**Walking together: Towards a collaborative model for maternal health care in pastoralist communities of Laikipia and Samburu, Kenya**

**Dr Michelle Kermode**[1] mkermode@unimelb.edu.au

**Dr Alison Morgan**[1] apmorgan@unimelb.edu.au

**Dr Josephat Nyagero**[2] Josephat.Nyagero@Amref.org

**Ms Florence Nderitu**[3] pc@aacestrlt.co.ke

**Dr Tanya Caulfield**[1] tanya.caulfield@unimelb.edu.au

**Dr Matthew Reeve**[1] m.reeve@unimelb.edu.au

**Dr John Nduba**[2] jnduba@yahoo.co.uk

1. Nossal Institute for Global Health

University of Melbourne

Level 4, Alan Gilbert Building

161 Barry St, Carlton

Victoria 3010

AUSTRALIA

2. Amref Health Africa

PO Box 27691-00506

Nairobi

KENYA

3. Mother's Union of the Anglican Church Kenya, Diosece of Mt Kenya West

PO Box 229

Nyeri, Nyeri County, Kenya 10100

**CORRESPONDING AUTHOR INFORMATION**

Dr Michelle Kermode

mkermode@unimelb.edu.au

Nossal Institute for Global Health

University of Melbourne

Level 4, Alan Gilbert Building

161 Barry St, Carlton

Victoria 3010

AUSTRALIA

P: +61 3 83441992

M: +61 406988773

**ABSTRACT**

**Purpose:** In 2009 the Kenyan Government introduced health system reforms to address persistently high maternal and newborn mortality including deployment of skilled birth attendants (SBAs) to health facilities in remote areas, and proscription of births attended by traditional birth attendants (TBAs). Despite these initiatives, uptake of SBA services remains low and inequitably distributed. This paper describes the development of an SBA/TBA collaborative model of maternal health care for pastoralist communities in Laikipia and Samburu.

**Description:** A range of approaches were used to generate a comprehensive understanding of the maternal and child health issues affecting these pastoralist communities including community and government consultations, creation of a booklet and film recognising the contributions of both TBAs and SBAs that formed the basis of subsequent discussions, and mixed methods research projects. Based on the knowledge and understanding collectively generated by these approaches we developed an evidence-based, locally acceptable and feasible model for SBA/TBA collaborative care of women during pregnancy and childbirth.

**Assessment:** The proposed collaborative care model includes: antenatal and post-natal care delivered by both SBAs and TBAs; TBAs as birth companions who support women and SBAs; training TBAs in recognition of birth complications, nutrition during and following birth, referral processes, and family planning; training SBAs in respectful maternity care; and affordable, feasible redesign of health facility infrastructure and services so they better meet the identified needs of pastoralist women and their families.

**Conclusion:** The transition from births predominantly attended by TBAs to births attended by SBAs is likely to be a gradual one, and an interim SBA/TBA collaborative model of care

has the potential to maximise the safety of pastoralist women and babies during the transition phase, and may even accelerate the transition itself.

**SIGNIFICANCE**

Kenya has a high burden of maternal and newborn mortality. Consequently, health system reforms were introduced to promote availability of skilled birth attendants (SBAs) and discourage deliveries by traditional birth attendants (TBAs). Despite these changes, only 10% of women from semi-nomadic pastoralist communities are delivered by an SBA; the majority are delivered by TBAs at home. Using a consultative, multi-method, research focused approach involving communities, SBAs, TBAs and government, we developed a collaborative model of SBA/TBA maternal health care to promote better uptake of health facility births in pastoralist communities.

**KEYWORDS**

Maternal health, pastoralist communities, collaborative models of care, Kenya, traditional birth attendants, skilled birth attendants

**FROM THE FIELD**

# Walking together: Towards a collaborative model for maternal health care in pastoralist communities of Laikipia and Samburu, Kenya

## PURPOSE

Persistently high maternal and neonatal mortality in many low- and middle-income countries remains a challenge for health planners and policy makers. The final report for the Millennium Development Goals found that the global maternal mortality ratio had declined by 45% from 1990 to 2013, well below the target of 75% (United Nations 2015). Nearly half of global maternal deaths in 2013 occurred in sub-Saharan Africa, mostly from preventable causes (Kassebaum et al. 2014), where maternal mortality ratios are over 30 times greater than in high-income countries (United Nations 2015).

