This article presents the results of an evaluation of the free delivery and caesarean policy (FDCP) in Senegal. The policy was introduced into five poor regions in 2005 and in 2006 was extended at regional hospital level to all regions apart from the capital (Dakar). The evaluation was carried out in 2006–7. There were four research components, all focused on selected facilities and districts within the five FDCP regions: a financial analysis of expenditure on the policy and wider health financing in the five regions and nationally; 54 key informant interviews from national down to facility level; 10 focus group discussions and 8 in-depth interviews; and analysis based on clinical record extraction of 761 major obstetric interventions.

The evaluation found significant implementation difficulties, especially related to the allocation of funds and kits and the adequacy of their contents. Despite that, significant increases in utilization in normal deliveries (from 40% to 44% of expected deliveries in FDCP areas over 2004–5) and in caesarean rates (rising from 4.2% to 5.6% in FDCP areas) were recorded. National data suggested that these trends were not found in non-FDCP regions. Using the evaluation data, the cost per additional caesarean under the policy was US$467 and the cost per additional supervised normal delivery was US$21. The article concludes that, in order to achieve its full potential, the FDCP requires improved systems for planning and allocating resources, and new channels to reimburse lower level facilities. It is also important that all complicated deliveries (not just caesareans) are included in the package. In the case of Senegal, a complementary strategy of investment in facilities, transportation and staffing is required to bring greater geographical access and upgrade services. These findings are likely to be relevant to other countries currently experimenting with similar approaches to reducing financial barriers to skilled attendance at delivery.

Keywords Deliveries, caesareans, Senegal, exemptions, evaluation, cost effectiveness
KEY MESSAGES

- Delivery fee exemptions can be cost-effective and have the potential to raise supervised delivery and caesarean rates.
- Delivery exemptions should be designed to provide protection against the major costs faced by households and to include the services which cover the highest health risks.
- Management of exemption policies is demanding, and includes the need to provide clear and simple guidelines for providers and clients; to operate adequate and speedy reimbursement for services; and to control against opportunistic charging by providers.
- In the context of poor availability of services and staff, fee exemption risks exacerbating inequalities, especially between urban and rural areas.

Introduction

The lifetime risk of maternal death in the least developed countries is estimated to be greater than 1 in 10, while for developed countries it is about 1 in 7300 (WHO et al. 2007). This reveals one of the greatest health inequities between the developing and the developed world.

There is an extensive literature about the effects of user fees for health care in developing countries (Pearson 2004; Gilson and McIntyre 2005; Witter 2005). There is a consensus that user fees often form a significant barrier to rational service use, particularly by the poor, and that other mechanisms of health care financing are preferable. High costs of maternal health care, especially deliveries, and their unpredictability for households, coupled with continuing high maternal mortality rates, have led to a debate about optimum health financing strategies for maternal health (Borghi and Lissner 2006).

Senegal’s free delivery and caesarean policy (FDCP) is part of a wave of similar schemes, across West Africa and other regions in which certain services are prioritized for universal free access. Its lessons are therefore of wider international interest.

The difference between these and earlier experiences of exemptions is that these are all focused on specific services or groups, thus side-stepping the problems of individual targeting (Bitran and Giedion 2003). The exemptions are also funded, at least in the countries evaluated so far, with a budget line to reimburse facilities for lost user fee revenues. Both of these features offer the potential for a more effective approach than previously documented (Gilson 1997). Many schemes are still young but some evidence is now emerging about the effectiveness, the cost, and the preconditions for success of delivery exemptions as a financing mechanism (Powell-Jackson et al. 2008; Witter et al. 2009).

This article describes the results of an evaluation of the FDCP in Senegal. The aim of the evaluation was to provide evidence of the effectiveness of universal fee exemption as a strategy for improving delivery care services in Senegal, and to recommend ways in which its implementation could be improved.

Background on the exemptions policy

Some context information on maternal health and the health system in Senegal is provided in Box 1. The Government of Senegal introduced the policy of exempting users from delivery fees in January 2005 in the five poorest regions of the country, and in January 2006 it was extended to the remaining five regions (omitting only Dakar), although initially confined to the regional hospital level. The policy of free delivery care had the purpose of reducing financial barriers to using public maternal health services. It was expected that the policy would lead to an increase in the number of professionally attended deliveries and thereby lead to a reduction in maternal and perinatal mortality.

