no. 28 Birthing Kits, NGOs and reducing maternal and neonatal mortality in Ethiopia

Ruth Jackson
no. 28 Birthing Kits, NGOs and reducing maternal and neonatal mortality in Ethiopia

Ruth Jackson
© Alfred Deakin Research Institute, Deakin University

National Library of Australia
Cataloguing-in-Publication data:
Jackson, Ruth (1960-)
Birthing Kits, NGOs and reducing maternal and neonatal mortality in Ethiopia

Bibliography
ISBN 978-1-921745-27-0

I. Jackson, Ruth, (1960-)
II. Alfred Deakin Research Institute.
III. Title. (Series: Alfred Deakin Research Institute; Working Paper No. 28).

362.1982

Disclaimer
This article has been written as part of a series of publications issued from the Alfred Deakin Research Institute. The views contained in this article are representative of the author only. The publishing of this article does not constitute an endorsement of or any other expression of opinion by Deakin University. Deakin University does not accept any loss, damage or injury howsoever arising that may result from this article.
The Alfred Deakin Research Institute Working Papers

SERIES TWO

The Alfred Deakin Research Institute (ADRI) is a specialised research unit that was established at Deakin University in 2009. From its foundation in the humanities and social sciences, the Alfred Deakin Research Institute promotes research that integrates knowledge generated from a broad range of disciplines in ways that address problems of local, national and international importance.

This series of working papers is designed to bring the research of the Institute to as wide an audience as possible and to promote discussion among researchers, academics and practitioners both nationally and internationally on issues of importance.

The working papers are selected with the following criteria in mind: To share knowledge, experience and preliminary findings from research projects: To provide an outlet for research and discussion papers (some of which have a policy focus): To give ready access to previews of papers destined for publication in academic journals, edited collections, or research monographs, and: To present this work in a form that is scholarly, well written and which has a clear sense of particular purpose and context.

Series Editor
Peter Kelly

Series Editorial Team
Santosh Jatrana
Tanya King
Samuel Koehne
David Lowe
Mark McGillivray
Gillian Tan

No. 02  Murphy, K. and Cherney, A.  *Policing ethnic minority groups with procedural justice: An empirical study*. April 2010.

No. 03  Ritchie, J. *We need one district government to be set up to replace other district governments*: The beginnings of provincial government in Papua New Guinea. April 2010.

No. 04  Murphy, B. and Murphy, K.  *'The Australian Tax Survey of Tax Scheme Investors': Survey methodology and preliminary findings for the second stage follow-up survey*. April 2010.


No. 06  Murphy, K. and Gaylor, A.  *Policing Youth: Can procedural justice nurture youth cooperation with police?* July 2010.


No. 08  Moore, C.  *Decolonising the Solomon Islands: British Theory and Melanesian Practice*. August 2010.


No. 10  Dickson-Walke, A.  *Taking over, of what and from whom?: Women and Independence, the PNG experience*. August 2010.

No. 11  Hancock, L. and O'Neill, M.  *Risky business: Why the Commonwealth needs to take over gambling regulation*. August 2010.


No. 13  Murphy, B., Murphy, K. and Mearns, M.  *The Australian Tax System Survey of Tax Scheme Investors: Methodology and Preliminary Findings for the Third Follow-up Survey*. September 2010.


No. 15  Murphy, K. and Cherney, A.  *Understanding minority group willingness to cooperate with police: Taking another look at legitimacy research*. November 2010.

No. 16  Murphy, K., Murphy, B., and Mearns, M.  *'The 2007 public safety and security in Australia survey': survey methodology and preliminary findings*. November 2010.


No. 18  Kelly, P.  *'A Social Science of Risk: The Trap of Empiricism, the Problem of Ambivalence?'* September 2011.

No. 19  Campbell, P., Kelly, P. and Harrison, L.  *'Social Enterprise: Challenges and Opportunities'* September 2011.


No. 24  Campbell, P., Kelly, P. & Harrison, L.  *'Transitional Labour Market Programs: Challenges and Opportunities'* December 2011.

No. 25  Robinson, G.  *'American liberalism and capitalism from William Jennings Bryan to Barack Obama'* December 2011

No. 26  Koehne, S.  *"Peaceful and Secure": Reading Nazi Germany through Reason and Emotion*, December 2011

SERIES 2

No. 27  King, T. J. & Murphy, K.  *Procedural Justice as a component of the Not In My Backyard (NIMBY) syndrome: Understanding opposition to the building of a desalination plant in Victoria, Australia, June 2012*

No. 28  Jackson, R.  *Birthing Kits, NGOs and reducing maternal and neonatal mortality in Ethiopia, June 2012*
Birthing Kits, NGOs and reducing maternal and neonatal mortality in Ethiopia

ABSTRACT

Reducing the high rate of maternal and neonatal mortality presents serious challenges for the government and NGOs in Ethiopia as only 10 percent of nearly three million deliveries per year receive skilled care at birth. This paper examines the partnership between the Birthing Kit Foundation (Australia) (BKFA) and three NGOs in rural Ethiopia. By supplying clean birthing kits to women in developing countries, BKFA is targeting sepsis (around 10 percent of direct maternal causes) and neonatal tetanus (around seven percent of all neonatal deaths)—especially when birth takes place in unhygienic conditions. The partnership between BKFA and the NGOs will create employment opportunities for women to assemble birthing kits, and for the NGOs to distribute the kits to women giving birth at home and to rural health centres and health posts. The distribution of birthing kits will also enable each NGO to build on existing community education programs around early marriage, gender based violence, and reducing harmful practices during labour and delivery.

Although Millennium Development Goal Five aims to increase the proportion of births attended by skilled health personnel, there are many barriers that affect a woman’s ability to access health care during delivery including cost, distance to a health facility, and, lack of transportation in remote areas. The Ethiopian health system is improving but many health posts and health centres in Ethiopia are under resourced and unable to provide clean delivery. Providing birthing kits to facilitate clean birth practices seems common sense. This paper examines the efficacy of a single intervention and the difficulties in identifying specific attributable effects on maternal and

1 An earlier version of this paper was presented to the ACFID – Universities Linkage Network Conferences, An Australian Approach to Development? People, Practice and Policy, Deakin University, Burwood, December 12-13, 2011.
newborn outcomes either at home or in a health facility. Differences between government and NGO approaches are presented. As reducing maternal sepsis and neonatal tetanus involves behaviour change on the part of both women and care providers during delivery, it appears likely that complex interventions involving a combination of education; training and/or community involvement may be more beneficial in achieving such a change. To what extent can NGOs have an effect on reducing maternal and neonatal mortality in rural Ethiopia?

