

# Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity

Review of the Literature on the Extent and Mechanisms by which Maternal, Newborn, and Child Healthcare Expenditures Exacerbate Poverty, with Focus on Evidence from Asia and the Pacific





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# Preface

This review is prepared as a product of the Asian Development Bank Regional Technical Assistance Project: TA–6515 REG (Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity). The authors gratefully acknowledge the funding made possible by the ADB RETA project that is financed principally by the Australian Government, which enabled preparation of this report.

Australia is taking a leading role in global and regional action to address maternal and child health. A key part of this is to strengthen the evidence for increased financial support and the most effective investments governments and donors can make to meet MDGs 4 and 5. Australia is supporting this RETA as a part of this commitment.

The ADB’s vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region’s many successes, it remains home to two-thirds of the world’s poor: 1.7 billion people who live on less than \$2 a day, with 828 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialog, loans, equity investments, guarantees, grants and technical assistance.

# Acknowledgments

This review built and expanded on an unpublished review jointly commissioned by three departments of the World Health Organization and written by Aparnaa Somanathan in 2006.

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## Abbreviations

ACT	–	artemisinin-based combination therapy
ADB	–	Asian Development Bank
ANC	–	antenatal care
C-section	–	cesarean
Lao PDR	–	Lao People’s Democratic Republic
MDG	–	Millennium Development Goal
MMR	–	maternal mortality rate
MNCH	–	maternal, neonatal, and child health
NGO	–	nongovernmental organization
OOP	–	out-of-pocket
PNG	–	Papua New Guinea
PRC	–	People’s Republic of China
TA	–	technical assistance
TBA	–	traditional birth attendant
WHO	–	World Health Organization

## Executive summary

The burden of poor maternal, neonatal, and child health (MNCH) varies greatly across Asia and the Pacific, and is among the highest in the world in certain countries in the region. Reducing this burden to achieve Millennium Development Goals (MDGs) 4 (reduce child mortality) and 5 (improve maternal health) will require expanding the use of effective MNCH care services and lowering the barriers to the use of such services. One of the most important barriers is the frequent need for households to pay out-of-pocket (OOP) for treatment. This financial barrier can substantially reduce access to and use of services, as well as increase inequity in health outcomes. In addition, such payments can adversely affect household welfare through their impact on overall household savings and consumption. In many countries in Asia and the Pacific there is a significant incidence of both catastrophic and impoverishing impact of OOP spending for healthcare, according to recent research.

This review sought to compile and assess the available global evidence on the mechanisms through which MNCH care expenditures heighten poverty and affect households in developing economies, particularly in Asia and the Pacific. Studies and surveys gathered through searches on the PubMed database of the National Center for Biotechnology Information (US), and through internet and manual searches, were systematically examined. The review built and expanded on an unpublished review of the household impact of maternal and newborn healthcare expenditures. That earlier review made by Aparnaa Somanathan in 2006 was commissioned by the World Health Organization (WHO).

A total of 127 studies were identified and included in the present review. The literature on MNCH costs to households has significantly expanded its coverage in the past decade, perhaps reflecting greater investments in research spurred by the MDGs. Most global regions are adequately covered, with Asia and Africa dominating. However, within Asia, little work has been done in Afghanistan, the Lao People's Democratic Republic, Pakistan, and Papua New Guinea, considering the contribution of these countries to overall maternal and child deaths. Most of the work has been on the costs of maternal healthcare. Less has been done on child healthcare costs, and almost nothing on the costs of neonatal care.

Several critical data gaps and weaknesses in the evidence base, identified in the review, make it difficult to draw firm conclusions about the extent to which MNCH care expenditures worsen poverty and the mechanisms through which they do so. Different and unclear definitions of what is being measured, as well as differences in the way costs are measured, make comparisons across countries and between studies within the same country unreliable. In addition, a majority of existing studies rely on survey data for estimates of household spending on MNCH care, but suffer from non-sample bias and inconsistent coverage of cost items. Much of the existing empirical work also examines the costs and consequences of MNCH care over a relatively short period of 1 month to a year although the financial consequences of these costs and the strategies taken to cope with them may extend over several years.

The financial costs of MNCH care absorb a significant share of household incomes in all settings where public sector financing of health services is either inadequate or ineffective, and there is too little access to public sector services. For poor households the costs of a single MNCH care episode may account for as much as 100%–200% of monthly incomes. The largest single cost component in many studies, especially in Asia, is the cost of purchasing medicines and supplies. In some countries, the costs are almost always associated with any use of formal MNCH services.

The financial costs of care are particularly large for deliveries involving complications or surgery. But even with normal deliveries at facilities, maternal care is very expensive in many Asian countries. Cost therefore remains a major barrier to safe motherhood in those countries. Public MNCH services tend to have lower direct costs than private services, but the direct costs of public MNCH services are high in countries where public services are supposed to be free.

The indirect costs of MNCH care have not been as well studied. Families incur significant opportunity costs from the time involved in traveling and obtaining MNCH care, as well as from the disruption of income-generating work caused by the care of sick family members. In countries in Asia and the Pacific, both the financial and time costs of MNCH care frequently contribute to financial catastrophe and impoverish households.

MNCH care expenditures indirectly influence household poverty through the coping strategies that households adopt to deal with the expenditures. Households that use their savings and sell off assets to pay for MNCH care erode their asset base and make themselves more vulnerable to other economic shocks. If they borrow at high interest rates from moneylenders and are unable to make interest payments, their indebtedness grows. In several Asian countries, borrowing by families to defray large MNCH costs leads to reduced consumption of essentials such as food and education in order to make repayments. The negative impact of MNCH payments thus often far outlasts the initial costs.

Focusing solely on the financial consequences of MNCH care costs ignores the impact that the potential for financial catastrophe may have on the use of healthcare services by households. The evidence suggests that households choose to forgo MNCH care to avoid the financial costs. Given the critical lack of informed demand for formal health services in MNCH care, financial barriers such as this will significantly undermine efforts to expand the use of services. These financial costs appear to be major barriers to improving access to and use of MNCH services in many countries in Asia and the Pacific, and contribute significantly to observed inequalities in access and MNCH outcomes.



# I. Introduction

## Background

The burden of poor maternal, neonatal, and child health (MNCH) varies greatly across Asia and the Pacific; in certain countries in the region it is among the highest in the world. Reducing this burden to achieve Millennium Development Goals (MDGs) 4 (reduce child mortality) and 5 (improve maternal health) will require both supply- and demand-side progress to expand the availability of effective MNCH care services, reduce the barriers to access that often discourage use, and ultimately increase the use of effective services. One of the most important of such barriers is the frequent need for households to pay out-of-pocket (OOP) for healthcare. This financial barrier can significantly reduce access to and use of services, as well as increase inequity in health outcomes. In addition, such payments can be detrimental to household welfare and overall poverty reduction goals through their impact on overall household savings and consumption, especially for the poor. The impact is likely to be commonplace in many countries in Asia and the Pacific. Recent studies (Borghesi, Storeng and Filippi 2008; Bonu et al. 2009) have revealed a significant incidence of the catastrophic and impoverishing impact of OOP spending for MNCH care in many countries in the region.

The regional technical assistance project Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity (TA 6515 REG) of the Asian Development Bank (ADB) examined what is known about the financial barriers to access to essential MNCH services and the impact of financial expenditures on households in Asia and the Pacific. This systematic review was conducted under the project to find out what is known in the literature about such expenditures and their impact on households, both globally as well as within Asia and the Pacific. The review built on an earlier, unpublished review with a narrower scope that was commissioned by the World Health Organization (WHO) through its Making Pregnancy Safer Department (Somanathan 2006). That earlier review examined the evidence on the financial impact on households of expenditures on maternal and newborn care.

## Objectives

The goal of this study was to assess how and to what extent the MNCH expenditures of households worsen poverty and financial burden, particularly in countries in Asia and the Pacific. The study sought to answer the following research questions:

- (i) What are the main direct and indirect costs to households from MNCH care and what is the relative importance of those costs?
- (ii) What is the magnitude of MNCH care costs relative to other household health and non-health expenditures, and how significant is the share of MNCH expenditures in overall expenditures?
- (iii) How and to what extent may MNCH care expenditures impoverish individuals and households?
- (iv) What are the various types of coping strategies available to women and households with respect to expenditures on MNCH care, how effective are the strategies, and what are their implications?
- (v) Does the financial burden associated with MNCH care fall disproportionately on the poor and other vulnerable groups?
- (vi) How well does the literature cover the situation and experience with respect to expenditures on MNCH care in Asia and the Pacific, given the region's burden of maternal and child ill health, and how adequate is the coverage in individual countries in the region?

The first two questions examined MNCH care expenses and their magnitude relative to other household resources and expenditures. The third question tackled the question of impoverishment, and the fourth question the strategies used to cope with large MNCH care expenditures. The fifth question examined the distributional aspects of MNCH care expenditures and dealt with the extent to which the poor and other vulnerable groups, particularly women, bear a disproportionate share of the financial burden associated with MNCH care. The sixth and final question pertained to how well the literature covers Asia and the Pacific and the individual countries in the region, considering the burden of maternal and child ill health in the region.

As the issues covered here affect women, children, and households in all parts of the world, the review was meant to be global in scope, while also highlighting and focusing on specific evidence from countries in the region. Much of the worst impact of OOP expenditures on MNCH care occurs in Asia and the Pacific, and is a major barrier to expanding MNCH care in many countries in the region.

## Outline

This report is organized as follows. Section II describes the methods used in the review and the scope of the

study. Section III presents the findings with respect to each of the research questions set out in the previous subsection. Section IV summarizes and discusses the results, and assesses the strengths and weaknesses of the evidence base. Appendix 1 contains descriptions of databases, the search terms and inclusion criteria, and the study protocol, and Appendix 2, a summary of the findings of the studies included in the review.

## **Research Team**

This review was a joint effort of a research team at the Institute for Health Policy (IHP) in Sri Lanka, consisting of Lara Brearley, Shiyam Mohamed, Vindya Eriyagama, Ruwanthi Elwalagedara, and Ravi Rannan-Eliya. Brearley developed and undertook the first set of reviews with assistance from Elwalagedara, and Mohamed and Eriyagama undertook the second set of reviews. Brearley managed the first phase of the work, and Mohamed managed the final phase. Rannan-Eliya provided overall supervision.

## II. Methods and Scope of the Research

The global review of the literature involved a systematic search of the PubMed database of the National Center for Biotechnology Information (US), supplemented by a number of other search strategies. The review was done to identify empirical studies on the financial impact on households of expenditures incurred for MNCH care in low and middle income developing countries.

### Search Strategy

One similar systematic review on this topic had been conducted previously. This was a study of the literature on the narrower topic of the economic impact of maternal and newborn healthcare expenditures on households, conducted by Aparnaa Somanathan in a paper commissioned by WHO (Somanathan 2006) but never published. The present review updates that earlier study and expands its scope to include expenditures for child healthcare.

A systematic search of the existing literature up to 2010 was conducted. Published and gray literature (unpublished and unreviewed reports) in the English language was reviewed, and the results were supplemented by the results of the search by Somanathan in 2005–2006 of the literature on the economic impact of maternal and newborn healthcare use on households. The Somanathan review adopted a similar search strategy, albeit restricted to the areas of maternal and newborn health, and covering the period 1990–2005.

The main strategy involved a keyword search of the PubMed database for studies published in the English language between 2000 and 2010, extending the Somanathan search from 2005 to 2010, and expanding the search by including material on child healthcare expenditures between 2000 and 2010. In addition, the titles and abstracts of selected key journals were reviewed manually as a backup procedure in case materials were missed in the keyword search. Manual searches were also performed on the bibliographies of identified papers. These were supplemented by a keyword search of the JSTOR academic journal database, and searches of the websites of WHO, the United Nations Children’s Fund (UNICEF), the World Bank, ADB, the Australian Agency for International Development (AusAID), the Health Systems Resource Centre of the Department for International Development (DFID) of the United Kingdom, the DFID funded Research for Development online research portal, the Electronic Development and Environment Information System (ELDIS), and the Partnership for Maternal, Newborn and Child Health.

In the PubMed search, various combinations of search terms were used to generate an initial list of potential studies through the database. The core search terms were: “health” AND “maternal,” “newborn,” “neonatal,” “child,” “MNCH,” “MCH” AND “access,” “catastrophic,” “consumption,” “cost,” “expenditure,” “fee,” “financial burden,” “household,” “impoverishment,” “income,” and “out-of-pocket.” These terms corresponded to the objectives of the review, and expanded on the terms used in the earlier search by Somanathan.

To minimize subjectivity in the filtering of studies from the PubMed search, two parallel and independent reviews of the initial PubMed search results were undertaken, and the results pooled. Lara Brearley and Ruwanthi Elwalagedara conducted the first review in September 2009 for the period 2000–2009. Vindya Eriyagama and Shiyam Mohamed carried out the second search in July–August 2011, and this was extended to cover the time period January–December 2010.