The package covered all women for normal deliveries at health post and health centre level (Centres de Santé type I, CSI) in the five poorest regions and all caesareans at CSIII and regional hospital level, except in Dakar. [In Senegal, health centres function as district hospitals; a few (Centres de Santé type II, CSI) are equipped to carry out caesarean sections; and others (CSI) are not.] The funding mechanism for normal deliveries took the form of kits with basic supplies,1 which were delivered via the Central Medical Stores (CMS). These replaced the user payments at point of delivery, at least in theory, and were estimated to cost 5500 FCFA (US$11) per kit. For the hospitals, 55 000 FCFA (US$110) was paid per caesarean section—some in advance, according to expected numbers, but if this was exceeded, then the difference was to be repaid, retrospectively. For the caesarean sections carried out in Centres de Santé, kits were provided, rather than money.

The participating institutions were all in the public sector, but did not include the Cases de Santé, which are grassroots-level structures providing normal deliveries via ‘matrones’.3 The private and traditional sectors were not included.

In Senegal, the private for-profit sector is concentrated in Dakar, where 60% of private clinics, 61% of private general doctors and 90% of private specialists are found (Hygea and Acodes 2005).

At the national level, a coordinating committee was established to oversee the policy in the Ministry of Health, including representatives from the departments of primary health care, planning, finance, reproductive health, hospitals and districts structures. Initially, the department of primary health led the process of implementation, but that role passed to the reproductive health department at the beginning of 2006. Forms were developed and sensitization carried out of stakeholders at the local level, working through Comités de Santé and Comités de Développement at regional and local levels. A budget of 439 million FCFA (US$878 000) was established to support the policy in 2005, funded by the government.
Ziguinchor, Tambacounda, Matam and Fatick.

centrally funded running costs were not counted if those were user fees before). Civil servant salaries, capital investment and are the costs which had to be funded from the policy (or from the collection of financial data in order to inform the Ministry of the policy was addressed by all components. Different areas had been affected. The issue of sustainability quality of care, and how women’s uptake of services in were held at community level to assess perceived changes in tors. Finally, focus group discussions and in-depth interviews were included on the basis of their poverty. However, some with non-implementing regions was not possible, as the regions included in the first wave of the policy. Unbiased comparison analysis is available for some facilities only.

The study evaluated trends in the regions which were implemented regions, where national statistics permitted. The most recent estimates for the maternal mortality ratio in Senegal are 980 (range: 590–1400) (WHO et al. 2007). This equates to a lifetime risk of dying for women of 1 in 22, which is higher than the average for sub-Saharan Africa.

On average, 37% of women deliver at home. For the poorest quintile, 70.2% deliver at home, compared with only 5.7% for the richest (MoH 2005; Ndiaye and Ayad 2006). In terms of attendants at the birth, 51.9% are attended by ‘skilled personnel’ (doctor, nurse, midwife or auxiliary midwife). Again, rates are closely linked to socio-economic group.

Caesarean section rates are 3.3% nationally, but with wide regional and socio-economic variations. In Dakar, more than 10% of last deliveries were caesarean sections (Ndiaye and Ayad 2006), while in Matam the figure was 0.5%. Rates rise with economic status and educational level.

Senegal is divided into 11 regions and 56 districts. Within the health sector, there are national hospitals, regional hospitals, Centres de Santé (CS) at the district level (covering 100–150 000 people) and Postes de Santé (PS) providing primary health care to between 5000 and 10 000 people. Senegal currently has 1 doctor per 17 000 inhabitants, 1 midwife per 4600 women and 1 nurse to 8700 inhabitants. In addition, their distribution is poor: of the 71 obstetricians, 55 are based in Dakar and only one in Tambacounda. Of the 422 midwives, 224 are based in Dakar and only 12 in Tambacounda (Diadhiou et al. 2006).

Like many developing countries, Senegal relies on user contributions to finance health care, as laid out in the Bamako Initiative. While civil servants salaries are paid centrally and some public funds are provided to assist with investment and running costs at facility level, the costs of locally contracted staff (including the matrones, who carry out most of the normal deliveries) are mostly borne by the Comités de Santé.

