Costs of near-miss obstetric complications for women and their families in Benin and Ghana

J BORGHI, K HANSON, C ADJEI ACQUAH, G EKANMIAN, V FILIPPI, C RONSMANS, R BRUGHA, E BROWNE AND EUSEBE ALIHONOU

1Infectious Disease & Epidemiology Unit, London School of Hygiene & Tropical Medicine, London, UK, 2Health Policy Unit, London School of Hygiene & Tropical Medicine, London, UK, 3Christian Health Association of Ghana, Accra, Ghana, 4Centre Régional pour le Développement et la Santé, Bénin, 5Department of Community Health, School of Medical Sciences, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana and 6Centre National Hospitalier et Universitaire, Cotonou, Bénin

This paper estimates the total cost to women and their families associated with a spontaneous vaginal delivery and five types of ‘near-miss’ obstetric complication in Benin and Ghana, and assesses affordability in relation to household cash expenditure. A retrospective evaluation of costs was carried out among 121 mothers in three hospitals in Ghana. A prospective evaluation of costs was undertaken among 420 pregnant women in two hospitals in Benin. Information was collected on the cost of travel to the facilities and of direct medical and non-medical costs incurred during their stay in hospital.

In Benin, costs ranged from an average of US$15 for a spontaneous delivery to US$256 for a near-miss complication caused by dystocia. In Ghana, average costs ranged from US$18 for a spontaneous vaginal delivery to US$115 for a near-miss complication caused by haemorrhage. Medical costs accounted for the largest share of total costs, mainly drugs and medical supplies in Ghana and costs of the delivery and any surgical intervention in Benin. Payments associated with a spontaneous vaginal delivery amounted to at least 2% of annual household cash expenditure in both countries. In the case of severe obstetric complications, costs incurred reached a high of 34% of annual household cash expenditure in Benin.

The economic burden of hospital-based delivery care in Ghana and Benin is likely to deter or delay women's use of health services. Should a woman develop severe obstetric complications while in labour, the relatively high costs of hospital care could have a potentially catastrophic impact on the household budget.

Key words: economic burden, affordability, obstetric complications, Benin, Ghana, maternal mortality

Introduction

Each year more than 20 million women experience ill-health as a result of pregnancy and more than 500 000 women were estimated to have died in 1995 as a result of causes related to pregnancy and childbirth (WHO 2001). Almost all of these deaths occur in developing countries, particularly Africa. Ensuring skilled attendance at delivery is one of the essential means of reducing maternal mortality (Safe Motherhood Inter-Agency Group 2000). However, in many African countries a large number of women still deliver with unskilled attendance or alone. In Benin an estimated 40% of mothers give birth without the assistance of a skilled birth attendant1 (Kodjogbé et al. 1997), as do 56% of mothers in Ghana (Ghana Statistical Services & Macro International Inc. 1999). Both countries have high rates of maternal mortality. Official estimates cite maternal mortality ratios of 498 per 100 000 in Benin (Kodjogbé et al. 1997) and 214 in Ghana (UNFPA 2000); a mathematical model suggests ratios could in fact be substantially higher (WHO, UNICEF and UNFPA 2001). Near-miss events, which are defined as severe obstetric complications that could have, but have not, resulted in maternal death, occur much more frequently than maternal deaths. In hospitals in Benin and South Africa, for example, near-misses were between five and ten times more frequent than maternal deaths (Ronsmans and Filippi 2003).

Women’s access to and utilization of formal maternity services can be limited by distance to health facilities and the cost of transport (World Bank 1994; Barlow and Diop 1995; Biego 1995; Lule and Ssembataya 1995; Hodgkin 1996); cultural factors including preferences for privacy, modesty and female attendants (Leslie and Gupta 1989); and women’s lack of decision-making power (Thaddeus and Maine 1994). In addition, the actual or perceived affordability of health services is important as anticipated costs may play a role in deterring care-seeking, with implications for the health outcomes of the mother and child (Stanton and Clemens 1989). Even when formal fees are low or non-existent, there may be hidden fees in terms of the cost of transportation, drugs purchased outside of the hospital, and food or lodging for the mother and her accompanying family members (Abel-Smith and Rawal 1992; Kawmine et al. 1998; Nahur and Costello 1998).