The PubMed search for the period 2000–2010 identified 54,021 potential articles. The search results were systematically sifted. First, all the titles and abstracts were reviewed, and a list of 9,612 potentially relevant articles was drawn up. Next, a detailed review of the shortlisted material according to specific inclusion criteria was carried out. From the 1,215 studies that were identified, a final shortlist of 127 articles was prepared. The shortlist of results from the two PubMed searches was then pooled with the studies identified earlier by Somanathan (which covered the period 1990–2005, but were restricted to the impact of maternal and newborn healthcare expenditures) and the studies identified through the additional search procedures. Investigators Ravi Rannan-Eliya, Vindya Eriyagama, and Shiyam Mohamed then jointly reviewed this shortlist before arriving at a final listing by consensus. This final list consisted of 82 studies.

The final list included in the review consisted of 127 studies—82 from the PubMed search and 45 from the review by Somanathan (mostly from earlier years), the manual search of selected journal titles and abstracts, and the search of online resources and websites.

### Scope

The scope of the review was defined as follows. First, it was concerned only with expenditures arising out of healthcare obtained for maternal, newborn, or child ill health, including both the direct and the indirect

costs incurred by households in gaining access to care. It did not examine the health, social, and other economic consequences of maternal, newborn, or child ill health, or the influence of poverty on the use of healthcare services. The study did not explore the health financing policy context in each country studied, and did not consider the quality of care provided. Second, the impact of expenditures or financial costs on healthcare seeking behavior and choice was not an explicit focus of the review, although it was mentioned in a number of studies included in the review and referred to in the discussion. Third, the review was restricted to studies examining the nature and impact of household expenditures on maternal, newborn, and child healthcare in low- and middle-income countries, as categorized by the World Bank (2010). Fourth, the systematic component of the review included only studies published between 1 January 2000 and 31 December 2010, in the English language. However, as noted, it also included studies identified in the earlier search by Somanathan (from the period 1990–2005), plus other studies identified through the secondary search strategies.

The following types of studies and publications were deemed eligible for inclusion: empirical analyses of household survey data, case studies, evaluations, reviews, surveys, peer reviewed journal articles, reports, and unpublished or gray literature. Identified studies were classified into four focal areas: (i) the amount and distribution of MNCH expenditures incurred by individuals and households, (ii) the magnitude of the MNCH-related burden in absolute terms and relative to household consumption, (iii) the incidence of MNCH expenditure among the poor and the impact of MNCH expenditure on impoverishment and inequity, and (iv) household coping strategies and capacity to cope with large MNCH expenditures. Accordingly, studies were included in the review if they discussed the costs and the financial impact on households of spending on MNCH care, the impact of costs and financial barriers on the use of MNCH services (including inequalities in use), and the impact of interventions that were intended to reduce the financial burden of MNCH care on households (including loans or insurance provided and changes in user fees for MNCH services).

## III. Results

This section presents the findings for each of the specific research questions outlined in Part I: What are the main costs to households from MNCH care and what is the relative importance? What is the magnitude of MNCH care costs relative to other expenditures and do these costs constitute a significant share of overall expenditures? Do MNCH care expenditures impoverish individuals and households? What are the uses of the types of coping strategies available and how effective are these strategies? Does the financial burden associated with poor MNCH fall disproportionately on vulnerable groups? How well does the literature cover the situation and experience in Asia and the Pacific, given the burden of maternal and child ill health in the region, and how adequate is the coverage? An annotated listing of the referenced publications is given in Appendix 2.

### What Are the Main Direct and Indirect Costs to Households from Maternal, Neonatal, and Child Healthcare and What Is the Relative Importance of Those Costs?

Direct costs are defined as monetary and in-kind payments incurred by households when seeking healthcare for maternal, newborn, and child ill health. They range from travel costs and payments for medicines, supplies, consultations, and hospital stays, to informal payments made to healthcare providers at home or at a health facility.

Indirect costs are the opportunity costs of employment and income forgone as a consequence of the search for treatment for maternal, newborn, and child ill health. These include the opportunity costs of travel time, waiting time, and visit time, for both the person seeking treatment and his or her companions. MNCH care expenditure requirements may indirectly impose long-term indirect costs on households. For instance, because of excessively large payments for a single MNCH care event, the family may reduce or forgo other household consumption over a long period of time; borrow, often at high interest rates, to pay the unexpectedly large medical bills; and be obliged to repay debts over several years, disrupting household consumption patterns. Substantial reductions in expenditures on items such as food and education may undermine investment in human capital and have a detrimental impact on household productivity, although the evidence on this is inconclusive.

### Direct Costs

#### Summary

- The comparability of total direct costs reported in different studies and settings is limited by wide variations in how cost items are defined and which cost items are included.
- The total direct costs of MNCH care for households include formal fees paid to providers, the cost of medicines, hotel charges for food and accommodation for both patients and companions, travel costs, and informal payments. All of these can significantly affect the decision to gain access to care and the selection of providers.
- Informal payments to providers can represent a considerable share of the direct costs
- The comparability of total direct costs reported in different studies and settings is limited by wide variations in how cost items are defined and which cost items are included.
- The total direct costs of MNCH care for households include formal fees paid to providers, the cost of medicines, hotel charges for food and accommodation for both patients and companions, travel costs, and informal payments. All of these can significantly affect the decision to gain access to care and the selection of providers.
- Informal payments to providers can represent a considerable share of the direct costs of MNCH in countries such as Bangladesh, Ghana, and Nepal.
- Although the public sector in many countries is supposed to provide free or low cost MNCH care, patients incur substantial expenditures at public providers, indicating failure on the part of the public sector to ensure the availability of a low cost, easily accessible option for MNCH care.
- Public providers of MNCH care still tend to provide more protection against the financial risks of excessively large payments for hospitalization and surgery than private providers.

Sixty empirical studies on MNCH care expenditures measure direct costs or quote a value for the direct costs of MNCH care. Of these 60 studies, 43 deal primarily with costs related to maternal healthcare, 15 with child healthcare costs, and 3 with neonatal healthcare costs. Thirty-two studies report on direct costs in Asia and the Pacific, 24 on direct costs incurred in Africa, and 1 on costs

in Latin America. Two studies (The Prevention of Maternal Mortality Network 1992; Borghi, Storeng and Filippi 2008) center on reducing financial barriers to obstetric care in developing countries, citing countries in both Africa and Asia. While efforts have been made to reduce financial barriers to care, the significant OOP expenditures for childbirth in countries such as Tanzania and Bangladesh, despite efforts in those countries to ensure the provision of free maternal healthcare, are repeatedly brought out in the literature (Nahar and Costello 1998; Kruk et al. 2008).

The majority of empirical studies on the costs of MNCH care attempt to measure direct costs. All but seven of the studies consist of surveys designed to collect data on some or all of the following direct cost items: travel costs; formal and informal consultation charges; admission or registration fees; charges for bed, delivery, surgery, and diagnostic procedures; purchase of medicines, supplies, and blood; hotel charges (food and accommodation); and informal payments to ancillary staff and other providers. The comparability of total direct costs across studies and across settings is limited by wide variations in how cost items are defined and which cost items are included.

Direct costs, by definition, include pre-visit costs, such as travel and medical costs incurred before arrival at the health facility. Pre-visit costs are estimated by Borghi et al. (2004) in a study of Nepal, the only study that estimates all of the direct costs listed above. Two studies that cover Benin, Ghana, and Argentina (Borghi, Bastus, Belizan, et al. 2003; Borghi, Hanson, Acquah, et al. 2003) and a study in Bangladesh by Khan (2005) do give a detailed breakdown of direct and pre-visit costs, but not as comprehensively as the Nepal study of Borghi et al. (2004). These studies, with a relatively comprehensive estimation of direct costs, are the only four that report pre-visit costs. The exclusion of key cost components, such as pre-visit costs and informal charges, from the majority of studies that report on direct costs means that much of the available global research on household expenditures on MNCH care provides only a lower bound for the total expenditure requirements of households.

The comparability of total direct costs across studies and across settings is also limited by wide variations in the definition of cost items. Notwithstanding these limitations, the evidence reviewed for this report indicates that total OOP direct costs tend to be many times larger for complicated deliveries and cesarean sections (C-sections) than for normal hospital deliveries (Borghi, Storeng and Filippi 2008; Afsana 2004; Bhat et al. 2009; Dhar et al. 2009; Khan and Zaman 2010; Borghi et al. 2004; Borghi, Hanson, et al. 2003; Khan 2005; Kowalewski, Mujinja and Jahn 2002; Borghi, Ensor, Neupane, et al. 2006; Nahar and Costello 1998; Levin et al. 2003; Iyengar et al. 2009).

The costs of these complicated deliveries can range from twice the cost of a normal delivery (Kowalewski, Mujinja and Jahn 2002) to 16 times the cost of a normal delivery (Afsana 2004). In a study in Benin and Ghana (Borghi, Hanson, et al. 2003), household direct costs are greatest for childbirth complications related to hypertension, hemorrhage, dystocia, and sepsis, because they resulted in long stays in the hospital. According to a review of evidence from low income countries in Africa and Asia by Richard, Witter, and de Brouwere (2010), the direct costs of maternal healthcare can range between 1% and 5% of total annual household expenditures, and can increase to between 5% and 34% if complications occur, possibly leading to a catastrophic expense for poor households.

Few patterns emerge with regard to the relative share of consultation and hospitalization charges in total MNCH costs. Part of the variation may be attributed to differences in charges set by public and by private providers in different settings, as discussed further below. Six of the studies examine the costs of normal deliveries and deliveries with complications separately, allowing comparison between the two. In each setting, the share of medicines and consultation charges is found to be greater than the share of travel costs for deliveries with complications (Borghi et al. 2004; Borghi, Hanson, et al. 2003; Nahar and Costello 1998; Hotchkiss 2000; Khan and Zaman 2010; Khan 2005).

In most countries, medicines and supplies constitute a sizable proportion, and often the largest single component, of total direct expenditures on MNCH care. In Pakistan, according to Kadir et al. (2000), medicines and supplies account for 36% of household costs for normal deliveries, increasing to 66% for C-section deliveries. In Bangladesh, the costs of medicines and supplies account for 25%–38% of total direct costs for normal delivery, rising to 47%–55% for complicated deliveries (Afsana 2004; Nahar and Costello 1998; Khan 2005). Studies by Borghi, Bastus, Belizan, et al. (2003) show that the proportionate costs for medicines and supplies in Africa are similar to those in Asia, at 33%–43% for normal deliveries, and 21%–45% for complicated deliveries. The lower share of medicines and supplies in direct costs for patients in Africa might be explained by the user fee exemptions and cost reduction schemes introduced by many African governments to improve maternal healthcare (Asante et al. 2007). It may also be due in part to medical cultures in many Asian countries that emphasize the importance of medicines, and associated with this the existence of extensive retail distribution networks for medicines. The purchase of medicines and supplies account for 25%–59% of total direct costs in all the settings examined, except for health center deliveries in Tanzania (11%) (Kowalewski, Mujinja and Jahn 2002) and hospital deliveries in Uganda (15%) (Levin et al. 2003).

Several studies show that medicines and supplies contribute to a great deal of uncertainty over total expenditures, as prices vary considerably and households do not know how much cash they should bring with them to the hospital and where they should purchase the medicines and supplies (Afsana 2004; Nahar and Costello 1998). In addition to not knowing the potential total cost of medicines and supplies, having to purchase bleach, gloves, or other medical necessities that are in short supply at the health facilities means that treatment is often delayed, as they are in Ghana and Benin (Borghi, Hanson, et al. 2003)

Hotel costs, including food and lodging, are a frequent, but not predominant, expense associated with inpatient MNCH care, particularly maternity care. Costs tend to be proportional to length of stay and compose a relatively similar share of total direct costs for childbirth in all studies: 10%–20% for normal deliveries and 5%–15% for complicated deliveries. Households bring food from outside, in addition to paying for food provided at the hospital itself, according to studies from many countries.

Evidence on OOP costs for childbirth at home is available for Nepal, Bangladesh, and two parts of India, Mumbai and Rajasthan (Borghi, Ensor, Neupane, et al. 2006; Borghi, Ensor, Somanathan, et al. 2006; Borghi et al. 2010; Das et al. 2010; Denny 2008; Somanathan 2006; Borghi et al. 2004). Home delivery costs are the most predictable and generally the lowest among maternal costs for households, although average costs vary with the type of assistance at delivery (Borghi et al. 2004; Hotchkiss 2000). A recent study in Bangladesh by Borghi et al. (2010) confirms the low cost of basic obstetric care provided at home, compared with delivery at a local healthcare facility. A study in Ghana by Asante et al. (2007) shows that the cost of home delivery with a traditional birth attendant (TBA) is about half that of normal delivery at a health facility. While home deliveries take longer, delivery at a health facility involves additional financial costs. In both Nepal (Borghi, Ensor, Neupane, et al. 2006) and state of Rajasthan, in India (Iyengar et al. 2009), home deliveries assisted by TBAs are the lowest cost deliveries, followed by deliveries attended by trained birth attendants and by deliveries assisted by institutional health staff.

