were identified by the M&E Specialist at VSI and emailed to Dr. Amanuel Gessessew for translation. All data were entered using PASW Statistics 18 and analyzed in Stata 10 (StataCorp, 2007).
2.8 ETHICAL REVIEW
The Bureau of Health of the Government of the National Regional State of Tigray granted the project ethical clearance. Ethical review for this project was obtained from the University of California, Berkeley Institutional Review Board in April 2009 and renewed in March 2010 (#2009-2-13). Before conducting the Exit Interview, the interviewers obtained informed consent from participating women.

3. Results
Pilot project health centers and hospitals began providing the full range of CAC services in July 2009. Pilot project health posts began assessing and referring women for CAC services in July 2009 and began providing CAC services at the beginning of January 2010. Implementation and data collection continued at health centers and hospitals until the end of September 2010, and at health posts until the end of December 2010.

The following analyses are based on 15 months of Service Delivery Form and Exit Interview Questionnaire data from health centers and hospitals (July 2009 to September 2010) and 18 months of Service Delivery Form and Exit Interview Questionnaire data from health posts (July 2009 to December 2010). The data includes Service Delivery Form information for 4,354 women seeking safe abortion services at pilot hospitals, health centers and health posts, of whom 51% participated in an exit interview (n=2,210) (Table 1).

Table 1: Data collection (July 2009 to December 2010)

<table>
<thead>
<tr>
<th></th>
<th>Health post (Jul ’09 – Dec ’10)</th>
<th>Health center (Jul ’09 – Sep ’10)</th>
<th>Hospital (Jul ’09 – Sep ’10)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Delivery Form</td>
<td>78</td>
<td>1,556</td>
<td>2,720</td>
<td>4,354</td>
</tr>
<tr>
<td>Exit Interview</td>
<td>29 (37%)</td>
<td>1,154 (74%)</td>
<td>1,027 (38%)</td>
<td>2,210 (51%)</td>
</tr>
</tbody>
</table>

3.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF WOMEN SEEKING ABORTION-RELATED SERVICES
The socio-demographic characteristics of the women seeking safe abortion services at pilot health facilities are presented in Table 2. The mean age was 23 years for hospital and health center clients and 27 for health post clients. A total of 7.5% of all clients were under the age of 18 (data not shown). The mean number of pregnancies for hospital and health center clients was one; health post clients, however, had a higher mean number of pregnancies (three). The mean number of previous abortions is less than one for clients at all facility levels.

The women who sought safe abortion services at health posts were more likely to have higher parity, no education, and live farther from the health facility. More than half of health post clients were illiterate (55%), as opposed to only 17% of health center clients and 18% of hospital clients. Two thirds of health post clients reported ever being married (67%), as opposed to a third of health center clients (30%) and hospital clients (36%). Most women seeking treatment at health posts lived one or more hours away from the health post (73%). This highlights the importance of having CAC services available at the health post level, as these women live even further away from health centers and hospitals, hindering their access to abortion-related services.
Most women seeking safe abortion services reported that their pregnancy was unplanned (83%), either wanting to get pregnant at a later date or not wanting to get pregnant at all. The fact that such a large number of women seeking abortion services did not plan their pregnancy illustrates that there is a large unmet need for family planning in these communities.

Table 2: Socio-demographic characteristics of women seeking CAC services

<table>
<thead>
<tr>
<th></th>
<th>Health post clients (N=78)</th>
<th>Health center clients (N=1,556)</th>
<th>Hospital clients (N=2,720)</th>
<th>Total (N= 4,354)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (min; max)</td>
<td>27.0 (15; 42)</td>
<td>22.7 (12; 48)</td>
<td>23.0 (14; 48)</td>
<td>22.9 (12; 48)</td>
</tr>
<tr>
<td>Obstetrical history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravida (min; max)</td>
<td>3.7 (1; 11)</td>
<td>2.1 (1; 13)</td>
<td>2.1 (1; 13)</td>
<td>2.1 (1; 13)</td>
</tr>
<tr>
<td>Abortions (min; max)</td>
<td>0.4 (0; 4)</td>
<td>0.3 (0; 5)</td>
<td>0.1 (0; 8)</td>
<td>0.2 (0; 8)</td>
</tr>
<tr>
<td>Parity (min; max)</td>
<td>2.7 (0; 10)</td>
<td>1.0 (0; 12)</td>
<td>1.0 (0; 12)</td>
<td>1.0 (0; 12)</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>43 (55.1%)</td>
<td>266 (17.1%)</td>
<td>489 (18.0%)</td>
<td>798 (18.3%)</td>
</tr>
<tr>
<td>Primary</td>
<td>18 (23.1%)</td>
<td>466 (30.0%)</td>
<td>756 (27.8%)</td>
<td>1,240 (28.5%)</td>
</tr>
<tr>
<td>Secondary</td>
<td>9 (11.5%)</td>
<td>520 (33.4%)</td>
<td>1,067 (39.2%)</td>
<td>1,596 (36.7%)</td>
</tr>
<tr>
<td>Above secondary</td>
<td>6 (7.7%)</td>
<td>135 (8.9%)</td>
<td>371 (13.6%)</td>
<td>512 (11.8%)</td>
</tr>
<tr>
<td>No response</td>
<td>2 (2.6%)</td>
<td>169 (10.9%)</td>
<td>37 (1.4%)</td>
<td>208 (4.8%)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>17 (21.8%)</td>
<td>891 (57.3%)</td>
<td>1,613 (59.3%)</td>
<td>2,521 (57.9%)</td>
</tr>
<tr>
<td>Ever married</td>
<td>52 (66.7%)</td>
<td>470 (30.2%)</td>
<td>984 (36.2%)</td>
<td>1,506 (34.6%)</td>
</tr>
<tr>
<td>No response</td>
<td>9 (11.5%)</td>
<td>195 (12.5%)</td>
<td>123 (4.5%)</td>
<td>327 (7.5%)</td>
</tr>
<tr>
<td>Average distance to health facility in hours</td>
<td>1.5 (0.1; 8)</td>
<td>0.9 (&lt;0.1; 32)</td>
<td>1.7 (&lt;0.1; 72)</td>
<td>1.5 (&lt;0.1; 72)</td>
</tr>
<tr>
<td>Less than one hour</td>
<td>18 (23.1%)</td>
<td>1,007 (64.7%)</td>
<td>1,419 (52.2%)</td>
<td>2,444 (56.1%)</td>
</tr>
<tr>
<td>One to two hours</td>
<td>33 (42.3%)</td>
<td>173 (11.1%)</td>
<td>591 (21.7%)</td>
<td>797 (18.3%)</td>
</tr>
<tr>
<td>Two to three hours</td>
<td>15 (19.2%)</td>
<td>96 (6.2%)</td>
<td>224 (8.2%)</td>
<td>335 (7.7%)</td>
</tr>
<tr>
<td>More than three hours</td>
<td>9 (11.5%)</td>
<td>105 (6.8%)</td>
<td>420 (15.4%)</td>
<td>534 (12.3%)</td>
</tr>
<tr>
<td>No response</td>
<td>3 (3.4%)</td>
<td>175 (11.3%)</td>
<td>66 (2.4%)</td>
<td>244 (5.6%)</td>
</tr>
<tr>
<td>Desire for current pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unplanned, wanted to get pregnant later</td>
<td>42 (53.9%)</td>
<td>930 (59.8%)</td>
<td>1,782 (65.5%)</td>
<td>2,754 (63.3%)</td>
</tr>
<tr>
<td>Unplanned, did not want to get pregnant at all</td>
<td>21 (26.9%)</td>
<td>279 (17.9%)</td>
<td>539 (19.8%)</td>
<td>839 (19.3%)</td>
</tr>
<tr>
<td>Planned, but miscarriage</td>
<td>3 (3.9%)</td>
<td>56 (3.6%)</td>
<td>191 (7.0%)</td>
<td>250 (5.7%)</td>
</tr>
<tr>
<td>Planned, but now unwanted or health issue</td>
<td>4 (5.1%)</td>
<td>27 (1.7%)</td>
<td>41 (1.5%)</td>
<td>72 (1.7%)</td>
</tr>
<tr>
<td>No response</td>
<td>8 (10.3%)</td>
<td>264 (17.0%)</td>
<td>167 (6.1%)</td>
<td>439 (10.1%)</td>
</tr>
</tbody>
</table>