Several studies have estimated the costs to the patient of delivery care. The majority report the official user fees charged to women for a spontaneous vaginal delivery (Owa
et al. 1992; Fox-Rushby and Foord 1996; Knowles 1998; Levin et al. 2000). A few studies estimate the hidden costs of ‘free’ care (Ramirez et al. 1997; Hotchkiss et al. 1998; Nahur and Costello 1998). However, little is known about how costs increase when women with severe obstetric complications during labour are managed in hospital; yet this information is crucial to a better understanding of the potential financial implications for households of delivery care. This paper aims to: evaluate the impact of severe obstetric complications (near-miss events) on the total costs faced by women and their families in a hospital setting, as compared with a spontaneous vaginal delivery; to measure the cost of each component of the patient bill; and to assess affordability in relation to household cash expenditure.

Methods

Background

Data were collected as part of a larger project to develop and implement a strategy to monitor and improve the quality of obstetric care in 12 referral hospitals in Benin, Ivory Coast, Morocco and Ghana, based on the identification of standard care related to near-miss obstetric events (Ronsmans and Filippi 1999). As part of the project, selected hospitals in each country were piloting an audit system of multi-professional case reviews of near-miss events and a census of near-miss cases and deaths for quality of care assessment. To this end, the collaborating hospitals identified five categories of near-miss event: anaemia, hypertension, haemorrhage, sepsis and dystocia (Ronsmans and Filippi 2003).

Site selection and description

For the purpose of the study of women’s costs, data were collected in Ghana and Benin only. In Ghana, the following three hospitals in the Ashanti region took part: the St Michael’s Catholic Mission Hospital, Pramso (94 beds); the Mampong district hospital maternity unit (120 beds); and the Komfo Anokye Teaching Hospital (KATH), Kumasi (834 beds). In Benin, data were collected in two hospitals in the south of the country: the Clinique Universitaire de Gynécologie et d’Obstétrique (CUGO) in the teaching hospital (CNHU) in Cotonou (598 beds) and a departmental hospital in Porto-Novo ‘Maternité du Centre Hospitalier Départemental de l’Ouémé’ (355 beds).

In Ghana and Benin since the early 1990s, as in many Sub-Saharan African countries, the public sector has become increasingly reliant on cost recovery to finance non-personnel recurrent costs. On admission to hospital in Ghana, patients are usually required to pay a deposit, which amounts to US$8.50 in the non-teaching hospitals, patients must also subsequently pay for drugs, medical supplies and the costs of assistance during delivery, as well as any surgical intervention. Food and lodging costs are also charged to the patient. In Benin, patients are required to pay a deposit of US$67.56 on admission to the teaching hospital. Prior to discharge, any remaining funds will be returned to the patient or, depending on the care provided, the patient may be required to provide additional funds.

Sample

Cost data were derived from a convenience sample of women having a spontaneous vaginal delivery and women having a near-miss event between 1999 and 2000 in the hospitals in Ghana. In Benin, data on costs were obtained from all near-misses and a convenience sample of spontaneous vaginal deliveries during a 2-month period in 2000.

Identification of costs

The direct out-of-pocket costs to women and their relatives for spontaneous vaginal delivery and for each of the five types of near-miss complication were estimated from the perspective of women and their relatives. Where near-miss cases had more than one diagnosis, the costs were classified by the primary diagnosis. The analysis included both medical and non-medical costs. The opportunity costs of travel time and time spent at the hospital were not considered.