The regions in the first wave of implementation were Kolda, Ziguinchor, Tambacounda, Matam and Fatick.

**Methods**

The aim of the evaluation was to assess the effectiveness of the FDCP. In order to answer this overall question, a number of more detailed questions were developed. They focused on the process of implementation (in particular, whether the policy was well understood, whether resources were adequate, whether funds and kits were appropriately allocated, and how the policy was managed); on the impact of the policy (on facilities, health staff, household costs, utilization of services and equity); and on the cost, cost-effectiveness and sustainability of the policy.

The research methods comprised four main sub-components (Table 1). The first, using key informant interviews at different levels of the health system, provided qualitative information on how the policy had been implemented and the perceptions of key stakeholders. The second used financial and logistical records to track expenditure on the policy, and how funds and kits had been allocated and had flowed in practice to different areas and levels. The third component used a facility survey to monitor changes in utilization and also in key quality indicators. Finally, focus group discussions and in-depth interviews were held at community level to assess perceived changes in quality of care, and how women’s uptake of services in different areas had been affected. The issue of sustainability of the policy was addressed by all components.

In addition, a small costing exercise was carried out during the collection of financial data in order to inform the Ministry of Health on the production costs of different delivery types. For the costing, we took the facility perspective only, as these are the costs which had to be funded from the policy (or from user fees before). Civil servant salaries, capital investment and centrally funded running costs were not counted if those were funded from sources outside the health facility. The main cost elements were drugs, supplies and the time of locally contracted staff, including a share of general services, such as cleaning, guards etc. These were assessed through local records and interviews of finance officers at facility level. Information was collected from a small sample [two regional hospitals, one CS, and one Poste de Santé (PS)] to obtain average costs for caesarean sections and normal deliveries. Local inputs and costs were thought unlikely to vary much across facilities of the same type.

Data were collected retrospectively in November 2006 to January 2007. Data were collected for the years 2004–06, to capture the situation before and after the introduction of the policy. Within the five FDCP regions, six districts were selected for study. The selection was based on: (1) whether they had a CSII, which offer Comprehensive Emergency Obstetric Care (CEmOC) and so allows for study of caesareans at district level, and (2) the size of district and number of facilities in it (the larger ones were prioritized, as they give larger samples).

Qualitative data were thematically analysed (in French for the key informant interviews; after translation from local languages for the community data). Financial data were analysed using Excel. Clinical data were analysed using EpiInfo, SPSS and Excel.

For the financial and facility records, overall data availability was high, with the exception of one or two facilities, where staff turnover or poor record-keeping meant that the forms were either partially or substantially unfilled. However, for the clinical component focusing on the analysis of major obstetric emergencies, data collection was very partial and, consequently, analysis is available for some facilities only.

The study evaluated trends in the regions which were included in the first wave of the policy. Unbiased comparison with non-implementing regions was not possible, as the regions were included on the basis of their poverty. However, some trends were compared across implementing and non-implementing regions, where national statistics permitted.
Results

Process of implementation

Communication of the policy

The key informants had a clear understanding of the policy’s goals. Dissemination was carried out effectively through official, hierarchical channels, according to key informants, who also described a wide variety of methods used to communicate the policy to communities.

While well disseminated, the policy was not well understood, and key informants highlighted a number of misunderstandings and ambiguities relating to it. Some, for example, cited beliefs that it only covered caesareans, or that it also included antenatal care, or that normal deliveries carried out in hospitals were included. Awareness of the FDCP at community level was patchy, and there was little clarity of understanding of what the policy meant in practice.

Adequacy of funds and kits

Key informants reported that there were not enough normal delivery kits, especially in the first year of operation. They described a clear system for mandating and sending funds for the CMS and the regional hospitals. However, no such clear system existed for the flow of kits and funds to district level and below. There was no mechanism to send funds to these levels to compensate for labour and other facility costs.

According to financial analysis, in relation to the actual numbers of deliveries carried out nationally in public facilities, there were 26 000 too few normal delivery kits distributed in 2005 (full-year figures for 2006 were lacking, but partial data suggests a continuing but smaller deficit for that year). For the caesarean sections, however, more funds were sent out than were needed—an over-coverage of 18% for 2005 and 30% for 2006.