Ruth Jackson
Alfred Deakin Research Institute

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACFID</td>
<td>Australian Council for International Development</td>
</tr>
<tr>
<td>AO</td>
<td>Abraham’s Oasis</td>
</tr>
<tr>
<td>APDA</td>
<td>Afar Pastoralist Development Association</td>
</tr>
<tr>
<td>ANC</td>
<td>Antenatal Care</td>
</tr>
<tr>
<td>AusAID</td>
<td>Australian Agency for International Development</td>
</tr>
<tr>
<td>BKFA</td>
<td>Birthing Kit Foundation (Australia)</td>
</tr>
<tr>
<td>CSA</td>
<td>Central Statistical Authority</td>
</tr>
<tr>
<td>CHW</td>
<td>Community Health Worker</td>
</tr>
<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
</tr>
<tr>
<td>EmOC</td>
<td>Emergency Obstetric Care</td>
</tr>
<tr>
<td>EmONC</td>
<td>Emergency Obstetric and Newborn Care</td>
</tr>
<tr>
<td>FGC</td>
<td>Female Genital Cutting</td>
</tr>
<tr>
<td>HEW</td>
<td>Health Extension Worker</td>
</tr>
<tr>
<td>HFE</td>
<td>Hamlin Fistula Ethiopia</td>
</tr>
<tr>
<td>HSDP</td>
<td>Health Sector Development Plan</td>
</tr>
<tr>
<td>HSEP</td>
<td>Health Services Extension Program</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-government Organisation</td>
</tr>
<tr>
<td>NMR</td>
<td>Neonatal Mortality Rate</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
</tr>
<tr>
<td>TT</td>
<td>Tetanus Toxoid</td>
</tr>
<tr>
<td>TTBA</td>
<td>Trained Traditional Birth Attendant</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WIN</td>
<td>Women in Need</td>
</tr>
</tbody>
</table>

2 Member of the board of Birthing Kit Foundation (Australia)
Introduction

Reducing the high rate of maternal and neonatal mortality in Ethiopia presents serious challenges for the government and Non-government Organisations (NGOs) as only 10 percent of nearly three million deliveries per year receive skilled care at birth (Central Statistical Authority and ORC Macro 2011). This paper examines the partnership between the Birthing Kit Foundation (Australia) (BKFA) and three NGOs in Ethiopia and outlines the extent to which NGOs can have an effect on reducing maternal and neonatal mortality and disability. Section 1 outlines the Ethiopian health system and the government’s approach to reducing maternal and neonatal mortality and disability. It illustrates some of the barriers women in rural Ethiopia face to access the health system and why there is a gap for services provided by NGOs. Section 2 explores evidence around clean birth kits and maternal sepsis and then contrasts this with delivery care in health facilities where there are also difficulties in maintaining infection control. Section 3 examines the impact of packaged interventions on neonatal health. Section 4 describes the three NGOs supported by BKFA and Section 5 examines what effect they can have on reducing maternal and neonatal mortality and disability in Ethiopia.

Overview of the Ethiopian health system

Managing health services in Ethiopia is challenging. Since 1991, the government’s health policy of “decentralisation and democratisation” (Kloos 1998) has been based on Primary Health Care (PHC) stating that health services should include preventive, promotive and curative components. Between 1995 and 2005, only 75 percent of urban households and 42 percent of rural households lived within 10 kilometres of a health facility (Central Statistical Authority (CSA) and ORC Macro 2006). The Ministry of Health (MOH) is responsible for “policy formulation, standard-setting, issuance of licenses and qualification of professionals, establishment of standards for research and training, coordination of external loans and grants” (World Bank and MOH 2005:84). The decentralisation of functions from the Centre to the regions was designed to give the districts block grants with responsibility for setting priorities, delivering services and determining budget allocations at the local level within the framework of the national policies.

Health Sector Development Plan I (HSDP) (1997-2002) aimed to increase access to health care from 40 percent to 50–55 percent (World Bank and MOH 2005:86) by delivering PHC services throughout the country. Reviews of HSDP I indicated the challenges in achieving universal health coverage as basic health services had not reached people at the grass roots (Habtamu Argaw 2007). In response, the government introduced the Health Services Extension Program (HSEP) which coincided with HSDP II (2002-2005). The HSEP aimed to improve equitable access to preventive essential health services through community (kebele) based services with a strong focus on sustained preventive health actions and increased health awareness. Originally designed to promote prevention, hygiene and sanitation education, the plan now includes health extension workers (HEWs) to provide reproductive health information and services including safe delivery at home. HEWs are assigned to each kebele to liaise with PHC facilities for referrals, particularly for high risk pregnancies and Emergency Obstetric Care (EmOC). To fully launch the HSDP, the government planned to upgrade existing health posts and construct new ones in 10,000 rural kebeles, employing a further 20,000 HEWs (World Bank and MOH 2005:85-6). HSDP III (2005-2010) coincided with the planning process of the Second National Development Plan and reiterated the government’s commitment to promote “decentralization and meaningful participation in local development activities” with administration of public health occurring at the regional level and

---

3 A skilled attendant is an accredited health professional — such as a midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns (WHO 2004).

4 “Maternal morbidity” includes a range of minor conditions of short duration to those which are severe and chronic. The term “disability” is used to describe “chronic, severe, morbidity that results from either pregnancy or childbirth” (McCarthy et al. 1992: 24).
planning and political administration being done at the district (woreda) level (MOH 2005:3).

The major goals of HSDP III were to improve maternal health, reduce child mortality and combat HIV/AIDS, malaria, TB and other diseases with the ultimate aim of improving people’s health status and thus achieving the Millennium Development Goals (MDGs) (MOH 2005:xii).

Health Sector Development Program (HSDP) IV is being redeveloped as a three-tier system with a health centre with five health posts providing services to 25,000 people. As the two HEWs in each kebele focus of the preventive and promotive aspects of health care, the intention is that they spend most of their time on community outreach programs to households, especially to mothers and children. HEWs provide family planning, clean delivery and essential newborn care services, and diagnosis and treatment of malaria and pneumonia. Health centres provide preventive and curative services and serve as a referral centre and practical training institution for HEWs. Health centres in turn, refer to primary hospitals which provide emergency surgery service including Caesarean Section and blood transfusion service. Primary hospitals refer to specialised hospitals which serve an average of five million people (Ministry of Health 2010:78).