A questionnaire to identify and measure the costs was developed in French for Benin and English for Ghana. The categories identified by the questionnaire were: costs of travel to and from the hospital by women and the relative(s) accompanying them to the facility;2 ‘hotel’ costs (including food and lodging for the woman and accompanying relatives); and medical costs. Food costs were calculated as the cost of any food purchased within or from outside the hospital plus the estimated value of food brought from home by relatives. Medical costs include the costs of drugs and medical supplies charged to the women and obtained within the hospital, and those purchased from outside;3 the cost of assistance during delivery and any surgical intervention, which were fixed charges for either a vaginal or caesarean delivery or other major operative intervention; and diagnostic tests including laboratory tests and other investigations.

The aim was also to identify and estimate any additional official or unofficial payments made by the women or their families. These payments are captured in the category ‘other’, which differed in content between the countries. In Ghana, women were required to pay for a health card upon registration at the hospital and also for shower caps, pegs, a baby vest and baby diapers. Anecdotal evidence from KATH suggests that while the purchase of shower caps was not a strict requirement of the hospital, they were sold by midwives as a means to supplement their income. In practice, all pregnant women attending this hospital for delivery had a shower hat. In Benin, items included in the category ‘other’ were payments made by women and relatives to use toilet facilities, the value of gifts offered to health staff and tips.4 Any additional unspecified costs incurred in each setting were also included in this category.

The questionnaire was piloted on a small sample of women in each facility prior to the start of data collection. In Ghana, both a midwife and a social scientist in each hospital, or just the social scientist in the case of the teaching hospital, collected data at the end of the woman’s hospital stay. Prior to discharge, the patient bill was used to determine the costs...
incurred within the hospital and then an interview with the woman was carried out to determine any additional costs incurred outside the hospital. These included transport costs and any additional purchases.

In Benin, a midwife was selected from each hospital to prospectively collect the data in October and November 2000. Relatives were predominantly responsible for covering the costs incurred during hospitalization and the woman herself was often unable to quantify the payments made. Therefore, the midwife tracked the woman's movements within the hospital and was in daily contact with the relatives to determine the nature and extent of any costs (official and unofficial) incurred during her stay in hospital.

Due to the differences in data collection mechanism and sampling, it is not possible to make direct comparisons between the costs incurred in Ghana and Benin. Hence, an independent analysis of costs in each setting, rather than a comparative analysis, is presented. Where necessary, costs were deflated to year 2000 prices and converted to US dollars using the average exchange rate (CFA to US$: Cedis to US$) for the year 2000. Data are presented by type of near-miss and for teaching and non-teaching hospitals separately. Statistical significance in differences between median costs is measured by the Mann-Whitney U Test.

Affordability
In order to assess the financial impact and affordability of hospital delivery for households, actual cost incurred by women and their families was measured in relation to average annual household cash expenditure taken from the Ghana Living Standards Survey (2000) and Enquête sur les Dépenses des Ménages en Milieu Urbain (2000) in Benin. For Ghana, expenditure was classified according to income quartiles; however, data for Benin were not disaggregated in this way, so only the average household cash expenditure for urban areas was used.

Results
In Ghana, cost data for all three hospitals were collected for 64 spontaneous vaginal deliveries and 57 near-miss cases (17 haemorrhage, 14 sepsis, 12 anaemia, 8 hypertension and 6 dystocia). In Benin, cost data were collected for 14 spontaneous vaginal deliveries and 406 near-miss cases (174 due to haemorrhage, 126 hypertension, 44 dystocia, 35 anaemia, and 27 sepsis). The cost data are not normally distributed, therefore the median as well as the mean is presented and the range (minimum, maximum value) is presented rather than the standard deviation (Tables 1 and 2). The total out-of-pocket payment made by women and their families in both countries was high for all types of delivery, especially for near-miss events, as shown in Tables 1 and 2.

