Evaluating skilled care at delivery in Burkina Faso: principles and practice

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Summary

There are strong expectations of what could be achieved by skilled care at delivery for maternal and newborn survival and health. Meeting these expectations involves the translation of the concepts and principles of skilled attendance into the reality of routine programmes. This process of translation brings to light some of the tensions which lie behind the consensus on the ideal package and particularly the alternative configurations of provider and place necessary in the immediate term. Lessons learnt from the implementation of specific projects and initiatives have a crucial role to play in informing scaling-up and the achievement of universal coverage. The Skilled Care Initiative implemented in Burkina Faso by Family Care International, evaluated and reported here, provides many lessons for moving from concepts to practice. Firstly, there is the crucial issue of local contextual adaptation, as no one-size-fits-all for skilled attendance. Secondly, interventions to achieve skilled care require and imply different levels of intensity of implementation, depending on the functionality of the wider health system in the intervention area. Thirdly, there is the crucial issue of the balance and sequencing of supply- and demand-side interventions. Finally, the concept of skilled attendance at delivery does not exist in a vacuum in space or time, and concurrent health initiatives and cross-sectoral developments, such as transport and road improvements, can strongly influence outcomes. This not only presents challenges for the implementation of specific interventions within health institutions and communities, but also for the evaluation of their effects.

keywords skilled attendance at delivery, conceptual frameworks, outcome evaluation

Introduction

2007 marked the 20th anniversary of the global Safe Motherhood Initiative. This initiated an on-going process of taking stock of lessons learnt and using these to advocate for revitalized efforts for the next decade (Gill et al. 2007). The 10th anniversary had heralded a turning-point in international recommendations on priorities for reducing maternal mortality (Starrs 2006). The shift essentially reflected a weight of accumulated evidence which challenged unrealistic expectations of mortality reduction from TBA training and antenatal at-risk screening. Although 10 action messages were promulgated at the 1997 anniversary, one of these characterized a new phase of focused effort – ‘Ensure skilled attendance at delivery’. This common-sense message had great intuitive appeal and was rapidly taken-up by national governments and international agencies as a core component of refocused safe motherhood strategies. The Millennium Declaration in 2000 helped to further promote skilled attendance at delivery¹ by making it a proxy indicator for one of the eight Millennium Development Goals – MDG5 ‘improve maternal health’ (MacDonagh 2005).

The prominence given to skilled attendance within safe motherhood policy and programming has stood the test of time. Early tensions with initiatives prioritizing emergency obstetric care – tensions spanning from the late 1990s to the early-2000s, were eventually overcome as skilled attendance began to be seen as all-encompassing for normal as well as complicated cases (Maine 2007). Similarly, concerns that care before and after delivery would be neglected were allayed by broadening the scope of work for skilled attendants to cover the ante- and

¹We use ‘skilled attendance’ and ‘skilled care’ at delivery synonymously.
postnatal periods, in theory at least. Intrapartum care remains however, the most strongly supported by evidence as regards reducing maternal mortality (Ronsmans & Graham 2006). Now in this 21st year of safe motherhood, there is no serious expectation that skilled attendance will suffer the same fate as TBA training or antenatal at-risk screening and fall out of favour. Rather, the experiences of implementing skilled attendance over the last decade will help to sharpen resolve for the goal of universal coverage. But although the importance of skilled attendance for all deliveries is undisputed, there is no clear consensus on the optimal transitional stages to reaching optimal configurations of place of delivery and provider, nor indeed the optimal transitional stages to reaching universal coverage (World Health Organization 2005b). The Lancet series on maternal survival advocates the optimal strategy for resource poor countries to be teams of midwives providing skilled care for deliveries in health centres (primary level facilities) and with access to referral services for comprehensive emergency obstetric care; referred to as a ‘health centre intrapartum care strategy’ (Campbell & Graham 2006). The time-frame and resources required to achieve such an optimum clearly vary between settings and so do the stages or pathways to reaching this service configuration. Variants of skilled attendance are inevitable since no ‘one-size-fits-all’ given the wide diversity of contexts within and between developing countries. Nevertheless, all skilled attendance strategies share a common conceptual framework or underlying principles which define the assumed mechanisms by which service inputs and processes exert effects on maternal and perinatal outcomes.