The budget for the policy remained the same year on year, despite increased coverage of the scheme, and there was some evidence of delayed payments in 2006. In the first year, funds were significantly under-spent, while in the second year, funds were tighter, but still adequate, if budget balances were brought forward. At national level, financial concerns were focussed on, not in the CMS, which claimed to be owed 124 million FCFA (US$248 000) in November 2006 for kits sent out under the policy.

The regional hospitals received 60% of the total funding for the FDCP in 2005, declining to 53% in 2006. The share allocated to caesareans (73%) in 2005 was excessive compared with caesarean rates and costs.

Management and administration

Regional key informants reported that kits were distributed to districts and hospitals according to a national list. The districts, however, were less clear about the rules, saying that they had received no communication about how kits were allocated, nor any feedback on their reports. They said that there were delays with kits and that kit supplies were unpredictable. This was confirmed by the sub-district KI, who suggested the need for better planning of kits, so that the numbers would link to demand at facility level.

The regional hospitals complained of poor management and delays in funding, with funds arriving in November of 2005 and 2006 (for a financial year starting in January). There were also reports of kits sitting in the regional medical stores for long periods.

Most figures for transfer of funds and kits tallied between levels, but there were some discrepancies between regional hospital receipts and national figures, raising questions about whether the funds arrived in full and whether records were accurate. Looking at the payments for caesarean sections, there were wide discrepancies between funds paid and numbers of caesarean sections carried out. This suggests planning and accounting problems, rather than losses as such.
Other serious systemic weaknesses were noted during the evaluation, including the absence of an overall document to guide implementation; no clear system for verifying claims; and no register of stocks at facility level. There were also misunderstandings relating to the use of caesarean kits. The CMS manufactured these for the regional hospitals and health centres, but the regional hospitals made up their own in practice. There were therefore excessive caesarean kits in the system. In Fatick, caesarean kits were distributed to all CS, whether or not they had an operating capacity. In response to these problems, the CMS stopped producing caesarean kits in 2006.

Costs of the policy

Overall expenditure

The total expenditure (excluding any management overheads and transport costs, which were not assessed) on the policy over the period of 2005 to mid-2006 was US$1.18 million. Overall expenditure was US$0.10 per capita in the areas covered by the policy for both 2005 and 2006, indicating that the expenditure expanded in line with increased coverage in the second year. Expenditure was US$2.75 per expected pregnancy in 2005 and US$2.9 in 2006.

Unit cost

The average payment by the FDCP per caesarean section at regional hospital level was US$137. For caesarean section kits, the cost was US$45. Normal delivery kits were planned at US$11, but in practice US$6 was spent on them. The difference between these sums was to be transferred to the health facilities to compensate for some of the other costs (such as time and overheads), but this never occurred.

Impact of the policy

Financial impact on providers

Comparison of the value of the transfers to providers under the FDCP with the cost of services and previous fees charged to users suggests that the regional hospitals have gained from the policy (Table 2). They received, in cash, some US$61 more than it cost them to provide a caesarean section and US$77 more than they used to charge for them. The value of these transfers will however be eroded if reimbursements are made late in the financial year, as appears to have been the case.

For the CS and the PS, however, no financial transfers were made; kits were supplied which provided some of the materials needed for normal deliveries. Although the value of the kit (the cost of supplying it) is similar to the cost of providing an average normal delivery at facility level, the health facilities were supposed to provide services for free and lost the ticket revenue (some US$4) which used to cover labour costs. In addition, there were shortfalls and delays in the arrival of kits, particularly in the first year, and some areas received far less support than others.