In addition to the HSDP, the MOH developed the National Reproductive Health Strategy 2006-2015 (MOH 2006:18) to support Ethiopia’s commitment to achieving the MDGs. The main targets are to:

- Increase to 60 percent the proportion of births attended by skilled health personnel either at home or in a facility (representing a six-fold increase from the current 9.7 percent).
- Increase national Antenatal Care (ANC) coverage levels to 70 percent.
- Equip one health post per 5,000 population to provide essential obstetric and newborn care.\(^5\)
- Equip one health centre per 25,000 population to provide basic EmOC and newborn care.\(^6\)
- Equip one rural/district hospital (250,000 population coverage) to provide comprehensive EmOC.\(^7\)
- Reduce maternal mortality to 350 deaths per 100,000 live births by 2015.

But there are many barriers that affect women’s ability to be able to access health care in developing countries such as Ethiopia including:

- Physical accessibility such as distance to a health facility,
- Travel time from home to the facility,
- Availability and cost of transportation,
- Decision-making (a woman’s husband is usually the key decision maker),
- Cost of medical supplies,
- Shortages of supplies (including clean birthing kits), equipment and trained health personnel, and,
- Unacceptability of facility care (Thaddeus et al. 1994; Barnes-Josiah et al. 1998; Jackson 2010; Dietsch 2010a). \(^8\)

As an aside here, much of the existing literature (and divisive debates) about maternal

---

5 Essential obstetric care includes focused antenatal care, clean and safe delivery, essential newborn care and recognition of complications and early referral.

6 Basic EmOC services include administration of antibiotics, uterotonic agents, and anticonvulsants, perform manual removal of placenta, perform removal of retained products of conceptions (e.g. MVA), and perform assisted vaginal delivery.

7 Comprehensive EmOC includes all basic EmOC services plus surgical procedures, particularly Caesarean Section and safe blood transfusions.
mortality and disability in developing countries focuses on describing the magnitude and causes of the problem; the difficulties in measuring maternal mortality (see Appendix 1); the obstacles to Safe Motherhood; and the interventions needed to strengthen modern health systems. These ‘health system factors’ (Bullough et al. 2005), largely focus on ‘levels of maternal mortality and morbidity [that] tell us about the risk attributable to pregnancy and childbirth as well as the performance of health systems in terms of access to health care and the quality of care provided’ (Gülmezoglu et al. 2004:16; see also WHO et al. 2004:14). In other words, the imperative has been to reduce maternal death and disability in developing countries through development based on the superiority of Western technology and its success with biomedicine and the transfer of these ‘techniques that were instrumental in reducing maternal mortality in industrialized countries’ (De Brouwere et al. 1998:771). A major consequence of the development of maternal health services means the location of birth must change: from home delivery where birth takes place without the assistance of trained health providers to facility based delivery and the medicalisation of maternity care (Koblinsky et al. 1999:404).

My research in Kafa Zone in south-west Ethiopia in 2007 (Jackson 2010), showed that most women give birth with the assistance of their neighbour, mother, mother-in-law, or husband. It is likely that women who give birth at home feel ‘safe’ because that is where birth normally takes place and where they are supported by close relatives and neighbours. In most cases, from the women’s point of view, home was the first ‘choice’ for the location for birth—the biomedical option was only ‘chosen’ when the something goes wrong or the situation is deemed to be ‘abnormal’ because of haemorrhage, obstructed labour or retained placenta. Women always felt it was ‘unsafe’ to go to a health facility because of the very real possibility they will die on the way. For this reason, a picture emerged of ‘unsafe’ childbirth denoting those births that were transferred to a health facility.

During my fieldwork I observed numerous campaigns for polio and measles for example, that required significant logistical efforts and resources but I concluded that Maternal and Child Health Programs had not been prioritised by the region due to lack of funding and political will. I argued that in the short to medium term, as health coverage increases, more and more sicker women will initially seek care, but over time as more women who are less at risk seek care, the average mortality in those seeking care will decrease (Ronsmans et al. 2010:292). Following Afsana and Rashid (2009), I suggested that if the Ethiopian government cannot afford to provide adequate obstetric services, there might be ‘a dreadful situation if the number of births at public hospitals increases’ (2009:132). The most recent estimates of the percentage of births delivered by a skilled health provider in Ethiopia is 10 percent; less than one percent of births are attended by a HEW and an estimated 10 percent of births take place in a health facility (CSA and ORC Macro 2011).

The argument in this section is that new health facilities in Ethiopia are intended to bring health programs closer to the community and fulfill the government strategies pertaining to decentralised health. As the aim to reduce the Maternal Mortality Ratio (MMR)8 to 350 maternal deaths per 100,000 live births by 2015 draws closer, it is clear there is still a long way to go especially as the HSDP is in transition to ‘predominantly professional providers of care’ (Koblinsky et al. 1999:404). The three NGOs described in this paper provide education programs to health workers, including HEWs and TBAs, and the broader community. Birthing kits are always distributed after training and information sharing about the need for early detection and referral of problem pregnancies and labour to tertiary health facilities. Clearly the NGOs feel they are providing a service that is not available in their locality. But first, the next section describes some of the problems around maternal sepsis and whether clean birth kits can make a difference.

8 There are three statistical measures of maternal mortality: Maternal Mortality Ratio (MMR) measures the number of maternal deaths during a given time period per 100,000 live births during the same time period. Maternal Mortality Rate (MMRrate) measures the number of maternal deaths in a given period per 100, 000 women of reproductive age during the same time period. The adult lifetime risk of maternal death measures the probability of dying from a maternal cause during a woman’s reproductive lifespan (WHO et al. 2007:5).
Maternal sepsis and clean birth kits: a review of the evidence

Around 15 percent of all live births are expected to develop serious obstetric complications (Thaddeus et al. 1994; WHO 1994:18; see also Bang et al. 2004 which validates this percentage through an observational study in India; Khan et al. 2006; The Partnership for Maternal, Newborn and Child Health 2006:67). Of these, around 75 percent of maternal deaths arise from direct obstetric causes: haemorrhage, eclampsia, obstructed labour, sepsis, toxaemia and unsafe abortion; it is argued that the majority of deaths could be prevented with timely medical treatment (McCarthy et al. 1992; Khan et al. 2006).

