

Viewpoint

Access to maternal and perinatal health services: lessons from successful and less successful examples of improving access to safe delivery and care of the newborn

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Summary

The huge majority of the annual 6.3 million perinatal deaths and half a million maternal deaths take place in developing countries and are avoidable. However, most of the interventions aiming at reducing perinatal and maternal deaths need a health care system offering appropriate antenatal care and quality delivery care, including basic and comprehensive emergency obstetric care facilities. To promote the uptake of quality care, there are two possible approaches: influencing the demand and/or the supply of care. Five lessons emerged from experiences. First, it is difficult to obtain robust evidence of the effects of a particular intervention in a context, where they are always associated with other interventions. Second, the interventions tend to have relatively modest short-term impacts, when they address only part of the health system. Third, the long-term effects of an intervention on the whole health system are uncertain. Fourth, because newborn health is intimately linked with maternal health, it is of paramount importance to organise the continuum of care between mother and newborn. Finally, the transfer of experiences is delicate, and an intervention package that has proved to have a positive effect in one setting may have very different effects in other settings.

keywords perinatal mortality, maternal mortality, health system, developing countries

Introduction

Every year worldwide there are over 6.3 million perinatal deaths and between 343 000 and half a million maternal deaths (Stanton *et al.* 2006; WHO 2006; Hill *et al.* 2007; Hogan *et al.* 2010). In particular, 98% of perinatal deaths and 99% of maternal deaths take place in developing countries and are avoidable. Early neonatal deaths (in the first week of life) and fresh stillbirths (occurring during delivery) have similar obstetric origins. That makes perinatal mortality an indicator of the availability and quality of obstetric and paediatric care and of maternal health and nutrition (WHO 2006; Fauveau 2007).

The medical causes of perinatal and maternal deaths are known and effective treatments exist. Evidence-based effective and cost-effective interventions for reducing the burden of stillbirths (Darmstadt *et al.* 2009; Haws *et al.* 2009; Menezes *et al.* 2009; Yakoob *et al.* 2009), of neonatal deaths (Darmstadt *et al.* 2005) and of maternal deaths (Campbell & Graham 2006) have recently been

reviewed. Most of the interventions need a health care system offering appropriate antenatal care and quality delivery care, including basic and comprehensive emergency obstetric care facilities. The challenge in low-income countries is to deliver both high coverage and high-quality care, and thus to reduce financial and geographical barriers to access to maternal and perinatal health services. Improving access to maternal and newborn quality care does not guarantee a positive effect on maternal and newborn health outcomes but is reasonably considered as a contributing action to this goal, along with education and socioeconomic development.

Evidence-based perinatal interventions

Bhutta *et al.* (2009) categorised 5 interventions with a high level of confidence (according to the strength and quality of evidence) for wide-scale delivery and nine additional interventions with some evidence of impact (Table 1). However, some of the evidence-based interventions are

V. De Brouwere *et al.* Access to maternal and perinatal health services**Table 1** Summary of evidence for interventions to prevent stillbirth

Behavioural and nutritional interventions before and during pregnancy	Prevention & treatment of medical disorders and infections during pregnancy	Screening and monitoring during pregnancy and labour	Intrapartum care interventions
<i>The five interventions of benefit recommended for inclusion and scaling up in programmes</i>			
	Heparin for certain maternal conditions including clotting disorders Syphilis screening and treatment†		Emergency obstetric care packages including caesarean section† Planned caesarean section for breech deliveries*,†
	Insecticide treated bed nets (ITNs) during pregnancy†		
<i>The nine interventions with some evidence of impact that can be included in programmes but further research recommended</i>			
Multiple micronutrient supplementation during pregnancy	Management of intra-hepatic cholestasis during pregnancy	Foetal movement counting for high risk pregnancies	Elective induction of labour for post-term pregnancies
Balanced protein-energy supplementation during pregnancy	Anti-helminthic treatment† Antimalarials in malaria-endemic areas†	Umbilical artery Doppler velocimetry for high risk pregnancies Intrapartum cardiotocography with or without pulse oxymetry	

Source: adapted from Bhutta *et al.* 2009;

*Recommended only where access to referral level care is good.