The aim of this paper is to highlight Family Care International’s (FCI) Skilled Care Initiative (SCI) and specifically its implementation in rural Burkina Faso, exploring common underlying principles to skilled attendance and adaptations found to be necessary in practice. Our paper provides the contextual background for subsequent articles in this Supplement which report on the conduct and findings of a comprehensive outcome evaluation of SCI in Burkina Faso. Launched in mid-2000 by FCI, the SCI was a 5-year multi-faceted project, designed to increase the use of skilled care in resource-poor settings (Family Care International 2007). Implemented in four, rural, underserved districts in Burkina Faso, Kenya and Tanzania, the overall project sought to improve the quality and availability of services for women, throughout pregnancy, childbirth and the immediate postpartum period, and where they can most easily be accessed – in the health centres and dispensaries.

We begin by introducing the paradigm of skilled attendance, and its key defining features – the provider and place of care. After summarising challenges in monitoring uptake of skilled attendance, we reflect on the case of the SCI in rural Burkina Faso, and conclude by highlighting the considerations of scaling-up from this specific experience.

The skilled attendance paradigm for reducing maternal mortality

Much has been written about the theory of reducing maternal mortality in developing countries over the past two decades, with one of the earliest, classic articles asking ‘Where is the M in MCH?’ (Rosenfield & Maine 1985). The perspectives taken on intervention can be broadly grouped into four categories – clinical, service, health system, and development, reflecting respectively direct, proximate, intermediate and distal determinants (McCarthy & Maine 1992; Graham et al. 2006). At the clinical level, there is a strong evidence-base on single interventions to prevent pregnancy as the ultimate risk factor for maternal death, to help preserve the normality of pregnancy and childbirth, and to manage mild to life-threatening obstetric complications. Service perspectives to reducing maternal mortality highlight the provision of reproductive health care, including maternity services, which are effective, affordable, appropriate and accessible. Supply- and demand-side factors are brought together in perspectives emphasizing the importance of the health system, including behavioural change interventions (Moore et al. 2002). A broader development framework in which to reduce maternal mortality emphasizes the importance of high-level political commitment to women’s lives, and investment in social and economic development to address gender and wealth inequities (Freedman et al. 2005; Gill et al. 2007).

It is widely-accepted that all of these perspectives on intervention are legitimate and necessary, and none alone sufficient where the primary target outcome is maternal mortality. The epidemiology of this outcome points clearly to the intrapartum period as a time of particular risk of life-threatening complications (Ronsmans & Graham 2006). This fact, together with the support from historical success stories and contemporary ecological analyses (De Brouwere et al. 1998), continue to provide the strong case today for prioritizing skilled attendance at delivery (World Health Organization 2005a). Although initially this was seen simplistically and perhaps wishfully as an intervention just in terms of the provider or skilled attendant, it was soon recognized that a much broader interpretation was needed. Indeed, a framework was required which encompassed clinical, service, health system and development perspectives. Thus the concept of skilled attendance at delivery has become almost synonymous with safe motherhood itself (MacDonagh 2005).
Box 1 summarizes relevant definitions and Figure 1 shows one example of a schematic representation of skilled attendance at delivery. Together these help to highlight three key and undisputed features, and the two main dimensions which define strategic variations and controversies – the primary provider and place of provision. The first undisputed key feature relates to the target group of women. Recognition that skilled attendance encompasses both normal and complicated deliveries is crucial, highlighting the importance of both essential obstetric care, which embraces emergency interventions, and the referral chain between levels of care (Jahn & De Brouwere 2001). The second key feature arises from the enabling environment of the health system, which encapsulates the supply- and demand-side, and emphasizes how coverage of skilled attendance is driven by the balance between these (Graham et al. 2001). Thus, for example, upgrading health facilities will not guarantee increased uptake by women in the absence of addressing demand-side barriers, such as affordability and accessibility (Ensor & Cooper 2004; Freedman et al. 2007). Conversely, creating demand without assuring the availability and quality of services will also lead to disequilibrium, manifesting for example by worsening health outcomes for mother and baby, and could be argued as unethical. The third key feature hinted at in Figure 1 is the wider political, policy and socio-economic environment, described earlier as the development perspective on intervention, which needs to be conducive to tackling inequities in geographic and financial access as well as cultural and gender status barriers. This environment embraces more than just the logistic capacity to ensure the minimum standard of equipment and consumables are universally available. It also includes the technical and administrative capacity to organize the supply and the societal capacity to demand services.