In Mumbai, payments to staff (in cash or in kind) compose 75%–100% of total direct costs when a TBA or relative attends delivery at home (Das et al. 2010). The share of expenditures on drugs and supplies is greater when trained attendants are used: 13%–21% in Nepal, Mumbai, and Rajasthan. According to Borghi et al. (2004), safe delivery kits are used more by mothers delivering with the help of a trained attendant (27%) than by those assisted by an untrained attendant (15%). Because of the relatively low travel costs and opportunity costs of time, home deliveries

cost much less than facility based deliveries. Many of the studies report that sociocultural barriers to facility based delivery combine with financial constraints to persuade mothers to deliver at home (Titaley et al. 2010; Stekelenburg et al. 2004), indicating the need for policy interventions to reduce the costs of delivery at a healthcare facility, alongside measures to address the sociocultural barriers.

The share of travel costs in total direct costs varies between 4%–64% for normal deliveries and 1%–49% for complicated deliveries, but there is considerable variation between studies and countries (Borghi et al. 2010; Borghi, Storeng and Filippi 2008; Kowalewski, Mujinja and Jahn 2002; Buor 2003; Ensor and Ronoh 2005). Such variation is inevitable, given the observed differences in distance and modes of transport. Travel costs are highest in Nepal, particularly in mountainous areas and rough terrain, where the physical barriers to access to care are quite significant and air transport is sometimes needed to transfer women to hospitals (Borghi et al. 2004). Similar regional variations in travel costs probably exist in other settings, but are examined only in the Nepal study. In an emergency, travel costs can soar, adding to the uncertainty of households about costs (Afsana 2004; Borghi et al. 2004). Having to raise money to pay for transport often delays access to treatment. A West African study notes that transport rental rates in an emergency, when vehicles are scarce, could be up to five times higher than normal rates (The Prevention of Maternal Mortality Network 1992).

In many settings, informal charges are a significant cost of MNCH care, especially at public providers. Informal charges are unofficial or illegal payments made to service providers to obtain publicly financed services or goods that should be available without charge to the patient. Attempts to estimate informal charges demonstrate lack of consistency in how costs are defined and measured in different settings. First, the components of informal costs that are measured vary considerably. Borghi et al. (2004) count informal payments to staff, as well as food brought by relatives and companion costs, as informal costs, while Afsana (2004) and Borghi, Hanson, Acquah, et al. (2003) focus primarily on informal payments to staff. Second, respondents often mistake informal charges for formal fees and report them as the latter in surveys, or the surveys do not actually attempt to distinguish between formal and informal payments. Estimates of total costs may therefore include informal charges within reported components, such as registration fees and consultation charges, even though the study does not explicitly mention informal charges. Third, even when respondents are able to distinguish between formal and informal payments, having health facility staff administer the survey, as in the Borghi, Hanson, Acquah, et al. (2003) study, may cause underreporting of informal payments. With the caveat that differences in how costs

are defined and measured may undermine comparability, some patterns emerge with regard to the composition of expenditures for different types of MNCH care.

Many of the studies point out the captive nature of informal charges. Women and their companions, relatively unfamiliar with the hospital environment and procedures, have little choice but to pay attendants and other ancillary staff to obtain supplies and information from them (Afsana 2004; Borghi et al. 2004).

Informal payments compose a significantly large share of total expenditures on MNCH care in the three studies that attempt to measure them explicitly: 25%–35% of costs for normal deliveries in the public sector in Bangladesh (Afsana 2004), Ghana (Borghi, Hanson, et al. 2003), and Nepal (Borghi et al. 2004). However, the frequency and extent of informal payments for MNCH care appear to be highly dependent on country context, and may be modest or minimal in other countries. Many studies do not explicitly include informal charges in their estimation of total expenditures; in some cases this may be because such payments are not common. The share of informal payments to staff, medicine purchases, and hospital charges varies substantially in the three studies that report on these. The study done by Afsana et al. (2004) also highlights the overcharging of patients by staff at health facilities in Bangladesh, with profits being shared among the staff responsible, but makes no mention of such practices in other countries.

Women using antenatal care (ANC) services in Argentina, Ghana, Malawi, and Uganda incur higher costs at hospitals than at health centers because of the higher user fees at secondary and tertiary care facilities and the costs of travel to such facilities (Levin et al. 2003; Borghi, Hanson, et al. 2003). A comparison of ANC costs across different settings in Bangladesh finds that the costs are lowest at healthcare facilities, where more patients can be seen without the necessity of travel to patients' houses by staff of the facilities, thus offsetting the running costs of the facilities (Borghi et al. 2010). The share of travel costs in total direct costs is relatively smaller when ANC is obtained at hospitals, because of the overwhelmingly large share of user fees and supplies in expenditures. In Rajasthan, nearly half of all ANC expenditures are on medicines and supplies (Hotchkiss 2000); hotel charges (inclusive of food, lodging, etc.) and companion costs are virtually nonexistent for both antenatal and postnatal care, as no hospitalization is required except in rare cases and most women travel unaccompanied (Levin et al. 2003; Kowalewski, Mujinja and Jahn 2002).

Several studies distinguish between the amount and composition of MNCH costs at public, private, and nongovernment organization (NGO) providers. Cost

comparisons from Asia and the Pacific (Afsana and Rashid 2001; Kawnine et al. 1998; Borghi et al. 2004; Borghi et al. 2010; MoHFW 1998; Iyengar et al. 2009) outnumber those from Sub Saharan Africa (Ayieko et al. 2009; Afsana and Rashid 2001; Asante et al. 2007; Elrayah et al. 2005; Levin et al. 2003; Borghi, Hanson, et al. 2003). Mean direct costs incurred by users at public facilities are always lower than those at private facilities but not necessarily lower than the mean direct costs at NGO facilities in Bangladesh (Kawnine et al. 1998), Ghana (Borghi, Hanson, et al. 2003; Asante et al. 2007), Malawi and Uganda (Levin et al. 2003), Nepal (Borghi et al. 2004), Tanzania (Kowalewski, Mujinja and Jahn 2002), Pakistan (Kadir et al. 2000), and Rajasthan (Hotchkiss 2000). Similarly, home deliveries cost less on average when attended by government health staff than when assisted by private doctors and midwives (Borghi, Storeng and Filippi 2008). Patients at public providers nonetheless incur substantial expenditures, indicating that in many countries the public sector fails to provide a low-cost, easily accessible option for maternal care.

Medicines and supplies purchased from the private sector tend to be more costly and therefore account for a higher share of total household costs. Their share of total direct costs for private sector deliveries ranges from 7% in Nepal (Borghi et al. 2004) to 14% in Bangladesh (Kawnine et al. 1998) and 30% in Rajasthan, India (Hotchkiss 2000). In the three countries medicines and supplies account for 40%–66% of all maternal and child health expenditures of households. Shortfalls in the supply of essential medicines at public facilities drive patients to more expensive private sources. On the other hand, when private providers are the primary source of care, medicines and supplies have a smaller share of total household costs, which are dominated instead by hospitalization and registration fees and operation charges. In Bangladesh, operation charges account for roughly 60% of the total direct costs of a C-section at private and NGO hospitals, but are nonexistent at public hospitals. The share of hotel costs in total direct costs is also greater in the private sector.

MNCH care in the public sector can be costly to households and often involves large OOP payments for medicines, but it tends to protect users from excessively large payments for hospitalization and surgery, unlike MNCH care in the private sector. Dhar et al. (2009) bring out this difference in a study in India. Normal delivery at a government facility (\$61) and at home (\$55) is inexpensive, but at a private facility it could be very costly (as high as \$1,035). The cost of maternal deliveries at private clinics amounts to 26% of family income, compared with just 10% for deliveries at a public facility. However, the findings from the studies cited in this paragraph and the previous one

with regard to cost differences between public and private sector providers cannot be readily generalized because of the small sample sizes, particularly for the private sector.

Several studies document variations in costs and prices for MNCH care within the same setting, but one study from Bangladesh reports price discrimination practices at two hospitals (Amin, Hanson and Mills 2004). According to the Bangladesh study, two different groups benefit from a discount on the normal charges, depending on income and social status. User fee exemptions are another source of price variations. In Ghana, such exemptions help reduce OOP expenditure on hospital fees—by 13.8% in the case of the poorest quintile of the population (Asante et al. 2007).

Cost is a major determinant of women's decision whether or not to give birth at a health facility or to use its prenatal care services. A few interventions intended to address the cost barrier were identified during the literature review. Under an obstetric risk insurance scheme tested in a district in Mauritania (Renaudin et al. (2007), a premium of \$21.60, payable in one or two installments, entitled mothers to four prenatal consultations, all prophylactic treatments, three laboratory tests including an ultrasound scan, and care during normal or complicated delivery, as well as transportation to a health facility. For women who chose not to enroll in the insurance scheme, user fees allowed the government to cover all other operating costs. Waivers for contributions from the very poor maintained equity, and the scheme achieved an enrollment rate of 95% in healthcare facilities that offered it. But the health facilities were ill prepared for the increased demand, and the quality of service declined as a result. According to Renaudin et al., the falloff in service quality might also have been due to a reduction in hidden fees charged before the insurance scheme was tested.

The studies reviewed in this section clearly show that wide variations in how cost items are defined and which cost items are included limit the comparability of total direct costs across studies and settings. Without key components of cost, the available research on the MNCH expenditures of households provides only a lower bound for those expenditures. But, despite the limitations, the evidence indicates similar trends and findings. Total direct cost is a composite of several elements, among them, the healthcare provider (public, private, or home delivery), the type of delivery (C section or normal delivery), the degree of complications, the cost of medicines, travel costs, and informal payments. Informal payments represent a considerable share of the direct costs of MNCH. Patients may be able to choose between public and private providers of maternal healthcare, but the substantial expenditures incurred at public providers suggest that the

public sector option in many countries is neither low cost nor easily accessible. However, in view of the excessively large, payments for hospitalization and surgery at private providers, public providers offer better protection for those who use their services.

## Indirect Costs

### Summary

- Indirect costs are the opportunity costs of employment and income forgone by those who seek treatment for maternal, newborn, and child ill health. The opportunity costs of time spent traveling, waiting, and visiting, for both the persons seeking treatment and their companions, are included.
- The literature on indirect costs associated with MNCH care has considerably increased in volume and geographic coverage in the past decade, indicating growing awareness of the issue.
- A large number of studies from all regions draw attention to the loss of income of family members and caregivers, and the opportunity cost of time, among the significant indirect costs of MNCH care.
- In many studies, the opportunity costs of time hinder the ability to obtain skilled birth attendance at healthcare facilities.
- The opportunity cost of time spent obtaining maternal healthcare is not limited to the time spent by those seeking treatment and their main companions but also includes the time spent by relatives, friends, and neighbors who visit or offer to stay with the patients, in the process also incurring further transport and hotel costs.
- Indirect costs contribute a significant share of total expenditures but remain the most poorly measured component of MNCH costs.

Many of the studies reviewed here consider the indirect costs associated with the time spent by patients and their companions in the course of traveling to health facilities and waiting to be served at the facilities. From only four studies reported in the review by Somanathan (2006), the literature on this topic has markedly increased in volume and geographic coverage, indicating growing awareness of the issue. This review covered the following countries: Bangladesh (Borghi, Sabina, et al. 2006), Cambodia (Huy et al. 2009; Potdar, Fetters and Phirun 2008), the People's Republic of China (PRC) (Tao et al. 2011), India (Bhat et al. 2009; Bhatia and Cleland 2001), the Lao People's Democratic Republic (the Lao PDR) (Ye et al. 2010), Malaysia (Chai and Lee

2009), Nepal (Borghgi et al. 2004; Dhakal et al. 2007; Pokhrel 2007; Borghgi, Ensor, Neupane, et al. 2006), Pakistan (Hussain et al. 2008), Viet Nam (Harving and Ronsholt 2007), The Gambia (Fox-Rushby and Foord 1996; Rutherford et al. 2009), Kenya (Larson et al. 2006), Malawi (Mota et al. 2009), Nigeria (Katung 2001; Tongo et al. 2009), South Africa (Tlebere et al. 2007), Tanzania (Kowalewski, Mujinja and Jahn 2002; Mubyazi et al. 2010; Young, Ali and Beckham 2009), Zambia (van Dijk et al. 2009), Zimbabwe (Mugweni, Ehlers and Roos 2008), and Argentina (Borghgi, Bastus, et al. 2003).

Estimating the opportunity cost of time spent seeking care involves making assumptions about wage income forgone. In the Argentina study, the opportunity cost of time was based on average wages in the case of working women, or on the minimum wage for women who stayed at home. To the extent that working women earn below the minimum wage, this method would result in an overestimate of indirect costs. In the Tanzania study, forgone income is estimated from the annual cash income received by farmers from the sale of the harvest, plus the costs of self-consumed farm produce. The one-time cash income is spread over a year to calculate daily income. The assumption that time costs are constant throughout the year may not be appropriate for farming households, whose income is seasonally determined. Valuing time, particularly that of women who take care of the family and do housework, is clearly problematic in settings where the labor market is not well developed. Seasonal labor is a major source of income and a significant share of the population in many developing countries is engaged in subsistence farming. In estimations where the price of care is a proxy for the opportunity cost of illness management, one should never misjudge the low level of illness reporting in resource-poor countries in estimating the conditional (on illness reporting) demand for healthcare. These variables seem to be endogenous—they not only depend on the type and severity of the illness reported but also affect illness-reporting behavior (Pokhrel 2007). These caveats must be considered when assessing the evidence on the indirect costs of MNCH care.