Giving birth attended by a skilled practitioner is promoted as the optimal strategy for reducing maternal and neonatal mortality (AbouZahr 2003, Renfrew et al. 2014). However, global skilled birth attendant (SBA) coverage remains poor in many places including sub-

Saharan Africa where only 52% of births were attended by an SBA in 2014, an increase of just nine percentage points in 24 years (United Nations 2015). Physical, financial and cultural barriers to accessing SBAs, combined with an SBA workforce shortage, have held back progress in SBA coverage (Hoope-Bender et al. 2014).

Many women not attended by SBAs receive care from traditional birth attendants (TBAs). From the 1970s to early 1990s, maternal health policies and programming promoted training of TBAs in the provision of basic antenatal, delivery and postnatal care (Sibley & Sipe, 2006). In the 1990s, following a decade of limited progress in reducing maternal mortality, international attention shifted to scaling up access to SBAs (Adegoke & van den Broek 2009). Consequently, TBAs were sidelined, and in some countries banned from attending deliveries. However, for complex reasons, many women in low-income settings are still cared for at the time of childbirth by TBAs rather than SBAs (Bergstrom & Goodburn 2001; Kruske & Barclay 2004; Saravanan et al. 2010). These reasons include the fact that TBAs are respected and familiar members of their communities who offer comfort and kindness to labouring women. In contrast, SBAs are not so well known, may come from outside the community, and can be hostile to women (Bohren et al. 2017; Balde et al. 2017). Additionally, some health facility procedures such as delivering in the lithotomy position, episiotomy, lack of privacy, and male attendants are not culturally acceptable in some communities (Byrne et al. 2016). Travelling to a health facility means a vehicle has to be obtained, whereas the TBA is more immediately available.

Kenya's high maternal and neonatal mortality reflects the slow progress seen in much of sub-Saharan Africa. The maternal mortality ratio in Kenya was estimated to be 490 deaths per 100,000 live births in 1990, which had reduced to 400 in 2013, a decrease of only 17%: the lifetime risk of maternal death in Kenya is one in 53 ( WHO, UNICEF, UNFPA 2014). The Government of Kenya instituted health system reforms aiming to have 90% of deliveries assisted by SBAs by 2015, a doubling from the 2008 level of 43% (KNBS & ICF Macro 2010). To achieve this goal, beginning in 2009, the Government deployed SBAs to health facilities in remote areas, made facility-based deliveries free, and actively discouraged TBA supported births. Despite these initiatives, uptake of SBA services remains low and inequitably distributed in Kenya; only 8% of women birthing in the remote pastoralist communities of

Laikipia and Samburu counties had an SBA present, and 57% were assisted by a TBA in 2012, while 89% of deliveries in Nairobi were attended by an SBA in 2014 (KNBS 2015; Nossal Institute for Global Health 2012). The situation in Laikipia and Samburu had improved by 2016, with 41% of births attended by an SBA (Anglican Overseas Aid, 2016).

Evidence suggests that more collaborative models that engage SBAs, TBAs and communities have the potential to improve the quality of maternal and newborn care and utilisation of health services (Falle et al. 2009; Byrne & Morgan 2011; Tomedi et al. 2013). The provision of training and supportive supervision for TBAs, allowing TBAs to be present at health facility births, and improving the skills of SBAs so that they communicate more effectively with TBAs and communities are all strategies that have improved the uptake of health facility births (Byrne & Morgan 2011). The aim of this paper is to describe the development of a model for SBA/TBA collaboration in Samburu and Laikipia counties of Kenya, which was based on knowledge and understanding gleaned from a range of sources, with the goal of contributing to better health outcomes for pastoralist women and newborns at the time of pregnancy and delivery. The model was intended to be evidence-based, locally appropriate and feasible, consistent with Kenyan government policy, and likely to promote or even accelerate the transition from homebirths attended by TBAs to facility-based births attended by SBAs.