Source: Service Delivery Form

As seen in Figure 7, the majority of women seeking abortion-related services at health posts and health centers walked to the health facility (74% and 70% respectively). Less than half of women seeking safe abortion services at hospitals walked (44%); 39% used a car and 12% took a bus. Since most women lived more than an hour from the health post and traveled to the facility on foot; traveling to a health center or hospital would have necessitated a longer journey, potentially on foot or by paying for transport.
3.2 ABORTION-RELATED SERVICE UTILIZATION AT PILOT SITES

A total of 4,354 women sought safe abortion services at pilot sites between July 2009 and December 2010 (Table 3). Service utilization was greatest at hospitals, which is potentially reflective of their larger catchment areas and their role as referral centers. In hospitals, health centers and health posts, safe termination procedures comprised the majority of services sought by women. Treatment of incomplete abortion was more common at hospitals and health posts (8.3% and 11.5% of cases respectively) than at health centers (2.1% of cases). Hospitals also recorded 2.5% of their caseload as treatment for intrauterine fetal death (IUFD).1

Table 3: Clients seeking abortion-related services at pilot sites

<table>
<thead>
<tr>
<th></th>
<th>Health post (N=78)</th>
<th>Health center (N=1,556)</th>
<th>Hospital (N=2,720)</th>
<th>Total (N=4,354)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe termination</td>
<td>69 (88.5%)</td>
<td>1,523 (97.9%)</td>
<td>2,427 (89.2%)</td>
<td>4,019 (92.3%)</td>
</tr>
<tr>
<td>Treatment of incomplete abortion</td>
<td>9 (11.5%)</td>
<td>33 (2.1%)</td>
<td>226 (8.3%)</td>
<td>268 (6.2%)</td>
</tr>
<tr>
<td>Treatment of intrauterine fetal death</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>67 (2.5%)</td>
<td>67 (1.5%)</td>
</tr>
</tbody>
</table>

The mean uterine size in weeks gestation of women presenting for safe termination differed by diagnosis (see Figure 8). On average, women presenting for safe termination had a mean uterine size of nine weeks gestation, women presenting for treatment of incomplete abortion had a mean uterine size of 12 weeks gestation, and women presenting for treatment of IUFD had a mean uterine size of 17

1Intrauterine fetal death is diagnosed when a clinician determines that the fetus is no longer viable, and is retained in the uterus. The term IUFD is often used when this occurs after the first trimester. However, in this pilot project 27 cases of IUFD were diagnosed before the first trimester; despite this, the percentage of IUFD in the project is comparable with the estimated percentage of IUFD occurring amongst all pregnancies (1%).
weeks gestation. The upper range for IUFD includes one woman at 44 weeks gestation; all other women treated for IUFD were 36 weeks or fewer gestation.

Figure 8: Mean uterine size in weeks gestation at initial visit by procedure (N=4,246)*

Table 4 presents the treatment given at the initial visit by facility level, including information on women who did not receive treatment and were referred during their initial visit from a health post or health center. It is important to note again here that HEWs began providing safe termination and treatment of incomplete abortion six months after health centers and hospitals began offering these services. From July to December 2009, HEWs determined the uterine size of women presenting for safe abortion services and then referred them to a higher-level facility to receive treatment. Before January 2010, 12 clients presented at health posts for safe abortion services, were assessed, and referred for treatment (11 for safe termination and one for incomplete abortion). After HEWs began providing safe termination and treatment of incomplete abortion in January 2010, they referred an additional 16 clients to receive treatment at a higher level facility (15 for safe termination and one for treatment of incomplete abortion). Providers at health centers referred 4% of clients seeking safe abortion services at their facility to a hospital. Reasons for referral are presented in detail in Section 3.4 Referrals.

Providers most commonly used medication methods for safe termination and treatment of incomplete abortion. Overall, 94% of safe terminations were induced with medication methods. All safe terminations at health posts were performed using misoprostol alone. The mifepristone-misoprostol combination was the primary method for safe termination at health centers and hospitals (69% and 75% respectively). MVA was used in a minority of cases for safe termination at health centers and hospitals (3% and 4% respectively).

At lower-level facilities, misoprostol was the primary method for treatment of incomplete abortion. HEWs used misoprostol to treat seven of the nine women who presented with incomplete abortion, referring the other two women to a higher level facility (one during Phase 1 and one during Phase 2). At health centers, most cases of incomplete abortion were treated with misoprostol (70%); 24% were treated with MVA and 6% were referred to a hospital. However, at the hospitals, surgical methods were
MVA was used in half of the cases of incomplete abortion (51%) and an additional 13% underwent evacuation and curettage. Hospitals are referral centers and receive a higher caseload of complicated cases for treatment of incomplete abortion that may require surgical methods such as MVA to complete the procedure. Eight women presenting at hospitals for treatment of incomplete abortion were given additional treatment(s): two were given IV fluids and analgesics; two were given no further treatment and only observed; one was given an IV only; one was given analgesics and IV fluids; one was given analgesics, antibiotics and IV fluids; and for one woman there is no information on her treatment. Treatment of IUFD at hospitals was primarily done using medication methods, mainly with misoprostol alone.