†Clear benefit for maternal and/or neonatal health.

already included in the 'antenatal care' package – screening and treatment of syphilis, the diagnosis and treatment of reproductive tract infections, immunisation with tetanus toxoid, malaria prophylaxis in endemic areas and nutritional support (Darmstadt *et al.* 2005). Regarding delivery, interventions that save the newborn life are included in the intrapartum care package, including identification and management of malpresentation and prolonged labour, the use of resuscitation techniques for asphyxiated infants, proper management of neonatal sepsis and other infections, skin-to-skin Kangaroo Care for pre-term infants and immediate and exclusive breastfeeding for all children (Anonymous 1999).

Evidence-based maternal interventions

Evidence-based interventions for maternal health consist of a long list of unfinished actions (Campbell & Graham 2006). A shorter list of essential interventions for maternity care in low-resource countries was recently defined by FIGO (2009). In short, the principle is to offer quality prenatal, intra-partum and post-partum care by skilled health personnel at the first level (basic essential obstetric care), backed up by an effective and affordable referral system including hospital for delivering timely comprehensive

essential obstetric and perinatal care. However, even if there is a relatively strong consensus on effective interventions in the international organisation spheres and among academic staff, this is not necessarily the case in countries. Indeed, there is still a huge number of clinical staff who are not informed on or not convinced by the evidence, or who do not comply with evidence-based interventions for various reasons (Khalil *et al.* 2005; Harvey *et al.* 2007; Richard *et al.* 2008a; Waiswa *et al.* 2008; Karolinski *et al.* 2009; Mfinanga *et al.* 2009; Stanton *et al.* 2009; Turner & Short 2009).

Approaches to increasing access: the supply–demand side model

If the appropriate interventions regarding the reduction of maternal and perinatal mortality, as well as the types of strategies in which they should be included, are relatively well-defined today, their implementation remains a challenge. To promote the uptake of appropriate care (i.e. effective and delivered with quality), there are two possible approaches: influencing the demand and/or the supply of care (Figure 1). In this article, demand-side interventions are defined as those that operate at the individual, household or community level (Ensor &