In the process of developing the policy, an estimate of average costs of normal deliveries was made: US$11 for the actual delivery and US$4 for the usual 2-day stay. A comparison with the eventual expenditure on normal delivery kits (US$6) immediately reveals a gap of US$9 per delivery.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Overall cost comparisons (US$): FDCP transfers, services costs and previous user fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caesarean section (funds) (US$)</td>
<td>Caesarean section kit (US$)</td>
</tr>
<tr>
<td>Value of transfer</td>
<td>137</td>
</tr>
<tr>
<td>Comparison with service costs</td>
<td></td>
</tr>
<tr>
<td>Cost of service</td>
<td>76</td>
</tr>
<tr>
<td>Surplus per act</td>
<td>61</td>
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<tr>
<td>Comparison with revenue lost</td>
<td></td>
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<tr>
<td>Previous tariffs</td>
<td>60</td>
</tr>
<tr>
<td>Surplus per act</td>
<td>77</td>
</tr>
</tbody>
</table>

*This assumes that full value is transferred to facilities, but in fact facilities receive only the supplies which the kits contain and the value of the ‘ticket’ payment for services by users is lost.

For the regional hospitals, the policy provided between 2% and 7% of their total revenue, or 5–17% (average 9%) of their user fee income in 2005.

Calculations of revenue foregone from normal delivery user fees at CS level found that 4–15% of user fee revenue was lost in 2005 and 3.3–8% in 2006. In addition, for those that perform caesarean sections, there was an additional loss of up to 8% of user fees in 2005 from loss of payments for caesarean sections (unlike the regional hospitals, the CS received no funds to pay for these procedures).

These calculations are based on the assumption that no charges were made. While no revenue from deliveries was reported for the CS in 2005–06, some PS did appear to continue charging, either throughout the period or during those months when they had run out of or not yet received kits. For the PS, delivery income contributed 5.4% of their user fee revenue in 2004 and calculations of loss for 2005 and 2006 are around 4%.

This is consistent with estimates based on the 2004 annual health statistics, according to which income from deliveries generated 4.6% of total user fees (MSPM/SNIS 2005). This rose to 6% by 2006 for the whole nation, but receipts in FDCP pilot regions declined while receipts rose in non-pilot areas over the period.

Looking at the overall health financing picture, the regional hospitals are highly dependent on state funding. For example, in addition to capital investment costs and civil servant salaries, 67% of their running costs came from the state in 2004 (with similar proportions in following years). For the CS the revenue structure was similar to the regional hospital, though user fees provide a slightly higher proportion of revenue (43% in 2004, compared with 37% for the regional hospital). On a per capita basis, there are wide variations in funding from the state (and also total funding, which tends to mirror state funding patterns). In terms of expenditure, they spent less on personnel costs and more on drugs. As with regional hospitals, the composition of revenue and expenditure changed little over the 3 years studied.

The PS received relatively little state funding (US$0.1 per capita per annum for 2004 and 2005) and derived most of their income from user fees (95–96%). Drugs formed their largest expenditure item (39% in 2004; 52% in 2005).
There is no evidence that funding sources other than user fees were affected by the exemptions. State funding per capita showed variability between regions and over the 3 years, but the overall trend was neutral.

The regional hospitals, while traditionally running deficits, were actually in surplus for the years under examination here (with the exception of Ziguinchor), although the surpluses for 2005 were smaller than those for 2004. Most of the CS had positive year-end financial balances, and these balances improved over the period 2004–05. Over the same period, the PS studied went from an overall deficit to a surplus. There is therefore no evidence that the FDCP was undermining overall facility financing.

**Impact on health staff**

All districts reported that the loss of revenues had affected their ability to pay and motivate community staff (the matrones, who carry out most of the normal deliveries, the health promotion staff in the community, and some others, such as stretcher-bearers). Sub-district key informants reported that community staff had been compensated out of general facility revenues. While most were paid a base allowance, plus a share of delivery fees before, now many received an increased but fixed monthly allowance. Five (out of 14) reported a drop in income for community staff; two reported an increase; and the others no change.

The workload of staff was very varied between facilities, even of the same type. For the regional hospitals, in one the average workload increased from 27 to 31 deliveries per midwife per month, while the other saw a decline from 11 to 8. At district level, the range in deliveries per midwife per month was from 12 to 125. The average increased from 53 per month in 2004 to 73 in 2005 (an increase of 33%).

Key informants and focus group participants reported that the Cases de Santé (community-based primary care centres) and traditional birth attendants are negatively affected by the policy, as they are excluded from the subsidies, but that in remote areas, where they remain the main provider, their business has been protected by the inaccessibility of public facilities.