Table 4: Treatment given at initial visit by facility level

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Health posts (N=78)</th>
<th>Health center (N=1,556)</th>
<th>Hospital (N=2,720)</th>
<th>Total (N=4,354)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe termination</td>
<td>69</td>
<td>1,523</td>
<td>2,427</td>
<td>4,019</td>
</tr>
<tr>
<td>Misoprostol alone</td>
<td>43 (62.3%)</td>
<td>363 (23.9%)</td>
<td>498 (20.5%)</td>
<td>904 (22.5%)</td>
</tr>
<tr>
<td>Mifepristone-misoprostol</td>
<td>0 (0%)</td>
<td>1,049 (68.9%)</td>
<td>1,824 (75.2%)</td>
<td>2,873 (71.5%)</td>
</tr>
<tr>
<td>Manual vacuum aspiration</td>
<td>0 (0%)</td>
<td>49 (3.2%)</td>
<td>105 (4.3%)</td>
<td>154 (3.8%)</td>
</tr>
<tr>
<td>Referred to higher level facility for treatment</td>
<td>26 (37.7%)</td>
<td>62 (4.1%)</td>
<td>---</td>
<td>88 (2.2%)</td>
</tr>
<tr>
<td>Treatment of incomplete abortion</td>
<td>9</td>
<td>33</td>
<td>226</td>
<td>268</td>
</tr>
<tr>
<td>Misoprostol alone</td>
<td>7 (77.8%)</td>
<td>23 (69.7%)</td>
<td>72 (31.9%)</td>
<td>102 (38.1%)</td>
</tr>
<tr>
<td>Mifepristone-misoprostol</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (0.4%)</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>Manual vacuum aspiration</td>
<td>0 (0%)</td>
<td>8 (24.2%)</td>
<td>116 (51.3%)</td>
<td>124 (46.3%)</td>
</tr>
<tr>
<td>Evacuation and curettage</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>29 (12.8%)</td>
<td>29 (10.8%)</td>
</tr>
<tr>
<td>Referred to higher level facility for treatment</td>
<td>2 (22.2%)</td>
<td>2 (6.1%)</td>
<td>---</td>
<td>4 (1.5%)</td>
</tr>
<tr>
<td>Additional treatments</td>
<td>0</td>
<td>0</td>
<td>8 (3.5%)</td>
<td>8 (3.0%)</td>
</tr>
<tr>
<td>Treatment of intrauterine fetal death</td>
<td>67</td>
<td>67</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Misoprostol alone</td>
<td>---</td>
<td>---</td>
<td>46 (68.7%)</td>
<td>46 (68.7%)</td>
</tr>
<tr>
<td>Mifepristone-misoprostol</td>
<td>---</td>
<td>---</td>
<td>14 (20.9%)</td>
<td>14 (20.9%)</td>
</tr>
<tr>
<td>Manual vacuum aspiration</td>
<td>---</td>
<td>---</td>
<td>2 (3.0%)</td>
<td>2 (3.0%)</td>
</tr>
<tr>
<td>Evacuation and curettage</td>
<td>---</td>
<td>---</td>
<td>3 (4.5%)</td>
<td>3 (4.5%)</td>
</tr>
<tr>
<td>Additional treatments</td>
<td>---</td>
<td>---</td>
<td>2 (3.0%)</td>
<td>2 (3.0%)</td>
</tr>
</tbody>
</table>

Source: Service Delivery Form

Figure 9 presents the division of providers of abortion-related services by procedure type and level of facility. Service provider data for health posts is not shown because all providers were HEWs. Nurses and midwives provided the majority of abortion-related services at both health centers and hospitals. At health centers, nurses performed about three-quarters of safe terminations (73%) and almost half of treatment of incomplete abortion cases (49%); health officers treated the majority of the remaining clients. At hospitals, almost all safe terminations (98%) and treatment of incomplete abortion cases (98%) were performed by nurses. Doctors performed only 2% of safe terminations and treatment of incomplete abortion cases.
3.3 FOLLOW-UP ATTENDANCE

All women who received CAC services were advised to return to the same health facility where they received abortion-related services approximately 14 days after their initial visit. The mean time from initial visit to follow-up visit was around 12 days for all facility levels (12.4 days for health posts, 12.7 days for health centers and 13.4 days for hospitals) (data not shown). The rate of follow-up attendance varied by facility level, with higher follow-up rates seen at the lower-level facilities: approximately two out of three health post clients and three out of four health center clients returned for follow-up. Less than half (44%) of women who were treated at hospitals returned for a follow-up visit.

Distance to the health facility, measured by the mean time of travel from home to facility, was not significantly different between women who did and did not attend a follow-up visit (1.3 vs. 1.6 hours respectively) (data not shown). Therefore, women most likely did not return to a health facility because their treatment was complete. Since these women lived within two hours of the health facility, if complications arose, they would have been reported to the health facility. This was confirmed by qualitative interviews with providers conducted by VSI staff during an M&E visit in July 2010, during which providers stated that women with completed procedures often felt satisfied with the services that they had received, and consequently, did not return for follow-up.

3.4 REFERRALS

While clients were able to obtain care at all levels of the health care system according to medical protocols, each pilot site was linked in a comprehensive referral system so that clients received proper care and treatment for complex cases as needed (see Figure 5). An important aspect of the feasibility of
this pilot project was the ability of providers to follow the correct referral protocol between different levels of the health care system to ensure women received comprehensive and appropriate care.

Table 5 shows that 28 women presenting at health posts were referred during their initial visit, 12 during Phase 1 (July through December 2009) and 16 during Phase 2 (January through December 2010). After Phase 1, HEWs referred women due to uterine size according to protocol (n=11), complicated cases (n=1) and the fact that a client presenting for safe termination requested a service that was not available at the facility (n=1). Three clients were referred for unknown reasons.

A total of 63 women were referred during their initial visit to a health center for safe termination. Fifty-six women were referred due to having a uterine size greater than 12 weeks gestation, one because the service she requested was not available at the facility, one because the facility had no mifepristone and/or misoprostol, and one because she presented with severe bleeding and uterine perforation. Two women presenting at a health center for incomplete abortion were referred, one due to uterine size greater than 12 weeks gestation and one because it was a complicated case.

The data demonstrates that providers consistently referred women according to medical protocols for uterine size and complications that could not be handled given the resources available at health centers and health posts.