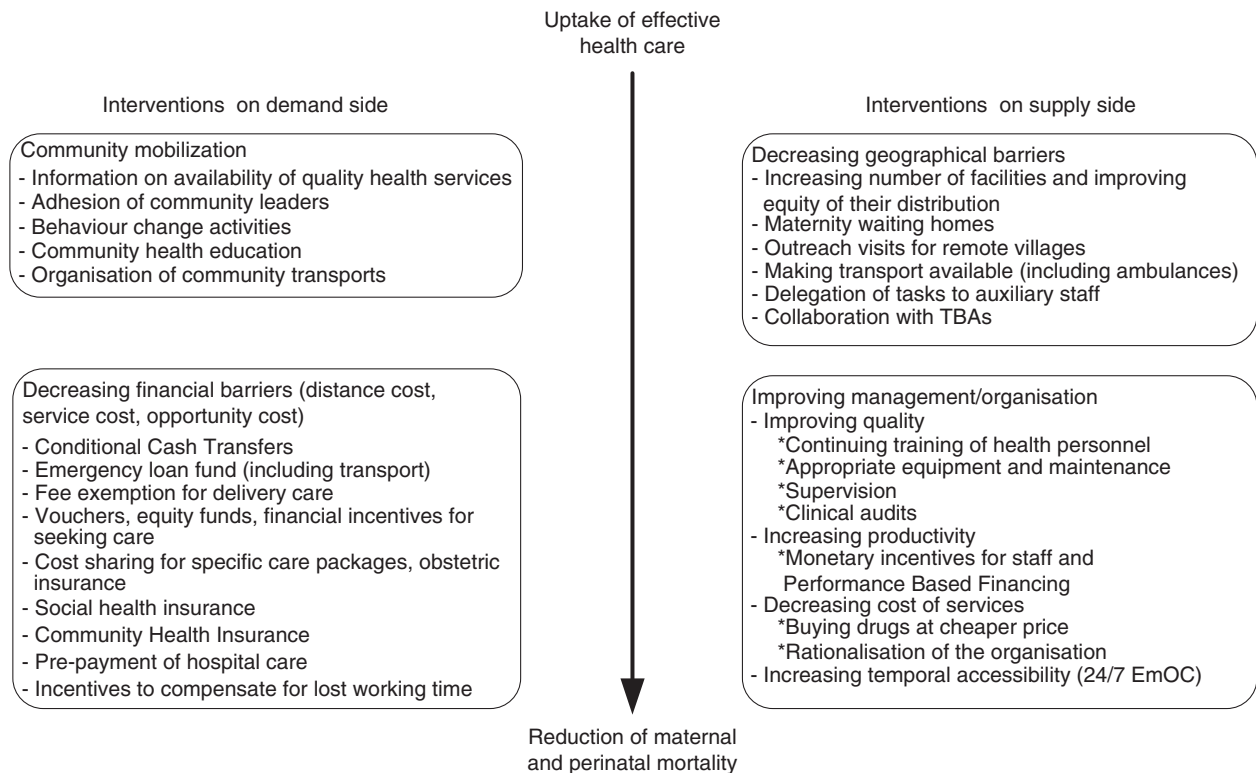


Figure 1 Possible interventions influencing the demand or the supply side for reducing maternal and perinatal mortality.

Cooper 2004). Supply-side interventions are those that influence the health service actors, be they individual health personnel, health institutions or ministries of health.

There are necessarily interactions between supply- and demand-side interventions. For example, maternity waiting homes are considered as ‘supply’, because they improve access to maternal health care. However, they will achieve their objective only if they attract women living in remote areas (demand creation). There is a link between barriers to seek care (financial, geographical, perception of staff, poor attitude and low perceived quality of care) and the extent and the quality of supply (distribution and qualification of staff, basic and continuing training, outreach services, capacity to reach all the communities, capacity to adapt to the local culture). Both are important – a high coverage of poor pregnancy and delivery care is not necessarily better than an excellent but barely accessible health service. However, quality of care should be first developed, because it would not be ethical to improve access to known bad health services.

Experiences addressing the demand side

Community mobilisation in Burkina Faso

In 2001–2005, Family Care International (FCI) implemented a complex intervention, called the Skilled Care Initiative (SCI), in Ouargaye, a poor district located in south-eastern Burkina Faso (Family Care International 2005). SCI consisted of two main interventions: improving the availability and quality of maternity care at referral, mid- and lower-level facilities; and promoting service utilisation through behaviour change communication, counselling and community mobilisation. A quasi-experimental design was used to assess the extent to which the SCI was associated with increased institutional births and maternal and perinatal mortality reduction in the intervention district (Ouargaye) versus the comparison district (Diapaga) (Graham *et al.* 2008). In 2004–2005, after a phase of supply improvement, SCI extensively developed the community mobilisation in Ouargaye. Community mobilisation aimed at increasing the use of quality delivery care through four axes: (i) advocacy and awareness raising;

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(ii) social marketing; (iii) behavioural change communication and (iv) community capacity strengthening.

The evaluation showed that the main significant difference between Ouargaye and Diapaga districts was the scope and intensity of the community-based interventions implemented in Ouargaye. There was a temporal association relationship before and after the implementation of the demand-driven interventions with a 30% increase in institutional births in the intervention district compared to 10% increase in comparison district (Figure 2) (Hounton *et al.* 2009).