Sepsis accounts for approximately 8 to 12 percent of direct maternal causes of death especially when birth takes place in unhygienic conditions (Khan et al. 2006). ‘Maternal sepsis’ is the general term used to describe a range of obstetric and genito-urinary tract infections affecting as many as 5.2 million women each year resulting in an estimated 62,000 deaths (Hussein et al. 2011:1). Puerperal sepsis is one form of maternal sepsis which is introduced during childbirth. It becomes obvious during the first 42 days after delivery and ‘is a serious, life-threatening disease with infection of the womb and abdominal cavity, bloodstream infection, fever and pain’ (2011:2). Other long term consequences for women include infertility and over one million infection related neonatal deaths every year. As Hussein et al. (2011) argue, family members and TBAs in developing countries may not be aware of the need for infection control when women give birth at home:

> Although many factors can contribute to the development of sepsis, poor hygiene during the intrapartum period has been recognised as a crucial risk factor for sepsis for over 150 years (Hussein et al. 2004). Clean birth has long been one of the World Health Organization’s (WHO) essential interventions (WHO 1996), estimated to avert 20–30% of newborn deaths due to sepsis and tetanus (Friberg et al. 2010). Similarly, clean birth together with labour monitoring and active third stage management in primary level facilities has the potential to avert 23% of maternal deaths across all low resource countries (LRCs) (Graham et al. 2008).

Hundley et al. (2011a) sought to identify the current state of knowledge regarding the effects of birth kits on clean birth practices and on maternal and newborn outcomes; and, the lessons learnt from the use of clean birth kits (Hundley et al. 2011b). A systematic search of the literature since 1987 identified birth kit use in 51 developing countries. Only nine studies reported the effects of intervention packages including birth kits and of these, only one study provided high quality evidence of causality. In many studies it was taken for granted the distributing birth kits led to their actual use and that the contents were used appropriately. There was some evidence that birth kits help increase clean delivery practices in the homes and health facilities studied, and strong evidence that interventions to promote clean delivery effectively reduce neonatal tetanus, neonatal mortality and sepsis (tetanus immunisation of pregnant women in combination with hand washing and clean delivery including clean cord care) (Bhutta et al. 2005).

According to Hundley et al. (2011a), similar findings in the review of birth kits suggests that including birth kits alongside other interventions such as women’s education and training birth providers can be effective in reducing tetanus related mortality, cord infection and neonatal sepsis as well as preventing maternal sepsis. However, there are no studies that focus solely on the effects of birth kits to clean practices as all studies have been assessed as part of a range of interventions (Bhutta et al. 2005; Haws et al. 2007). Bhutta et al. argues that ‘there is no evidence that as a single intervention, use of a clean delivery kit is necessarily the most appropriate way of ensuring that caregivers and birth attendants pay sufficient attention to antisepsis, nor is there evidence that kit use impacts umbilical cord

---

9 Direct obstetric deaths arise from obstetric complications of the pregnancy state. Indirect obstetric deaths are those resulting from previous existing disease, or diseases that developed during pregnancy, and which were not due to direct obstetric causes but aggravated by physiological effects of pregnancy. For example, deaths due to aggravation of an existing cardiac or renal disease, malaria, or HIV/AIDS are indirect obstetric deaths.
Training TBAs to provide ‘clean’ delivery

Goodburn et al. (2000) compared maternal outcomes in terms of postpartum infection, of deliveries conducted by trained traditional birth attendants (TTBAs) and untrained birth attendants (TBAs) in a rural area of Bangladesh where a local NGO had previously trained the TBAs. The motivation for training TBAs is based on the assumption that as they are present at most home deliveries they can avoid harmful practices and acquire beneficial ones; be trained to recognise complications and make referrals to health centres and hospitals if there are complications of labour. According to Goodburn et al., most evaluations ‘suggest that TBA training as a sole intervention does not significantly reduce maternal mortality and that improvements will only occur when the TBA training is linked to a strong referral system which includes transport and effective obstetric services at the first referral level’ (2000:394-5). However, TBA training is expected to lead to improved hygienic practices that prevent postpartum infection in the mother and baby as TBAs learn the ‘three cleans’: ‘clean hands’, ‘clean surface’ and ‘clean cord’ (2000:395).

What then of the evidence? The study found that TTBAs were more than twice as likely as untrained TBAs to perform a ‘clean’ delivery but the predicted outcome did not occur as there was not any relationship between the training status of the TBA and outcome in terms of symptoms of maternal infection. The strongest risk factor for postpartum infection is likely to be a pre-existing reproductive tract infection. Long and difficult labour and the insertion of hands (possibly associated with delivery complications) ‘may be potent factors for introducing or exacerbating existing infection whether or not the delivery includes the ‘three cleans’” (Goodburn et al. 2000:398). Moreover, ‘clean’ delivery on its own cannot prevent infection in a contaminated environment so it is likely there will be many opportunities for recontamination after the TBA washes her hands. Other factors that could determine postpartum infection include nutrition as poorly nourished women with micronutrient and vitamin deficiencies may be at higher risk for developing infections. Thus it is argued ‘that training TBAs cannot be expected to prevent postpartum infections’ (2000:398) and questions should be asked about what should be expected from TBA training which appears to be based on a ‘rather idealistic view of benefits that can be achieved by programmes which include TBA training, but also on flimsy evidence for the effectiveness of some of the standard interventions which form the core of this training’ (2000:398).

On the other hand, Dietsch (2010a) and Dietsch and Mulimblaimba-Masururu (2011a; 2011b) present a number of papers describing the experience of traditional midwives in the Bungoma district in western Kenya close to the Ugandan border. Eighty-four traditional midwives participated in either individual or group in-depth interviews. The traditional midwives describe their relationship with women as a core component of their identity and satisfaction. They midwives speak about being patient, kind and humble with labouring women, and about practicing intuitively by following the woman’s progress and not a clock. Being a traditional midwife involves lifelong learning through mentorship or an apprenticeship and sometimes with short courses through colleges or hospitals. Most of the participants had attended seminars provided by staff at Mission in Health Care, the NGO that was responsible for distributing birthing kits (funded by BKFA).

Prior to being able to access birth kits, some traditional midwives would use nylon sacks or their own or the woman’s clothes. Many were not in the habit of using soap when they washed their hands and they found the cost of gloves prohibitively expensive. The cost of gloves, razor blades, and the sack was more than two thirds of their fee. Razor blades were used and reused or sugarcane stalk was often used to cut the cord. The traditional midwives reported that the clean birth kit has made a great difference to them and spoke of its usefulness for infection control purposes. It was useful to protect themselves from infections, protect the baby from infection and reduce the risk of cross infection between women. Dietsch (2010b) concludes that ‘we are in no doubt that the birth kits play a role in reducing maternal and infant morbidity and mortality’ and observational data confirmed that ‘the birth
kits were used effectively and as intended to assist in the provision of a clean and safe birth’ (2010b:116).