Table 5: Reasons for referral to higher level facility during initial visit

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Health post (N=78)</th>
<th>Health center (N=1,556)</th>
<th>Total (N=1,634)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe termination</td>
<td>69</td>
<td>1,523</td>
<td>1,592</td>
</tr>
<tr>
<td>Referral during initial visit</td>
<td>26</td>
<td>63</td>
<td>89</td>
</tr>
<tr>
<td>Confirmation of uterine size and treatment (Phase 1 at health posts; July to December 2009)</td>
<td>11</td>
<td>---</td>
<td>11</td>
</tr>
<tr>
<td>Uterine size requiring referral according to protocol</td>
<td>10</td>
<td>56</td>
<td>66</td>
</tr>
<tr>
<td>Complicated case</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Service requested by client not available at facility</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Facility has no mifepristone and/or misoprostol</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No reason given</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Treatment of incomplete abortion</td>
<td>9</td>
<td>33</td>
<td>42</td>
</tr>
<tr>
<td>Referral during initial visit</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Confirmation of uterine size and treatment (Phase 1 at health posts; July to December 2009)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterine size requiring referral according to protocol</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Complicated case</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Service Delivery Form

As seen in Table 6, of the 45 women who returned for a follow-up visit at a health post after receiving safe termination services, only one woman was referred to a higher-level facility, as a result of being a complicated case (blood loss and severe anemia). Seven women returned for a follow-up visit to a health post after being treated for incomplete abortion. Two of these women were referred, one for treatment failure and the other for severe bleeding and anemia.
Most women (76%) who received safe termination at a health center returned for a follow-up visit (n=1,152). Forty-eight of these women were referred to a hospital: 44 had experienced treatment failure and four were referred because they presented with complicated cases (two women had sepsis, one had shock and uterine perforation, and one had sepsis and uterine perforation). None of the women returning for a follow-up visit at health centers after treatment of incomplete abortion required referral.

### Table 6: Reasons for referral to higher level facility during follow-up visit

<table>
<thead>
<tr>
<th></th>
<th>Health post (N=78)</th>
<th>Health center (N=1,556)</th>
<th>Total (N=1,634)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safe termination</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of women returning for a follow-up visit</td>
<td>69</td>
<td>1,523</td>
<td>1,592</td>
</tr>
<tr>
<td>Referral during follow-up visit</td>
<td>1</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>0</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Complicated case</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>Treatment of incomplete abortion</strong></td>
<td>9</td>
<td>33</td>
<td>42</td>
</tr>
<tr>
<td>Number of women returning for a follow-up visit</td>
<td>7</td>
<td>26</td>
<td>33</td>
</tr>
<tr>
<td>Referral during follow-up visit</td>
<td>2</td>
<td>---</td>
<td>2</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>1</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td>Complicated case</td>
<td>1</td>
<td>---</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Service Delivery Form

Six women presented with complications at the follow-up visit, and all were referred for treatment. Of these women, there were only three adverse events due to treatment (one at a health post and two at health centers). The first case presented at a health center with signs of sepsis three days after receiving misoprostol alone. The second case presented at a health center with signs of sepsis six days after receiving mifepristone-misoprostol. The third case presented at a health post with blood loss and severe anemia after receiving misoprostol alone (days to follow-up missing). The three other complicated cases were due to factors not related to treatment (e.g. uterine perforation and cervical infection and bleeding at initial visit). There were no maternal deaths reported due to abortion-related complications.

### 3.5 SAFETY: SIDE EFFECTS, COMPLICATIONS AND ADVERSE EVENTS

When women returned for their follow-up visit, they were asked about their experience of side effects in the Exit Interview. Women were asked to rate the severity and duration of any side effects they experienced, and whether they sought further medical treatment.

Of all women who were treated with MVA, few reported experience of side effects: four to seven percent reported experiencing nausea, shivering, headache or vomiting (Figure 10). Women who were treated with mifepristone-misoprostol and misoprostol alone had similar experience of side effects, with the exception of vomiting. Significantly more women who were treated with mifepristone-misoprostol experienced vomiting compared to women who were treated with misoprostol alone (24% vs. 19% respectively). Half (52%) of women treated with medication methods and most women (85%) treated with MVA did not experience side effects. Side effects were generally transient and self-resolving, lasting less than two hours on average (data not shown).
Figure 10: Client report of experience of side effects, by treatment method (n=2,189)^

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No side effects</th>
<th>Shivering</th>
<th>Headache</th>
<th>Vomiting</th>
<th>Nausea</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVA (n=134)</td>
<td>85%</td>
<td>4%</td>
<td>7%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Mifepristone-misoprostol (n=1,512)</td>
<td>52%</td>
<td>15%</td>
<td>23%</td>
<td>24%</td>
<td>32%</td>
</tr>
<tr>
<td>Misoprostol (n=543)</td>
<td>53%</td>
<td>19%</td>
<td>24%</td>
<td>32%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Exit Interview
^No response on side effects for 10% of women receiving misoprostol only, 9% of women receiving mifepristone-misoprostol, and 5% of women receiving MVA.

According to data from the Exit Interview, only 277 women (14% of the total number of women receiving medication methods) sought additional treatment from a health care provider for side effects, and 433 women (21% of the total number of women receiving medication methods) took medication to manage side effects (data not shown). Perceptions of severe side effects were comparable across treatment methods. Twenty-six women (5%) who took misoprostol alone, 69 women (5%) who took mifepristone-misoprostol, and two women (1.5%) who were treated with MVA rated at least one side effect severe or very severe (data not shown).

3.6 PROGRAM EFFECTIVENESS: COMPLETION OF PROCEDURE AND NEED FOR REFERRAL AND ADDITIONAL INTERVENTIONS

3.6.1 Completion of Procedure

Providers assessed the completion of the initial treatment during the follow-up visit. For this analysis, completion of procedure was assessed from service delivery data of women who returned for a follow-up visit (2,252; 52% of total sample). Women were considered to have a complete termination if they returned for follow-up and were found, either by pregnancy test or pelvic exam, to no longer be pregnant and received no additional treatment. Women who received treatment for incomplete abortion were categorized as having a complete procedure after a pelvic exam and if no additional treatment was given at the follow-up visit.

Completion rates varied by the type of procedure, as illustrated in Figure 11. For safe termination, misoprostol alone resulted in a complete procedure in 81.2% of clients (95% CI 77.9% to 84.5%); mifepristone-misoprostol in 90.3% of women (95% CI 88.8% to 91.8%); and MVA in 94.8% (95% CI 90.3% to 99.3%). However, it is important to note that utilization of MVA for safe termination was very low in this pilot project (3.8%). Misoprostol alone had a completion rate of 93.6% for treatment of incomplete abortion (95% CI 87.3% to 99.8%) and a completion rate of 80.0% for IUFD (95% CI 68.5% to 91.5%). MVA resulted in 100% completion rates for both treatment of incomplete abortion and IUFD.
Only 2.8% of the women who returned for a follow-up visit (64 out of 2,252) had a positive pregnancy test during their follow-up assessment (42 had received mifepristone-misoprostol for their initial treatment, 20 had received misoprostol only, and two had been treated with MVA). Pregnancy termination was completed by surgical (22 with MVA, two with D&C) and medication methods (13 with misoprostol only, nine with mifepristone-misoprostol); 18 were referred with no further information. There was no report of any serious problem to neonates in project areas from continuation of pregnancy.