Strategies to lower financial barriers

At the end of the 20th century, there was a renewed interest in poverty and equity in health. In 1990, Demographic and Health Surveys included an indicator of the households' wealth, and these data were progressively used by researchers to show the association of poverty with health coverage and outcomes. The World Bank health, nutrition and population strategy, adopted in 1997, focussed on improving the health of the world's poor (Gwatkin 2000). The first publications in relation to wealth and access to obstetric care showed the enormous size of the poor–rich gap in many countries (Kunst & Houweling 2001). This gap is more important for antenatal care and professional delivery care than for the treatment for acute respiratory infection (ARI), diarrhoeal diseases or immunisation (Houweling *et al.* 2007). In the poorest countries, most of the women living in rural areas have little access to caesarean sections. In 16 countries of sub-Saharan Africa, caesarean section rates in rural poorer women do not reach 1% (and in 10 of these countries rates are lower than 0.5%) (Ronsmans *et al.* 2006). With the familial technique developed in 2004,

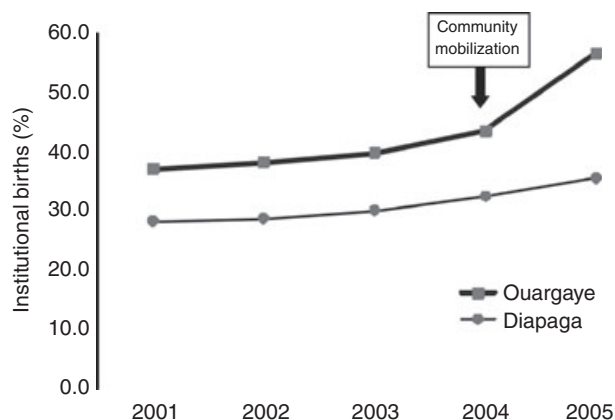


Figure 2 Trends of institutional births in Ouargaye and Diapaga, Burkina Faso, 2001–2005. Source: Hounton *et al.* 2009.

it is possible to explore the relationship between maternal mortality and poverty and to examine the poor–rich gap (Graham *et al.* 2004). The first results point to the magnitude of the gradient between the poorest quintile (e.g. in Peru, 800 maternal deaths per 100 000 live births) and the richest quintile (130 per 100 000). Part of this is explained by the lack of access to antenatal and delivery care (Ronsmans & Graham 2006).

Financial barriers are increasingly seen as one of the main barriers to access to emergency obstetric and perinatal care (Richard *et al.* 2008a,b). In response, quite a few initiatives have emerged at local or national level in Asia, Africa and Latin America. Case studies of experiences such as cost sharing mechanisms in Burkina Faso (Ouédraogo *et al.* 2008), obstetric risk insurance in Mauritania (Renaudin *et al.* 2007), focussed community health insurance in Guinea (Ndiaye *et al.* 2008), fee exemption strategies in Ghana (Witter *et al.* 2007), Senegal (Witter *et al.* 2008) and Bolivia (Pooley *et al.* 2008), vouchers and health equity funds in Cambodia (Por *et al.* 2008) and conditional cash assistance in India (Devadasan *et al.* 2008) have all shown some degree of success in improving access to maternal and perinatal care. But again, all these strategies need supply-side efforts to increase quality and organisation of care to work.

Vouchers in Cambodia

The principle of a voucher scheme is to give selected persons (e.g. poor women) a voucher that entitles them to specified free services. In the case of safe motherhood, vouchers cover, for instance, antenatal care (ANC) visits, transport to facilities, delivery fees and post-partum consultations for women and newborns.

In Cambodia, a voucher scheme was implemented in 2007 in three districts of Kampong Cham province, together with a Health Equity Fund (HEF) scheme and a supply-side strategy [Performance-Based Contracting (PBC)]. The HEF was designed to promote access to public hospitals. HEF beneficiaries were identified according to eligibility criteria, either in advance at the community level or at the hospital level through interviews. Eligible poor patients received full or partial support from the HEF for the cost of user fees, transport costs and other costs incurred during hospitalisation. Two NGOs were subcontracted to be the voucher management agencies (VMA). Poor pregnant women were identified by local health volunteers and VMA staff at their home through home visits organised every 3 months. The voucher recipients got five coupons: 3 for ANC, 1 for delivery and 1 for post-natal care. The voucher also entitles the woman to: (i) round-trip transportation costs for antenatal care, delivery and post-natal care at the contracted

health centre, (ii) referral transportation costs from the health centre to referral hospital in case of complication, and (iii) free antenatal care, delivery and post-natal care at the contracted health centre (Por *et al.* 2008).