Loss of income when patients or caregivers cannot work is often a major expense for households. Young children who are admitted for treatment are usually accompanied at all times by family members or caregivers, who must wash, feed, and look after them, and in so doing lose their income during the period of confinement. Of the \$61 cost of treating a child in Viet Nam, on average, indirect costs amount to \$28 (Harving and Ronsholt 2007), including \$13 in lost income, a considerable expense for the households concerned. The income lost

by companions is significantly higher for complicated delivery (\$4.13–\$78.50) than for normal delivery (\$1.10–\$10.20). The opportunity costs of time for companions are often inflated in the case of complicated delivery by the greater distance traveled to reach appropriate care and by the lengthier stay in the hospital (Borghgi, Storeng and Filippi 2008). A study done in a rural province of Cambodia notes that about 50% of the economic burden is due to direct medical costs, and the remaining 50% to the nonmedical costs of caring for the sick child and the income lost because of work missed or the need to pay someone else to tend the rice fields (Huy et al. 2009). Two-thirds of households borrow money to cover these costs, and 25% sell assets or use their savings.

The opportunity cost of time spent obtaining maternal healthcare is often limited to the woman's time or the main companion's, although in many cases there is more than one companion. According to studies from Tanzania, Nepal, and Zambia (Kowalewski, Mujinja and Jahn 2002; Mubyazi et al. 2010; Borghgi et al. 2004; van Dijk et al. 2009), relatives, friends, and neighbors commonly offer to stay with the mother during her confinement, and thereby incur further transport, time, and hotel costs. In Nepal, 67% of women admitted to a hospital are accompanied by their husbands, 15% by their mothers, 40% by their mothers-in-law, and 49% by neighbors or friends. These companions spend an average of 2.8 days with the patient and, as reported by 55% of households, lose income as a result. The opportunity costs to the household of the time spent in the hospital by the main companion (relative or friend) amount to just under NR500.

The opportunity costs of time can hinder efforts to obtain skilled birth attendance at healthcare facilities. An Indonesian study that explores why women still prefer traditional birth attendants and home delivery finds that to some women home delivery is more convenient, as it allows them to take care of family members and manage their daily household chores (Titaley et al. 2010).

One study from Cambodia analyzes the loss of productivity due to cases involving abortion (Potdar, Feters and Phirun 2008). Women who required only one medical or pharmacy visit to obtain abortion care lost an average of 2.3 days of productive time, while those who needed three visits lost more than 1 month (33.5 days). The productive time lost was shortest among women paraprofessionals, factory workers, and other wage earners, and longest among women in the informal sector who were self employed as market vendors.

Time spent traveling, as well as distance to the health facility, is reported in 10 studies (Hussain et al. 2008;

Katung 2001; Borghi et al. 2004; Mubyazi et al. 2010; Titaley et al. 2010; van Dijk et al. 2009; Ye et al. 2010; Rutherford et al. 2009; Tao et al. 2011; Tlebere et al. 2007). Travel time can be converted into costs if assumptions are made about the opportunity cost of the time involved.

Travel time and waiting time are higher for hospital visits. In The Gambia, time costs at a new mobile health service are 0.9% of the total costs of maternity services, compared with 12% at the usual provider of maternal health services (Fox-Rushby and Foord 1996). Mobile clinics may be much more accessible to rural populations living some distance away from a regular clinic. In Nepal, households asked to report the amount of income lost attribute 10%–20% of total delivery costs to time costs (Borghi et al. 2004). A similar ratio is mentioned for Burkina Faso, where comparable methods of estimating costs were used (Sauerborn, Adams and Hien 1996). In another study in rural southern Zambia, it took more than 1 hour for 90% of HIV-infected children and their caregivers to reach a clinic, and more than 5 hours for 25%. Lack of transportation, insufficient financial resources, and poor roads were commonly cited obstacles to access to the clinic (van Dijk et al. 2009). An economic analysis of childhood pneumonia in Northern Pakistan estimates the opportunity costs of time spent by families seeking care at \$4.63 for severe pneumonia and \$5.44 for very severe febrile disease. Parents also spend 2.7 days per visit, on average, to have their child treated. This estimate includes travel time and time spent at the health facilities (Hussain et al. 2008).

Like direct costs, indirect costs follow no predictable pattern of contribution to total household MNCH care expenditures. The varying wage levels in different countries are part of the reason. In Argentina, where wages are higher than in relatively less developed Nepal, indirect costs are likely to have a more significant share of MNCH care expenditures. Other explanations may lie in differences in access to healthcare and cultural practices regarding when a woman is taken to the hospital for childbirth. Indirect costs are likely to be higher in settings where women travel longer distances to get to health facilities or where women are taken to the hospital several days or weeks before delivery as a precautionary measure. In addition, differences in methods make it virtually impossible to assess indirect costs across settings. What is clear from the evidence presented above is that indirect costs contribute significantly to total expenditures but are still the most

poorly measured component of MNCH care costs.

The studies reviewed in this section reveal a large increase in the volume and geographic coverage of the literature on this topic since the review done by Somanathan (2006), implying growing awareness of the issue. Loss of income of parents and caregivers and opportunity cost of time are important elements of indirect cost discussed here. The opportunity cost of time spent obtaining maternity care is a barrier to obtaining skilled birth attendance at healthcare facilities. As studies in Tanzania, Nepal, and Zambia show, it is not confined to the woman's or the main companion's time, but also affects relatives, friends, or neighbors who visit or offer to stay with the mother and thereby incur further transport, time, and hotel costs. Like direct costs, indirect costs follow no clear pattern of contribution to total household MNCH care expenditures. While their share of these expenditures is significant, indirect costs remain the most poorly measured among MNCH care costs.

## What is the Magnitude of Maternal, Neonatal, and Child Healthcare Costs Relative to Other Health and Non-health Expenditures and Do These Costs Constitute a Significant Share of Overall Expenditures?

### Summary

- In some countries, household payments for MNCH care make up a large share of total household expenditures.
- Childbirth with complications is generally much more expensive than normal childbirth, and the costs take a big chunk out of the household budget, according to studies from Ghana and Benin.
- A study in Bangladesh found that all families, regardless of income, had incurred catastrophic expenditures.
- Meaningful conclusions about the variation in the share of MNCH care expenditures in total household consumption across countries and settings cannot be drawn because the published studies use significantly different methods. The type of survey and the length of the recall period, for example, are different, and so are the procedures followed in estimating total household expenditures.

The magnitude of MNCH care costs relative to other household expenditures is an important determinant of the extent to which MNCH care expenditures disrupt consumption patterns and impose a financial burden on households. Somanathan (2006) found only two studies from Africa that reported on the share of MNCH costs in total household spending. Since then, research on this topic has increased. Nine studies, including seven new ones from Asia and the Pacific, are covered in this review (Alamgir, Naheed and Luby 2010; Bonu et al. 2009; Borghi, Hanson, et al. 2003; Mota et al. 2009; Perkins et al. 2009; Prata et al. 2004; Saksena et al. 2010; Saulo et al. 2008; Somanathan 2006).

According to Perkins et al. (2009), the facility based medical costs of a normal delivery (direct service charges, including delivery fees, consultation fees, hospitalization costs, and expenses for consumables such as drugs and supplies) use up an average of 17% of the monthly household income in Kenya, 8% in Burkina Faso, and 6% in Tanzania. OOP expenditures are higher for a delivery with complications. These expenditures account for 35% of the monthly household income in Kenya, 16% in Burkina Faso, and 10% in Tanzania. In all three countries, OOP expenses for a normal delivery are higher in government hospitals than in peripheral health centers and dispensaries, and higher still at private hospitals.

A study from Tanzania by Prata et al. (2004) estimates that, on average, 4.1% of total annual household expenditures in 1993 were allocated for maternal healthcare—2.3% for normal deliveries and 1.8% for ANC. In a study on the costs of near-miss obstetric complications for women and their families by Borghi, Hanson, Acquah, et al. (2003), expenditures for normal delivery make up 1% of total annual household cash expenditures in Ghana and 2%–5% in Benin, depending on whether the delivery took place at a teaching or a nonteaching hospital. However, expenditures associated with near-miss complications caused by hypertension, hemorrhage, sepsis, and dystocia account for a much larger share of total household expenditures, ranging from 5% to 8% in Ghana, and from 15% to 34% in Benin.

A study done by Bonu et al. (2009) in India, using data from the National Sample Survey, reveals that 16% of families incur catastrophic expenditures for antenatal and postnatal care (expenditures greater than 10% of annual household consumption). The incidence of maternal health expenditures exceeding household capacity to pay (more than 40% of household consumption) is 51%. In the lowest income deciles the financial distress due to maternal health costs is even greater: these costs exceed the annual household capacity to pay of all the families from the poorest decile and 99% of the families from the

second poorest decile that incur maternal healthcare costs, compared with 6% from the richest decile. In contrast, only 11% of households in the poorest decile incur catastrophic expenditures, compared with 33% of households in the richest decile, indicating nonuse of services among the poor. The study also finds that 81% of women in the poorest group deliver at home to avoid the high costs of delivery care.

Four studies examine the magnitude of child healthcare costs as a share of total household expenditures. In a study from Bangladesh on hospitalization for childhood pneumonia, Alamgir, Naheed, and Luby (2010) report that all families in the study, regardless of income group, incurred catastrophic expenditures. On average, 75% of all families and 82% of those in the low income groups spent more than 50% of their monthly household budget while seeking care. Of the total hospitalization expenditures, medical costs accounted for 71%. Mota et al. (2009) analyze healthcare costs for childhood malaria episodes in Zomba, Malawi. These amount to 9%–14% of total fortnightly household expenditures, depending on whether formal or informal services are used. A study by Saksena et al. (2010) in Tanzania finds that families spend on average 35% of the total household expenditure in the previous month to pay for hospital admission for sick children. For families in the lowest income quintile, the financial burden is disproportionately high, at 81% of total monthly household spending, compared with 12% for those in the wealthiest quintile. Hospitalization costs as a proportion of total monthly household expenditures are found to be higher in district designated hospitals that are church owned (56%) than in hospitals that are owned by the government (27%). Healthcare at district-designated hospitals costs 171% of monthly household expenditure, for the poorest quintile, compared with just 10% for the richest households. Even when care is sought in government-owned hospitals, poorest families still spend a much larger proportion of the total household expenditure (52%) than the wealthiest families (13%). In another study, Saulo et al. (2008) examine treatment costs for childhood malaria in Tanzania. They report that median annual household costs for first-line antimalarial treatment of nonsubsidized artemisinin based combination therapy (ACT) constitute 0.9% of annual household consumption spending, and subsidized Coartem®, 0.1% (according to average annual household consumption data for 2001). The cost of nonsubsidized ACT represents 7% of the total annual expenditure on food and 33% of the total annual expenditure on healthcare. However, these results suggest that nonhospital care for children is generally far less expensive for households.

Evidence from the Equitap network analyses of household budgets in low- and middle-income countries in Asia indicates that OOP payments for all healthcare generally absorb 2%–5% of total household consumption (van Doorslaer et al. 2006). The MNCH

care expenditure shares in Tanzania, Ghana, and Benin are quite large in comparison, considering that they reflect expenditures on MNCH care alone. However, this apparent discrepancy is probably explained by differences in methods. The Equitap studies of OOP health expenditures, as well as the study of Bonu et al. (2009) in India, estimate the share of health expenditures in total household spending by using household budget surveys in which health expenditures are just one component of a range of goods and services for which spending data were collected. The studies from Tanzania, Ghana, and Benin, on the other hand, use data from special health surveys that specifically focused on health spending, and are therefore likely to have overestimated the health shares by encouraging better reporting of health expenditures versus non health expenditures. These differences, plus other methodological differences between studies in recall periods and estimation methods, make it difficult to draw any meaningful conclusions about the variation in the share of MNCH care expenditures in total household consumption. However, it can be inferred that those studies that rely on health surveys may be overestimating the reported share in spending.

Two other studies use a national health accounts (NHA) approach to examine MNCH care spending as a share of total household spending on health. Somanathan et al. (2004) use NHA data to anchor estimates of the proportion of total private health expenditures attributable to reproductive healthcare in Bangladesh and Sri Lanka, and Hotchkiss (2000) does the same for Rajasthan, India. Antenatal and postnatal healthcare spending as a share of total household expenditures on health is found to be 1.8% in Bangladesh, 1.0% in Sri Lanka, and 2.4% in Rajasthan, India. The corresponding shares for childbirth and pregnancy related expenditures are 2.4% in Bangladesh, 1.1% in Sri Lanka, and 3.1% in Rajasthan, India. MNCH care expenditures thus represent 2%–6% of total household expenditures on health in the three countries studied. Because of the comprehensive coverage of maternal and child healthcare services in the public sector of Sri Lanka, household spending on those services is much lower in that country than in Rajasthan or Bangladesh. Hence, a much larger share of private health expenditures in the latter two territories is attributable to MNCH care.