**Delivery care in health facilities**

Considering that delivery care in health facilities is expected to decrease infection rates when health professional use clean practices, sterile gloves and instruments, research shows that puerperal sepsis is associated with institutional delivery because of invasive procedures such as vaginal examination, instrumental or caesarean delivery (Hussein et al. 2011). The main point here is that although interventions described in the review (especially interventions relating to hand hygiene) emphasise the importance of behaviour change in the workforce, these changes are extremely difficult to implement—‘even if individuals are well motivated, working in a chaotic environment or a setting with poor infrastructure can be a barrier to change’ (2011:7).

In 2007 I visited Bonga Hospital, four health centres, one clinic and 11 health posts in Kafa Zone in southwest Ethiopia (Jackson 2010). Of these 17 health facilities, only four had any plumbing with facilities for hand washing. In the hospital there was only a trickle of water in one or two sinks; one government health centre collected water from the roof into plastic tanks in the courtyard; one NGO run health centre had running water which caused consider difficulties in maintenance with pumps from streams continually blocking and also had rainwater and piped town water. And one clinic had plumbing installed but only had water after rain to fill the tank on the roof. The only trained health practitioner I observed who attempted to clean his hands between patients was the Doctor in charge at Bonga Hospital who carried a bottle of alcohol in his pocket. No one else made any attempt to clean their hands between patients and in most health facilities there was no water or alcohol-based hand rub for them to do so.

Indeed, even in Australia the problems with *Staphylococcus aureus* sepsis, especially methicillin-resistant *S. aureus* (MRSA) are familiar to many people and the general medical community as a problem associated with health care (Turnidge et al. 2009). Less well known is *Staphylococcus aureus* bacteremia (SAB) a common cause of bloodstream infections in Australia causing a ‘crude mortality rate of 11.2% when measured at discharge or 7 days, whichever came sooner’ (Collignon et al. 2005 based on Turnidge et al. 2009). *S. aureus* is a common infection carried into the community by patients or health care workers although some strains are found in patients who have had no recent health care contact. Hospital strains are often resistant to methicillin and antimicrobial drugs. *S. aureus* is a common cause of SAB. The study by Collignon et al. estimated that there are over 6,000 episodes in Australia per year, and that approximately two thirds of all cases of SAB are associated with healthcare or medical procedures (i.e., all hospital-onset and approximately one third of community-onset episodes). Other research shows that between five and 10 percent of patients admitted to hospital acquire an infection during their admission (Spelman 2002). Many of these infections are associated with urinary catheters, intravenous cannulas and surgical wound infections (Turnidge et al. 2009). Strategies to prevent SAB include hand washing and improved aseptic techniques, shorter hospital stays, minimal use and early removal of invasive devices, adequate staffing and an active infection control program (Spelman 2002; Collignon et al. 2009; Dendle et al. 2009; Grayson et al. 2011). This discussion points to the difficulties in maintaining infection control even in hospitals in ‘developed’ countries such as Australia. Whether ‘clean’ birth is practiced in health facilities in Ethiopia is impossible to answer without further research. However, if the aim is to increase the proportion of births attended by skilled health personnel either at home or in a facility then preventing maternal and neonatal infection should be prioritised through hand hygiene.

**Impact of packaged interventions on neonatal health: a review of the**
Ninety-nine percent of neonatal deaths occur in developing countries usually soon after birth at home against a backdrop of poverty suboptimal care-seeking and weak health systems (Haws et al. 2007:194). Recent analysis of the evidence base for efficacy and effectiveness of interventions and their cost-effectiveness suggested that feasible, cost-effective interventions exist that could prevent roughly two-thirds of all neonatal deaths. Haws et al. (2007:195) evaluated the evidence in the global literature for the impact of a wide range of interventions during the antenatal, intrapartum and postnatal periods on perinatal and neonatal health status outcomes. They found there is a paucity of data from developing countries and poor rates of inclusion of a number of key evidence-based interventions: only 41 studies included a package of interventions for neonates were identified (2007:197).

Haws et al. (2007) found that antenatal interventions were almost exclusively micronutrient supplementation trials, tetanus toxoid (TT) immunisation of pregnant mothers or birth preparedness; intrapartum interventions overwhelmingly involved promotion of clean delivery. Some studies packaged clean delivery training for birth attendants with TT immunisation, some provided labour surveillance in addition to clean delivery (2007:207). Only one study (Bang et al. 2005) implemented the complete family-community package of evidence-based essential newborn care interventions—they reported 70 percent decline in the neonatal mortality rate, 56 percent decline in the perinatal mortality rate, and a 49 percent decline in the stillbirth rate. In essence, Haws et al. argue, that the empirical evidence for the impact of neonatal health care packages is a weak base on which to build effective programs. Evidence-based approach to packaging interventions is clearly needed (Haws et al. 2007:213). Yet key questions remain regarding the feasibility of delivering packages of neonatal interventions particularly at the community level, as TBAs and Community Health Workers (CHWs) may be limited in their ability to provide multiple interventions and delivering packages of interventions can require, or be perceived to require, intensified logistical coordination and resource inputs that may be challenging in some low-resource settings (2007:210).

Ross (1986) states that the evidence that training TBAs will prevent neonatal tetanus is much weaker than that for vaccination of women with TT either before or during pregnancy. When TBAs are trained their tasks should include promotion of TT vaccination coverage. More recent research confirms these findings (Bang et al. 2005; Darmstadt et al. 2005; Campbell et al. 2006; Haws et al. 2007; Bhutta et al. 2008) and that ‘it is imperative that preventive strategies such as clean delivery and maternal tetanus immunization form a cornerstone of maternal care in any setting and that they go hand-in-hand’ (Bhutta et al. 2005:560). In Ethiopia it is important to note that less than 50 percent of women’s last live birth was protected against neonatal tetanus (CSA and ORC Macro 2011).

Birthing Kit Foundation (Australia) (BKFA) partnerships in Ethiopia

The BKFA works with Non-Government Organisations (NGOs) and communities to provide a clean birthing environment for women in 28 developing countries in order to reduce the incidence of infant and maternal mortality. BKFA provides birthing kits and education in clean birthing practices. Each birthing kit contains a sheet of plastic, a pair of disposable gloves, a couple of pieces of gauze, a piece of soap, a couple of clean ties and a disposable sterile blade. BKFA partners with NGOs who train skilled health workers and Traditional Birth Attendants (TBAs) in clean and safe delivery using the kits. BKFA is targeting maternal sepsis and neonatal tetanus.