Figure 12 shows the proportion of cases where an additional dose of misoprostol was given to complete the safe termination. An additional 5% of women who received mifepristone-misoprostol for safe termination and returned for a follow-up visit received misoprostol for completion. Women who received misoprostol for safe termination during their initial visit were more likely to receive another dose to complete the procedure during their follow-up visit (12%). Assuming this additional dose of misoprostol resulted in a complete procedure, completion rates between MVA, mifepristone-misoprostol, and misoprostol alone were not statistically significant. However, because health care providers did not document a second follow-up visit, we cannot confirm that these cases were complete.
3.6.2 Need for Additional Interventions

The need for additional interventions to complete procedures is presented in Table 7 by treatment method. More of the cases requiring additional interventions to complete a termination procedure at the follow-up visit were initiated with misoprostol alone (19%) compared to those initiated with mifepristone-misoprostol (10%) or MVA (5%). Either MVA, misoprostol, D&C) or mifepristone-misoprostol was used to complete these cases. Providers used misoprostol to complete half of safe terminations initiated with misoprostol alone (58 out of 103 cases; 56%) and a third of cases initiated with mifepristone-misoprostol that were not complete at the follow-up visit (57 out of 153 cases; 37%).

Of the 261 women requiring additional interventions to complete a safe termination at the follow-up visit, 51 (20%) were referred for completion of safe termination to a higher level facility (12 treated with misoprostol alone, 34 treated with mifepristone-misoprostol, and five treated with MVA at the initial visit).

Only four women who received misoprostol for treatment of incomplete abortion required additional interventions at the follow-up visit: one received MVA, one received misoprostol, and two were referred. Ten cases of IUFD that received misoprostol at the initial visit required additional interventions at the follow-up visit; eight were completed using surgical methods and two using an additional dose of misoprostol.

Source: Service Delivery Form

*Excludes nine women who were referred at initial visit before treatment and who do not have a matched referral form
Table 7: Need for additional interventions at follow-up visit by initial treatment method

<table>
<thead>
<tr>
<th></th>
<th>Misoprostol alone (N=1,062)</th>
<th>Mifepristone-misoprostol (N=2,970)</th>
<th>Manual vacuum aspiration (N=280)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe termination</td>
<td>914</td>
<td>2,955</td>
<td>154</td>
</tr>
<tr>
<td>Attended follow-up visit</td>
<td>552</td>
<td>1,588</td>
<td>96</td>
</tr>
<tr>
<td>Required additional</td>
<td>103 (18.7%)</td>
<td>153 (9.6%)</td>
<td>5 (5.2%)</td>
</tr>
<tr>
<td>interventions at follow-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visit</td>
<td></td>
<td>Manual vacuum aspiration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dilation and curettage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Misoprostol</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>58</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mifepristone-misoprostol</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Referral to higher level facility</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None (decided to keep pregnancy)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment of incomplete</td>
<td>102</td>
<td>1</td>
<td>124</td>
</tr>
<tr>
<td>abortion</td>
<td>76</td>
<td>1</td>
<td>44</td>
</tr>
<tr>
<td>Required additional</td>
<td>4 (5.3%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>interventions at follow-up</td>
<td></td>
<td>Manual vacuum aspiration to complete</td>
<td></td>
</tr>
<tr>
<td>visit</td>
<td>1</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Treatment of IUFD</td>
<td>46</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Attended follow-up visit</td>
<td>37</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Required additional</td>
<td>10 (27.0%)</td>
<td>1 (9.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>interventions at follow-up</td>
<td></td>
<td>Manual vacuum aspiration to complete</td>
<td></td>
</tr>
<tr>
<td>visit</td>
<td>6</td>
<td>0</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>---</td>
</tr>
<tr>
<td>Source: Service Delivery Form</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The 32 women who received E&C are excluded: ten had successful procedures and did not require any additional interventions; 22 did not attend a follow-up visit.

As can be seen in Figure 13, very few cases required referral for additional interventions. Most procedures were assessed to be complete at the follow-up visit, ranging from 83% at health posts to 91% at health centers and 86% at hospitals. Most women received the additional interventions required for completion at the same facility: six women at health posts, 59 at health centers, and 171 at hospitals. Only 6% of women at health posts and 4% of women at health centers required interventions that were beyond the capacity of the health facility they initially attended, thereby necessitating referral.
3.7 FAMILY PLANNING COUNSELING AND SERVICES

According to project protocol, all women should be counseled during both their initial and follow-up visit to discuss their fertility desires and contraceptive choices. Providers noted counseling women both at the initial (85%) and follow-up visits (87%) in the Service Delivery Form, in line with service delivery protocols (data not shown).

The most common contraceptive methods given to women were injectable contraception (47%) and oral contraceptive pills (15%) (Table 8). Implants (3%), condoms (1%), and intrauterine devices (<1%) were provided in smaller numbers. Only one woman who received care from a HEW at a health post did not leave her initial visit with a contraceptive method. Women were more likely to leave without a contraceptive method at their initial visit at hospitals than health centers (11% vs. 6%).

The majority of women who had never used contraceptives (69%) left their initial visit with a contraceptive, as did women who had ever used contraceptives (72%) (Table 9).
Table 9: Contraceptive service provision at the initial visit by ever use of contraceptives

<table>
<thead>
<tr>
<th></th>
<th>Never used contraceptives (n=2,346)</th>
<th>Ever used contraceptives (n=1,870)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left with a method after initial visit</td>
<td>1,618 (69.0%)</td>
<td>1,354 (72.4%)</td>
</tr>
<tr>
<td>Did not leave with a method after initial visit</td>
<td>279 (11.9%)</td>
<td>113 (6.0%)</td>
</tr>
<tr>
<td>No response</td>
<td>449 (19.1%)</td>
<td>403 (21.6%)</td>
</tr>
</tbody>
</table>

Source: Service Delivery Form

*Excludes 138 women with no information on previous use of contraceptives

Of all women who took contraception home at their initial visit, nearly all were still using a method at the time of their follow-up visit (98%), indicating that there is some drop-off in contraceptive use after method provision (Figure 14). However, of those women who did not take contraception home at their initial visit, 52% were using a method at the time of their follow-up visit, illustrating that women received contraception elsewhere.