In many of the studies reviewed, MNCH care paid for by households can make up a considerable portion of total household expenditures. In Tanzania, 4.1% of total annual household expenditures in 1993 were allocated for maternal healthcare. Studies done in Ghana and Benin report that expenditures associated with near-miss complications caused by hypertension,

hemorrhage, sepsis, and dystocia account for a much larger share of total household expenditures, while a study in Bangladesh finds that all families in the study have incurred catastrophic expenditures, no matter which income group they represent (Alamgir, Naheed and Luby 2010). However, the studies that were reviewed differ in many ways in the type of survey used, the recall period, and the estimation method, making it difficult to draw any meaningful conclusions about the variation in the share of MNCH care expenditures in total household consumption.

## Do Maternal, Neonatal, and Child Healthcare Expenditures Impoverish Individuals and Households?

### Summary

- The costs of MNCH care for households are large in many countries, and can impoverish households or represent catastrophic levels of spending.
- Catastrophic levels of spending for MNCH care appear to be the norm in many lower-income countries, such as Bangladesh, the PRC, and India.
- Facility-based maternal care in particular often requires household out-of-pocket spending that substantially exceeds monthly household incomes, and complicated deliveries typically result in even higher spending.
- The high cost of facility based maternal care, which is often impoverishing and catastrophic for households, discourages mothers from obtaining skilled attendance at birth, and reduces overall facility based admission rates.
- Routine child treatment tends to be much cheaper, but acute child illnesses resulting in hospitalization are often impoverishing in many countries.
- Attempts to alleviate the impact through insurance or user fee exemptions have not always been successful, indicating the importance of scheme design and funding levels.

Household OOP expenditure for medical care can potentially have a detrimental impact on the living standards of households. If the health expenditures are large in relation to overall household budgets, they can be catastrophic. The households may have to borrow, often at high interest rates, to finance medical costs, and thereby incur long-term indebtedness (Afsana 2004). Current living standards are affected, and so are future

living standards, as well as the ability of the households to withstand other shocks. Alternatively, they may be forced to sell assets or cut back on other forms of consumption. For the poor, who typically lack access to easy or cheap credit and have minimal assets, the consequences can be particularly devastating.

Large expenditures for medical care can impoverish households by forcing them to divert spending from other needed items of consumption, such as food, to finance healthcare. In the case of households that are already poor, high medical expenditures can intensify poverty. Work by the Equitap network in Asia and the Pacific has shown that OOP expenditures on health push tens of millions of people below the poverty line (van Doorslaer et al. 2006).

The standard approach to measuring the incidence of medical impoverishment involves examining a household's total expenditure or consumption, both including health expenditures and excluding those expenditures. If health spending drives expenditure below the chosen poverty line, the household is deemed impoverished. Different poverty lines can be used, although international comparative studies, such as the study done by van Doorslaer et al. (2006), tend to use the international \$1 or \$2 poverty lines defined by the World Bank. National studies, on the other hand, often use the relevant country specific poverty lines. Measurements of the incidence of catastrophic expenditures on health usually involve assessing whether a household spends more than a defined percentage, e.g. 10% or 40%, of its overall expenditures on health, or of some other aggregate such as nonfood expenditures (Borghetti et al. 2004).

In many contexts, however, cash income or cash expenditures are not a good measure of household resources. A study by Lucas and Nuwagaba (1999) in Uganda found that in two districts significant cash was available at the community level for only 4 months during the year. In the study by Kowalewski, Mujinja, and Jahn (2002) in Tanzania, 45% of all women in the districts covered by the study had no cash income. This problem of temporary or seasonal inability to pay reportedly affects 40%–50% of all households in Sub Saharan Africa (Soucat et al. 1997). In many countries, women rarely control earnings from cash crops and therefore have limited access to cash during the year. Consumption is a better measure of household socioeconomic status. However, none of the studies reviewed in this section use consumption as a measure of household resources.

Research focused on the catastrophic and impoverishing impact of MNCH expenditures is quite limited, probably because of the lack of survey data that consistently measure and accurately record both MNCH expenditures

and overall household consumption. Existing studies tend to focus on the relationship between household incomes and MNCH care expenditures, and indirectly on the catastrophic or impoverishing impact of expenditures in excess of incomes, particularly for the income poor. Household impoverishment is only implied in much of this work and rarely measured separately.

In total, 18 studies that report on whether MNCH expenditures might be impoverishing or catastrophic or provide data suggesting this were identified. In addition, two reviews by Borghi et al. (2008) and Witter, Richard, and de Brouwere (2008) cover the topic in passing. Most of these studies examine the impact of maternal healthcare costs. Few cover the issue in relation to child healthcare, and none examine the impact of costs for newborn care. Of the 18 empirical studies, 12 are from Asia and the Pacific, and the rest are from Africa, an indication of greater interest in or awareness of this issue in Asia and the Pacific. Another study also reports on the results of a scheme designed to reduce the catastrophic impact of maternity care by improving financial protection (Renaudin et al. 2007).

The study by Borghi et al. (2004) in Nepal is one of the few studies that explicitly seek to quantify the extent to which maternal healthcare expenditures impoverish households. It compares the proportion of households living below the subsistence level before payments for child delivery care with the proportion after the payments were made. At baseline (predelivery), 50% of households were already below the subsistence level. After the payments for delivery care, the proportion increased to 66%. When only hospital deliveries were considered, the baseline proportion below subsistence level was 36%, indicating the pro-rich distribution of hospital deliveries in general. After delivery care payments the proportion increased to 81%.

Three studies that examine the relative size of maternal healthcare costs in Bangladesh find that the costs of facility-based childbirth frequently exceed the monthly income of households, and can thus be considered impoverishing. Often, according to Afsana (2004), the costs incurred for a normal birth in a medical college hospital in Bangladesh are both impoverishing and catastrophic, being close to the monthly income of some families in the survey. For 76% of households the costs of a cesarean section are four to five times the average monthly income of the sample. Unlike Afsana et al., who focus on a relatively deprived segment of the population in rural Bangladesh, Kawanine et al. (1998) examine cesarean section costs at different hospitals in Dhaka. They find that delivery expenditures exceed average monthly household incomes by 200% in the low income group, and by 120% in the middle-income group, indicating both impoverishing and catastrophic impact. However, the study does not report how

expenditures as a share of income vary according to the type of provider. Nahar and Costello (1998) examine the affordability of maternity services at government facilities in Dhaka. Expenditures on maternity care represent 50%–100% of monthly income for 21% of households, and 100%–800% of monthly income for 27% of households. Cesarean deliveries generally absorb a much larger share of incomes than normal ones. Although childbirth is supposed to be free in public clinics in Bangladesh, in practice it is quite costly. Maternal healthcare expenditures consume a substantially large share of household incomes.

Kowalewski, Mujinja, and Jahn (2002), find that total direct and indirect costs associated with normal delivery absorb 22% of the annual average cash income of farmers in a district in Tanzania. The corresponding figure for antenatal hospitalizations is 50%, and for surgical deliveries, 117%. The costs of obtaining maternal healthcare far exceed the cash resources of women in the districts studied, who are subsistence farmers; 45% of them do not have any cash income. In another study in Tanzania, Prata et al. (2004) look into the payments that households will have to make if the Mother–Baby Package (MBP) of WHO is implemented, and the impact of those expenditures on household incomes. Their findings show that in order to pay the full price of the MBP, most households will have to allocate half of their annual consumption to maternal healthcare, and the poorest will have to spend 90% of their total income. Even a 75% subsidy will absorb more than 20% of the total annual assets of the poor. An increase in the subsidy share from 75% to 90% will not improve access to services due to affordability, and will not have a significant impact on overall household wealth.

In a study that estimates the magnitude of OOP expenditures for maternal healthcare in Kenya, Burkina Faso, and Tanzania, Perkins et al. (2009) find that the expenditures are higher for a complicated delivery—35% of the monthly household income in Kenya, 16% in Burkina Faso, and 10% in Tanzania. In all three countries, OOP expenses for normal deliveries are higher in government hospitals than in peripheral health centers and dispensaries, and are even higher at private hospitals. Expenditures do not significantly differ between the poorest women and the wealthiest in all three countries, indicating the regressive nature of the financial costs of maternal healthcare, and the heavier burden on the poor.

Bogg, Wang, and Diwan (2002) study the socioeconomic determinants of the use of essential maternal health services following the introduction of health sector reforms in the PRC in 1985. For women, the costs of access to maternal healthcare are often both impoverishing and catastrophic, and are therefore a deterrent to the use of such care. Based on supply- and demand-side models (fee for service) with

a focus on cost recovery, the reform policies have resulted in a substantial reduction in the share of government funding for healthcare, and an increase in OOP health expenditures. The rise in OOP spending poses significant financial constraints on access by households to maternal healthcare. In 1994, delivery fees consumed about 10% of the average annual household income, on top of other associated costs. Hospital-based deliveries fell from 65% in 1985–1989 to 57% in 1990–1995 as the majority of uninsured women chose to deliver out of hospital (nearly 60%) at the time of the study. The overall use of skilled attendants at delivery decreased from 74% to 62% during the same period, and to less than 50% in the case of uninsured women.

Quayyum et al. (2010) look into the economic impact of household expenditures for obstetric care and the protective effect of insurance on poor families in two districts of Indonesia. Their study reveals that the average cost of a complicated delivery at two public hospitals composes 23%–32% of the annual household income at the subsistence level. Overall, 68% of women seeking delivery care at the two hospitals are covered by insurance; about 61% are insured under a government-run scheme for the poor. For 29% of women in the study, obstetric expenditures were catastrophic (more than 40% of disposable income). In the absence of any insurance, the study shows, 68% of the poorest households would have been making catastrophic payments for all types of obstetric care (near-miss, caesarean section, normal delivery, normal delivery with complications). Expenditures were catastrophic for 8.8% of households in the highest income group, regardless of whether they had insurance or were paying out of pocket.

Asante et al. (2007) investigate the impact of a national fee exemption policy for delivery care in Ghana. Although there was some evidence of equity in easing the financial burden associated with delivery care, richer households were found to benefit more from the policy than poor households. The implementation of the policy has led to a reduction in the share of mean OOP payments of households for delivery in total payment for delivery care. The incidence of catastrophic payments has also decreased; for the poorest quintile, the share of households paying out of pocket in excess of 2.5% of their income dropped from 55% before implementation to 46% after. In one of the regions where the policy was implemented, the proportion of deliveries at a health facility doubled among women in the poorest income group. The proportion of households falling into extreme poverty (based on the poverty head count) as a result of paying the delivery fees also declined, from 2.5% to 1.3%. However, for poor households the reverse was true: payments for delivery care increased the poverty head count by 2.2% after the policy

was implemented, from 1.3% before implementation. The decrease in OOP expenditures was proportionately higher among the richest households (22%) than among poor households (13%). This demonstrates the challenge of reaching the poorest with such schemes.

Only four studies, all of them from Asia (two from Bangladesh, and one each from Cambodia, and Indonesia), report on the impoverishing or catastrophic impact of child healthcare costs. Two of these examine the impact of treatment costs associated with the relatively rare but highly expensive illnesses childhood cancer and burns, and the other two analyze the financial impact of childhood pneumonia and dengue (Alamgir, Naheed and Luby 2010; Witter, F. and V. 2008).

Alamgir, Naheed, and Luby (2010), in their study in Bangladesh, investigate the total costs of illness to families with children below five years of age hospitalized with pneumonia, and the coping strategies of those families. The mean household expenditure for a single illness episode is \$94. Catastrophic and impoverishing expenditures are found to be the norm. All families in the study incurred catastrophic hospitalization expenditures; 75% of them spent more than half of their total monthly expenditure on hospitalization. This study shows how families in Bangladesh became vulnerable to impoverishment by incurring an excessive financial burden for the treatment of childhood pneumonia. Not only the cost of care itself but also the strategies for coping with the healthcare expenditures had a detrimental impact on households. Only 16% of the families had enough income to pay for all the hospitalization costs. The costs had to be met through borrowing or through the mortgage or sale of assets for 76% of the families—64% borrowed the full cost of admission, and 10% borrowed at a monthly interest rate of 5%–30%. The poorest families were disproportionately burdened financially by the costs of care, and were 10 times more likely to borrow than families in other income groups. The excessive health expenditures pushed families, particularly those from the low-income group, into debt. Family members had to work extra hours to make up for income lost during the hospitalization period, limit spending on essential items such as food and children's education, sell productive assets, and even forgo healthcare, thereby exacerbating illness and perpetuating a cycle of deepening poverty.

