

## **Improving Antenatal Care Services Utilization in Ethiopia**

### **Full Report**



**Included:**

- *Description of a health system problem*
- *Viable options for addressing this problem*
- *Strategies for implementing these options*



**Not included: recommendations**

*This policy brief does not make recommendations regarding which policy option to choose*



#### **Who is this policy brief for?**

Policy makers, their support staff, and other stakeholders with an interest in the problem addressed by this policy brief

#### **Why was this policy brief prepared?**

To inform deliberations about health policies and programmes by summarizing the best available evidence about the problem and viable solutions

#### **What is evidence-based policy brief?**

Evidence-based policy briefs bring together global research evidence (from systematic reviews\*) and local evidence to inform deliberations about health policies and programmes

\*Systematic review: A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyze data from this research

#### **Executive Summary**

The evidence presented in this Full Report is summarized in an Executive Summary

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## **Competing interests**

No competing interest.

## **Acknowledgements**

We would like to thank participants of the policy dialogue for providing us with input and feedback.

## **Suggested citation**

Gebreyohannes Y, Hadis M, Abay S, Ararso D, Dibaba A, Mengistu F. Improving Antenatal Care Service Utilization in Ethiopia (Policy Brief). Addis Ababa, Ethiopia: Ethiopian Public Health Institute, 2016.

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# **Preface**

## ***The purpose of this report***

The purpose of this report is to inform deliberations among policymakers and stakeholders. It summarizes the best available evidence regarding the design and implementation of policies for improving antenatal care service utilization.

The report was prepared as a background document to be discussed at meetings attended by those engaged in developing policies on maternal health and people with an interest in such policies (stakeholders). It is not intended to prescribe or proscribe specific options or implementation strategies. Rather, its purpose is to allow policy makers and stake holders to systematically and transparently consider the available evidence about the likely impacts of different options improving antenatal care service utilization in Ethiopia.

## ***How this report is structured***

The executive summary of this report provides key messages and summarizes each section of the full report. Although this entails some replication of information, the summary addresses the concern that not everyone for whom the report is intended will have time to read the full report.

## ***How this report was prepared***

This policy brief brings together global research evidence (from systematic reviews) and local evidence to inform deliberations about improving antenatal care service utilization in Ethiopia. We searched for relevant evidence describing the problem, the impacts of options for addressing the problem, barriers to implement those options, and implementation strategies to address these barriers. We searched particularly for relevant systematic reviews of the effects of policy options and implementation strategies. We supplemented information extracted from the included systematic reviews with information from other relevant studies and documents. (The methods used to prepare this report are described in more detail in Appendix 1)

### ***Limitations of this report***

This policy brief is based largely on existing systematic reviews. For options where we did not find an up-to-date systematic review, we have attempted to fill in these gaps through other documents, through focused searches and personal contact with experts, and through external review of the report.

Summarizing evidence requires judgments about what evidence to include, the quality of the evidence, how to interpret it and how to report it. While we have attempted to be transparent about these judgments, this report inevitably includes judgments made by review authors and judgments made by ourselves.

### ***Why we have focused on systematic reviews***

Systematic reviews of research evidence constitute a more appropriate source of evidence for decision-making than relying on the most recent or most publicized research study.<sup>i,ii</sup> We define systematic reviews as reviews of the research literature that have an explicit question, an explicit description of the search strategy, an explicit statement about what types of research studies were included and excluded, a critical examination of the quality of the studies included in the review, and a critical and transparent process for interpreting the findings of the studies included in the review.

Systematic reviews have several advantages.<sup>iii</sup> Firstly, they reduce the risk of bias in selecting and interpreting the results of studies. Secondly, they reduce the risk of being misled by the play of chance in identifying studies for inclusion or the risk of focusing on a limited subset of relevant evidence. Thirdly, systematic reviews provide a critical appraisal of the available research and place individual studies or subgroups of studies in the context of all of the relevant evidence. Finally, they allow others to appraise critically the judgments made in selecting studies and the collection, analysis and interpretation of the results.

While practical experience and anecdotal evidence can also help to inform decisions, it is important to bear in mind the limitations of descriptions of success (or failures) in single instances. They may be useful for helping to understand a problem, but they do not provide reliable evidence of the most probable impacts of policy options.

### ***Uncertainty does not imply indecisiveness or inaction***

The systematic reviews included in this report did not have skilled antenatal care service utilization as direct outcome. Hence their effects on skilled antenatal care service utilization cannot be certain. Nonetheless, policy makers must make decisions. Uncertainty about the potential impacts of policy decisions does not mean that decisions and actions can or should not be taken. However, it does suggest the need for carefully planned monitoring and evaluation when policies are implemented.<sup>iv</sup>

*“Both politically, in terms of being accountable to those who fund the system, and also ethically, in terms of making sure that you make the best use possible of available resources, evaluation is absolutely critical.”*

(Julio Frenk 2005, former Minister of Health, Mexico)<sup>v</sup>

# **The problem: Low Antenatal Care (ANC) service utilization**

## **Background**

Antenatal care coverage at least one visit (ANC1) is defined as the percentage of women aged 15–49 with a live birth in a given time period that received antenatal care provided by skilled health personnel- such as a midwives, doctors or nurses- at least once during their pregnancy. Whereas, antenatal care coverage at least four visits (ANC4) is the percentage of women aged 15–49 with a live birth in a given time period that received antenatal care by any provider four or more times during their pregnancy (WHO 2012).

ANC provides a measure of access to the health system and is critical in ensuring proper coverage of care to identify maternal risks and improve health outcomes for the mother and newborn (WHO 2011a). The World Health Organization (WHO) recommends a minimum of four antenatal care visits; ideally, the planned visits are (1<sup>st</sup> as early in pregnancy as possible, 2<sup>nd</sup> at 28-32 weeks, 3<sup>rd</sup> after 36 weeks, and 4<sup>th</sup> before expected date of delivery or when woman needs to consult). However, global estimates indicate that only about half of all pregnant women receive this recommended amount of care (UNICEF 2015).