The project was a partnership between Amref Health Africa, the Mothers' Union of the Anglican Church in Kenya (MUACK) (Diosece of Mt Kenya West), the relevant County Health Ministries, and the Nossal Institute for Global Health at the University of Melbourne. It articulated with existing health and development projects in pastoralist communities being facilitated by MUACK, which were part of the Australia Africa Community Engagement Scheme (AACES) in Laikipia and Samburu counties. The study sites were five group ranches in Laikipia and three in Samburu, with a population of approximately 24,500 (KNBS 2010) and an estimated 980 births each year. The health system comprises: dispensaries (level II) located in group ranches, which serve as primary care facilities mostly staffed by solo nurse SBAs; health centres and sub-district hospitals where medical officers and basic emergency obstetric care can be provided; and the district hospital where comprehensive emergency obstetric care is available. Group ranches are bounded geographical areas where groups of

people hold the title and are able to graze their livestock – each group ranch is comprised of multiple villages.

## DESCRIPTION

The overall project consisted of four components that collectively provided a comprehensive and varied overview of the current situation in Laikipia and Samburu in relation to maternal and newborn care:

1) A qualitative study to describe the practices and perceptions of TBAs and SBAs and the barriers to facility-based deliveries, from a range of perspectives, which involved a total of: 19 focus groups discussions involving TBAs, community health workers, community women and men; and 15 in-depth interviews with SBAs, health facility managers, community leaders and government staff. Details of the qualitative study methods, analysis and findings have been published elsewhere (REFERENCES REMOVED FOR BLINDING).

2) A census of all TBAs in the study sites, followed by a survey of TBAs to investigate their knowledge, attitudes and practices. The survey design and results have been reported elsewhere (REFERENCE REMOVED FOR BLINDING). Understanding the current practices of TBAs allowed us to identify the optimal role for them in a model of integrated care.

3) Creation of a film and accompanying booklet to document the lives and work of TBAs and SBAs, highlighting the positive aspects of their work, the challenges they face, and the opportunities for collaboration. The purpose of the film and booklet was to recognise and value the contributions of both SBAs and TBAs serving these remote communities and to highlight the reasons for poor uptake of facility-based services, using media that are readily accessible to a non-academic audience.

4) A basic audit of health facility drugs, equipment, and essential supplies was undertaken using an adapted version of a WHO checklist that assesses the availability of infrastructure, drugs and supplies essential for the provision of Basic Essential Obstetric and Newborn Care (SAFE International Research Partnership 2003). These audits were important because the placement of SBAs in remote communities will only have benefit if they are adequately resourced to practice safely.

Additionally, we conducted a series of consultation and dissemination meetings with local government and non-government agencies, and local communities. The purpose of these meetings was to inform stakeholders about the project, solicit their views on the project, gain their permission to gather the data, and address any concerns. We also appointed a local advisory group. Findings from the project along with the film and booklet were disseminated during a meeting held in Nanyuki (Laikipia) at the end of the project, which was attended by government representatives and representatives from the participating communities (whose travel costs were covered by the project). The findings were shared with the broader development community at a meeting in Nairobi in March 2015.

A locally recruited team consisting of a Research Officer and two Research Assistants were trained and supervised to assist with community consultations, undertake data collection, and support the film maker. All data collection was in the local language (Maa or Kiswahili), and ethics approval was obtained from Ethics and Scientific Review Committee of Amref Health Africa, in Kenya, and from the Human Research Ethics Committee of the University of Melbourne. All participants gave informed consent to participate in the research, film and booklet.