A study in Cambodia by Huy et al. (2009) assesses the cost and impact on households of childhood dengue fever and other febrile illness. Direct medical costs amount to 50% of the total illness costs for dengue and 40% for other febrile illness. To manage the costs of care, a majority of the families (67%) incur an average debt of \$23.50 (range: \$0.50–\$50.00), double the fortnightly household

expenditures on food. Hospitalization significantly increases the debt incurred, from \$4.50 (for outpatient treatment) to \$23.10. Cost reimbursement reduces the hospitalization cost for 60% of very poor families from \$37.80 (average hospitalization cost in a public hospital) to \$3.50. But especially for 82% of the households in the study, which belonged to the lowest income groups (42% very poor, 40% poor), health expenditures were no less catastrophic and their coping strategies worsened the financial burden on the household and further deepened household poverty.

In a nationally representative survey in Bangladesh, Mashreky et al. (2008) identified 1,013 children who had suffered burns in the preceding year, including 20 who were permanently disabled. Household members were interviewed to determine the social and economic impact of the injuries. More than 7% of the children required hospitalization for their burns, for an average duration of 13.4 days. Families incurred average direct expenditures of \$462 for the treatment of severe burns. Expenditures were highest for girls 10–14 years old. More than 61% of the families were earning less than \$50 a month. For them, these treatment costs, in addition to the other suffering caused by the injuries, were severely catastrophic.

Mostert et al. (2008) investigate the economic and other impact on the families of children receiving chemotherapy for acute lymphoblastic leukemia at an academic hospital in Indonesia. The income of the 51 families decreased by 69% on average from the start of treatment, and many parents lost their jobs (29% of fathers and 8% of mothers), mostly as a result of the illness costs and other burdens. The treatment costs were catastrophic for most, and resulted in financial difficulties (78%) and debt (65%), forcing parents either to postpone treatment or to withdraw their children from parts of the treatment (18%).

These studies covered in the review provide evidence that the MNCH care expenditures of households are large in many countries and can impoverish households through catastrophic spending. Unfortunately, robust research on this topic has been limited by methodological problems in measuring such events and expenditures, and by the lack of comparable survey measures. Several studies nonetheless show that such outcomes are common, even at free government health facilities. Catastrophic spending for MNCH care appears to be the norm in many countries, such as Bangladesh, the PRC, and India. Facility-based maternal care in particular often requires households to spend out of pocket substantially beyond their monthly household incomes, especially for complicated deliveries. Studies from the PRC show that the often impoverishing and catastrophic cost of facility based maternal care discourages mothers from obtaining skilled attendance at

birth, and reduces facility based admission rates. Routine child treatment tends to be much cheaper, but acute child illnesses resulting in hospitalization are often also impoverishing in many countries. Several studies show that attempts to ease this impact through insurance or user fee exemptions do not always succeed, and that the design and funding of schemes is therefore important.

## What Are the Uses of the Various Types of Coping Strategies Available to Women and Households and How Effective Are These Strategies?

### Summary

- Households obtaining healthcare can be burdened by two types of costs: the financial costs of illness, and the time costs resulting from the net reduction in household time available for production or for the care of family members.
- Households typically use their income and available cash to meet the financial costs of illness. But MNCH care can impose heavier costs and force households to respond by selling assets, borrowing, or not making use of any care at all.
- Forced sale of assets, borrowing, and nonuse of care because of the potential cost, particularly in maternal care, are quite common in several countries, including South Asian and some African countries.
- In many countries, borrowing is often done from the informal financial market, and is associated with interest rates that are punitively high, especially for poor families, thus increasing the financial hardships and long-term consequences of obtaining MNCH care.
- Little research has been done on how families cope with the time costs of obtaining MNCH.

Sauerborn, Adams, and Hien (1996) provide a useful and comprehensive review of the strategies used by households in Burkina Faso for coping with the economic costs of illness and the effectiveness of those strategies with respect to healthcare costs. Although the study does not focus on MNCH, it is mentioned here because its conceptual framework and empirical findings are relevant to the issues dealt with in this review. Sauerborn, Adams, and Hien define coping as a short-term strategy adopted within the prevailing value system to avert a negative effect on the actor (Davies 1993; Sauerborn, Adams

and Hien 1996)—the breakdown of the household as an economic and social entity, characterized by household destitution and disintegration. They use three economic criteria in assessing the success of coping strategies: whether the strategy averted household destitution and disintegration, whether it reduced the negative effects of illness on household production, and whether it preserved household assets. The present study follows the earlier review made by Somanathan (Somanathan 2006) and adopts these definitions and effectiveness criteria in reviewing the evidence for coping strategies in MNCH care. Strategies for coping with the financial costs of illness are distinguished from strategies for coping with the time costs of illness. The former involve raising enough resources to pay for the costs of obtaining healthcare; the latter are concerned with making up for the time lost by households, and for the consequent losses in production. Both sets of strategies are reviewed below.

As a first step, households typically resort to wages, savings, and any available cash to pay for MNCH care (Alamgir, Naheed and Luby 2010; Borghi, Storeng and Filippi 2008). Wages and savings are the primary source of cash financing for 42% of home deliveries and 34% of facility based deliveries in Nepal (Borghi et al. 2004), and for 72% of all deliveries in Tanzania (Prata et al. 2004). Alamgir, Naheed, and Luby (2010) report from Bangladesh that only 16% of families have regular incomes sufficient to finance the costs of healthcare for their children; 61% of families depend exclusively on external sources of funding. In studies from Bangladesh, Benin, Cambodia, Ghana, India, Kenya, Papua New Guinea (PNG), and Tanzania, households facing MNCH costs are lent or given cash by their extended families, colleagues, and friends (Borghi, Hanson, et al. 2003; Nahar and Costello 1998; Benjamin, Sapak and Purai 2001; Alamgir, Naheed and Luby 2010; Chuma, Okungu and Molyneux 2010; Huy et al. 2009; Iyengar et al. 2009; Perkins et al. 2009). However, in most cases, the funds are insufficient to meet all the expenditure needs. The next most common coping response of households that have to pay for MNCH costs is the sale of assets, particularly livestock. Afsana et al.'s 2004 case study in rural Bangladesh finds that households sell domestic birds, cattle, or land—and, in one instance, even a tin roof—to pay for maternity care. Those delivering at home are more likely to rely on the sale, use, or mortgage of grains, livestock, and assets than those delivering at a facility (32%, compared with 14%) in Nepal (Borghi et al. 2004). Nearly a third of the households in the study of Prata et al. (2004) in Tanzania resorted to selling livestock and other assets. Sauerborn et al. (1995) note that while the sale of livestock is a widespread response to crises of many kinds in Africa, the sale of cereals is viewed as the last resort. Cereal stocks are required to maintain overall food security, and farmers want to avoid selling grains when prices are low.

Three studies from India (Asfaw, Lamanna and Klasen 2010; Willis et al. 2009; Pandey et al. 2002) report evidence of gender differences in the financing strategy adopted. An analysis of data from the 60th round of the Indian National Sample Survey, using a multinomial logit model, reveals that boys are much more likely to be hospitalized than girls, although there is only a small gender gap in the use of household income and savings to finance child hospitalization. Financing through borrowing, the sale of assets, and help received from friends is also more likely if the hospitalization involves boys than if it involves girls. Furthermore, this gender gap in financing sources intensifies as household incomes increase.

Taking out loans to finance MNCH care needs is customary in all settings, but it is by no means the preferred option (Alamgir, Naheed and Luby 2010; Borghi, Storeng and Filippi 2008; Chiwuzie et al. 1997). The poor in particular have low access to credit markets and must often pay high interest rates to informal lenders when they borrow. Sauerborn, Adams, and Hien (1996) point out that loans are generally available only to households that own assets they can offer as collateral. A large number of the studies included in this review report on the use of loans to finance MNCH care in many developing countries.

According to Nahar and Costello (1998), nearly one-fifth of all households in Bangladesh borrow from money lenders. Another study in Bangladesh by Alamgir, Naheed, and Luby (2010) reveals that the proportion of household health spending financed through borrowing by rural households is double the proportion for urban households. Afsana (2004) reports that the very high interest rates charged by moneylenders in rural Bangladesh triple debt values within 6 months. Borghi et al. (2008), in a study done in several countries, find that 25% of households borrow from moneylenders, at interest rates of 5%–30% per month, to pay for care. In a study in Cambodia (Huy et al. 2009) 67% of households with MNCH expenses incurred an average debt of \$23.50 (range: \$0.50–\$50.00), more than the average monthly household expenditure on food, by borrowing money from friends, neighbors, or local moneylenders. In Nepal, loans finance 51% of facility deliveries and 24% of home deliveries. The amounts borrowed cover 60% of the total costs of a home delivery, but less than 40% of the total delivery costs at a facility. The study done by Borghi et al. (2004) in Nepal also collected information on the amounts raised through loans and the terms of the loans. In general, the amounts of money raised through loans from moneylenders and shopkeepers were larger than the amounts obtained from friends.

Although households can meet their immediate MNCH expenses through borrowing, they often find themselves having to divert resources from consumption for extended

periods of time to repay the loans. In Burkina Faso, households that had incurred debts associated with emergency obstetric care were slower to repay the loans than households that had borrowed for uncomplicated deliveries (Borghi, Storeng and Filippi 2008). Half of all households that borrowed money said they would use wages and savings to repay the loans, 43% mentioned the sale or mortgage of assets and land, and 6% intended to cut back on food or other essential consumption. Alamgir, Naheed, and Luby (2010), in their study in Bangladesh, report that half of the respondents planned to reduce the amount of food purchased by their families to repay the loans. Twenty-two percent planned to work extra hours, while 13% said that they would have to sell their assets to repay the loans. To help with the repayments, 22% of families planned to stop sending their children to school or paying for private tuition, or to move their children to schools where the costs were lower (Alamgir, Naheed and Luby 2010).

Few studies examine coping behavior with regard to the indirect (time) costs of seeking MNCH care. The evidence suggests that time costs are significant and can often account for a larger share of total costs than direct costs. This is particularly so for poor households involved in labor intensive economic activities, where the contribution of every member of the household counts. In farming households, time lost because of poor health could be quite critical during the harvesting or sowing season, and may result in the loss of cash income for the entire year. Sauerborn, Adams, and Hien (1996) report that intra household labor substitution is the most frequently chosen strategy for coping with anticipated production losses. In a majority of cases, households seek to reallocate the home production tasks of the sick family member among healthy members of the household. Unsurprisingly, larger households are in a better position to do this than smaller ones. One study in Burkina Faso (Sauerborn, Adams and Hien 1996) indicates that intra-household labor substitution is only partially successful in averting the loss of production income. Kowalewski, Mujinja, and Jahn (2002) find that women in Tanzania cope with the long travel and wait times associated with seeking ANC by combining several activities on the same day, like going to the market or visiting friends on the same day as the healthcare visits.

Much of the literature reviewed above deals with the coping strategies adopted by households after costs are incurred. Sauerborn, Adams, and Hien, on the other hand, present evidence to suggest that households may actually avoid costs by modifying their illness perception and ignoring the condition, by continuing to work despite the perceived illness, or by allowing illness to go untreated. Work by Afsana (2004) in Bangladesh and by Kowalewski, Mujinja, and Jahn (2002) in Tanzania shows that women prefer to

deliver at home in order to avoid the large financial and time costs associated with delivering at a health facility. In Benin, 8% of women with complications who were identified for the cost analysis in a non-teaching hospital left the hospital before discharge to avoid paying the full hospital bill (Borghgi, Hanson, et al. 2003). The proportion of all women with complications who left without paying the bill was 13%. In MNCH care, where the use of medical services is already constrained by a lack of informed demand for healthcare, cost prevention through underreporting and underutilization of care is inevitable. The financial implications of worsened health outcomes due to forgone care are not explored in any of the studies reviewed.

The review revealed various institutionalized interventions used to make loans unnecessary or to reduce the resulting debt burden. These mechanisms include safety net strategies introduced by governments and other concerned groups (user fee exemptions, reductions or waivers, health insurance schemes, voucher systems, loan funding).

In Sub-Saharan Africa, communities have set up loan funds to cover the costs of specific types of care. The evidence suggests that these community loan funds have helped households cope with the seasonal nonavailability of cash (Chiwuzie et al. 1997). Emergency loan funds in Nigeria and Sierra Leone were motivated by the fact that households incur excessively high travel expenditures, particularly for emergency obstetric care (The Prevention of Maternal Mortality Network 1992; Essien et al. 1997). Community members contributed what they could to a pool of funds, which households could use to pay for obstetric care services. However, good financial management, strong leadership, and the capacity to take appropriate action against defaulters are critical to the effective operation of the loan funds. Further, in resource poor settings, household contributions might not be enough to cover the costs incurred by the community. In their evaluation of emergency loan funds in Nigeria, Chiwuzie et al. (1997) and Essien et al. (1997) find evidence of a large number of women making use of loan funds to pay for transport, as well as other items of obstetric care. The study design adopted by both studies does not allow for a control group, making it difficult to assess to what extent loan funds increased access to obstetric care. The evaluation of community loan funds in Sierra Leone by Fofana et al. (1997) does allow control group comparisons by covering chiefdoms with and without loan funds. The use of referral facilities by women with complications living in chiefdoms with loan funds more than doubled pre- and post-intervention; in chiefdoms without loan funds, there was little difference in utilization (Fofana et al. 1997). None of the three studies examine the actual costs of MNCH care or report the size of the loans and what share of costs they covered. Existing evidence on loan

funds is thus inadequate for assessing the extent to which community loan funds have helped households cope with the financial burden of MNCH care.