ANC often presents the first contact opportunity for a woman to connect with a formal health services, thus offering an entry point for integrated care, promoting healthy home practices, influencing health seeking behaviors such as breastfeeding, early postnatal care, and planning for optimal pregnancy spacing, and linking women with pregnancy complications to a referral system (WHO 2007). ANC is also an opportunity to promote the use of skilled attendance at birth, women are more likely to give birth with a skilled attendant if they have had at least one ANC visit (Stanton et al. 2009). Thus, effective programmes offered through ANC will increase the impact and effectiveness of care during childbirth and postnatal care that reduces maternal and neonatal morbidity and mortality (WHO 2007).

Antenatal care help women prepare for delivery and understand warning signs during pregnancy and childbirth. It can be a source for micronutrient supplementation, treatment of hypertension to prevent eclampsia, immunization against tetanus, HIV testing and

medications to prevent mother-to-child transmission of HIV in cases of HIV-positive pregnant women. In areas where malaria is endemic, health personnel can also provide pregnant women with medications and insecticide-treated mosquito nets to help prevent this debilitating, sometimes deadly disease (UNICEF 2015).

The Federal Ministry of Health of Ethiopia has implemented a set of high impact interventions, including antenatal care, skilled birth services and postnatal care with the aim of reducing maternal mortality to 267 per 100,000 live births at the end of 2015. However, although the ANC coverage has shown an increment over the past decade and half, it is still below average. The continuity of service and quality of care is not also optimal as evidenced by low coverage of skilled delivery, tetanus toxoid vaccine uptake, screening for syphilis, utilization of ITN as well as suboptimal uptake of prevention of mother-to-child transmission of HIV (PMTCT) services by pregnant women (FMOH 2015).

The objective of this evidence brief, therefore, is to summarize the best available evidence describing the problem of low coverage of ANC services in Ethiopia and potential solutions for addressing the problem.

## **How big is the problem?**

In Ethiopia, only 40% of women aged 15-49 with a live birth received ANC1 (at least one visit) from a skilled provider, that is, from a doctor, nurse, or midwife, for their most recent birth (ECSA 2014). This value is much more below the average rates of least developed countries and Sub-Saharan Africa i.e., 74% and 76% respectively. On the other hand, only 32% percent of women with a live birth received ANC4 (at least four visits) during the length of their pregnancy, which is also below the average rates for least developed countries and Sub-Saharan Africa which is 44% and 47% respectively (UNICEF 2015). The figure below illustrates the coverage of ANC1 and ANC4 of Ethiopia compared with the globe.

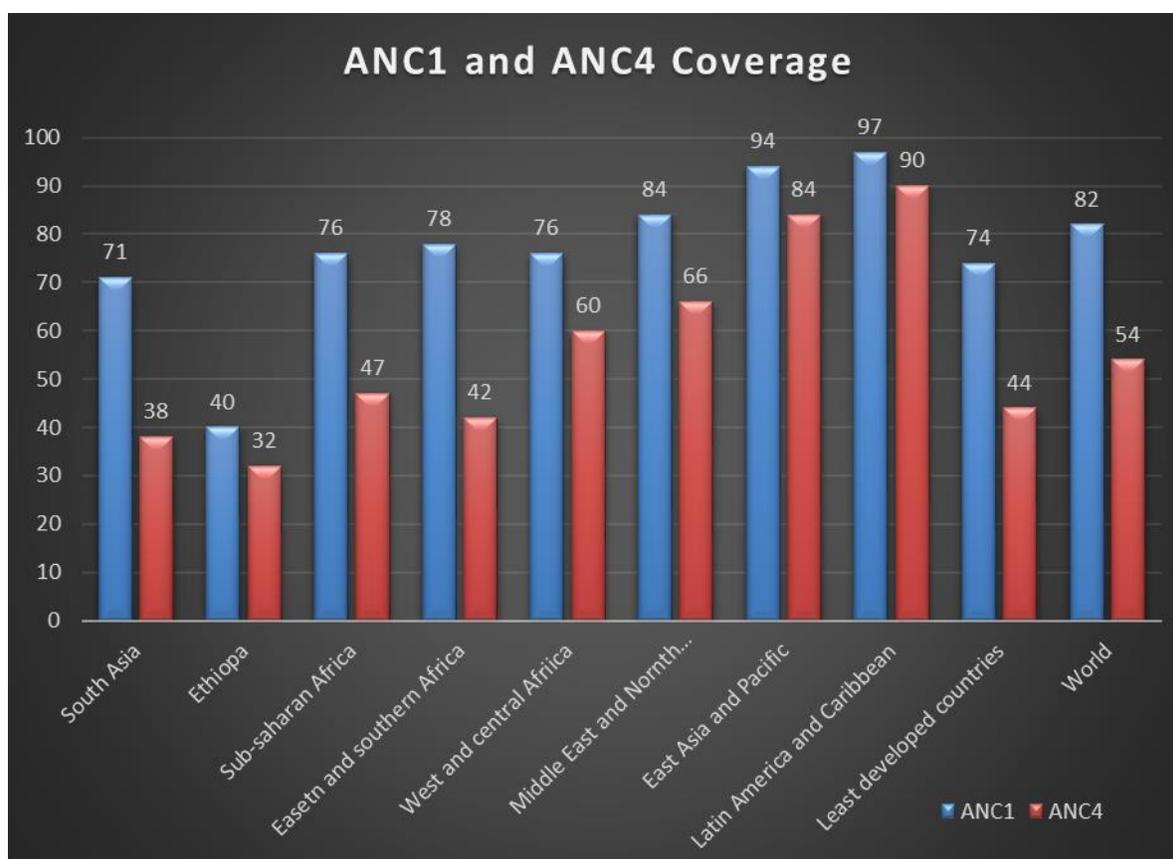


Figure 1: Percentage of women aged 15–49 attended at least once during pregnancy by skilled health personnel (ANC1) and percentage attended by any provider at least four times (ANC4), by Region, 2010–2014.