**Impact on household costs**

Providers clarified that the following types of care or items were not free under the FDCP: antenatal care, postnatal care, abortion, newborn care, transport to facilities, other conditions in pregnancy (e.g. malaria), food in hospital, and prescriptions for items not included in the kit. The consensus then is that only the ticket price for the delivery itself and the items which are covered by the kits are free. One key informant even reported that clients were charged tickets for hospitalization, while another stated that only the act was free (i.e. none of the materials costs).

In general, users reported still paying for many items which should be free, such as gloves, drugs, accommodation and ticket costs, as well as those known to be excluded, such as transport and payments for complications. It appears from these accounts that the real cost of care has not reduced significantly for most.

An exception to this was caesarean sections in some areas, where fully free services were reported to have been received. This may reflect the reimbursement structure of the policy.

It is clear from the focus group discussions that the major costs of care for households are transport for referral (for emergencies) and drug costs, neither of which is adequately covered at present. Where costs are waived for normal deliveries, this often only indicates the ticket cost. Meanwhile, some participants report increases in other costs, notably drugs (which they previously bought from the facility pharmacy but now buy outside, at greater cost). Whether these rises are incidental or linked to the policy (facilities recouping costs by increasing drug prices) is not clear, but the net effect may negate the benefits of the policy or even exacerbate pre-existing problems of affordability. This finding is corroborated by the financial analysis, which found that while facilities were losing fees from deliveries, their overall revenues had grown healthily during the period of policy implementation.

**Equity impact**

The FDCP was a universal policy, and should therefore have benefited all households equally, or according to their clinical (delivery) needs. In relation to geographical equity between regions and districts, however, the evaluation found that there were big variations in allocations per capita of funds and kits. The kits were not distributed according to a population-based formula (with Tamba, for example, receiving more than three times as many in 2005, relative to population, as Kolda). Similarly, for the funds sent to the HR for caesarean sections, there was a variation of more than 100% between the allocations to Matam, for example, compared with Ziguinchor. The variation in caesarean section funding is more easily explained in relation to infrastructure distribution and capacity. However, normal delivery kits, at least, should follow population figures more closely.

Focus group discussions in the five regions suggested that while the FDCP should in principle benefit the poor the most, in practice it relied on access to facilities, which many in more remote areas lack. These responses are confirmed by secondary data: the PRSP, for example, estimates that only 39% of households have access to maternity units (access being defined as being able to reach them in less than 30 minutes), while for even the community-based Cases de Santé, only 32% nationally are estimated to have access (Ministry of Economy and Finance 2002).

The majority of key informants at facility level reported that there was no change for the poor under the FDCP, as they had previously received free drugs, so there was no benefit for them. This suggests that both before and after, the poor were making some form of contribution. Estimates at PS level of the proportion of indigents ranged from 0% to 25%, with most estimating around 5% of clients.

**Impact on utilization of services**

Overall facility data from the five research regions showed an increase in facility deliveries from 40 to 44% of expected deliveries over 2004–5 ($P < 0.0001$), and an increase in caesarean section rates from 4.2% of facility deliveries in 2004 to 5.6% in 2005 ($P < 0.0001$). These indicate that the policy has
had a positive impact on utilization. National statistics support this finding: while facility delivery numbers at CS and PS level rose by 77% overall between 2004 and 2006 for FDCP regions, for non-FDCP regions, the increase was 19% (SNIS 2005; SNIS 2007).

Looking at the findings by level, data from two regions (data were missing for the other regions) showed a proportionate increase of 20% in total facility deliveries, comparing 2004 and 2005 figures, while for caesarean sections, the increase was 51%. For these regions together, caesarean sections increased from 5.72% to 7.19% of total hospital deliveries (an increase of 1.5%), though this masks differences between the two: in Ziguinchor, the increase was from 3.9% to 6.6%, while Tambacounda remained at around 8%. For overall supervised deliveries, the rate for these two regions increased from 31% to 36% between 2004 and 2005.

For the two regional hospitals for which we have data (Kolda and Ourossogui), there was a 17% increase in caesarean sections in one, and a 27% increase in total deliveries. For the other, caesarean sections rose by 91%, though were still low as a proportion of all deliveries (the increase was from 1.8% to 3.1%), while total deliveries increased by 12%.