Figure 14: Current contraceptive use at exit interview (n=1,387)

3.8 CLIENT SATISFACTION

During the follow-up visit, women who completed the exit interview (n=2,210) were asked several questions about their experience, including their satisfaction with the services, method and provider; and their experience of side effects and post-procedure family planning counseling. The Exit Interview Questionnaire included both open-ended questions with codes for common responses and a series of statements about which respondents indicated their level of agreement using a five-point Likert scale (ranging from Strongly Disagree to Strongly Agree).

3.8.1 Overall Satisfaction

During the exit interview, providers asked women several questions about their satisfaction with the care they received, and specifically about the method used for the procedure and their provider. Overall, client satisfaction was very high (Table 10); most women (99%) rated their overall experience as
“good” (vs. “bad” or “so-so”). When asked the reason for their rating, the most commonly mentioned reasons were that they were treated well by the provider, cramping was easy to tolerate, and the services provided were close to their home. Only 11 clients rated their experience as bad, citing prolonged bleeding, severe pain, and the fact that the “induction of abortion was not successful” (data not shown). The majority of women (91%) stated that they would choose to have the procedure in the same level facility in which they received treatment, ranging from almost 100% at health posts to 91% at health centers and hospitals.

**Table 10: Overall client satisfaction** (from exit interview)

<table>
<thead>
<tr>
<th>Level of facility</th>
<th>Health post (n=29)</th>
<th>Health center (n=1,154)</th>
<th>Hospital (n=1,027)</th>
<th>Total (n=2,210)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate your overall experience?^</td>
<td>29 (100%)</td>
<td>1,136 (98.4%)</td>
<td>1,016 (98.9%)</td>
<td>2,181 (98.7%)</td>
</tr>
<tr>
<td>Good</td>
<td>0 (0%)</td>
<td>8 (0.7%)</td>
<td>3 (0.3%)</td>
<td>11 (0.5%)</td>
</tr>
<tr>
<td>Bad</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (0.1%)</td>
<td>1 (0.1%)</td>
</tr>
<tr>
<td>Level of facility where client would chose to have the procedure is the same as where she got the procedure</td>
<td>28 (99.6%)</td>
<td>1,045 (90.6%)</td>
<td>933 (90.9%)</td>
<td>2,006 (90.8%)</td>
</tr>
</tbody>
</table>

Source: Exit Interview

^No response in 0.9% of health center clients and 0.7% of hospital clients

Across all three levels of provider, women reported that their pain was managed (Table 11). The perceived quality of counseling sessions by all levels of provider was high, with most women reporting that the procedure was as expected from the counseling session. It is notable that 91% of women felt comfortable discussing their contraceptive choices with a HEW, whereas comfort level ranged between 71 to 76% with the other, higher-level providers.

**Box 1: Client perspectives**

“I am satisfied to get such service in my vicinity. If this service continues, it is my belief that many problems of women will be solved.”

– Safe termination client, health center, age 24 (parity 0)

“The availability of such service in a health post is excellent.”

– Safe termination client, health post, age 24 (parity 2)

“This is a new hope for women’s health.”

– Safe termination client, health center, age 26 (parity 2)
Table 11: Women’s perceived quality of care by provider

<table>
<thead>
<tr>
<th></th>
<th>Health extension worker (n=33)</th>
<th>Nurse/Midwife (n=1,845)</th>
<th>Health officer (n=265)</th>
<th>Doctor (n=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Felt the provider was able to manage my pain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree/Strongly agree</td>
<td>29 (87.9%)</td>
<td>1,395 (75.6%)</td>
<td>208 (78.5%)</td>
<td>44 (72.1%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>1 (3.0%)</td>
<td>9 (0.5%)</td>
<td>1 (0.4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Disagree/Strongly disagree</td>
<td>2 (6.1%)</td>
<td>15 (0.8%)</td>
<td>1 (0.4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No response</td>
<td>1 (3.0%)</td>
<td>426 (23.1%)</td>
<td>55 (20.8%)</td>
<td>17 (27.9%)</td>
</tr>
<tr>
<td><strong>The procedure was as expected from counseling session</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree/Strongly agree</td>
<td>30 (90.9%)</td>
<td>1,592 (86.3%)</td>
<td>245 (92.5%)</td>
<td>56 (91.8%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>2 (6.1%)</td>
<td>37 (2.0%)</td>
<td>3 (1.1%)</td>
<td>3 (4.9%)</td>
</tr>
<tr>
<td>Disagree/Strongly disagree</td>
<td>1 (3.0%)</td>
<td>43 (2.3%)</td>
<td>10 (3.8%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No response</td>
<td>0 (0%)</td>
<td>173 (9.4%)</td>
<td>7 (2.6%)</td>
<td>2 (3.3%)</td>
</tr>
<tr>
<td><strong>Felt comfortable discussing my family planning choices with this provider</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree/Strongly agree</td>
<td>30 (90.9%)</td>
<td>1,400 (75.9%)</td>
<td>197 (74.3%)</td>
<td>43 (70.5%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>1 (3.0%)</td>
<td>10 (0.5%)</td>
<td>3 (1.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Disagree/Strongly disagree</td>
<td>0 (0%)</td>
<td>10 (0.5%)</td>
<td>1 (0.4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No response</td>
<td>2 (6.1%)</td>
<td>425 (23.0%)</td>
<td>64 (24.2%)</td>
<td>18 (29.5%)</td>
</tr>
</tbody>
</table>

Source: Exit Interview

*Six clients are excluded because they had no data on provider*

### 3.8.2 Satisfaction with Method

Client satisfaction with misoprostol alone was very high, and three out of four women who were treated with misoprostol alone stated that they would recommend this method to a friend who needed this type of service (Table 12). Similarly, 73% of women would recommend mifepristone-misoprostol to a friend, and 53% of women who were treated with MVA said that they would recommend it. The lower percentage with MVA could be partially explained by the fact that there was a high level of non-response to this question by women who were treated with MVA.