Figure 3 shows the results in terms of beneficiaries. In 2006, the PBC and the HEF scheme were introduced – covering only 1.1% of the expected births – and 84% of deliveries still took place at home. In 2007, the voucher scheme began and covered 2.4% of deliveries. The proportion of institutional deliveries increased up to 25%, while the proportion of self-paying women decreased from 93% to 79%. In 2008, the voucher scheme reached 7.0% of deliveries and the HEF 4.4%, while the coverage of institutional deliveries increased up to 45% (and self-paying proportion was reduced to 75%). This is a remarkable progress, accomplished in less than 3 years. However, it is considered that about 37% of the population is eligible for a voucher/HEF scheme. Therefore, the proportion of beneficiaries was 58% of the estimate number of eligible poor women. The authors report that most of the women who benefited from the schemes used a modern facility for delivery for the first time.

Experiences influencing the supply side

Reproductive health care for refugees in Uganda

Since 1990, the West Nile districts of Uganda have hosted about 140 000 refugees living in post-emergency settlements interspersed within rural host communities. Refugee

health services run parallel to host services in most refugee-affected districts and are provided by international, regional and locally based non-governmental organisations (NGOs), coordinated by the United Nations High Commissioner for Refugees (UNHCR). In 1999, the Government of Uganda (GoU) and UNHCR initiated a strategy to integrate refugee and host population health services in the West Nile region. The process of integration broadly entailed sensitisation of public health system stakeholders and refugees and progressive handover of NGO facilities by the health district. The UNHCR provided supplementing budgetary support to the district health service (Orach & De Brouwere 2006).

This situation offers a quasi-experimental comparative study design with data on host and refugee population and health services outputs before and after the integration of refugee services in the public health system. It gives a picture of the effect of a supply-side intervention.

Before integration, refugees benefited from health centres that were geographically accessible, better equipped, better funded and staffed with more highly skilled personnel. In the case of referral to the district hospital, care was provided directly by the UNHCR to the hospital; in case of emergency, refugees benefited from immediate and free of charge transport to the district hospital. For the period before integration (1999–2001), the rates of major obstetric interventions (MOI) for life-threatening indications were significantly ($P < 0.0001$) higher for refugees than hosts at 1.01% (95% CI, 0.77–1.25) *vs.* 0.51% (0.47–0.53). In Adjumani district (one of the 4 West Nile districts

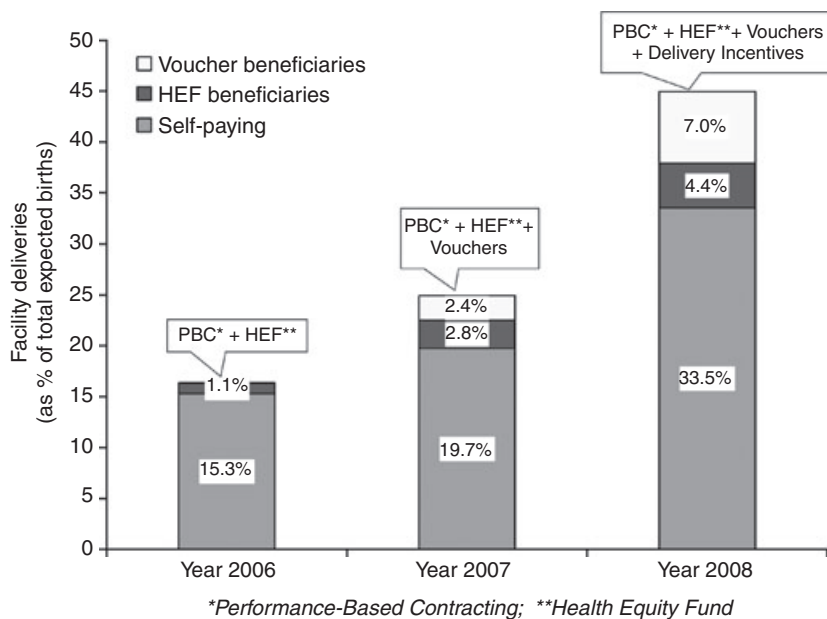


Figure 3 Facility deliveries in Kampong Cham province by type of beneficiary. Source: Por *et al.* 2010.