In terms of the main provider and place of provision, there are clearly a great many possible variants (Fig. 2), although three main models stand out: delivery with a health professional at home, without a professional at home, and with a professional in a health facility (Koblinsky et al. 1999). The dimension of professional or non-professional could be differentiated further on a number of bases, such as competency to manage normal deliveries and identify, manage and refer complications in the mother and newborn. Similarly, the dimension of place of provision could be sub-divided on the basis of ‘closeness to client’ or availability of facilities needed to provide different obstetric functions. In many settings, some combinations of provider and place are fixed together, as for instance, where professional midwives do not practice in the community and so deliveries by midwives are synonymous with facility deliveries. Moreover, several combinations may exist within the same country, and some can be seen as transitional phases towards one of the four

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**Box 1 Key definitions**

**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. Joint statement of WHO, ICM & FIGO)

**Skilled attendance:** is a partnership of skilled attendants AND an enabling environment of equipment, supplies, drugs and transport for referral to emergency obstetric care. The political, economic and socio-cultural environment can also prevent or enable skilled attendance. (Graham et al. 2001)

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![Figure 1](image1.png)  
**Figure 1** Conceptual framework for skilled attendance at delivery. Source: adapted from Graham et al. (2001).

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![Figure 2](image2.png)  
**Figure 2** Four models of birth attendant and place, and common pathways* between them. *Solid arrows indicate direction of common pathways between models over time.
main models. As Koblinsky and Campbell (2003) note in their review of country case-studies, all settings where deliveries take place with health professionals appear to shift inevitably and eventually into the dominant pattern of facility-based care.

For many developing countries with low current coverage of skilled attendance and major supply-side barriers, both of professionals and of functioning health facilities, strategies are needed which address immediate needs but also work towards an explicit policy on the preferred place and provider for delivery care (Campbell & Graham 2006). A key issue in identifying transitional steps is their resource and time implications, as for example, where countries opt for the creation of a new cadre of providers or where existing workers are to be redeployed. The WHO/ICM/FIGO definition of skilled attendants (Box 1) is restricted to accredited health professionals (doctors, nurse, midwives), but as will be illustrated in the case of Burkina Faso, designations of professionals and skilled attendants are often context-specific. A serious shortage of accredited professionals exists now and for the foreseeable future in many countries, as discussed in the 2005 and 2006 World Health Reports (World Health Organization, 2005b, 2006) and echoed by Koblinsky et al. (2006). The competencies of providers clearly have major implications on the extent to which the concept of skilled attendance is applied in practice and thus on effectiveness in reducing maternal mortality. Whilst much importance is attached to training in clinical and interpersonal skills, increasingly it is recognized that re-training and supervision are also key, as are issues of deployment, motivation and retention (MacDonagh 2005; ten Hoope-Bender et al. 2006). These human resource factors represent major challenges to scaling-up of skilled attendance at delivery in the immediate term.