Despite the high level of satisfaction with medication methods, women cited some concerns as well. Some women indicated that they were worried or afraid to be at home during part of the termination (51% of misoprostol only clients and 44% of women who took mifepristone-misoprostol). Further, 26% (141) of women who took misoprostol only, 31% (472) of women who took mifepristone-misoprostol, and 20% (27) of women who were treated with MVA felt that there were too many visits to the health facility (data not shown). However, despite these concerns, very low numbers of women reported the occurrence of anything happening during their procedure that made them feel that it was not worth undergoing (9% of women who took misoprostol only; 13% of women who took mifepristone-misoprostol; and 6% of women who were treated with MVA, data not shown).
Table 12: Satisfaction with method

<table>
<thead>
<tr>
<th>Method</th>
<th>Misoprostol alone</th>
<th>Mifepristone-misoprostol</th>
<th>Manual Vacuum Aspiration</th>
<th>Evacuation &amp; Curettage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=543)</td>
<td>406 (74.8%)</td>
<td>1,099 (72.7%)</td>
<td>71 (53.0%)</td>
<td>3 (30.0%)</td>
<td>1,579 (71.8%)</td>
</tr>
<tr>
<td>Agree/Strongly agree</td>
<td>1,099 (72.7%)</td>
<td>1,099 (72.7%)</td>
<td>71 (53.0%)</td>
<td>3 (30.0%)</td>
<td>1,579 (71.8%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>3 (0.6%)</td>
<td>8 (0.5%)</td>
<td>4 (3.0%)</td>
<td>0 (0%)</td>
<td>15 (0.7%)</td>
</tr>
<tr>
<td>Disagree/Strongly disagree</td>
<td>13 (2.4%)</td>
<td>26 (1.7%)</td>
<td>0 (0%)</td>
<td>1 (10.0%)</td>
<td>40 (1.8%)</td>
</tr>
<tr>
<td>No response</td>
<td>121 (22.3%)</td>
<td>379 (25.1%)</td>
<td>59 (44.0%)</td>
<td>6 (60.0%)</td>
<td>565 (25.7%)</td>
</tr>
</tbody>
</table>

Source: Exit Interview

^11 women who were referred at initial visit before treatment and do not have a matched referral form are excluded because they have no information on treatment method

4. Conclusions

This pilot project introduced a comprehensive program to increase access to safe abortion services at all levels of the health care system. In providing care to a total of 4,354 women over the course of 18 months (July 2009 to December 2010 at pilot health posts and July 2009 to September 2010 at pilot health centers and hospitals), this project demonstrated that quality CAC services can be provided at all levels of the health care system, down to the health post level.

SAFE AND HIGH-QUALITY SERVICES ARE BEING PROVIDED

Of the 2,252 women who attended a follow-up visit (52% of all women), 81% of women who took misoprostol alone and 90% of women who took the mifepristone-misoprostol regimen had a complete procedure. Providers at health posts and health centers consistently referred women according to medical protocols for uterine size and complications that could not be handled given the resources available at that level.

Women were very satisfied with their providers, services received, treatment method, and facilities. The only negative experience reported frequently by women was that they did not get to spend enough time with their provider, particularly at the hospital level. Overall, women rated the quality of counseling as very good for preparing them for their procedure. Of the women who received medication methods, over 73% of women would recommend this treatment to a friend.

Further, providers noted during the VSI M&E visit in July 2010 that private clinics that had previously been offering unsafe abortion services were increasingly closing as a result of the provision of safe CAC services at all public health facilities. This indicates that providers of unsafe abortion services are no longer needed by women now that women can access safe abortion services at all levels of the Ethiopian health system.

NURSES PROVIDE THE MAJORITY OF ABORTION-RELATED SERVICES AT HEALTH CENTERS AND HOSPITALS

Almost all abortion-related service providers are trained in MVA, from nurses to physicians. However, since the beginning of the project, a natural division of labor developed in many of the facilities. Nurses predominantly provided medication methods while health officers, interns and physicians provided MVA
and other surgical methods, often to complete procedures if medication methods failed. Since the majority of abortion-related cases are early in pregnancy and uncomplicated, they are easily handled by nurses using medication methods. This reserves higher level providers for complicated cases, consequently conserving both human and financial resources within the health care system.

QUICK ADOPTION OF MEDICATION METHODS
Prior to the implementation of this project, MVA was the only uterine evacuation method available at health centers and the primary method available at hospitals. Medication methods were used in the majority of cases in this project, demonstrating that providers have been quick to adopt medication methods – a dramatic shift in clinical practice. The average uterine size at the initial visit was nine weeks for safe termination cases and 12 weeks for incomplete abortion cases, demonstrating that medication methods are a feasible option for uterine evacuation for the majority of cases.

HEWS ARE CAPABLE OF PROVIDING HIGH-QUALITY SAFE ABORTION SERVICES
This project demonstrated that HEWs can safely provide these services to women at the health post level. Over the course of one year (January through December 2010), HEWs provided 43 safe terminations and treated seven cases of incomplete abortion with misoprostol, and referred 17 women. HEWs demonstrated that they could follow treatment and referral protocols correctly, understanding their capacity to treat clients at the health post level and referring women to higher level facilities if they did not have the resources or skills to treat them.

Women were very satisfied with their experiences seeking safe abortion services from HEWs. It is important to highlight that the majority of women who sought safe abortion services from a HEW left their initial visit with a contraceptive method, and women said they were comfortable speaking with HEWs about their contraceptive options. This could be due to the fact that HEWs come from the communities in which they serve, and women may feel more comfortable talking to them and trusting them compared to providers at higher levels. As well, part of the work of HEWs is “community outreach,” and HEWs often visit women and their families in their homes, potentially giving women a chance to build a relationship with the HEWs. HEWs are an integral part of the primary health care system in Ethiopia, and this report provides strong evidence to suggest that HEWs are able to provide safe, high-quality CAC services to women in rural communities of Ethiopia.

MOST WOMEN RECEIVED POSTABORTION CONTRACEPTIVE SERVICES
Both provider and client reports showed that most women received family planning counseling. Most women were provided a long-acting method of contraception – injection – which is known to be one of the most desired methods of family planning in the area (Prata et al., 2009). Most women reported using a contraceptive method during the follow-up visit. Women who received treatment at health posts and health centers were more likely to report leaving with a contraceptive method, highlighting the need to strengthen family planning services at the hospital level. However, half of the women who did not receive a method during their initial visit reported using a contraceptive method when asked during their follow-up visit, indicating that women have family planning methods available to them and may prefer to receive contraception separately.
5. Recommendations

Findings from this project demonstrate that safe abortion services can be integrated into every level of the health care system, and that safe abortion services can be provided by all levels of health care provider, including the lowest-level government health workers in Ethiopia, HEWs. We recommend to policy makers and key stakeholders that CAC services as described in this project be scaled up nation-wide in Ethiopia.

UPDATE GUIDELINES TO INCORPORATE PROJECT FINDINGS AND CURRENT RESEARCH
Given the demonstrated feasibility of the medical and procedural protocols of the CAC Pilot Project in Tigray, and its ability to increase accessibility of safe abortion service, the technical guidelines for safe abortion service provision should be updated. In particular, the role of HEWs should be expanded to include early first trimester safe termination and treatment of incomplete abortion. Medical protocols for uterine evacuation should be updated to include misoprostol alone regimens in addition to the mifepristone-misoprostol regimen. These updated guidelines should be disseminated to all key stakeholders and providers of safe abortion services so they can be implemented and services expanded.