## ASSESSMENT

A summary of key findings from the qualitative investigation, TBA survey, facility audit and subsequent meeting with policymakers are presented in this section. More detailed information on the research components specifically are available from the published papers (REFRERENCES REMOVED FOR BLINDING)

### *Practices and perceptions of TBAs*

TBAs engage with women from pastoralist communities at all stages of pregnancy and delivery. They provide advice to keep the (in-utero) baby small, such as restricting food intake, inducing vomiting and increasing physical activity during pregnancy. They massage women during pregnancy and labour, administer a range of herbs, and play a key role as mediator between the woman and her husband. During labour, their role is a relatively passive one focusing on providing comfort by holding the woman, receiving the baby, and

ensuring that both are kept warm. TBAs provide extended post-partum care, assisting with household chores and promoting breast feeding (REFERENCE REMOVED FOR BLINDING).

All participant groups recognised TBAs as having a range of positive attributes. The TBAs were seen to be: familiar, trusted and respected members of their communities; repositories of valued knowledge; affordable and accessible; and able to provide emotional and practical support to women at the time of childbirth. Additionally, they allowed women to deliver in the squatting position. However, some shortcomings were also acknowledged. TBA knowledge of safe obstetric practice, particularly recognition and management of complications, was recognised as sub-optimal. The fact that they are unable to administer injections and medicines was also seen as a disadvantage. Some judged TBA practices as unhygienic (no handwashing or gloves, dirty utensils and an unclean environment) (REFERENCE REMOVED FOR BLINDING). TBAs identified a number of challenges related to their practice including difficulties arranging transport in the event of complications, caring for women who may be HIV positive, and encountering wild animals when travelling to the homes of women requiring their care (REFERENCE REMOVED FOR BLINDING).

### *Perceptions of SBAs*

Community members and TBAs acknowledged that SBAs had valuable technical knowledge and skills, practiced safe and hygienic deliveries, were able to administer medicines and injections, and were better linked into the health system. However, they also described the negative attitudes and behaviours of SBAs (including verbal and physical abuse of women) and absenteeism as negative attributes of SBAs. Additionally, the health facility environment was judged by many women and TBAs to be unsuitable for childbirth. They reported that labouring women were sometimes left alone, the room was too cold, family members had limited access, and routine procedures such as episiotomies, suturing, vaginal examination and delivering in the lithotomy position were frightening (REFERENCE REMOVED FOR BLINDING).

Many SBAs found being a solo practitioner in a remotely-located dispensary challenging, especially if it involved living far from their own families. They found it very difficult to persuade women to attend the health facility for delivery, and were sometimes called to

deliver babies at home, often when the woman was in advanced labour and experiencing a complication. SBAs also faced challenges when trying to arrange transportation for the referral of unwell women to higher-level facilities. They sometimes had to travel out of station for professional and personal reasons, which caused tension and discomfort with the local community. Women would present to the dispensary for care, sometimes in labour, only to find the SBA was not available to attend to them (REFERENCE REMOVED FOR BLINDING).

### *Barriers to accessing facility-based deliveries*

Community members and TBAs identified several reasons for the persistence of homebirths despite the Kenyan government initiatives designed to promote health facility deliveries. The perception that doctors and nurses in health facilities treated women disrespectfully, and limited understanding of the risks associated with homebirths in remote locations were commonly identified reasons, along with distance, poor roads and transport problems related to access and cost (REFERENCE REMOVED FOR BLINDING).

### *Existing and potential SBA/TBA collaborations*

Even though the Kenyan government policy is to promote delivery with SBAs and to discourage delivery with TBAs, we found ample evidence of mutual respect and informal collaborations between SBAs and TBAs working in pastoralist communities. Some TBAs facilitated referrals to SBAs, and accompanied women to the health facility for antenatal care and delivery, and in some cases were allowed to remain with the woman as a birth companion. Most SBAs acknowledged that TBAs had better relationships with the women in the community (REFERENCE REMOVED FOR BLINDING).

### *Audit of health facilities*

The audit of five dispensary level health facilities considered the availability of infrastructure, equipment, supplies and drugs required for delivery, newborn resuscitation, documentation and referral. All five facilities had cord clamps, episiotomy scissors, stethoscope, sphygmomanometer, fetoscope, thermometer, baby scales, gentamycin, paracetamol, and a maternity register. Only two sites had neonatal suction, only one had a

neonatal ambu-bag, and none had oxygen. One site had no oxytocics, and four had no injectable ampicillin. Three sites had no electricity, three sites had no direct road access, and two sites had no running water. Four sites had no stretcher or ambulance available.