**Note:** Estimates are based on a subset of countries with available data for the period 2010–2014. The ANC1 analysis includes 98 countries covering 94% of births worldwide, and the ANC4 analysis includes 92 countries covering 66% of births worldwide. Estimates represent data from countries covering at least 50% of regional births (ECSA 2014; UNICEF 2015).

Missing the first visit of ANC increases maternal morbidity and mortality (Bhutta et al. 2005). In Ethiopia, only 17% of pregnant women have attended the first quarter ANC visit, i.e. before the end of twelve weeks of amenorrhea while the rest of pregnant women missed the opportunity of getting early ANC visit (ECSA 2014).

The maternal health indicators from Mini DHS 2014 have a huge gap with the planned five year coverage indicators in the HSTP (2015/16-2019/20) i.e. ANC at least four visit coverage is planned to be 95% at the end 2020 (FMOH 2015) whereas the coverage was 32% in 2014 (ECSA 2014).

An estimated 2.6 million births occur each year in Ethiopia and about 15 percent of pregnant women are estimated to develop life-threatening obstetric complications. Direct obstetric complications account for 85 percent of the deaths as well as many acute and chronic illnesses (FMOH 2014). Thus, Ethiopia is one of the top four countries with number of maternal deaths in the world with 13,000 maternal deaths (4%) next to India, Nigeria and Democratic Republic of the Congo which is 17%, 14%, and 7% respectively of the global maternal deaths reported in 2013 (WHO 2014).

## **Causes of the problem**

Different studies have indicated the underlying factors that could describe the low level of ANC services in developing countries (The Partnership For Maternal & Child Health 2010). In Ethiopia, the predominant underlying factors can be categorized as 1) Economic barriers, 2) Socio-cultural barriers and Educational status, 3) Access to health services, and 4) Poor quality of ANC services.

### **Economic barriers:**

ANC coverage is lower among women who need it the most: those who are poor, less educated, and living in rural areas. An important barrier is the inability to pay for ANC or the treatment prescribed in ANC, where user fees are in place and safety nets for the poor do not exist (ECSA 2014; The Partnership For Maternal & Child Health 2010). Even when antenatal care was offered free of charge, the cost of transport (sometimes across difficult or dangerous terrain), the loss of women's labor to the family, and the possibility of having to pay for additional medicines and diagnostic services render attendance impossible (Finlayson & Downe 2013).

In Ethiopia public health facilities are supposed to provide free maternity services by policy since 2005; But in reality, mothers paid an average of 126 ETB to get ANC services from public health facilities excluding health posts (EPHI 2014). According to another study done by Ethiopian Health and Nutrition Research Institute (EHNRI), in 2012, among mothers attending ANC services 43% mothers claimed that the cost of transportation is tolerable

while 29% mothers claimed that the cost of transportation is expensive (EHNRI 2014). As a result, pregnant mothers may not seek care due to associated costs.

In the recent Demographic and Health Survey in Ethiopia, 77% of mothers in the highest wealth quintile received antenatal care from skilled provider compared to the 24% for the lower wealth quintile (ECSCA 2014).

### **Socio-Cultural barriers:**

Pregnancy is considered as a physiologically healthy and also perceived as a natural process of life, therefore; women, families and communities may underestimate the importance and utilization of ANC (Finlayson & Downe 2013; The Partnership For Maternal & Child Health 2010). Studies in Ethiopia have also supported this evidence. About seven women in every ten stated that pregnancy is a natural phenomenon which needs no health facility visits. More than three in every ten women indicated lack of knowledge about the service as a reason for ANC non-attendance (Gedefaw et al. 2014). Tura (2009) has found that among the ANC non users, lack of awareness was mentioned by 51.4% and absence of health problems during pregnancy by 40.9%. Qualitative data also showed that *“ANC is not well utilized as expected because of low awareness of the community about its importance or the absence of health problem”* (Tura 2009).

A literature review looking at cultural barriers to seeking maternal health care in Ethiopia, found that many women were not aware of the risks of pregnancy, pregnancy danger signs or when to begin ANC (Aliy.J & Hailemariam.D 2012). Most women prefer to wait three or four months before confirming their pregnancy and sharing the news with others. Husbands may also discourage their wives from discussing their pregnancies as they believe it is a private matter. Many of these women only attended ANC because they felt sick or were persuaded by family members. These factors delay mothers' first visit of ANC which often means they will attend less than the recommended four times visit (BBC Media Action 2012).

In addition, the Mini Demographic Health Survey also indicated 46% of births did not take place in a health facility because mothers did not think it was necessary, and 33% of mothers stated that giving birth at health facilities is not customary; which could be

additional factors for low utilization of ANC. Age of a mother was also associated with skilled antenatal care; antenatal care from skilled provider is more common among pregnant mothers aged <20 (45%) followed by mothers aged 20-34 (43%) and the age group of 35-49 (31%) (ECSA 2014).

Other local studies have also strengthened the results of the Demographic and Health Survey. A study in southern and central Ethiopia found that women who have exposure to media and who are literate, women with low or no parity and women with planned pregnancy are more likely to use ANC (Regassa 2011; Zegeye et al. 2013; Tewodros et al. 2009).

### **Educational status**

According to the recently held Ethiopian Mini Demographic Health Survey (ECSA 2014), education has a direct link whether pregnant women receive skilled antenatal care. Skilled antenatal care increases from 30% among women with no education to 96% among women with more than secondary education. Another local study also supports the above findings, 78.5% of women with primary education and 86% with secondary education received ANC while only 52% of illiterate women received ANC from skilled provider (Assfaw & Sebastian 2010).