In Ghana, median costs ranged from $16 for a spontaneous delivery in a non-teaching hospital to $115 for a near-miss complication caused by haemorrhage in the teaching hospital. The total cost associated with a near-miss complication was significantly higher than that of a spontaneous delivery ($92 versus $21, p = 0.03). Table 3 shows the breakdown of total cost by main cost components for each type of delivery: spontaneous vaginal and the five types of near-miss complication for the teaching hospital. The costs for drugs and medical supplies were predominant, representing on average 79% of total cost (drugs, medical supplies and delivery costs). Sixty-two percent of medical costs were due

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<tr>
<th>Table 1. Total out-of-pocket costs to women and their families in Ghana in US$ 2000</th>
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<tr>
<td>Teaching hospital</td>
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<td>-----------------------------------------------</td>
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<tr>
<td>n</td>
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<tr>
<td>Spontaneous vaginal delivery</td>
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<tr>
<td>Anaemia</td>
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<td>Hypertension</td>
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<tr>
<td>Haemorrhage</td>
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<td>Sepsis</td>
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<td>Dystocia</td>
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<tr>
<th>Table 2. Total out-of-pocket costs to women and their families in Benin in US$ 2000</th>
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<tr>
<td>Teaching hospital</td>
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<tr>
<td>-----------------------------------------------</td>
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<tr>
<td>n</td>
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<tr>
<td>Spontaneous vaginal delivery</td>
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<td>Haemorrhage</td>
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<td>Sepsis</td>
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<td>Dystocia</td>
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</table>
to drugs and medical supplies. The flat charge for a spontaneous vaginal delivery in Ghana varied from $1.1 in Mampong to $4.2 in KATH; and for a caesarean section or other major operative intervention, including anaesthesia, from $6 in Pramso to $37 in KATH. ‘Hotel’ costs (food and lodging) accounted for only 14% of the total cost of complicated deliveries, with transport and ‘other’ costs contributing little to the overall cost. Food accounted for an average of 63% of hotel costs in KATH, 81% in Mampong, and in Pramso there were no lodging costs reported. The median length of stay in hospital varied from 6 days for sepsis to 15 days for anaemia and dystocia as shown in Table 4.

The total cost of delivery care, especially for obstetric emergencies, represented a significant financial burden for Ghanaian households. Table 5 shows costs of delivery care as a proportion of annual household cash expenditure, estimated at $1773 in 2000. Haemorrhage placed the greatest cost burden on households at 5–8% of annual cash expenditure. The burden on the poorest income quartile is substantially greater, the cost associated with this same near-miss event representing 11–19% of annual household cash expenditure. The cost of a spontaneous vaginal delivery at the teaching hospital represented 1% of annual household expenditure.

In Benin, total costs ranged from a median of $15 for a spontaneous delivery in a non-teaching hospital to $256 for a near-miss complication caused by dystocia in the teaching hospital (Table 6). The total cost associated with a near-miss complication was significantly higher than that of a spontaneous delivery ($157 versus $26, \( p = 0.004 \)). In the teaching hospital, medical costs represented 64% of the total as shown in Table 6. The cost of the delivery (either spontaneous vaginal delivery or an operative intervention with anaesthesia) and laboratory tests represented 65% of the medical costs. The flat charge for a spontaneous vaginal delivery varied from $3 in Porto Novo to $6 in CUGO; and for a caesarean section or other major operative intervention from $20–$41 in Porto Novo to between $43–$129 in CUGO. Hotel costs accounted for 25% of the total. Lodging accounted for 53% of total ‘hotel’ costs in Porto Novo and 84% in CUGO. Table 4 indicates that the median length of stay in hospital varied between 4 days for a near-miss haemorrhage to 8 days for a near-miss dystocia case.

The total cost of obstetric emergencies represented a large financial burden for households in Benin. Annual household cash expenditure in 2000 was $781.\(^6\) As shown in Table 5, the greatest financial burden incurred was for dystocia cases, accounting for 23–34% of annual household cash expenditure in the teaching and non-teaching hospital, respectively. The cost of a spontaneous vaginal delivery at the teaching hospital was 3.4% of annual household expenditure.

### Discussion and conclusions

Our results show that the economic burden of hospital-based delivery care in Ghana and Benin is significant. Should a woman develop severe obstetric complications during labour, the costs of hospital management escalate rapidly, with a potentially catastrophic impact on household budgets. These findings also illustrate the important role played by households in financing health services in Ghana and Benin.