This section provides a description of the BKFA program in Ethiopia for the next 12 months. BKFA’s program (funded by AusAID) will provide the resources for birthing kit assembly and distribution in three locations in Ethiopia. The design responds to the request for assistance from Abraham’s Oasis (AO), Afar Pastoralists Development Association (APDA) and Hamlin Fistula Ethiopia (HFE), to fund in-country birthing kit production. The program also covers refresher training for 40 Traditional Birth Attendants (TBAs) in antenatal care (ANC), clean and
safe delivery and postnatal care by APDA. The partnership between BKFA and AO, APDA and HFE represents an ongoing partnership over the last 4, 4 and 7 years respectively. BKFA’s objective is to create locally sustainable opportunities for in-country birthing kit production.

The consequences of high maternal and infant mortality on households and communities is not the sole motivation for attention to the issue as these issues should also be viewed through the lens of women’s rights and empowerment and a concern for women’s health in its own right. This means that the interconnection of broader socioeconomic, cultural and political factors, proximate factors and medical causes affecting maternal mortality can be better understood and addressed.

Anecdotal reports from the three NGOs in Ethiopia demonstrate that the demand for birthing kits is increasing. This approach allows the program to get some ‘quick wins’ by providing the resources to employ women who would otherwise not be able to find work, and to increase demand for ‘clean sheet’ delivery at home. Subsequent phases of the program could respond to local demand through the health posts, health centres and hospitals.

Abraham’s Oasis

Abraham’s Oasis (AO) is an Ethiopian Resident Charity operating programmes divided between Orphans and Vulnerable Children and Women in Need (WIN) in Shire, in the North-Western Zone of Tigray Region. The WIN Programme consists of:

- Maternal Health Awareness and Prevention
- Assembly and Dissemination of Clean Delivery Kits
- Identification and Prevention of Obstetric Fistula
- Training of fistula patients wanting to work and live at Grace Village, and Gender Based Violence focal self-help groups.

AO argues that the focus on women’s health cannot be provided in isolation without taking into account the other problems women face. The WIN Programme targets women who have faced early marriage that leads to early child bearing and all the related complications resulting in disabilities and death. It also targets destitute, poor, disabled, malnourished women who stand little chance of survival with the added burden of a pregnancy. The women WIN program targets have had no opportunity to attend school, no choice in ceremonies and rites of passage such as Female Genital Cutting (FGC) and marriage, no choice when to be pregnant or where delivery will take place, abandonment or divorce following rape, infertility, the birth of a stillborn baby, or obstetric fistula.

AO places an emphasis on women’s health generally and maternal health in particular. Representatives from AO speak at most women related venues in Tigray Zone, raising awareness for the plight and need for change for the role of women in the Zone. Every occasion is a platform for community dialogue and teaching/talking/sharing. AO’s Programme Officer is quick to seize the opportunity at farmers meetings, women’s meetings and funerals to tell the story of women and their needs. This contact has led to the Programme Officer being called by all government offices to come and ‘talk about women’ at their pre-arranged sessions.

To date, BKFA has funded the production of 2000 birthing kits by AO. Supplies have been purchased locally and an instruction manual for use of the kits has been produced in Tigrinya. As kits are used there is an opportunity for birth attendants to collect more kits and be in touch with skilled birth attendants. This provides the opportunity to discuss difficulties and when to refer birthing women to seek skilled assistance. Reports show that even the health centres like them because the women now know about them and want the ‘clean sheet’ delivery rather than giving birth directly on the bed or floor. AO has received feedback from one woreda that the provision of clean delivery kits reduced maternal/infant mortality and morbidity by 10 percent during the last ten months of 2010.
Distribution of Clean Delivery Kits

AO uses various steps for distributing the birthing kits. The first step has been to start by educating higher level administrative officers at the zonal and kebele level with their plans. This includes health, social and women’s offices as well as direct suppliers of delivery services. The second step is to train all health professionals in the use and disposal of clean birthing kits. This ensures that the kit is only ever distributed after the training and with the endorsement that a senior health professional will be responsible for the disseminated kits. The training also teaches birth attendants about high risk pregnancies, the need for early detection and referral of problem pregnancies and labour to tertiary health facilities.

AO has received a request from head of the neighbouring kebele (Medabaye Zana) for 400 birthing kits to be supplied in all their health facilities to be used by midwives, HEWs and TBAs. The reason for this is because the women are now ‘demanding that kits be used’. According to AO, the supply of clean birthing kits should be extended to HEWs and other health professionals to provide the basis for clean delivery for each delivery.

At the end of the project AO hopes to:

- Provide clean birthing kits for deliveries that occur at home each year.
- Continue education programs promoting clean delivery using birthing kits. This program is an entry point to promote community dialogue and education about issues such as early marriage, growth stunting of the female child, gender based violence, obstructed labour and other problems that may lead to obstetric fistula and other obstetrical problems.
- Raise awareness about early referral for obstetric emergencies from Kebele Lemlem to Suhul Hospital.
- Potentially reduce maternal and neonatal mortality by 10 percent.

Afar Pastoralist Development Association

Afar Pastoralist Development Association (APDA) has been implementing a primary health program in the Afar pastoral society for 12 years. When the program started in 1994, there were no social services at all in the pastoral society: whether health or education. Since its early beginnings in the hands of 21 health workers, the program has evolved over time and now has 245 health workers working in 14 woredas. These health workers are trained for six months in training adapted for the remote conditions under which they work and implemented in collaboration with the Bureau of Health for Afar Region. This project with BKFA plans to assist in Dagaba in northern Dubte (which are only accessible through camel transport) and the adjoining district of Daaba.

APDA trains local women who are working as TBAs, to give them information beyond their traditional knowledge, and equips them and partners them within the primary health team as the only way for pastoral women to get any essence of safe motherhood. Without this aspect of the primary health work, the health workers and women extension workers alone are not able to implement or advocate for safe motherhood since the task of delivering babies is that of the existing traditional midwives. Based on reports from training in 2009/2010 where initial training of 40 TBAs took place, this training is an essential component of community development. The TBAs were unaware how harmful practices could make a mother weak or even die in childbirth. The training will:

1. Revise the modules taught in the first training course emphasizing antenatal checking and the women who are at risk and should be referred for hospital delivery. Modules included:
   - Essential hygiene and sanitation
   - Nutrition during pregnancy and lactation
   - Normal and abnormal symptoms of the trimesters of pregnancy
• Identifying, agreeing on and planning to stop harmful practices in childbirth including FGC; preventing the mother from eating or drinking during labour; bleeding the mother from the cord while the placenta is in situ; delaying breastfeeding and giving the baby butter, goat’s milk or sugar and water; avoiding washing the mother and child for seven days post-partum.