### **Access to health services**

A national study done by Ethiopian Health and Nutrition Research Institute (EHNRI) in 2012 showed that distance from home to health facility and absence or shortage of transportation are among causes for not attending ANC services. According to the study more than 56% of the mothers attending ANC services did not use transportation to come to health facilities. With respect to the average time taken on foot from home to facility, 20% of the participants reported it takes more than half an hour to reach the health facility. Regarding the clients' perception of distance from home to facility, the study revealed that about 25% of the participants perceived health facilities are too far and with little or no transportation (EHNRI 2014).

According to the Mini Demographic Health Survey (ECSA 2014), distance or lack of transportation (21%) was the main reason not to attend delivery in a health facility which

could be also the reason for not attending ANC services considered as a natural phenomenon by the community.

### **Poor quality of ANC services:**

To provide quality of care, ANC services need guidelines, appropriately trained providers, and certain supplies and equipment. The Ethiopian Service Provision Assessment Plus 2014 identified the gaps in the quality of ANC services. There is also a complaint by the clients as they perceived a long waiting time to see their provider (16%) in all health facilities excluding the health posts and this was more common in the hospitals (EPHI 2014). A local study conducted in North West Ethiopia also indicated as 40% of women did not receive an explanation about their health status, and 49% felt that as they were not listened by their health providers (Desalegn 2014).

Another study conducted in Northern Ethiopia showed perception of poor quality ANC service is higher among women who had visited public institutions (42.6%) compared to private (10.2%) which could be a barrier for not utilizing the service (Fesseha 2014).

## **Policy options**

The reduction of maternal mortality in Africa lies in the optimal implementation of the continuum of interventions geared at improving the quality and accessibility of health care services (Bhutta et al. 2005; Brouwere et al. 2008).

Health Sector Transformation Plan (HSTP) of the Ethiopian Federal Ministry of Health addresses issues related to focused antenatal care with at least four visits per pregnancy as a mainstream at all service delivery levels with a target to increase the proportion from 68% to 95% at the end of 2020 (FMOH 2015). However, according to the Ethiopian Mini DHS (2014) the ANC coverage with at least four visits is only 32%, not 68%. Achieving the above target given the trend of ANC coverage of at least four visits in the last four Consecutive HSDPs is difficult and needs integrated and innovative approaches.

Therefore, we propose three options addressing physical, socio-cultural and financial barriers for ANC utilization. These options are 1) Behavior Change Communication (BCC) campaign for socio-cultural barriers 2) mHealth for physical and socio-cultural barriers and 3) Conditional Cash Transfer for financial barriers.

### ***Policy option 1:***

#### **Behavioral Change Communication (BCC) campaign**

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Behavioral Change Communication (BCC) is a process that motivates people to adopt and sustain healthy behaviors and lifestyles. Sustaining healthy behaviors usually requires a continuing investment in BCC as part of an overall health program. Many health and development programs use behavior change communication (BCC) to improve people's health and wellbeing, including family planning and reproductive health, maternal and child health, and prevention of infectious diseases (Salem et al. 2008).

BCC interventions are increasingly seen as the key interventions for addressing social and cultural barriers and achieving goals laid out for health programs (Noar et al. 2009).

### **Current practice in Ethiopia:**

Involvement and empowerment of communities has been the major driver of health improvement in Ethiopia. The process of engaging communities has gathered momentum when the health extension programme was started. The practice of innovation diffusion and behavior change communication using model families and tapping into the cultural and social networks such as the coffee ceremony has helped the country register remarkable progresses in many health programs and consolidated the community engagement in health interventions (FMOH 2015).

Social and Behavioral Change Communications (SBCC) campaigns to prevent HIV/AIDS and Tuberculosis, combat the devastating effects of malaria, and other communicable and non-communicable diseases are being implemented as a pilot project in Ethiopia through different governmental and non-governmental organizations with the support from the U.S. Agency for International Development, USAID (HC3-Ethiopia 2015; JSI 2015).

### **Impacts of BCC:**

We were not able to find a systematic review on impacts of BCC campaign in improving ANC service utilization. However, there are established experiences of BCC campaign for the additional utilization of ANC services by pregnant women from low and middle income countries like Cambodia and Indonesia.

Cambodia has the practice of BCC campaign for antenatal care with in the first month of missing a period in 2009. After the campaign, ANC visits increased from 69 to 89%, delivery by Skilled Birth Attendants from 44 to 71% and delivery in health facilities from 22 to 53%, the proportion of pregnant women completing all four recommended ANC visits almost doubled, while the proportion of pregnant women receiving 90 iron folate tablets also increased significantly. Given the positive results of the campaign in improving ANC coverage, Cambodia is using the approach to implement a communication campaign for appropriate care-seeking for pneumonia and improving complementary feeding practices in the country (UNICEF 2013).

The BCC campaign called SIAGA campaign was also implemented in Indonesia in 2001. After the campaign about 90 percent of women respondents reported accessing antenatal care four or more times during their pregnancy (Sood et al. 2004).

➤ *BCC campaign might increase utilization of health services by pregnant mothers.*

## **Applicability, Equity, Economic Considerations, and Monitoring and Evaluation**

### **Applicability:**

There is no sufficient data that BCC campaigns could work in all low and middle income countries except the pilot studies. However, with appropriate adaptations to local contexts, in the channels used and the message, this targeted approach to behavioral change can be used to increase demand for a number of essential maternal and newborn health interventions especially in the rural setting where socio-cultural influences are related to the health service utilization (UNICEF 2013). Considering the second generation HEWs and strong Health Development Army (HDA), there is a good opportunity to apply BCC in Ethiopia. Social and Behavioral Change Communications (SBCC) campaigns to prevent HIV/AIDS and Tuberculosis, combat the devastating effects of malaria, and other communicable and non-communicable diseases showed favorable results though it is too early to make conclusions.