### Table 3. Composition of costs to women and their families in the Teaching Hospital in Ghana (mean costs in US$ 2000) as percentage of total (in brackets)

<table>
<thead>
<tr>
<th>Case type</th>
<th>Drugs and medical supplies</th>
<th>Delivery</th>
<th>Lab. tests</th>
<th>Transport</th>
<th>Food</th>
<th>Lodging</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaemia</td>
<td>27.2 (49%)</td>
<td>9.3 (17%)</td>
<td>3.0 (5%)</td>
<td>0.8 (1%)</td>
<td>7.1</td>
<td>5.7 (10%)</td>
<td>2.0</td>
<td>55.1</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>46.9 (41%)</td>
<td>37.3 (32%)</td>
<td>6.0 (5%)</td>
<td>4.2 (4%)</td>
<td>9.8</td>
<td>5.8 (5%)</td>
<td>4.9</td>
<td>114.9</td>
</tr>
<tr>
<td>Hypertension</td>
<td>63.1 (46%)</td>
<td>37.6 (28%)</td>
<td>5.9 (4%)</td>
<td>1.6 (1%)</td>
<td>16.0</td>
<td>4.5 (5%)</td>
<td>1.7</td>
<td>136.5</td>
</tr>
<tr>
<td>Dystocia</td>
<td>54.4 (59%)</td>
<td>22.0 (24%)</td>
<td>7.0 (8%)</td>
<td>1.3 (1%)</td>
<td>4.5</td>
<td>1.7 (2%)</td>
<td>1.3</td>
<td>92.2</td>
</tr>
<tr>
<td>Sepsis</td>
<td>53.8 (48%)</td>
<td>36.3 (32%)</td>
<td>2.4 (2%)</td>
<td>2.4 (2%)</td>
<td>8.5</td>
<td>7.3 (6%)</td>
<td>2.0</td>
<td>112.7</td>
</tr>
<tr>
<td>Normal delivery</td>
<td>6.7  (35%)</td>
<td>4.2 (22%)</td>
<td>n.a.</td>
<td>1.7 (9%)</td>
<td>1.2</td>
<td>0.8 (4%)</td>
<td>4.8</td>
<td>19.4</td>
</tr>
</tbody>
</table>

### Table 4. Median length of hospital stay (days) for a spontaneous delivery and each type of near-miss complication

<table>
<thead>
<tr>
<th></th>
<th>Ghana</th>
<th>Benin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Median</td>
</tr>
<tr>
<td>Spontaneous vaginal delivery</td>
<td>61</td>
<td>1</td>
</tr>
<tr>
<td>Anaemia</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Hypertension</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>Sepsis</td>
<td>14</td>
<td>6</td>
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<tr>
<td>Dystocia</td>
<td>6</td>
<td>15</td>
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</tbody>
</table>
Prompt and effective management of complicated pregnancies and labour are now seen as central to efforts to reduce maternal mortality in developing countries (Starrs 1997). The high costs of such care may well deter women and their families from utilizing emergency obstetric services when they need them; or result in delays in accessing such services.

This study provides a lower-bound estimate of the total cost of pregnancy to households. Medical costs incurred before arrival at the hospital were not included, although some women and their families reported that they were referred to the hospital from a lower level of care, where additional medical costs were incurred. Furthermore, indirect costs associated with the value of relatives’ time spent travelling to the hospital and waiting there with the woman were not included, although there is evidence to suggest these costs can be significant (Borghi et al. 2000; Levin et al. 2000). Lost productivity to the household due to possible long-term morbidity suffered by mothers as a result of the near-miss event was not explored in this study. This would provide information on possible income losses accruing as a result of care seeking, as well as the possible long-term financial impact of residual obstetric morbidity on the household economy.

Cost data were collected by midwives who were well placed to comprehensively collect such data throughout a patient’s hospital stay. One concern with this approach is the reliability of estimates of unofficial payments made by patients. In the case that the midwives themselves are eliciting these payments, there would be a clear incentive for them to be underreported. An alternative to allowing midwives to collect the cost data would be to conduct a retrospective interview with patients; however, this would have introduced new biases arising from patient recall. A final limitation is the absence of background information on households’ socio-economic status, education level, etc. These data would have allowed the analysis of any correlations between these variables and total cost to be made.