In terms of place of childbirth, the key uncertainty is the extent to which all women should be encouraged and enabled to deliver in health facilities, as a national policy aspiration. The arguments for and against have been well rehearsed in many recent publications (Buttiens et al. 2004; Stanton et al. 2007), and several countries do already support such a strategy. Achieving this aspiration is, however, a long-term prospect for many nations, and this again raises the issue of interim steps. Based on currently-available evidence, the Lancet series (2006) argued that a skilled attendance strategy should have as its core feature the opportunity for women to give birth in a primary level facility (variously called a health centre, birthing centre, maternity home). Midwives would be the main providers, but with other attendants working with them in a team. This so-called health centre strategy ideally should be routinely available to all women during labour and delivery. The aim would be to maintain the normality of the birthing process, with an emphasis on non-intervention, with women and their babies monitored during labour and for 24 h after birth.

Underlying this skilled attendance strategy are thus important principles of safety, primary prevention, and early detection and management of problems. New technologies and improved practice would be spread rapidly through the professional bodies and hierarchies intrinsic to this strategy. Campbell and Graham (2006) argue that this strategy compared to other provider-place configurations would be effective in terms of reducing maternal mortality because it can provide packages of single interventions proven to be clinically efficacious. Moreover, this strategy is likely to be more cost-efficient than options focusing on home or hospital-based care as it is likely to achieve a higher coverage of deliveries. A key consideration in assessing the success of this and alternative skilled attendance strategies, however, is the indicators and mechanisms for monitoring.

The challenge of monitoring skilled attendance

The conceptual framework for skilled attendance at delivery described earlier (Figure 1) highlights the interplay of multiple facets and constituents. As others have noted (MacDonagh 2005), this synergy is crucial and yet most indicators routinely used to describe or track skilled attendance focus on single discrete elements. Two shortcomings are of particular note. Firstly, dedicated, robust measures and mechanisms are lacking for capturing both the essential ‘skilled’ characteristics of providers (be these clinical or interpersonal) and of environments (in terms of functionality and enablement). Whilst special studies have measured these elements (Hussein et al. 2004), the availability of valid indicator data through routine information systems is lacking in many settings. Secondly, a crucial aspect currently having limited measures is case-mix or, in other words, the balance of normal, complicated and severely-complicated deliveries. The measure known as Unmet Obstetric Need is one option which has been widely applied through a supportive network (UON Network, 2007). Although Caesarean section rates are often used as the marker for complicated deliveries, this only helps partially to distinguish between women presenting because of a clinical need vs. women without problems who choose skilled care. Some novel approaches could, however, be used to help illuminate this difference. For example, where there are user fees or indirect costs, the proportion of poor women who deliver with skilled attendance could be seen as a proxy for cases needing life-saving intervention, as...
these women are unlikely to opt for such charges unless there is a clinical need.

The most frequently-used population based indicator relevant to skilled attendance is the proportion of live births with health professionals (doctors, nurses and midwives). Two common data sources for national and international comparisons are the Demographic and Health Surveys (DHS) and the Multi-indicator Cluster Surveys (MICS). Both of these derive data from questions to women respondents about recent live births, and where and with whom they delivered. Much has been written about the problems of this approach (Hussein et al. 2004), in terms of omission of stillbirths, errors in women’s recall or knowledge, and lack of indication of the skills or qualifications of providers. Nevertheless, the DHS and MICS remain an invaluable resource for exploring trends and differentials within countries. As a proxy indicator for MDG5 this albeit partial measure of skilled attendance at delivery has been extremely influential in directing the attention of governments and international development partners to underserved areas and groups. Recently this measure has also been integrated into the Countdown to 2015 (Bryce et al. 2006), both for looking at co-variates of child survival as well as for maternal health. This initiative tracks progress towards universal coverage and categorizes countries on the basis of benchmarks set to different populations into either ‘on track’ (meeting coverage targets), ‘watch’ (close to target but warranting oversight), or ‘high alert’ indicating coverage is seriously inadequate. Figure 3 illustrates this grouping for the proportion of deliveries with skilled attendants for 32 low income countries from DHS data, and highlights the importance of sub-national disaggregation of coverage indicators – here into rural and urban populations. Exploring differentials by wealth is also important as equity is a core principle of most skilled attendance frameworks. However, although it is the intention of DHS and MICS to follow the WHO/ICM/FIGO definition for skilled attendants, restricting the category to accredited professionals, in practice there is inevitably some variation in interpretation between countries, which makes not only international tracking of progress, as in the Countdown to 2015, problematic but also make judging the comparative effectiveness of alternative strategies difficult.