### **Equity:**

There is insufficient evidence that BCC campaigns increases equity. However, since BCC campaigns often focuses on appropriate means of communication strategy which are tailored to the local contexts it is likely that the rural population including the pastoralist communities can be benefited. Thus BCC campaign has a potential to increase equity especially if it is integrated in all aspects of the health system

### **Economic Considerations:**

There is limited evidence on cost-effectiveness of BCC Campaigns. However, communication resources can be focused towards the most effective channels or leverage points to increase the probability of sustaining the efforts over time (USAID 2014). Furthermore, assessment of the cost-effectiveness of BCC and using mass media-based

strategies to influence use of health services should include an analysis of the costs of the interventions, as well as of effects implied by the changes induced in patterns of care.

### **Monitoring and Evaluation:**

There is limited data on cost-effectiveness, sustainability, and scalability of BCC interventions. Thus there is a need for monitoring and evaluation of BCC interventions in terms of reach and effectiveness among intended audiences (Agrawal & Aruldas 2014).

### ***Policy option 2:***

#### **Mobile Health (mHealth)**

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Though there is no standardized definition for mHealth, WHO defines mHealth or mobile health as an area of electronic health (eHealth) involved in provision of health services and information via mobile technologies, such as mobile phones, patient monitoring devices, personal digital assistances (PDAs), and other wireless devices. mHealth involves the use of mobile phone's core utility of voice and short messages service (SMS) as well as more complex functionalities and applications including general pocket radio service (GPRS), third and fourth generation mobile telecommunications(3G and 4G systems), global positioning system(GPS), and Bluetooth technology (WHO 2011b).

Currently there is growing enthusiasm for mHealth interventions and it has been argued that there is huge potential for mHealth interventions to have beneficial effects on health service delivery process, especially in resource poor setting (Vital Wave Consulting 2009). Mobile health technologies have the potential to reduce professional isolation especially in rural areas and to provide ongoing support to health care workers as well as citizens. It might also increase the access to health care and health related information, particularly for hard to reach populations i.e., addresses physical barriers (WHO 2008b).

#### **Current Practice in Ethiopia**

Ethiopia is one of the countries in Africa holding its national telecom, Ethio Telecom (ETC), a monopoly on all telecom services including fixed, mobile, internet and data communications. With a population of almost 90 million, Ethiopia is Africa's second most populous country. The country's mobile penetration rate remains one of the lowest in the

world which is 34% at the end of 2014. However, mobile penetration is rising as it is the only viable telecoms option in many areas (Lange 2015).

Health Extension Workers (HEWs), the front-line workers in the country's health system, interact with communities and families as well as other actors in the health system, and as such they have a variety of information and communication needs, many of which could be addressed by mobile or electronic health tools. Ethiopia has employed more than 38,000 HEWs since 2003. Unlike the general population, nearly 90 percent of these health workers have mobile phones (Vital Wave Consulting 2011).

While innovative mHealth projects have been launched in Ethiopia and other low-income countries (such as sending reminders using voice or SMS messages, use of mobile devices for health related data collection and reporting) in the past years, many have been short-term or have covered a limited geography. The Ethiopian Federal Ministry of Health (FMoH) has identified the need to develop a scalable and comprehensive mHealth platform and strategy that could meet long-term needs and strengthen the primary health care system through the HEWs (Vital Wave Consulting 2011).

### **Impacts of mHealth**

We could not find a systematic review dealing with ANC attendance as a direct outcome of mHealth intervention. However, a systematic review by (Gurol-Urganci et al. 2013) on the impact of mobile messaging reminders for attendance of health care appointments has shown a positive effect on uptake of health care appointments (Table 1).

➤ *Mobile phone interventions probably increase attendance of health care services.*

**Table 1: Mobile phone messaging reminders for attendance at healthcare appointments**

<b>Patient or population:</b> Patients with healthcare appointments					
<b>Setting:</b> All settings (Primary, hospital, community, outpatient)					
<b>Intervention:</b> Mobile phone text message reminders					
<b>Comparison:</b> No reminders					
Out comes	Illustrative comparative Risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidences (GRADE)
	Assessment risk	Corresponding risk			
	No reminders	Mobile phone text message reminders			
Attendance rate at health-care appointments	678 per 1000	773 per 1000 (698 to 854)	RR 1.14 (1.03 to 1.26)	5841 (7 studies)	⊕⊕⊕○ moderate <sup>a,b</sup>
Other outcomes	None of the included studies reported on health outcomes, costs, user evaluation of the intervention, user perception of safety, potential harms or adverse effects of the intervention				
*The basis for the <b>assumed risk</b> (e.g. The median control group risk across studies) is provided in footnotes. The <b>corresponding risk</b> (and its 95% confidence interval) is based on the assumed risk in the comparison group and the <b>relative effect</b> of the intervention (and its 95% CI). <b>CI:</b> Confidence interval; <b>RR:</b> Risk ratio					
GRADE Working Group grades of evidence: ⊕⊕⊕⊕ ( <b>High quality</b> ): Further research is very unlikely to change our confidence in the estimate of effect. ⊕⊕⊕○ ( <b>Moderate quality</b> ): Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate ⊕⊕○○ ( <b>Low quality</b> ): Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. ⊕○○○ ( <b>Very low quality</b> ): We are very uncertain about the estimate.					
<sup>a</sup> Unclear risk of bias for several categories in the included studies.					
<sup>b</sup> In one study the unit of analysis was appointment rather than the individual participant which may have resulted in clustering of data.					