The sample of normal deliveries included in the study was small; however, our results are consistent with other studies. For example, a study of women’s costs in Ghana in 1998 estimated the total cost of a spontaneous vaginal delivery at $20.64 (Levin et al. 2000). For a caesarean section the total cost increased to between $68.39–139.58 (ibid). In our study, caesarean section was not considered separately, but is included as part of the cost of certain near-miss cases. In terms of affordability of care, a study of women’s costs of caesarean section in public, private and NGO facilities in Bangladesh showed that they reached 19% of average annual income in the lowest income group (Kawnine et al. 1998), again not dissimilar from our results.

Direct comparisons between Ghana and Benin were not attempted here due to the differences in sampling strategy, sample size and data collection methods. For example, the length of stay in hospital for near-miss cases in Ghana seems to have been longer than in Benin. This could be due to a number of factors, including the sampling strategy adopted in Ghana, where mostly severe cases with consequently longer hospital stay, which had been selected for the near-miss audit study, were interviewed; or to different hospital discharge policies. Unfortunately, we were unable to control for these factors.
What are the implications for policy makers who seek to increase the rate of skilled attendance at delivery and reduce the rate of maternal mortality? Certain changes in the organization of the hospitals could improve the efficiency of service delivery and also possibly alleviate some of the costs borne by households. For example, anecdotal evidence from Ghana suggests that, in government hospitals, frequent supply shortages force women or their families to make purchases from private pharmacies. These may be more expensive and may also delay their obtaining treatment. In the case of IV sets for resuscitation or emergency blood transfusion, for example, the consequences would be serious and possibly fatal. If government hospitals could guarantee a regular availability of essential drugs and medical supplies for delivery care, especially for emergency cases, this would ensure more prompt and possibly life-saving care for women.

The shortage of drugs and supplies in hospitals has further implications for the affordability of care to the household, as anecdotal evidence from Benin suggests. When drugs are purchased from outside the hospital the units of purchase are frequently larger than that required, leading to wastage and probably increasing costs to the household, although this issue was not explored in the present study. Furthermore, some of the near-miss study case reviews indicate that health staff sometimes prescribe without checking previous prescriptions, resulting in women buying the same drugs under different names. A final organizational concern, particular to the teaching hospital in Ghana (KATH), was the obligatory payment for meals, even if they were not requested or consumed. This was reported as a source of frustration by some of the women interviewed, as well as an additional and unnecessary cost to households.

Our study shows that the total costs incurred by women in labour are far from predictable, with a wide range from the cost of a spontaneous vaginal delivery to that of managing severe complications during delivery. This counters one argument that has been made in support of the introduction of user fees, that they would remove the unpredictability of maternity care costs for users (Nahur and Costello 1998). For those women who require hospital delivery, accessing sufficient cash to cover the bill can cause significant delays in receiving treatment. The results of an analysis of near-miss case reviews indicate that the main sources of cash were extended family, work colleagues or employers, friends and, in a few cases, hospital staff themselves (Behague, work in progress). The sale of animals was also reported in one case (ibid). In Benin, 8% of near-miss cases, identified for the cost analysis in the non-teaching hospital, left the hospital before discharge to avoid paying the full hospital bill. The percentage of the total number of near-miss cases that left without paying was even higher at 13%.

The mechanism for collecting fees is an important factor in determining access to care, with direct payment systems often inappropriate for rural populations that face the problem of temporary or seasonal inability to pay, reportedly occurring in up to 40–50% of households in Sub-Saharan Africa (Soucat et al. 1997). Access to capital is limited in these countries; and illness impacts disproportionately on the poor, who are forced to spend almost as much in absolute terms on high-cost care (hospital and private care) as do the richest 20% (Fabricant et al. 1999). While officially payment exemptions for the poorest are common in many health systems, the evidence suggests that only a small proportion of those eligible for exemptions actually receive them (Huber in Fabricant et al. 1999). Similarly, in our study, the burden of cost fell disproportionately on the poorest women, some of whom left the hospital before discharge to avoid a payment they could not afford.