Healthcare safety nets in the form of social health insurance, publicly funded hospitals, user fee exemption schemes, and health cards are generally introduced to protect households, particularly the poor and vulnerable, from the detrimental effects of healthcare expenditures (Barber and Gertler 2008; Bogg, Wang and Diwan 2002; Borghgi, Ensor, Somanathan, et al. 2006; Chandir et al. 2010; Devadasan et al. 2008; Long et al. 2010; Penfold et al. 2007; Pitchforth et al. 2006; Renaudin et al. 2007; Richard et al. 2007; Rob, Rahman and Bellows 2009; Thanh et al. 2010; Wilkinson et al. 2001; Khun and Manderson 2008). Indeed, the taxonomy of coping behavior in Sauerborn, Adams, and Hien (1996) includes the use of free healthcare as a potential strategy. Available evidence on user fee exemptions and MNCH care shows that although women compose a significant proportion of potential beneficiaries of fee exemptions, they often do not know such exemptions are available (Mills et al. 2008; Abdu et al. 2004; Benjamin, Sapak and Purai 2001; De Allegri et al. 2011; Witter et al. 2007). In many African settings women are semiliterate and have to rely on information provided verbally (Bitran and U. 2003). It is therefore important to complement the removal of user fees with demand-side awareness raising strategies.

With regard to public health insurance, the role of universal coverage and publicly funded hospitals in ensuring a high degree of access to maternal care is highlighted in two recent books that review successful strategies for reducing maternal mortality (Borghgi, Ensor, Somanathan, et al. 2006; Richard, Witter and de Brouwere 2010). Many studies have examined the impact of compulsory health insurance schemes on the use of MNCH care (Long et al. 2010; Renaudin et al. 2007). But there is virtually no empirical evidence on the extent to which healthcare safety nets protect households from excessively large MNCH care expenditures. This requires data on the MNCH care expenditures of households before and after the introduction of healthcare safety nets, preferably with a control group for comparison. There is now a consensus that direct OOP payments for MNCH care are regressive, and many countries are therefore removing user fees for basic services as part of wider reforms aimed at making health financing more equitable. Several studies reviewed here note the introduction of health insurance schemes in the PRC, Egypt, Thailand, Indonesia, Mongolia, and Zaire, and the gradual abolition of user fees in Ghana, Burkina Faso, Uganda, and Sierra Leone (Smith and Sulzbach 2008; Penfold et al. 2007; Nanda 2002; Long et al. 2010; De Allegri et al. 2011; Abdu et al. 2004; Xu et al. 2002; Yip and Berman 2001; Criel, Van der Stuyft and Van Lerberghe 1999).

Cash transfer programs and vouchers for food, transport, and other services are discussed in nine of the studies (Chandir et al. 2010; Ir et al. 2010; Rob, Rahman and Bellows 2009; Schmidt et al. 2010; Barber and Gertler 2008; Bhat et al. 2009; Bogg, Wang and Diwan 2002; Devadasan et al. 2008; De Costa et al. 2009). According to these studies, most of these programs and schemes have succeeded in increasing the use of ANC and reducing maternal deaths in the short run. However, sustainability is still in question, given the funding limitations, the lack of transparency in the administrative system, and the reduced quality of care by the health workforce due to the increased demand, among other factors. Further, the ability of such targeted schemes to reach the poorest and most vulnerable is unclear, as means testing can be particularly challenging in low-resource settings, where data and administrative capacities are weak and the better-off segments of the population tend to benefit more.

In Burkina Faso, Sauerborn, Adams, and Hien (1996) find that the coping strategies adopted by households are highly successful in helping those households avoid destitution or disintegration (the first criterion of effectiveness), but are not as effective in minimizing the adverse effects on household production (the second criterion). A large proportion of the sample incurred production losses despite attempts to reallocate labor within the household. The third criterion of effectiveness is almost never met as most households reduced their asset base in order to purchase healthcare. None of the MNCH care studies included in this review specifically assess the effectiveness of household coping strategies with regard to all three criteria.

The long-term consequences of the strategies adopted by households to cope with short term MNCH care costs have been neglected in the literature, partly because their determination would require data collection over a long period of time. The sale of property, assets, and livestock can seriously erode a household's resources over time, particularly if the illnesses are periodic or chronic (Nanda 2002). Alternatively, borrowing to pay for MNCH care could drive households into a debt trap as high rates of interest absorb an increasingly larger share of the household budget. Debt repayment and erosion of the asset base exacerbate household impoverishment, further undermining the ability of households to pay for healthcare and causing them to run down their assets further or borrow even more. Sauerborn, Adams, and Hien (1996) note that most households emerged from the illness episode poorer and more vulnerable to further economic stresses because the asset buffer that they needed to cope with seasonal food insecurity and other social and economic crises was significantly depleted. Without social safety nets to give them adequate protection and insure them against the

consequences of illness, households could thus become trapped in a vicious cycle of illness, catastrophic healthcare expenses, erosion of assets, and poverty. The study done by Alamgir, Naheed, and Luby (2010) in Bangladesh notes similar points. Research in Africa, rural PRC, Thailand, and Viet Nam concludes that debt, the sale of productive assets, or the sacrifice of investments in future productivity can put future welfare at risk, for example, by curtailing children's education and thereby triggering a vicious cycle of impoverishment and more indebtedness.

The studies reviewed here point to two types of costs that can burden households obtaining MNCH care: the financial costs of illness, and the time costs resulting from the net reduction in household time available for production or the care of family members. The first type of cost is typically met with income and available cash, but MNCH care often imposes greater costs and forces households to respond by selling assets, borrowing, or not making use of any care at all. This type of negative outcome is quite common in several countries, as several of the studies show, and is particularly prevalent in the use of maternal care, in South Asian and some African countries. In many countries, borrowing is often from the informal financial market and is associated with interest rates that are punitively high, especially for poor families, thus increasing the financial hardships and long-term consequences of obtaining MNCH care. Schemes designed to mitigate this impact and to reduce the needed payments or provide alternative financing are reported in a number of studies, but, for most of those schemes, evidence that they are sustainable and effective is limited. Very little research has been done on how families cope with the time costs of obtaining MNCH.

### Summary

- In most, but not all, countries covered in this review, the household costs of MNCH care are a higher burden on poor families than on the non-poor ones.
- In contrast, in a few countries both the absolute and the relative burden of OOP expenditures for MNCH care is higher for the nonpoor than for the poor.
- Schemes and policies designed to reduce the costs faced by the poor in gaining access to MNCH care are generally ineffective. Considerable inefficiencies also occur in the targeting of the poor.
- Inefficiencies and failures in the targeting of fee exemptions and other subsidies for the costs of MNCH care are commonly noted in studies from Asia and the Pacific.
- Even in the private sector, targeting can also be inefficient, as one study in Bangladesh reveals.

## Does the Financial Burden Associated with Poor Maternal, Newborn, and Child Health Fall Disproportionately on the Poor and Other Vulnerable Groups?

Efforts to assess the distribution of the financial burden associated with healthcare have generally focused on the incidence of healthcare expenditures across poor and rich households. The same is true of MNCH care expenditures. Twenty-eight of the studies reviewed here contain evidence on the size of the financial burden borne by different income groups. However, gender and social exclusion issues are generally ignored, and none of the studies examine the incidence of the economic burden of poor MNCH on women, widows, unmarried mothers and single parents, and the socially excluded. Part of the reason for the greater attention received by the income poor is the ease with which they can be identified with routinely collected survey data. Household surveys and cost studies on MNCH care lend themselves to analyses of expenditures by income group; analyses that cover other vulnerable groups would require additional data or alternative methods.

Nanda (2002) suggests that women's ability to pay ought to be redefined from a gender perspective, taking into account women's access to and control over resources. Nanda (2002) and Rutherford et al. (2009) indicate that the financial autonomy of caregivers (mostly mothers) is also a decisive factor in the ability to gain access to and pay for healthcare for children. A qualitative study from Ghana shows that paying for healthcare is generally difficult for women from poor households, and even harder for, widows and unmarried women with children (Waddington and Enyimayew 1990). Sauerborn, Adams, and Hien (1996) and Muela, Mushi, and Ribera (2000) argue that since illness necessitates the reallocation of time and resources within a household, a person's position in the household will determine reallocations made toward that person's healthcare. Thus, even within nonpoor households, women may end up bearing a disproportionate share of the burden of paying for MNCH care because of their relatively weak position within the household. Women without fathers, spouses, or sons, are particularly vulnerable.

In most of the studies reviewed, the poor spend a much larger proportion of their monthly household income on MNCH care than the rich (Borghini et al. 2004; Kawne et al. 1998; Prata et al. 2004). The cost of a C-section in Dhaka, Bangladesh, absorbs over 200% of the average monthly income of households earning below Tk5,000 per month, compared with only 71% for those earning more than Tk10,000 (Kawne et al. 1998). Similarly, Borghini et al. (2004) reports that the costs of a normal delivery in a

public hospital account for 366% of the monthly income of the poorest quintile but only 113% for the wealthiest quintile in Nepal. Home delivery costs less but the costs still fall more heavily on the poorest quintile, accounting for 36% of their monthly income, compared with 1% for the richest quintile (Borghini et al., 2004). In Tanzania, maternal healthcare costs make up 5.32% of the total annual household expenditures of the poorest quintile and 2.73% of such expenditures for the richest quintile (Borghini et al. 2004; Kawne et al. 1998; Prata et al. 2004). In India, maternal healthcare costs exceed the capacity to pay of all households in the poorest income group and 99% in the second poorest decile, compared with only 6% in the richest decile. With practically no capacity to pay for delivery at a public facility, 81% of women in the poorest decile deliver at home (Bonu et al. 2009).

Both Alamgir, Naheed, and Luby (2010) and Huy et al. (2009) observe that low income families in Bangladesh and Cambodia are many times more likely than upper income families to borrow in order to finance hospitalization costs for childhood illnesses. They are also more likely to incur higher debt, and face a disproportionately heavier financial burden as a result. Taffa and Chepngeno (2005) report that families with the lowest monthly expenditures among slum dwellers in Nairobi, Kenya, are 20%–30% less likely to seek healthcare for childhood illnesses, depending on the perceived severity of the illness. In Tanzania, household socioeconomic status is a significant determinant of the decision to seek care for childhood illness. Least poor families are 2.5 times more likely to seek care than the poorest households, suggesting that the latter may be forgoing care because they cannot afford the costs (Manzi et al. 2005). Similarly, Mayhew et al. (2008) find substantial differences between wealth quintiles in the use of skilled birth attendants in Afghanistan (42% for the richest households, versus 6% for the poorest), and suggest that the user fees may be stopping poor women from seeking maternal healthcare.

In India and Sri Lanka, however, this pattern is reversed (Somanathan et al. 2004). Rich households in both urban and rural areas allocate a larger share of total annual household expenditures to delivery care services than poor households. The reason for this may lie in the absolute amounts paid by rich and poor households and the type of provider sought. In India and Sri Lanka, rich women have a high propensity to deliver at private hospitals and consequently incur much higher OOP expenditures than poor women, who often deliver at home (in the case of India) or at public hospitals (almost always the case in Sri Lanka), where care is relatively cheaper. The Sri Lankan experience indicates that effective government provision of accessible and free or near-free facility-based maternal healthcare can be effective in preferentially protecting the poor from the financial burden of MNCH costs, as well as ensuring a high degree of access to the services.

Given the limited supply of private hospitals in Nepal, rich women use public facilities and spend only as much as poor women do, in absolute terms. Borghi et al. (2004) find that the difference between the average amounts paid for delivery care by the poorest and richest quintiles is not statistically significant. The evidence examined for this review suggests that user fee exemption schemes in hospitals are often ineffective in ensuring that the poor pay a proportionately lower share of their income for MNCH care than the rich. Other direct and indirect costs of facility-based delivery care are higher for most poor households. Consequently, poor women in Nepal, unlike those in India and Sri Lanka, spend a larger share of the household budget on MNCH care.

Barros, Santos, and Bertoldi (2008), however, report a high level of equity in maternal healthcare for all income groups in Brazil. They find that the Brazilian public healthcare system finances 81% of all deliveries, and 95% of deliveries among the poorest 40%, less than 1% of whom report some OOP expenditure. Even among the richest 20% of households, only 17% pay out-of-pocket; for the rest, the deliveries are financed by private health plans (50%) and the public health system (33%).

Other studies examine various programs aimed at alleviating the financial burden of MNCH care, and report small to moderate gains in equity for the poor while noting various inconsistencies. In Indonesia, Quayyum et al. (2010) find that a government-run insurance scheme for the poor protects the poorest families against excessive costs related to obstetric care. However, the fact that about 14% of households in the richest quintile are also benefiting from the policy indicates inefficiencies in the targeting of the scheme. A fee exemption policy for delivery care in Ghana is somewhat more successful in providing the poorest groups with more equal access to delivery care, but overall it has been found to benefit wealthier women, for whom the reduction in OOP expenditures for maternal healthcare is proportionately higher (Asante et al. 2007). In a similar scheme in Senegal there is no significant change or benefit for the poor (Witter, Armar-Klemesu and Dieng 2008).