### *Film and booklet*

The film entitled "Walking together: The experience of traditional and skilled birth attendants in rural Kenya" can be viewed on YouTube from the following link: https://www.youtube.com/watch?v=-VX9d8JbgMQ. The accompanying booklet is freely available from the authors. The film engendered engagement with stakeholders (including communities) and stimulated lively discussions about models of care in ways that reports and published papers do not.

### *Engagement with policy makers*

The study findings were shared at a follow-up meeting with a group of policy makers and program implementers in Nairobi (March 2016). The meeting participants recognised that the current reality in the pastoralist communities of Laikipia and Samburu is that births are mostly occurring at home with TBAs in attendance, and that the transition from births attended by TBAs to births attended by SBAs will most likely be a gradual one in these communities. All agreed that an interim SBA/TBA collaborative model of care, while also promoting the role of the community health workers, has the potential to maximise the safety of pastoralist women and newborns during the transition phase, and may even accelerate the transition itself.

### *Proposing a model of SBA/TBA collaborative care for pastoralist women*

Drawing on the collective findings from the varied sources of data, we propose a formalised model of SBA/TBA collaborative care that remains consistent with Kenyan Government policy, involving the following:

- Shared antenatal care with at least one antenatal visit involving both the SBA and TBA to facilitate detailed birth planning with the woman.

- The TBA escorting women to health facilities at the onset of labour, and remaining as a birth companion to provide support and comfort for the labouring woman. Women may be more likely to attend a health facility and receive better quality care if accompanied by a trusted, familiar other, as demonstrated in Tamil Nadu, India (Mathai 2011). Additionally, onsite care by the TBA may enable the woman to stay for the recommended 24 hour period of post-partum observation.
- The TBA assisting the SBA with some tasks during delivery given that the SBA is often a solo practitioner. For example, the TBA could ensure the newborn is kept warm and facilitate the early initiation of breastfeeding.
- The TBA providing post-partum care, with back-up from the SBA. In addition to the traditional post-partum care provided by TBAs, they can monitor both the woman and the newborn for post-delivery complications such as sepsis, in order to facilitate early and rapid referral.

## CONCLUSION

This paper describes the components of a project that collectively culminated in the development of a SBA/TBA collaborative care model that could be adopted as a strategy for strengthening the quality of maternal and newborn care among pastoralist women in Laikipia and Samburu counties, Kenya. Local communities and government were partners in this process. The model subsequently informed the development of a checklist for pastoralist friendly maternal and newborn health care facilities, which is currently being piloted in selected facilities.

Based on our research findings and our direct experiences with SBAs, TBAs and communities we are of the view that formalising and implementing the proposed SBA/TBA collaborative care model is likely to improve the uptake of facility-based deliveries among pastoralist women. Such an initiative would have to be supported by the provision of training for the TBAs and SBAs involved. TBA training could include nutrition during pregnancy, signs and symptoms of complications pre and post-partum, referral procedures, routine post-partum care, and family planning.

As found in our study (REFRENCES REMOVED FOR BLINDING), studies elsewhere in Africa have identified staff mistreatment of women during childbirth as an important barrier to accessing facility based care (Balde et al., 2017; Bohren et al., 2017). Consequently, SBA training on respectful maternity care is also indicated if the proportion of women delivering in health facilities with SBAs is to increase in Laikipia and Samburu. Additionally, some re-design of health facility infrastructure and services to more effectively meet the specific needs of pastoralist women and their families are required e.g. ensuring that: privacy is provided; the environment is warm; and that water, toilets and cooking facilities are available.