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where the number of refugees is the highest, reaching 25% of the district population), rates of major obstetric intervention were significantly higher for refugees than for hosts (1.22% [0.92–1.59] *vs.* 0.64% [0.54–0.74]; $P < 0.0001$), and the maternal mortality ratio was 2.5 times higher in host populations than in refugees (322 per 100 000 births [247–396] *vs.* 130 [81–179]) suggesting that major obstetric interventions were effective in saving lives (Orach & De Brouwere 2004).

During the period after the implementation of the integration (2003–2004), the rate of MOI for life-threatening indications remained stable for refugees at 1.02% (0.79–1.25 CI) while it increased significantly in the host population to 0.85% (0.80–0.90).

On the whole, the per capita cost of health care was 2.7 times higher for the refugee than the host population (US\$13.12 *vs.* US\$4.85), mainly because refugee health services are run by staff of higher professional qualifications and because drugs, materials and supplies are more readily available, prescribed and used in refugee (Orach *et al.* 2007). However, at a cost of USD 13.12 for the full range of reproductive health services (with coverage of 99% for the ANC full package, of 37% for institutional delivery, at a rate of 1.2% for necessary caesarean sections) and with a possible effect of a 2.5-fold maternal mortality reduction, this still represents a good buy for any government.

Performance-based financing in Rwanda

A performance-based financing scheme (synonyms: results-based funding or paying for performance) aims to increase the performance of health services for a defined range of specific targets through the financial motivation of health workers, health institutions or authorities. Performance-based financing (PBC) rests on a vision of *homo economicus*, and thus the belief that health workers will respond to financial incentives. Its potential success rests on another assumption: the selected targets reflect – and will keep reflecting – the broader system goals (Eldridge & Palmer 2009).

In Rwanda, a combination of reforms have been introduced since 2000, including PBF of health centres to achieve targeted outputs, including supervised deliveries. This was piloted in three districts in 2002–2005 and then scaled up nationally from 2005 (Meessen *et al.* 2006; Rusa *et al.* 2009b). The institutional set-up for the PBF strategy has four categories of actors and functions: (i) health centre staff who deliver the services; (ii) the consumers; (iii) the fund holder (NGO or district authority in charge of contracting in with the health centres, controlling the health centres outputs and accountable to the government);

(iv) the regulator (in charge of assuring quality and policy priorities) (Soeters *et al.* 2006). The health centres performance is assessed through a series of output indicators (e.g. number of curative consultations, number of deliveries, number of pregnant women having received 2nd to 5th dose of tetanus toxoid) (Meessen *et al.* 2007). These outputs are ‘purchased’ from the health centres that are reimbursed for the quantity of services provided according to a standardised fee structure for a list of fourteen services, adjusted by a composite quality score (Rusa *et al.* 2009a).

Progress has been impressive: a 78% increase in institutional deliveries over 2006–2008 (Soucat *et al.* 2008). According to demographic survey data, coverage has been increased from 31% of births in 2000 to 52% in 2007. Infant mortality has also been reduced significantly over this period, from 107 per 1000 live births in 2000 to 86 in 2005 and 62 in 2007 (Institut National de la Statistique, Ministère de la Santé, & Macro International Inc. 2008; Institut National de la Statistique Rwanda (INSR) & Macro International Inc. 2009). Maternal mortality has been on a roller coaster, dropping from 611 per 100,000 births in 1990 to 500 in 1992, then soaring to 1071 in 2000 and dropping again to 750 in 2007. It should be noted, however, that the impressive achievements have been made through a combination of reforms since 2000, including changes in the management of aid (pooled funding), a substantial increase in community health insurance coverage, decentralisation and changes to facility status (autonomisation). In addition, overall expenditure on health care has risen considerably. Moreover, PBF was introduced alongside substantial improvements to other elements of the health care system delivery such as: quality assurance mechanisms including integrated supervision; careful monitoring of the health centres outputs; clarification of the responsibility and roles of the various stakeholders and continuing attention from the government to health centres performance. It is thus difficult to disentangle the single effect of a financial incentive strategy from the associated elements of PBF.