One alternative approach to financing would be for government hospitals to introduce flexible rather than fixed payment schemes, enabling the spread of payment over time (either before or after using care), although this may be difficult to administer. Numerous studies show that it is easier for households to finance the cost of illness when part of the cost is prepaid (Diop et al. 1995; Fox-Rushby and Foord 1996; Schneider et al. 2001). Therefore, community health insurance or pre-payment schemes could provide an alternative method of financing that would protect the poor from the consequences of catastrophic illness (Smith et al. 2001), and facilitate prompt access to emergency obstetric care, when women most need it.

Because of its facility-based design, our study did not provide any information on the unknown numbers of women who do not seek formal care in response to obstetric complications, and who die at home as a result. Further research, ideally at the household level, is required to evaluate the magnitude of this problem, together with the total and long-term impacts of the financial burden of maternal ill health on households; and to better understand the mechanisms which households use to access capital when a woman experiences an obstetric complication requiring hospital management. In addition, further evaluations are required to assess the impact of flexible payment schemes in hospitals, and community health insurance schemes for women during pregnancy.

Endnotes

1. A skilled birth attendant is defined here as doctor, nurse or midwife.
2. There were many more relatives who visited the patient and no doubt incurred costs, but for simplicity we limited our analysis to just the person(s) who accompanied the woman to the facility and remained with her.
3. Women in Ghana and Benin were expected to provide bleach to sterilize the materials, bed sheets, gauze, gloves and sanitary pads when admitted. Similarly, families of women in need of a blood transfusion were expected to provide a blood donor or purchase blood from the blood bank.
4. It is unclear whether these tips were voluntary payments or involuntary unofficial payments. In Ghana, only cash exchanges were recorded. In Benin, any gifts offered to midwives were recorded and the market value of the gift imputed.
5. The proportionate differences in costs for normal and near-miss deliveries in the non-teaching hospitals follow a similar pattern to the teaching hospital and so are not shown here.
6. This is based on a survey of 102 831 households in Cotonou, with an average of 3.97 adults per household (Institut National de la Statistique et de l’Analyse Economique 2000).
7. This information results from an in-depth analysis of case
reviews presented at audit meetings in Benin, currently being compiled in a work in progress by Dominique Behague.

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Biographies

Josephine Borghi, MSc, is a Research Fellow in the Infectious Disease Epidemiology Unit, London School of Hygiene and Tropical Medicine, U.K.

Kara Hanson, DSc, is a Lecturer in the Health Policy Unit, London School of Hygiene and Tropical Medicine.
Charles Adjei Acquah, MSc, works for the Christian Health Association of Ghana, Accra, Ghana.

Gatien Ekanmian, MD, works at the Centre Régional pour le Développement et la Santé, Bénin.

Veronique Filippi, PhD, is a Lecturer in the Infectious Disease Epidemiology Unit, London School of Hygiene and Tropical Medicine.

Carine Ronsmans, MD, DrPH, is a Senior Lecturer in the Infectious Disease Epidemiology Unit, London School of Hygiene and Tropical Medicine.

Ruairi Brugha, MD (Public Health), is a Senior Lecturer in the Health Policy Unit, London School of Hygiene and Tropical Medicine.

Edmund Browne, PhD, is Head of Department/Senior Lecturer in the Department of Community Health, School of Medical Sciences, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana.

Eusèbe Alihonou, Professor, is Head of the Maternity Unit in the Centre National Hospitalier et Universitaire, Head of Centre de Recherche en Reproduction Humaine et en Demographie, Cotonou, Bénin.

Correspondence: Josephine Borghi, Infectious Diseases Epidemiology Unit, London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK. Tel: +44 (0) 20 7927 2939; Fax: +44 (0) 207 637 5391; E-mail: jo.borghi@lshtm.ac.uk.