## **Applicability, Equity, Costs, Monitoring and Evaluation**

### **Applicability**

There is a growing evidence for the applicability of mHealth interventions in low and middle income countries (LMICs), particularly in improving treatment adherence, appointment compliance, data gathering, and developing support networks for health care delivery. However, the quantity and quality of the evidence is still limited in many respects. Therefore, in all application areas, it remains a need to take small pilot studies to full scale, enabling more rigorous experimental and quasi-experimental studies to be undertaken in order to strengthen the evidence base (Hall et al. 2014).

### **Equity**

There is currently insufficient evidence whether mHealth increases equity (Jennings & Gagliardi 2013).

### **Economic Considerations**

There is limited data on cost-effectiveness of mHealth interventions (Agarwal et al. 2015).

### **Monitoring and Evaluation**

Although the level of mHealth utilization is growing in countries, evaluation of those activities is very low (12%). The low levels of evaluations reported are a reflection that mHealth is still growing and the process of evaluation may still not be considered a priority at this stage (World Health Organization, 2011b). Therefore, there is a need for monitoring and evaluation of cost-effectiveness, and health outcomes including equity of mHealth (Gurol-Urganci et al. 2013).

### ***Policy option 3:***

#### **Conditional Cash Transfer (CCT)**

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Conditional Cash transfers (CCTs) are programs that transfer cash, generally to poor households, on the condition that those households make pre-specified investments in the human capital. Health and nutrition conditions generally require periodic checkups, growth monitoring, and vaccinations for children less than 5 years of age; antenatal care for mothers and attendance by mothers at periodic health information talks (Fiszbein & Schady 2013). The purpose of CCT is to make a positive impact on the recipients' health, education or other socio-economic wellbeing based on the condition applied. The conditions are in turn often designed to target certain groups within the poor population rather than everyone (WHO 2008a).

Countries have been adopting or considering adoption of CCT programs at a prodigious rate. Virtually every country in Latin America has such a program. Elsewhere, there are large-scale programs in Bangladesh, Indonesia, and Turkey, and pilot programs in Cambodia, Malawi, Morocco, Pakistan, and South Africa, among others. In some countries, CCTs have become the largest social assistance program, covering millions of households, as is the case in Brazil and Mexico. CCTs have been hailed as a way of reducing inequality, especially in the very unequal countries like in Latin America; helping households break out of a vicious cycle whereby poverty is transmitted from one generation to another; promoting maternal and child health, nutrition, and schooling; and helping countries meet the Millennium Development Goals (Fiszbein & Schady 2013). This option aims to provide money to each mother coming for ANC visits.

#### **Current situation In Ethiopia:**

Conditional cash transfer is not yet practiced for mothers attending antenatal care in Ethiopia. However, Public health facilities are supposed to provide free maternity services including ANC services by policy since 2005 (FMOH 2010). But, in reality clients are paying an average of 113 Ethiopian Birr for the ANC service they receive at health facilities. This service fee is higher in government health facilities than in private ones (EPHI 2014).

## **Impact of Conditional Cash Transfer:**

We could not find a systematic review dealing with improving ANC service utilization as direct outcome of Conditional Cash Transfer intervention. However, a systematic review on impact of conditional cash transfer on health outcomes and use of health services (Lagarde et al. 2009) has shown a favorable result that CCT programmes appear to be an effective approach to encourage some preventive behaviors and to increase the uptake of preventive services which were already free. A SUPPORT-Summary of a systematic review (Pantoja 2008) evaluated the impact of conditional cash transfer in improving the uptake of health interventions in LMIC (see Table 2).

- *Conditional cash transfer programmes could be effective in increasing the use of preventive services. Conditional cash transfer programmes may increase ANC attendance since it increases care seeking behavior.*

**Table 2: Impact of conditional cash transfer**

<b>Outcomes</b>	<b>Impact</b>	<b>Number of participants (studies)</b>	<b>Quality of the evidence (GRADE)</b>
<b>Care-seeking behavior</b>	All studies reported an increase in the use of health services in the group with cash transfers (27% increase in individuals returning for voluntary HIV counseling, 2.1 more visits per day to health facilities, 11-20% more children taken to the health center in the past month, 22-33% more children <4 years attending preventive healthcare visits)	5,832,619 (5 studies)	⊕⊕⊕○ Moderate
<b>Immunization coverage</b>	The effects were unclear (increased vaccination rates in children for measles and tuberculosis but only in a specific groups or temporarily, and without change in one study)	5,832,619 (4 studies)	⊕⊕⊕○ Moderate
<b>Health status</b>	Mixed effects on objectively measured health outcomes (anemia) and positive effects on mothers' reports of children's health outcomes (22-25% decrease in the probability of children <3 years being reported ill in the past month)	5,421,619 (3 studies)	⊕⊕⊕○ Moderate
<p>GRADE Working Group grades of evidence:</p> <p>⊕⊕⊕⊕ (<b>High quality</b>): Further research is very unlikely to change our confidence in the estimate of effect.</p> <p>⊕⊕⊕○ (<b>Moderate quality</b>): Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate</p> <p>⊕⊕○○ (<b>Low quality</b>): Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.</p> <p>⊕○○○ (<b>Very low quality</b>): We are very uncertain about the estimate.</p>			

**Limitations:** This is a good quality systematic review with only minor limitations.

## **Applicability, Equity, Economic considerations, and Monitoring and Evaluation**

### **Applicability:**

CCT have grown very popular in the recent past, and they have started to develop in many developing countries, notably outside of Latin America. Examples include conditional incentive programmes for pregnant women to deliver in health facilities in India and Nepal (Lagarde et al. 2009). In resource-poor settings where public spending on healthcare is low and access to effective interventions limited, expanding the capacity of health services would be necessary for cash transfers to result in improved use of health services (Pantoja 2008).