At district level, there are considerable variations between the districts studied, but the overall picture is of a 31% increase in facility deliveries over the period, a 65% increase in caesarean sections (from 1.3% to 1.7% of all deliveries), but also a 47% increase in fresh still births (from 2.7% to 3.1% of all deliveries).

For the PS, deliveries rose by 8% over 2004–05, while referred cases rose by 49% (which may indicate a response to reduced financial barriers). There were wide variations between facilities within the group.

The analysis of patient records for women with major obstetric interventions (MOI) originating in FDCP districts confirms the increases documented in the routine facility data. In Kanel, for example, the rates of IOU tripled from 0.2% before the policy to 0.6% of expected births after the policy was implemented, although remaining very low in absolute terms. In Sedhiou, caesarean section rates were 1% from 2001 to 2004. These almost doubled to 1.8% in 2005–06. There are, however, considerable fluctuations from month to month, which in some cases are linked to the absence of key personnel. In general, the rate of major interventions remains very low (on average not even 1%).

### Sustainability of the policy

The FDCP is a national initiative, supported by national funds rather than external aid. Although most KI gave priority to the policy’s goals, the key informants at national level were all sceptical, in varying degrees, about sustainability. The Ministry of Finance key informants felt that its main contribution was in increasing financial barriers). There were wide variations between facilities within the group.

The Ministry of Finance key informants pointed out the uncertainties facing state coffers over the years ahead and suggested instead a focus on micro-insurance and community health insurance, which offer more possibilities of cost-sharing with communities. Donors emphasized the need for government leadership and political commitment. The role of donors was seen as supportive, but not central. Ministry of Health key informants were uncertain about the policy’s future. One saw it as worthy but possibly lacking support outside the Ministry. The other two saw the design as inherently unsustainable.

Secondary sources suggest that total public expenditure on health was around US$15 per capita in 2005 and US$16 in 2006 (MSPM/SNIS 2007). In relation to this, spending on the FDCP constituted only 0.6% of expenditure in 2005 and 0.5% in 2006. This proportion should be sustainable, if stakeholder perspectives are positive.

### Cost-effectiveness of the policy

Comparing overall expenditure with the number of deliveries actually performed in 2005, the cost was US$2.2 per normal delivery and US$15.4 per caesarean section (Table 3). The low level of expenditure in relation to the normal deliveries indicates the low level of subsidy being provided and the ongoing payments which households have to make.

In terms of ‘value for money’, based on the estimates of utilization changes, the estimated cost was US$467 per additional caesarean section and US$21 per additional delivery. However, these costs may be over-estimated; national figures suggest that the increase in utilization in FDCP areas may have been greater than the evaluation figures from selected facilities that were used for these calculations. Moreover, as awareness spreads and implementation improves, the cost per delivery should reduce.

In terms of perceived cost-effectiveness, the overall assessment by national key informants was that the policy was important and positive, especially for poor women in rural areas, but that the implementation needed improving. Regional key informants felt that its main contribution was in increasing access to caesarean sections.

### Discussion

The research methods allow for a detailed understanding of the process of policy implementation and the financing of the policy. Impact data are more partial, particularly as the absence of a household survey limits our ability to quantify the economic impact on households. Findings would also have been strengthened by more health outcomes data and detailed information on trends in non-FDCP regions. However, these were not comparable as they were richer and better served prior to the policy’s introduction.

The results of the Senegal evaluation suggest that while overall budgeting was adequate and sustainable, in scale, relative to overall health expenditure, there were significant problems with implementation, including allocating resources according to need, making timely transfers to facilities, and transferring funds to lower level facilities to adequately

### Table 3 Expenditure and cost per additional delivery (US$), Senegal, 2005

<table>
<thead>
<tr>
<th>Caesareans</th>
<th>Normal deliveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure on caesareans 2005 ($)</td>
<td>217,994</td>
</tr>
<tr>
<td>Number of caesareans 2005</td>
<td>1419</td>
</tr>
<tr>
<td>Unit costs ($)</td>
<td>154</td>
</tr>
<tr>
<td>Additional caesareans</td>
<td>467</td>
</tr>
<tr>
<td>Cost per additional caesarean ($)</td>
<td>467</td>
</tr>
</tbody>
</table>
compensate them for lost revenues. It is therefore not surprising to find that users are continuing to face high costs in many cases. In the context of continued charging for some services, health providers have many ways of passing on under-funded costs. This finding supports that of a similar evaluation in Ghana, where facilities were found to have captured some part of the Delivery Exemption Scheme benefits (Witter et al. 2009). A related evaluation of the Safe Delivery Incentive Policy in Nepal also highlighted considerable implementation difficulties and the need for strong financial monitoring systems (Powell-Jackson et al. 2008).