A review of barriers to good quality midwifery care in low and middle income countries from the perspective of providers identified a number of social, economic and professional barriers including: the low status of midwives resulting in lack of respect and authority; the perception that attending a birth is unclean or polluting work; the social isolation and vulnerability of women who are often young and single and required to live away from their own communities; being paid very low or even no wages; poor staffing contributing to very heavy workloads and excessive overtime; lack of adequate training and supportive supervision; managing the tension between professional and domestic demands; and the lack of drugs, equipment and basic infrastructure (including water and light) (Filby et al. 2016).

The impact of the Government's strategy of placing SBAs in remote areas will be limited unless the SBAs are supplied with the tools-of-trade required to deliver reasonable quality care. The results of our basic audit highlight major gaps in medicines, equipment and infrastructure that seriously compromises SBAs capacity to provide safe deliveries in health facilities.

A combination of careful consultations with local communities and government, mixed methods research activities, and the creation of the film and booklet generated a nuanced understanding of the maternal and child health landscape affecting the pastoralist communities of Laikipia and Samburu Counties in Kenya, and identified key recommendations for an SBA/TBA collaborative model of care to promote health facility births. Both the study findings and the collaborative care model have relevance for other

pastoralist communities elsewhere in Kenya and in neighbouring countries. Additionally, strong community/NGO/government/research partnerships have been established, which provides an ideal platform for future implementation and evaluation of interventions informed by evidence.

**Conflict of interest:** All authors declare that they have no conflict of interest.

**Acknowledgements:** Mothers' Union of the Anglican Church Kenya Diocese of Mt Kenya West, Health Ministries of Laikipia and Samburu counties, Pamela Onyo, Lillian Piroris, and John Ole Tingoi. This study was funded by the Australian government's Department of Foreign Affairs and Trade. The views expressed are those of the authors and not necessarily those of the Commonwealth of Australia.

## REFERENCES

AbouZahr, (2003). C. Safe motherhood: a brief history of the global movement 1947–2002. British Medical Bulletin, 67(1), 13–25.

Adegoke, A.A. & van den Broek, N. Skilled birth attendance – lessons learnt. BJOG, 116 (Suppl 1), 33-40.

Balde, D.M., Diallo, B.A., Bangoura, A., Sall, O., Soumah, A.M., Vogel, J.P., et al. (2017). Perceptions and experiences of the mistreatment of women during childbirth in health facilities in Guinea: a qualitative study with women and service providers. Reproductive Health, 14:3, DOI 10.1186/s12978-016-0266-1.

Bergström, S., & Goodburn, E. (2001). The role of traditional birth attendants in the reduction of maternal mortality. In: De Brouwere, V., Van Lerberghe, W. (Eds), Safe motherhood strategies: a review of the evidence (p. 77–99). Belgium: ITG Press.

Bohren, M.A., Vogel, J.P., Tuncalp, O., Fawole, B., Titiloye, M.A., Olutayo, A.O., et al. (2017). Mistreatment of women during childbirth in Abuja, Nigeria: a qualitative study on perceptions and experiences of women and health care providers. Reproductive Health, 14:9, DOI 10.1186/s12978-016-0265-2.

Byrne, A., & Morgan, A. (2011). How the integration of traditional birth attendants with formal health systems can increase skilled birth attendance, International Journal of Gynecology and Obstetrics, 115(2), 127–34.

Byrne, A., Caulfield, T., Onyo, P., Nyagero, J., Morgan, A., Nduba, J., Kermode, M. (2016). Community and provider perceptions of traditional and skilled birth attendants providing maternal health care for pastoralist communities in Kenya: a qualitative study, BMC Pregnancy and Childbirth, 16:43, DOI 10.1186/s12884-016-0828-9.

Falle, T., Mullany, L., Thatte, N., Khatry, S., LeClerq, S., Darmstadt, G., et al. (2009). Potential role of traditional birth attendants in neonatal healthcare in rural southern Nepal. Journal of Health Population and Nutrition, 27(1), 53–61.

Filby, A., McConville, F., Portela, A. (2016). What prevents quality midwifery care? A systematic mapping of barriers in low and middle income countries from the provider perspective. PLoS One, 11(5), e0153391. doi:10.1371/journal.pone.0153391.