### **Equity:**

CCT programmes are often justified by social equity concerns. As poor people usually accumulate the detrimental effects of different barriers to access, CCT mechanisms are seen as a single transfer mechanism that can “level the playing field” and redistribute donations in order to equalize opportunities in a society. However, it may be more difficult and costly for people living in rural and other underserved areas to have access to the specific health services targeted by cash transfers. Therefore, if an adjustment is not incorporated into the transfers, those recipients would benefit less than those with better access to health services (Lagarde et al. 2009; Pantoja 2008).

### **Economic considerations:**

There is no data on cost-effectiveness of CCT in improving antenatal care utilization. In sub-Saharan Africa where the majority of the population lives in extreme poverty, such programmes would require massive budget resources and have, as a basic prerequisite, the need to develop health systems further (Lagarde & Palmer 2006).

### **Monitoring and Evaluations:**

Conditional cash transfers schemes such as those developed in Latin American countries entail considerable costs and capacity requirements and these can constitute obstacles to programme effectiveness and implementation in low-income settings. These programmes involve relatively complex mechanisms for targeting as well as logistics for the delivery of transfers, besides the need for good coordination with service providers in health and

education for the tasks of monitoring and supervision. Therefore, the cost-effectiveness of conditional cash transfer programmes should be evaluated in low-income settings with more limited health system capacity prior to wide spread implementation in those settings (Lagarde & Palmer 2006; Pantoja 2008)

# Implementation considerations

Mobile Health (mHealth), Behavior Change Communication (BCC) campaign, and Conditional Cash Transfer (CCT) are three potential solutions to improve ANC service utilization in Ethiopia. Implementing these options requires other changes, including policy changes. Strategies for implementing the options should take advantage of factors that enable their implementation as well as addressing barriers.

## **Enablers of improving skilled ANC attendance in Ethiopia include:**

- ✚ More than 38 thousand health extension workers working at the grass root level, who can be used for all three options
- ✚ Strong political commitment from national and local authorities for maternal and child health in general and skilled ANC service attendance in particular
- ✚ Improvements in public health infrastructure in both rural and urban areas
- ✚ Existing referral systems- connection between primary health care and higher level care
- ✚ The establishment of the ‘Health Development Army’ in the country, which can be used for effective implementation of BCC
- ✚ Advanced technological innovations and rising of the mobile penetration rate in the country can be used for effective implementation of mHealth
- ✚ A number of global and local partners and civil society organizations working on maternal health
- ✚ Major funding opportunities and strong public-private partnership at national and global level
- ✚ An increasing number of skilled health workers in Ethiopia
- ✚ The initiatives by federal ministry of health on information revolution and experiences gained from HIV/AIDS
- ✚ The launch of radio station at the ministry of health

Barriers to the three options and implementation strategies that address those barriers are summarized in Tables 3 to 6.

**Table 3: Barriers and implementation strategies for all options**

<b>Barriers</b>	<b>Descriptions</b>	<b>Implementation strategies</b>
Manuals or guidelines	There are no manuals or guidelines in place to implement the options	Develop manuals for the three options
Financial resources	There may be insufficient financial resources to implement all the options	<p>Pilot study to evaluate costs and cost-effectiveness before full scale implementation</p> <p>Resource mobilization through coordination of governmental and non-governmental organizations</p> <p>Establish a consortium of stakeholders for maternal health to pool resources and use them for achieving the common goal of increasing level of ANC utilization</p>
Poor quality of care	Poor quality of care could discourage mothers from seeking ANC attendance	Improve the quality of care
Sustainability	Implementation of options may be halted when a decision maker is replaced	Integrating the options into the institutional structure
Weak monitoring and evaluation(M&E)	Since all options are new and not institutionalized they may require strong M&E	Integrating the options in to the institutional structure and develop strong M&E activities with validated indicators for each option

**Table 4: Barriers and implementation strategies for Option 1: Behavioral Change Communication (BCC)**

<b>Barriers</b>	<b>Descriptions</b>	<b>Implementation strategies</b>
Lack of integration and harmonization of BCC	BCC is not integrated into all programmes in their original design	BCC is a component of all successful interventions and must be included in their original design
Limited capacity	Limited capacity and availability of trained, in-country resource people, including advertising agencies and media outlets, can hamper the effective implementation of BCC programs	Capacities for BCC should be built (FHI 2002) There should be a structured system at national and regional levels Universities should train experts in behavioral communications
Political and physical environments	Geography and population diversity can complicate the development of BCC programs, especially in case where vast distances must be covered, or multiple languages and cultural traditions included, in a single country program.	Conducting formative studies to map values, norms, interests, and behaviors of various ethnic groups, Developing BCC tools which are appropriate to various settings addressing the language, culture and other social values Building and maintaining linkages and coordination among different stakeholders to reach the diversified population and expanding comprehensive BCC strategies
Sustainability	To be effective, BCC strategies and components must evolve constantly to meet the changing needs of target populations	Continuous input of human and financial resources. Conduct periodic formative researches Continuous improvement of BCC tools to accommodate changes in the communities and in technologies Revise the cost of airtime in broadcasting BCC

**Table 5: Barriers and implementation strategies for option 2: Mobile Health (mHealth)**

<b>Barriers</b>	<b>Descriptions</b>	<b>Implementation strategies</b>
Cost at the macro, individual and healthcare provider level	A key aspect for any of these technology systems to work is that they must be affordable at point of use	A billing structure must be implemented that allows for a “reverse cost” approach, so, the Ministry of Health or other stakeholders pay for it. Otherwise may not be feasible or sustainable (WHO 2008b)
Literacy	mHealth intervention using mobile phones might not be feasible for those who are illiterate	Design various applications that have different capabilities to address the illiterate mothers such as voice message, phone call, etc. which can be further expanded as technology evolves
Capacity	Capacity to run the mHealth program may not be available	The capacity for of mHealth technology should be built by building a cadre of tech savvy health administrators and mHealth specialists.
Poor quality of health services	The introduction of technological solutions may be difficult as the access and delivery of health services are complex in LMIC	Highlight the need of mHealth contribution towards addressing the key health priorities
Lack of operational compatibility and standards	Lack of operational compatibility and standards within existing mobile communication systems	Introduction of 3G/4G wireless technology may help overcome aspects of this particular challenge by enabling the unification of existing standards under one umbrella
Sustainability	mHealth projects depend on donor funds and may not continue beyond the pilot phase	Measures of sustainability should be built into an mHealth program from the beginning of the planning process to expand to new audiences by exploring long-term financing possibilities including incorporation of funding from the government budget