• Identifying and referring women at risk to the established health centres or hospital for delivery

• Dealing with HIV/AIDS during childbirth

2 Discuss the deliveries they had since the training, the challenges and the way they were able to apply the knowledge they now have.

3 Discuss progress made on and experiences in stopping harmful traditions in the birthing process

4 Discuss postnatal care and issues of postnatal hygiene

5 Discuss preventing HIV transmission and how to care for those in the community affected

6 Review reporting, equipping and networking between the TBAs and APDA.

7 Promote the activities of APDA including the Mille Emergency Maternity Hospital and ensure they are invited to see the hospital from time to time.

Outcomes of the APDA project include:

• Provision of a refresher course to build on the knowledge, information and ideas as well as the capacity to use this knowledge to assist other women during childbirth. To date, more pregnant women have attended ANC, sought referral for delivery if there is a problem, and completed the immunisation of their children.

• Each TBA in Afar is teamed with an HEW; this will ensure that APDA is able to provide clean birthing kits for HEWs and referrals to the district health centres and hospital.

• Building on a culture of safer motherhood as women in remote locations use a trained, equipped TBA rather than an untrained TBA with no equipment or referral network.

• Strengthening the capacity of the TBAs by reequipping them with clean birthing kits and providing an incentive for them to continue.

• APDA holds community discussions throughout the year on stopping harmful practices such as FGM and early marriage as well as continuing the community program of literacy and health awareness.

• Cessation of traditional practices that harm women and newborns as directed in the training.

• Reduction of maternal and neonatal mortality by 10 percent.

Hamlin Fistula Ethiopia

Hamlin Fistula Ethiopia (HFE) (Addis Ababa Fistula Hospital) and its five regional Centres offer comprehensive care for women who suffer from incontinence, physical impairment, shame and marginalisation as a result obstetric fistula. The regional centres are strategically located in highly populated regional areas adjacent to existing government hospitals and aim to:

• Provide rural women suffering from obstetric fistula with access to medical help

• Treat more women suffering from obstetric fistula.

• Educate the local population about safe birthing practices and the causes of obstetric fistula

• Locate women who are hidden away and ostracised because of obstetric fistula

• Reduce maternal morbidity and mortality.
• Reduce the incidence of obstetric fistula and still births in rural Ethiopia.

Each fistula centre carries out the following activities:

• Patient surgery, care and rehabilitation – treatment is free
• Physiotherapy and patient counseling
• Teaching in health, literacy, numeracy and handicrafts
• Employment and training of HEWS who promote maternal health and fistula awareness; partner with regional health bureaus and local NGO’s; transport patients to the centres for treatment; distribute safe birthing kits (supplied by BKFA).
• In 2011, HFE started a pilot project making birthing kits at Desta Mender.

The situation expected at the end of the HFE project is:

• Meaningful employment for women at Desta Mender
• Increased awareness of women to give birth at health centres where skilled birth attendants are available
• Use of clean birthing kits during delivery in remote areas where skilled birth attendants or health centres are not available.
• Reduction of maternal and neonatal mortality by 10 percent.

**BKFA reporting system**

BKFA requires all NGOs receiving birthing kits to fill out a Reporting Form each year. This simple form requires the NGO to identify the number of kits received during the period, the number of kits distributed and the number of kits in stock at the end of the period. Other questions identify whether the kits are used in clinics or home births; how many women died within a month of delivery; and, how many babies died within a month of delivery.

For example, for the period 1 April 2008 to 31 March 2009 AO received 1,600 kits and distributed 476. No women died but there was one recorded baby’s death. On the question ‘Was there a reduction in childbirth related infections since the introduction of the kits?’ the answer was ‘not yet’. However, the benefits for the community were ‘attracting mothers to come for delivery because of the birth kits’.

HFE has been receiving and distributing birthing kits from BKFA since 2007. Kits are distributed through the Bahir Dar, Mekelle, Yirgalem and Harar Hamlin Fistula Centres. Since 2007-08, HFE has distributed almost 60,000 kits to clinics and for home births. There is no record of maternal and neonatal deaths but generalised statements stating that ‘the number of mothers who delivered by trained birth attendants have increased; the antenatal coverage has improved; those mothers who develop complications are referred to hospitals or health centres immediately, and the immunisation coverage has increased’. Because of limited financial resources and time, BKFA cannot expect NGOs to undertake more research than this, but I would suggest that this information does not really provide any real way to analyse the effect of birthing kits.

**Can NGOs have an effect on maternal and neonatal mortality and disability?**

Providing birthing kits to facilitate clean birth practices to women who give birth at home or in a health facility appears to be common sense—especially when birth takes place in unhygienic conditions. Yet as I argued in my thesis (Jackson 2010) the “distance” from international maternal strategies and policies to their implementation in places such as rural southwest Ethiopia is vast and that the ‘pathway to maternal survival’ is not a ‘direct, linear route’ (CHANGE/The Manoff Group 2005). One of the “hurdles” that I briefly mentioned in this paper is that debate in much of the existing literature about maternal mortality and disability in developing countries is still divisive. One key area of contention is that much of the literature argues that the location of birth must change from home delivery without
skilled assistance to health facility based delivery and the medicalisation of maternity care (Koblinsky et al. 1999). Even though there is broad consensus that skilled birth attendants will improve maternal and neonatal health outcomes, ‘current safer motherhood and newborn care programmes emphasise interventions that do not reach the poorest households’ (Costello et al. 2004:1166). As Costello et al. (2006) and others argue, that there is a need for a balanced approach that encompasses community based strategies in addition to health based intra-partum services.