Hoope-Bender, P., de Bernis, L., Campbell, J. Downe, S., Fauveau, V., Fogstad, H., et al. (2014). Improvement of maternal and newborn health through midwifery, Lancet, 384, 1226-35.

Kassebaum, N.J., Bertozzi-Villa, A., Coggeshall, M.S., Shackelford, K.A., Steiner, C., Heuton, K.R., et al. (2014). Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013, Lancet, 384, 980–1004.

KNBS (Kenya National Bureau of Statistics) & ICF Macro. (2010). Kenya Demographic and Health Survey 2008-09. Kenya: KNBS and ICF Macro.

KNBS (Kenya National Bureau of Statistics). (2010). The 2009 Kenya Population and Housing Census: Counting our people for the implementation of Vision 2030. Kenya: KNBS.

KNBS (Kenya National Bureau of Statistics). (2015). Kenya Demographic and Health Survey 2014. Kenya: KNBS.

Kruske, S., & Barclay, L. (2004). Effect of shifting policies on traditional birth attendant training, Journal of Midwifery and Women's Health, 49(4), 306–11.

Mathai M. (2011). To ensure maternal mortality is reduced, quality of care needs to be monitored and improved alongside increasing skilled delivery coverage, International Journal of Obstetrics and Gynaecology, 118 (Suppl 2), 12-14.

Nossal Institute for Global Health, Mothers Union of the Anglican Church of Kenya, Anglican Overseas Aid. (2012). The Road Less Travelled: Maternal and child health baseline survey among Maasai and Samburu nomadic pastoralist communities in Laikipia and Samburu, Kenya. Kenya: Anglican Overseas Aid.

Nossal Institute for Global Health, Mothers Union of the Anglican Church of Kenya, Anglican Overseas Aid. (2012). The Road Less Travelled: Kenya Endline Report. Kenya: Anglican Overseas Aid

REMOVED FOR BLINDING

Renfrew, M.J., McFadden, A., Bastos, M.H., Campbell, J., Channon, A.A., Cheung, N.F. et al. (2014). Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. Lancet, 384(9948), 1129-45.

SAFE International Research Partnership (2003). SAFE Strategy Development Tool: A guide for developing strategies to improve skilled attendance at delivery. Sotland: The Dugald Baird Centre for Research on Women's Health, University of Aberdeen.

Saravanan, S., Turrell, G., Johnson, H., Fraser, J. (2010). Birthing practices of traditional birth attendants in South Asia in the context of training programmes, Journal of Health Management, 12(2), 93–121.

Sibley, L.M., & Sipe, T.A. (2006). Transition to skilled birth attendance: is there a future role for traditional birth attendants? Journal of Health Population and Nutrition, 24(4), 472-8.

Tomedi, A., Tucker, K., Mwanthi, M. (2013). A strategy to increase the number of deliveries with skilled birth attendants in Kenya, International Journal of Gynecology and Obstetrics, 120, 152–5.

United Nations. (2015). The Millennium Development Goals Report 2015. New York: UNICEF.

WHO, UNICEF, UNFPA. (2014). Trends in maternal mortality, 1990 to 2013: estimates by WHO, UNICEF, UNFPA, The World Bank, and the United Nations Population Division. Geneva: World Health Organization.

**Author/s:**
Kermode, M; Morgan, A; Nyagero, J; Nderitu, F; Caulfield, T; Reeve, M; Nduba, J

**Title:**
Walking Together: Towards a Collaborative Model for Maternal Health Care in Pastoralist Communities of Laikipia and Samburu, Kenya

**Date:**
2017-10-01

**Citation:**
Kermode, M., Morgan, A., Nyagero, J., Nderitu, F., Caulfield, T., Reeve, M. & Nduba, J. (2017). Walking Together: Towards a Collaborative Model for Maternal Health Care in Pastoralist Communities of Laikipia and Samburu, Kenya. MATERNAL AND CHILD HEALTH JOURNAL, 21 (10), pp.1867-1873. https://doi.org/10.1007/s10995-017-2337-5.