**Table 6: Barriers and implementation strategies for Option 3: Conditional Cash Transfer**

<b>Barriers</b>	<b>Descriptions</b>	<b>Implementation strategies</b>
Sustainability	Sustainability could be a challenge (Handa & Davis 2006)	Carefully designed exit strategies consistent with CCT program objectives (Handa & Davis 2006)
Motivation to change	Participation of mothers could be low due to socio-cultural barriers	Adjusting the design of CCT programs to the heterogeneous socio-cultural factors prevailing in the country Increased recognition of these cultural norms and the importance of delivering incentive funds directly to women
Poor capacities of health facilities	Health facilities might find it difficult to meet additional demand likely to arise when beneficiary households try to meet the condition	Pilot study to assess possible rise in demand and the capacity of health facilities before full-scale implementation
Implementation capacities	Capacities for managing cash transfer schemes are weak in low-income countries. The health system may not be able to meet the additional administrative demands related to conditionality (Schubert & Slater 2006)	Preparing CCT implementation guidelines, organizational change and capacity building on CCT of the relevant bodies within the civil service (Schubert & Slater 2006), and link cash transfers to existing and complementary programs
Feasibility	CCT may be difficult to implement	Pilot study to assess the feasibility of CCT
Over reporting	Abuse of money allotted for would be mothers is a possibility by over reporting ANC attendance	Put an appropriate auditing mechanism in place
Cumbersome bureaucracy	Burdensome paperwork to provide cash to mothers may discourage mothers not to come to a health facility again	Minimizing paper work

## Next Steps

The aim of this policy brief is to foster dialogue and judgments that are informed by the best available evidence. The intention is *not* to advocate specific options or close off discussion. Further actions will flow from the deliberations that the policy brief is intended to inform. These might include, for example:

- ✚ Careful consideration of the need for Behavioral Change Communication
- ✚ Careful consideration of the need for mobile Health (mHealth)
- ✚ Careful consideration of conditional cash transfers to mothers attending ANC at health facilities
- ✚ Monitoring and evaluation of the suggested policy options and implementation strategies.
- ✚ Consideration of appropriate implementation strategies for each of the three options

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# Appendices

## Appendix 1. How this policy brief was prepared

The methods used to prepare this policy brief are described in detail elsewhere.<sup>vi,vii,viii</sup>

The problem that the policy brief addresses was clarified iteratively through discussion among the authors, review of relevant documents and research. Research describing the size and causes of the problem was identified by reviewing government documents, routinely collected data, searching PubMed and Google Scholar, through contact with key informants, and by reviewing the reference lists of relevant documents that were retrieved.

Strategies used to identify potential options to address the problem included considering interventions described in systematic reviews and other relevant documents, considering ways in which other jurisdictions have addressed the problem, consulting key informants and brainstorming.

We searched electronic databases of systematic reviews, including: the Cochrane Library (CENTRAL, Cochrane Database of Systematic Reviews), Support Summaries, PDQ Evidence, Health Systems Evidence and supplemented these searches by checking the reference lists of relevant policy documents and with focused searches using PubMed, Google Scholar, and personal contacts to identify systematic reviews for specific topics. The final selection of reviews for inclusion was based on a consensus of the authors.

Potential barriers to implement the policy options were identified by brainstorming using a detailed checklist of potential barriers (SURE guide for identifying and addressing barriers) to implementing health policies. Implementation strategies that address identified barriers were identified by brainstorming and reviewing relevant documents.

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<sup>vi</sup> Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 4. Clarifying the problem. [www.evipnet.org/sure](http://www.evipnet.org/sure)

<sup>vii</sup> Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 5. Deciding on and describing options to address the problem. [www.evipnet.org/sure](http://www.evipnet.org/sure)

<sup>viii</sup> Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 6. Identifying and addressing barriers to implementing the options. [www.evipnet.org/sure](http://www.evipnet.org/sure)

## **Acronyms and abbreviations**

ANC– Antenatal Care  
BCC – Behavioral Change Communication  
CCT – Conditional Cash Transfer  
DHS – Demographic Health Survey  
ECSA- Ethiopia Central Statistical Agency  
eHealth – Electronic Health  
EHNRI – Ethiopian Health and Nutrition Research Institute  
EPHI - Ethiopian Public Health Institute  
ETB – Ethiopian Birr  
FMOH - Federal Ministry of Health  
HEP - Health Extensions Program  
HEW - Health Extension Worker  
HIV- Human immune deficiency virus  
HSDP-Health Sector Development Program  
HSTP – Health Sector Transformation Plan  
IEC – Information, Education, and Communication  
ITN – Insecticide Treated Net  
LMIC-Low and middle-income countries  
MDGs – Millennium Development Goals  
mHealth – Mobile Health  
MMRs – Maternal Mortality Ratios  
NGO – Non Governmental Organizations  
RCT – Randomized control trial  
RR – Relative Risk  
SMS – Short Message Services  
SNNPR – South Nation Nationalities and Peoples Region  
UHEPs – Urban Health Extension Professionals  
UN – United Nations  
UNICEF –United Nations Children’s Fund  
USAID – U.S Agency for International Development  
WHO –World Health Organization