Lessons learned

None of the case studies reviewed was an isolated intervention. Either they were conceived as a multiple intervention at the start (like the Skilled Care Initiative or the obstetric risk insurance in Mauritania), or a single intervention was implemented in a context where other interventions were already in place since a few years (the voucher scheme in Cambodia). Almost all interventions identified in the literature have mixed demand- and supply-side components. Indeed, it is difficult to consider a demand-side intervention when the supply side is not

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adequate; it would be unethical. Equally, investing in a supply-side intervention without community sensitisation would not be very efficient and would become rapidly counter-productive (without patients, health personnel would lose their competence).

The second lesson is that there is no magic bullet. The choice of an intervention depends on the context and whatever the intensity of the work performed, it never solves the problem on its own. Fee exemption for delivery care (including caesareans) in Ghana had a modest impact on access to care, with an 11.9% increase in Central Region and a 5% increase in the Volta region (Penfold *et al.* 2007). An explanation for this modest increase in utilisation could be the fact that even for the delivery fee component, the reduction in cost for households was not to zero (caesarean sections reduced from \$155 to \$111 and normal deliveries from \$17 to 13) (Witter *et al.* 2008). The other element highlighted was the poor quality of care both before and after the exemption (Ansong-Tornui *et al.* 2007).

The third lesson concerns the impact of a specific intervention on the whole health system. Choices cause change in the health system, and nobody can predict how and to what extent a 'good' decision to improve access to care has a negative or a positive effect on other segments of the health system. For example, the 'good' decision to remove user fees in South Africa improved access to curative services but apparently at the expense of some preventive services, including antenatal care (Wilkinson *et al.* 2001). Another example is the 'good' decision to substantially decrease user fees for caesarean section had the effect of increasing the fees for non-obstetric surgery, a way for the staff or the hospital administration to compensate the loss of official and/or unofficial earnings (Ouédraogo *et al.* 2008; Witter *et al.* 2008). In monitoring the impact of policies, the wider health system perspective should be maintained.

The fourth lesson is the importance of an integrated approach to perinatal health: newborn health is intimately linked with maternal health. Obstetricians, midwives, paediatricians, health centre staff should all think and act globally for the couple 'Mother and Child' and not only for one of them. Integrated evidence-based packages of care have been defined at different levels of services: clinical care at hospital level, outpatient and outreach services and family and community care (Kerber *et al.* 2007). They are not new and probably are all known by the health personnel and supported by their ministries of health. However, their implementation is not managed adequately yet.

The last lesson is about the transfer of experiences. An intervention package that repeatedly proved to have a

positive effect in one setting may have very different effects in other settings. For example, conditional cash transfers have been a success in Latin America (Morris *et al.* 2004; Borghi *et al.* 2006; Lagarde *et al.* 2007) but are operating in a different way in India where results are mixed. The Conditional Cash Transfer scheme (called *Janani Suraksha Yojana*) appears to have contributed to increased institutional deliveries but with different effects according to the state, mainly because of misunderstandings in the process and, in some cases, abuse of the funds (Devadasan *et al.* 2008).

Reducing barriers to access to maternal and perinatal services is certainly a matter of political will. This will, however, has to be exerted based on a sound strategy, footing on an appropriate equilibrium between demand-side and supply-side interventions implemented on the long term with sufficient flexibility to be suited to the continuous changing environment.

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