The Senegal case study raises the issue of how to operate an exemption scheme with facility reimbursement when there are no mechanisms for financial transfers to the lower level facilities. While there were mechanisms for transferring funds to the autonomous regional hospitals, there was no equivalent for the health centres and health posts, which receive support in kind (in the form of drugs), but whose only cash flow comes from users. This feature led to the use of kits, which are a problematic transfer mechanism: they imply that all deliveries require the same inputs, which is clearly not true; they require a physical transport system and separate stock-keeping measures; and they do not provide flexible resources for facilities.

It is well-recognized internationally that complicated deliveries are most likely to generate high and potentially catastrophic costs for households, and that these events can have long-term damaging consequences (financial, physical, emotional and social) (Storeng et al. 2007). It is therefore highly desirable that the FDCP be adapted to provide for all complicated deliveries, not just caesareans as at present. This recommendation was endorsed by many of the key informants.

If these operational constraints were overcome, the increased utilization of delivery and caesarean services already recorded would be expected to rise considerably, which would increase the cost of the policy, but also its cost-effectiveness, given that most of the investment in areas such as staffing is fixed. In addition to addressing the practical challenges outlined, it is important that all key players develop a consensus on the role of the policy and how it fits with wider health financing strategies nationally.

All policies that address financial barriers make the assumption that an adequate supply network is available and that users would avail themselves of services if only they became more affordable. In some contexts, facility fees may be the main barrier, in which case the exemption mechanism is appropriate. In others, such as Nepal, it has been noted that other costs, particularly transport, dominate, indicating the need to address demand-side costs (Borghi et al. 2006). In Senegal, a detailed household cost breakdown is lacking. However, there was ample evidence from qualitative methods that there is demand for skilled attendance at delivery, but also significant non-financial barriers, including distance to facilities, poverty, and cultural and religious attitudes. These have to be addressed independently to maximize gains from the FDCP subsidy and to ensure that it operates in a pro-poor way.

Having attracted women to deliver in facilities, health gains depend on having all of the components of skilled attendance available at the level of quality required to do more good than harm (Campbell and Graham 2006). In Senegal, the shortage of midwives is a key constraint, with most facility deliveries at district and sub-district level carried out by semi-trained ‘matrones’.

Evaluations are typically conducted after a relatively short period of implementation, and the Senegal evaluation fits this pattern. Some of the problems noted (such as poor systems for reimbursing facilities quickly and according to actual delivery numbers) may be transitional and may improve over time. Others, such as funding commitments, may worsen, or indeed improve, if a policy is perceived by key stakeholders to be effective and manageable. It is therefore desirable that the research findings be revisited and updated after some years.

Conclusions
The policy of free delivery and caesareans in Senegal is still young. However, it has already shown its potential to address the cost of deliveries, particularly for caesareans. In order to achieve its full potential, however, it requires improved systems for planning and allocating resources, and new channels to reimburse lower level facilities. Without these, facilities are likely to continue to act opportunistically to recoup lost income. It is also important that all complicated deliveries (not just caesareans) are included in the package. In the case of Senegal, a complementary strategy of investment in facilities, emergency transportation and staffing is also required to bring greater geographical access and upgrade services. These are lessons which should be studied by other countries implementing or planning to implement similar exemption policies.

Competing interests
The authors declare that they have no competing interests.

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Endnotes

1 The content of the basic delivery kit was: 10 sterile gauzes; one pair of latex gloves; one syringe; one cord clamp; 10 sanitary towels; one dose of vitamin K; one unit of antiseptic (Argyrol); and oxytocin.

2 The exchange rate at the time of research was US$1 = 500 FCFA.

3 Matrones are young assistants to midwives, recruited through the community and given 3–6 months’ training.

References