Findings in Sibley and Sipe’s (2006) analysis on the effectiveness of TBA training reveals moderate-to-large improvements in behaviours such as safe delivery, clean delivery and cord-care practices and small but significant decreases in perinatal mortality and neonatal mortality. TBA training was also associated with small but significant increases in the use of ANC and EmOC ‘suggesting that referral is a multi-faceted process, an influence of TBAs on care-seeking behaviour may be limited’ (2006:474). Sibley and Sipe argue that health systems that deliver proven interventions through the continuum-of-care approach (see Darmstadt et al. 2005) could reduce the number of newborn deaths by up to one-third. Although Sibley and Sipe argue for functioning health systems to further reduce maternal newborn and mortality, in environments of scarce resources, all interventions that prevent and treat complications should be considered. This means there should be a balanced approach that encompasses upgrading health facilities and training and deploying professional care, but also evaluates, refines and disseminates ‘promising community-based approaches to care during birth and the immediate postpartum and postnatal periods’ (2006:477).

More recently, the systematic review with meta-analysis conducted by Wilson et al. (2011) shows that perinatal death can be reduced by 24 percent by incorporating strategies that train and support TBAs. The review showed only non-significant reductions in maternal mortality. To be effective, TBAs need ‘an appropriate package of training, support, linkage with healthcare institutions, and resource supply’ (Wilson et al. 2011). Strategies supporting TBAs that are beneficial ‘include training and support, as well as linkage with healthcare professionals, continued skill development, access to resources such as clean birth kits and resuscitation equipment, and effective referral pathways’ (Wilson et al. 2011):

The most effective intervention to improve perinatal and maternal outcomes is the use of skilled birth attendants. Although this intervention is a central goal, the economic, geographical, political, and social realities have limited the ability of national and international effectors to ensure the presence of skilled attendants at all births…limited coverage has resulted in 52 million women giving birth without skilled attendance every year. Therefore, other cadres of health workers might need to be considered to extend the coverage of maternal and neonatal care. Traditional birth attendants can improve the coverage of maternal and neonatal care, and evidence from this meta-analysis suggests that they can be a component of the strategies to improve perinatal outcomes. Traditional birth attendants often represent a more feasible, culturally acceptable, and accessible option for women in developing countries (Wilson et al. 2011).

At present, there is not enough evidence on the impact of clean birthing kits as a single intervention to determine if they contribute to the reduction of maternal mortality and neonatal mortality in Ethiopia. As many health posts, health centres and hospitals are under-resourced and unable to provide clean and safe delivery, I would suggest that BKFA continue to work with NGOs to ensure that hand-washing and clean delivery be promoted along with tetanus immunisation of pregnant women during ANC as tetanus vaccination is the most effective and best option for reducing neonatal tetanus (Bhatta et al. 2005:562). There is no doubt that the NGOs described in this paper have each introduced innovative ways to work in their local communities to improve maternal and child health. Although birthing kits are a single intervention, they are used by the NGOs to connect with their communities along with education and training.
Following Sibley and Sipe (2006), I would argue that there is no ethical alternative but to provide a balanced phased approach to maternal and neonatal health interventions in developing countries such as Ethiopia:

To improve pregnancy outcomes, there is a critical need, not only to upgrade health facilities and train, strategically deploy, and retain professional care providers, but also to evaluate, refine and disseminate promising community-based approaches to care during birth and the immediate postpartum and postnatal periods (Sibley et al. 2006:477).

Clearly, there is a need for more research by BKFA to determine what those community-based approaches are, to identify the factors that facilitate the correct use of birth kits, whether birth kits can act as an incentive or disincentive for facility birth and what are the best knowledge systems to enable implementation lessons to be stored and shared more productively across developing countries.10

10 These research priorities have been identified by (Hundley et al. 2011a).
Appendix 1

A number of studies for the WHO, UN and UNFPA document the difficulties in measuring maternal mortality and conclude that reliable estimates of the dimensions of the problem are not generally available. AbouZahr and Wardlaw (2001) describe some of the problems of using assistance of a skilled attendant at delivery as a process indicator. These include a lack of unequivocal epidemiological evidence; problems of definition to define skilled attendant; and a lack of trend data. The report by WHO, UNICEF and UNFPA (2004) stresses that the margins of uncertainty are so large and the strategies deriving the estimates between countries so varied that estimates should not be used to monitor short-term trends or cross-country comparisons (WHO et al. 2004:2). It concludes that the intention of the estimates is to draw attention to the existence and likely dimension of the problem of maternal mortality thus stimulating ‘greater awareness of and attention to the challenge of measuring maternal mortality’ (2004:13). More recently, AbouZahr (2011) describes two independent exercises to estimate levels of maternal mortality in 2010 using different statistical methods, and discusses the value and limitations in such exercises and ways to interpret the different estimates. For example, Ethiopia’s maternal mortality ratio (MMR) was estimated to be 720 per 100,000 live births in 2005 with a lifetime risk of maternal death of one in 27 (WHO et al. 2007:24). By 2010, it was estimated to be 470 per 100,000 live births with a lifetime risk of maternal death of one in 40 (WHO et al. 2010). Hogan et al. (2010) constructed a database of 2651 observations of maternal mortality for 181 countries for 1980 – 2008, from vital registration data, censuses, surveys, and verbal autopsy studies. Their estimate is that there were 342,900 maternal deaths worldwide in 2008. They estimate that the MMR in Ethiopia was 590 per 100,000 live births in 2008 (2010:1618). In 2005, the Ethiopian Central Statistical Authority (CSA) estimated the MMR to be 673 maternal deaths per 100,000 live births. Data for the period 1994 - 2000 show the MMR was estimated to be 871 deaths per 100,000 live births. The DHS states that although maternal mortality may appear to be declining, the rates are both subject to a high degree of sampling error and it is not possible to conclude there has been a decline. The true MMR for 2000 ranges from 548 to 799 deaths per 100,000 live births (CSA and ORC Macro 2006:233).

There is no doubt that measurement is a problem for international and national experts—the Federal MOH, UNICEF, WHO, and UNFPA. Ethiopia’s 2008 national assessment designed as a census of all hospitals and health centers, took 18 months and cost almost US$1 million dollars. The results showed there were considerable challenges including an incomplete list of facilities by the MOH, incomplete records of maternal and neonatal death and that 50 percent of hospitals could not provide Comprehensive Emergency Obstetric and Newborn Care (EmONC) and 98 percent of health centres do not have basic EmONC (Keyes et al. 2011).
References


Dietsch, E. (2010a), 'The experience of being a traditional midwife: relationships with skilled birth attendants', *Rural and Remote Health* 10 (1481): (Online)


Jackson, R., (2010), *(Un)safe routes: Maternal mortality and Ethiopia’s development agenda*, Unpublished thesis, School of International and Political Studies, Faculty of Arts and Education, Deakin University