ALL PROVIDERS SHOULD BE TRAINED IN MEDICATION METHODS OF UTERINE EVACUATION
Mid and lower-level providers were the cornerstone of abortion-related service provision in this project at every level of the health care system. HEWs demonstrated that they can provide termination and treatment of incomplete abortion safely, which increases the reach of these important services to rural women. Mid-level providers at health centers and hospitals are better equipped to handle the large case load with medication methods, which require less time with the client. While all mid-level providers should be trained in MVA, with the incorporation for medication methods, MVA and other surgical methods can be reserved for more complicated cases.

INCREASE COMMUNITY AWARENESS ABOUT UNSAFE ABORTION AND PREVENTION OF UNWANTED PREGNANCY
As is the case in many countries, abortion is a sensitive topic in Ethiopia. While the criminal code has been revised, not all women or communities are aware of the change, or of the availability of services. Further, providers may also not be aware of their role in providing abortion services per the criminal code and technical guidelines. Additional effort needs to be made to educate women and communities about how to prevent unwanted pregnancy, the consequences of unsafe abortion, and the availability of safe abortion services. Special effort should be made to understand the attitudes and beliefs around abortion, and to tailor messages to communities.

ENSURE SUPPLY OF REPRODUCTIVE HEALTH COMMODITIES
To ensure that CAC services are brought to scale, supply of drugs (i.e. mifepristone and misoprostol), MVA equipment, family planning methods, and other supplies (e.g. pregnancy tests) need to be available in constant supply necessary to meet demand. To be truly comprehensive, a CAC program needs all methods of uterine evacuation and family planning regularly available. To that end, partners working with the FMOH in reproductive health should collaborate to ensure that quality supplies are available at every level of the health care system, paying attention to issues of demand, continuity of supply, and expiration date.
6. References


7. Appendix: Service Delivery Guidelines

HEALTH POST – INITIAL VISIT

Woman comes to health post

Medical History
Physical & Pelvic Exam
Initial Assessment

Shock
Sepsis
Uterine Perforation
Intrauterine Fetal Death*

Abnormal vaginal bleeding (Not Pregnant)

Refer

Request & Eligible for Termination

Uterine size ≤ 9 Weeks

800 mcg misoprostol, oral
3 Doses, 3 hours apart
Doses 1 & 2 @ Health Post
Dose 3 @ Health Post or home

Book follow-up visit in 1 week
Contraceptive Services

Uterine size > 9 Weeks

Refer

Treatment of Incomplete Abortion or Miscarriage

Uterine Size ≤ 12 Weeks

600 mcg misoprostol, oral
1 Dose @ HP

Reassess after 3 hours

Book follow-up visit in 1 week
Contraceptive Services

Uterine Size > 12 Weeks

Refer

* Fetal demise of 13 weeks or greater
HEALTH CENTER – INITIAL VISIT

Woman comes to health center

Medical History
Physical & Pelvic Exam
Initial Assessment

Shock
Sepsis
Uterine Perforation
Intrauterine Fetal Death

Abnormal vaginal bleeding
(Not Pregnant)

Treat as appropriate
Contraceptive Services

Refer if needed

Uterine size
< 9 Weeks
Discuss options with woman

Uterine size
10-12 Weeks

Uterine size
>12 Weeks

Uterine Size
< 12 Weeks
Discuss Options with Woman

Uterine Size
13 - 28 Weeks

Uterine Size
13 - 28 Weeks

Treatment of Incomplete
Abortion or Miscarriage

200 mg mifepristone, oral
1 Dose @ Health Center
800 mcg misoprostol, oral
1 Dose @ home
36 to 48 hours after mifepristone

Book follow-up visit in 1 week
Contraceptive Services

800 mcg misoprostol, oral
3 Doses, 3 hours apart
Doses 1 & 2 @ Health Center
Dose 3 @ Health Center or home

Book follow-up visit in 1 week
Contraceptive Services

MVA

200 mg mifepristone, oral
1 Dose @ Health Center
800 mcg misoprostol, oral
1 Dose @ home
36 to 48 hours after mifepristone

Book follow-up visit in 1 week
Contraceptive Services

MVA

600 mg misoprostol, oral
1 Dose @ HP

Book follow-up visit in 1 week
Contraceptive Services

MVA

* Fetal demise of 13 weeks or greater
HEALTH CENTER – SUBSEQUENT VISITS

Woman returns to health center

Initial Assessment & Pelvic Exam

Shock
Sepsis
Uterine Perforation

Pregnancy Test

Assess based on results of pelvic exam and pregnancy test

NOT PREGNANT
(-) Pregnancy Test & (-) Pelvic Exam

Contraceptive Services Discharge

INCOMPLETE ABORTION
(+) Pregnancy Test & (-) Pelvic Exam
or (-) Pelvic Exam & (+) Pregnancy Test

- <12 Weeks
  - 600 mg mifepristone, oral
  - 1 Dose @ Health Center
  - Reassess after 3 hours
  - Book follow-up visit in 1 week
  - Contraceptive Services

- 13–28 Weeks
  - MVA

- >12 Weeks
  - Contraceptive Services
  - Book follow-up visit in 1 week

PREGNANT
(+) Pregnancy Test & (+) Pelvic Exam

- <12 Weeks
  - MVA*

- >12 Weeks
  - Refer

*If MVA is unavailable, refer
HOSPITAL – INITIAL VISIT

Woman comes to hospital

Medical History
Physical & Pelvic Exam
Initial Assessment

Shock
Sepsis
Uterine Perforation
Intrauterine Fetal Death*

Abnormal vaginal bleeding
(Not Pregnant)

Treat as appropriate
Contraceptive Services

Uterine Size < 4 Weeks
Discuss options with woman

200 mg mifepristone, oral
1 Dose @ Hospital
800 mg misoprostol, oral
1 Dose @ home 36 to 48 hours after mifepristone

Book follow-up visit in 1 week Contraceptive Services

Request & Eligible for Termination

Uterine Size 10-17 Weeks

200 mg mifepristone, oral
1 Dose @ Hospital
800 mg misoprostol, oral
1 Dose @ home 36 to 48 hours after mifepristone

Book follow-up visit in 1 week Contraceptive Services

Uterine Size 13 - 28 Weeks

600 mg misoprostol, oral
1 Dose @ Hospital

Book follow-up visit in 1 week Contraceptive Services

Book follow-up visit in 1 week
Contraceptive Services

Uterine Size < 12 Weeks
Discuss Options with woman

Uterine Size 13 - 28 Weeks

Uterine Evacuation with medical or surgical methods

Book follow-up visit in 1 week
Contraceptive Services

Reassess after 3 hours
Book follow-up visit in 1 week
Contraceptive Services

Treatment of Incomplete Abortion or Miscarriage

Uterine Size 13 - 28 Weeks

Uterine Evacuation with medical or surgical methods

MVA

* Fetal demise of 13 weeks or greater