The Skilled Care Initiative in rural Burkina Faso

The SCI comprised three tiers of activity:

- Strengthening national policies, programmes and guidelines in support of increasing skilled care during childbirth;
- Offering high quality accessible essential obstetric care close to where women live;
- Mobilising and educating communities to plan for and use routine and emergency maternal health services.

These three tiers can be related to the core elements of the conceptual framework shown in Figure 1: creating an enabling environment and addressing health system supply- and demand-side barriers. The practical implementation of these tiers varied across the three participating countries (Freedman et al. 2007), illustrating the essential variation in skilled attendance in response to different health system contexts and needs. Here we focus on SCI in rural Burkina Faso.

Figure 4 is the schematic representation of the conceptual framework developed and applied by SCI (FCI, 2007). The size and nature of the postulated intervention effect was at least a 10% increase in the population-based rates of skilled care at childbirth. The content of the intervention package is described in detail elsewhere in this supplement (Hounton et al. 2008), and was designed and implemented with the District Health Management team within the project district of Ouargaye in south-east Burkina Faso. On the supply-side, the SCI sought to address personnel shortages at health facilities; improve provider performance and service quality; upgrade facility infrastructure and equipment; and strengthen health management systems – with a particular emphasis on health centres, which are key to bringing safe delivery care closer to women. Strengthening at this level not only included the interventions mentioned above, but also

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Figure 3 Categorization of 32 low-income priority countries by percentage coverage of births with skilled attendants. Source: derived from Mukuria et al. (2005).

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2In terms of all who attended or most qualified in the eyes of the woman.
putting in place a radio-call system to facilitate the referral of complications, as well as consultations with the doctor at the district hospital about case management. At the district hospital, similar interventions were introduced to improve essential obstetric care. In addition, a new maternity ward was constructed and the operating theatre was upgraded to be able to provide all comprehensive emergency obstetric care (CEmOC) functions. The medical officer was also trained in conducting Caesarean sections, and CEmOC at hospital level was thus performed by accredited health professionals – doctors and nurse-midwives.

Reflecting on the two key dimensions discussed earlier, provider and place, it is important to identify the adaptations to the skilled attendance conceptual framework necessary in the context of Burkina Faso (FCI, 2005). In terms of the primary provider of delivery care in facilities closest to women, the auxiliary midwife (Accoucheuse Auxiliaire) is the main skilled attendant practising at health centres (CSPS). The auxiliary midwives undergo a focused 2-year pre-service training programme. Through SCI, the head of the health centre – a nurse and usually male – was given additional training to conduct deliveries in health centres with high case-loads. However, rather than teams comprised solely of midwives, in Burkina Faso these included the nurse and an auxiliary midwife, since professional midwives only practice in district hospitals. The health centre teams are completed by a community health worker (Agent Itinérant de Santé) with a 2-year pre-service training focused on community education and nursing. In some busy health centres, these workers may also help to conduct deliveries, or traditional birth attendant (Matrone) may assist the auxiliary midwife. In Burkina Faso the Ministry of Health considers auxiliary midwives to be skilled attendants. SCI sought to upgrade their skills to encompass all essential competencies, except vacuum extraction and MVA, which in Burkina Faso are not authorised at health facilities below the district hospital level. However, in terms of the WHO/ICM/FIGO definition noted earlier (Box 1), and based on their pre-service training, competencies and scope of responsibilities, these auxiliary midwives would not be regarded as skilled attendants. This has a number of

Figure 4 Skilled Care Conceptual Framework. Source: adapted from Family Care International (2007)
implications for interpreting the effectiveness of the SCI, as discussed elsewhere in this Supplement.

Conclusion: from concept to reality

Ensuring that all women have the opportunity for skilled care at delivery is an undisputed priority for the health of both mothers and babies (Starrs 2007). What constitutes skilled care is also broadly accepted in terms of best practice for normal and complicated deliveries. Similarly who should ideally be the skilled attendant is widely-endorsed – a health professional with midwifery skills, practising in a place where safe delivery is possible as well as access to emergency obstetric care. There is also wide recognition that these supply-side characteristics of skilled attendance at delivery need to be balanced with demand-side features which enable and encourage women to take-up care. Finally, there is general agreement about the importance of the enabling environment or functioning health system. In other words, skilled care at delivery as an intervention and programmatic priority has much support and general consensus. This is illustrated by, for example, its use in the monitoring of progress towards MDG5 on improving maternal health.

There are strong expectations of what could be achieved by skilled care at delivery for maternal and newborn survival and health (World Health Organization 2005a). Meeting these expectations involves the translation of the concepts and principles of skilled attendance into the reality of routine programmes. This translation brings to light some of the tensions which lie behind the consensus on the ideal package and particularly the alternative configurations of provider and place necessary in the immediate term. Lessons learnt from the implementation of specific projects and initiatives have a crucial role to play in informing scaling-up and the achievement of universal coverage. The SCI implemented by FCI provides many such lessons on moving from concepts to practice.

The SCI in rural Burkina Faso, as reported and evaluated in this Supplement, was guided by a conceptual framework (Figure 4) that illustrates the aspirations and expectations of the skilled care approach in reducing maternal mortality and morbidity, and the pathways to achieving this impact through both supply- and demand-side interventions. In practice, however, conceptual frameworks – which are, necessarily, simplified models – obscure several key considerations and challenges for wide-scale implementation. Firstly, there is the crucial issue of local contextual adaptation, as no one-size-fits-all for skilled attendance. In rural Burkina Faso, for example, there is an acute shortage of health professionals. The primary providers of delivery care in the SCI were the auxiliary midwives who would not be regarded as skilled attendants by international standards. Secondly, interventions to achieve skilled care require and imply different levels of intensity of implementation, depending on the functionality of the wider health system in the intervention area. Conceptual frameworks rarely accommodate a dimension or metric for this and thus may mask the challenge of achieving implementation adequacy. Thirdly, there is the crucial issue of the balance and sequencing of supply- and demand-side interventions, which is difficult to depict in a conceptual model. The experiences of many initiatives show a tendency to focus on the supply-side, presuming that demand will increase in consequence. The SCI in rural Burkina achieved significant increases in coverage because there was a major emphasis on community mobilisation, and these efforts were undertaken alongside supply-side strengthening. Finally, the concept of skilled attendance at delivery does not exist in a vacuum in space or time, and concurrent health initiatives and cross-sectoral developments, such as transport and road improvements, can strongly influence outcomes. This not only presents challenges for the implementation of specific interventions within health institutions and communities, but also for the evaluation of their effects on the intended beneficiaries of skilled attendance – mothers and babies.

Acknowledgements

The authors would like to thanks colleagues in Immpact and FCI who have helped in the preparation: Lisa Davidson and Lucia D’Ambruoso at Immpact for assistance with references, and Ellen Brazier at FCI for her contribution to developing the SCI Conceptual Framework and for providing valuable feedback on an earlier version of this paper. This work was undertaken as part of an international research programme – Immpact, funded by the Bill & Melinda Gates Foundation, the UK Department for International Development, the European Commission and USAID. The funders have no responsibility for the information provided or views expressed in this paper. The views expressed herein are solely those of the authors.

Conflicts of interest

The authors have declared no conflicts of interest.

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