Likewise, targeting in the private sector is often ineffective, although voluntary price discrimination by providers can potentially improve access for the poor. In the only case studied for maternal healthcare, price discrimination in obstetric care was observed in two private hospitals in Bangladesh. In practice this involved two differential approaches—one based on income, giving higher rates of discount to the majority of the poorer users than to wealthier users, and the other based on social status, giving discounts and most benefits to occupational groups with the highest status and associated with high- and

middle-income groups (88% of doctors, 72% of large businessmen, 71% of senior government officials) (Amin, Hanson and Mills 2004).

Evidence from other studies suggests that, even when efforts are made to provide equitable MNCH care, the uptake of services remains low and many of the poor are still financially burdened. Ensor et al. (2008), for instance, find that, despite the availability of a well-established program of assistance by village midwives and insurance funding for the poor, access to skilled attendants at delivery is still unequal among poor households in Indonesia. The study indicates that because they derive much of their earnings (58%) through private payments for the service, midwives may tend to neglect poorer households in favor of wealthier ones, who are better able to pay. On average, midwives charge up to Rp500,000 per delivery, of which Rp300,000 is charged to the mothers. Insurance for the poor covers Rp200,000; the mothers still have to pay the remaining Rp100,000, an amount that can seem large to women from low-income families.

Another study in Indonesia examines the relationship between maternal mortality and the availability of skilled attendants, and finds similar results: 71% of the wealthiest women but only 10% of the poorest deliver with skilled attendants. The maternal mortality rate (MMR) is extremely high among the poorest women, at 2,303 per 100,000 (about 13 times higher than the MMR for the richest group). The high MMR, even with the use of skilled attendants, suggests that the women seek professional care too late, and possibly only when there are obstetric complications. Apart from birth traditions, the high cost of maternal care has been identified as a key factor delaying the pursuit of proper maternal healthcare (Ronsmans et al. 2009). A state-run scheme in Gujarat, India, encouraging women from households below the poverty line to seek institutional delivery services at a private hospital is well targeted, with 97% of women enrolled in the scheme delivering at a facility and saving a substantial amount in delivery fees. However, most women still incur some OOP expenditures and do not benefit adequately from some services offered under the scheme. For instance, only 30% use the postnatal care services (Bhat et al. 2009).

Similarly, an intervention study in Ghana (Ansah et al. 2009) done to test the impact of free healthcare on utilization and health outcomes in relation to malaria in children finds no measurable impact. It has been suggested that the indirect costs of care, including opportunity costs, present a greater financial barrier to care seeking than the direct cost of user fees. The authors argue that, if this were the case, the poorest households, which stood to gain the most from free healthcare, would be affected.

The studies reviewed present a mixed picture with respect to the incidence of the financial burden associated with MNCH care. The available studies focus on the distribution of the burden by income level, and ignore other dimensions such as gender and social exclusion. In most of the countries covered, the poor spend a much larger proportion of their monthly household income on MNCH care than the rich, with the poorest families incurring expenditures that are often impoverishing and financially catastrophic, and poor families are far more likely to be forced to borrow or sell assets to finance care. However, absolute levels of expenditure are rarely higher for poorer families than for higher income families, indicating that the higher ratio of MNCH costs to family income is a greater burden. This is notably the case in Nepal, where highly subsidized MNCH care is provided by the public sector in a context where private provision is limited, but where cheap MNCH care is associated with large direct and indirect costs for households, regardless of income level.

The relatively higher burden of costs for poor families in countries like Afghanistan, Cambodia, Indonesia, Kenya, and Tanzania is reported to be a major reason for the reduced use or nonuse of needed MNCH care by the poor. In contrast, studies in a few other countries report that the absolute and relative burden of OOP expenditures for MNCH care is higher for the nonpoor than for the poor. In countries like Sri Lanka and Brazil, this appears to be due to the effective availability of subsidized or free public services that the poor can use, such that most OOP spending is associated with care sought by the nonpoor at private providers. In India, a similar segregation of care utilization between public and private sectors is seen, although access to public care by the poor is not as good as in the other countries previously mentioned. A few studies look at schemes and policies designed to reduce the costs faced by the poor in using MNCH services, and generally find these schemes ineffective or inefficiently targeted to the poor. Such inefficiencies and failures in targeting, commonly noted in studies from Asia and Pacific, may be due to the challenge posed by effective means testing to target the most poor, the failure of the poor to make use of the benefits, the failure of providers to consistently act in a pro-poor manner, or other barriers to care (both financial and otherwise) that prevent access by the poor. One study on the same topic from Bangladesh also finds a high degree of targeting inefficiency in price discrimination by the private sector in favor of the poor.

## How Well Does the Literature Cover the Situation and Experience in Asia and the Pacific, Given the Burden of Maternal and Child Ill Health in the Region, and How Adequate Is the Coverage of the Individual Countries in the Region?

### Summary

- Relative to their burden of maternal and child deaths, South Asia and Sub Saharan Africa are relatively underrepresented in the published research, as is Latin America.
- Coverage of the Pacific (2%) and Middle Eastern and North African (2%) regions is particularly poor, despite the challenges faced in those areas.
- Although most of the research comes from India and the PRC, the volume of research published is less than expected, given these countries' overall share of the global burden of maternal and child deaths.
- Given their relative MNCH burden, Bangladesh and Nepal receive a disproportionately large amount of interest in the research, while Afghanistan and Pakistan are relatively neglected.
- Several countries in Asia and the Pacific with major MNCH challenges have largely been ignored in the published research. Among these countries are Myanmar, Timor-Leste, and Papua New Guinea.

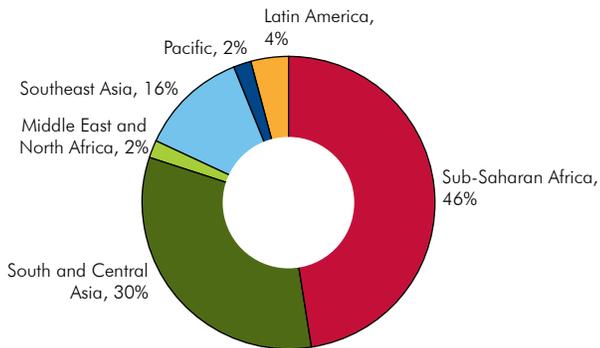
A key motivation for the ADB technical assistance project was the concern that policy makers may not be giving enough attention to the MNCH challenges in Asia and the Pacific, where progress has generally been good overall but where large and significant pockets of poor performance exist. This section examines how well the research literature covers the problems in countries in Asia and the Pacific, and relates the extent of coverage to the underlying burden of maternal and child health in the region.

The review covered 127 studies from 38 countries, corresponding in geographic category to the regional categorization by the World Bank (2010). The regional distribution of studies is shown in Figure 1. Sub-Saharan Africa accounted for 46% of all the studies, and Asia and the Pacific region, for 48%. Studies from Latin America and the Middle East and North Africa composed the remaining 6%. In that sense, the two major regions where the burden of maternal and child mortality falls were found to be equally well covered by research on this topic. However, it is worth noting that the research literature has

poor coverage of the Pacific (2%) and the Middle East and North Africa (2%), despite the challenges those areas face.

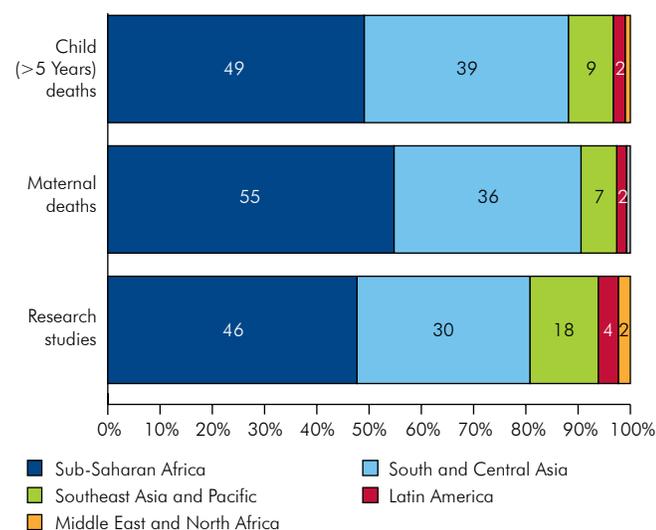
Figure 2 shows the global distribution of maternal and child deaths by region, used here as a proxy for the regional variation in the maternal and child health burden, and compares the distribution of deaths with the regional coverage of the literature. Relative to the regional distribution of maternal and child ill health, the research literature identified for this review is reasonably representative, and there is no evidence of under-attention to the Asia and Pacific region as a whole. South Asia and Sub-Saharan Africa, however, are relatively underrepresented in the research literature, and Southeast Asia is somewhat overrepresented, as is Latin America.

**Figure 1: Distribution of Research Literature on Maternal, Neonatal, and Child Healthcare Costs, by Global Region**



Source: Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

**Figure 2: Distribution of Research Studies on Maternal and Child Deaths, by Global Region**

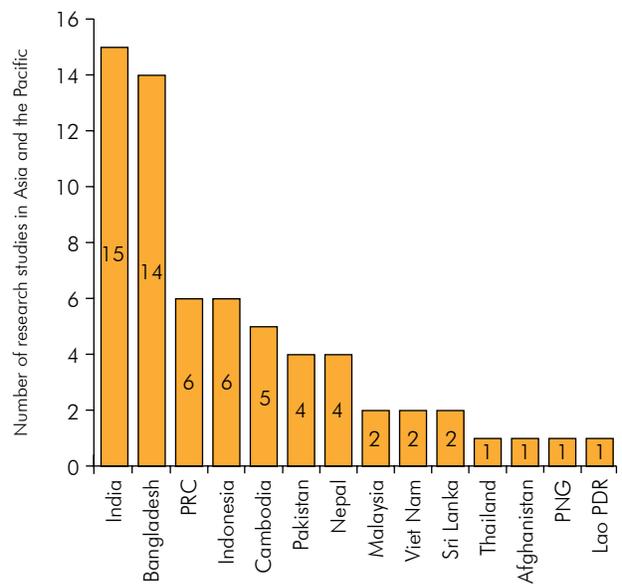


Source: Chou et al. 2010; You, Jones and Wardlow 2011; Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

Sixty-four of the studies report findings from Asia and the Pacific region, covering only 14 developing countries, as shown in Figure 3. India (15 studies) and Bangladesh (14) are by far the most well researched, followed by the PRC (6) and Indonesia (6). However, both the PRC and India are relatively undercovered, given their population and share of overall maternal and child mortality. Among Cambodia, the Lao PDR, and Viet Nam, Cambodia (5) is the most well researched, while the Lao PDR (1) is minimally represented. Several countries in the region with major MNCH challenges, including Myanmar and Timor-Leste, are not represented at all, and only one study each from Afghanistan, PNG, and Thailand was found. Other than the PNG, no other Pacific island country is represented in the studies.

Figure 4 contrasts the distribution of research studies on MNCH costs in the countries of South Asia with the distribution of maternal and child deaths. Bangladesh and Nepal are disproportionately well researched, relative to the underlying MNCH burden, and Afghanistan and Pakistan, are relatively neglected. Figure 5 contrasts the distribution of research studies on MNCH costs in the countries of Southeast and East Asia with the distribution of maternal and child deaths. The research-favored countries in this case, relative to the underlying MNCH burden, are Cambodia, Malaysia, and Viet Nam, while the PRC, Indonesia, and Myanmar are quite under-researched.

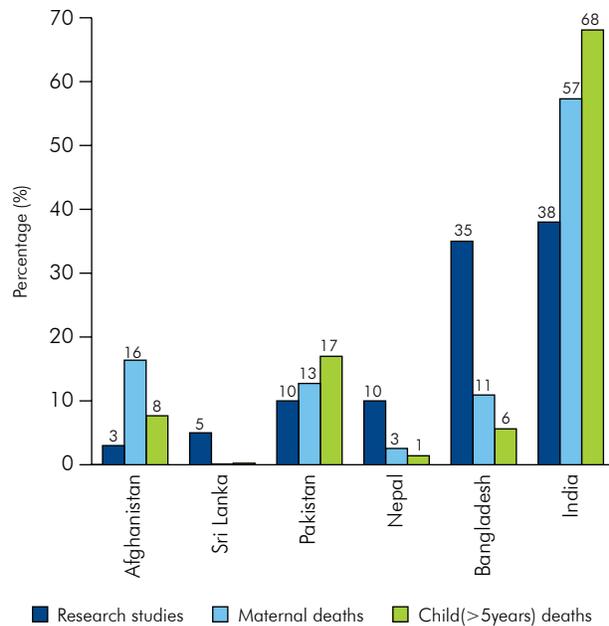
**Figure 3: Breakdown of Literature Coverage in Asia and the Pacific**



Lao People's Democratic Republic (Lao PDR), Papua New Guinea (PNG), People's Republic of China (PRC)

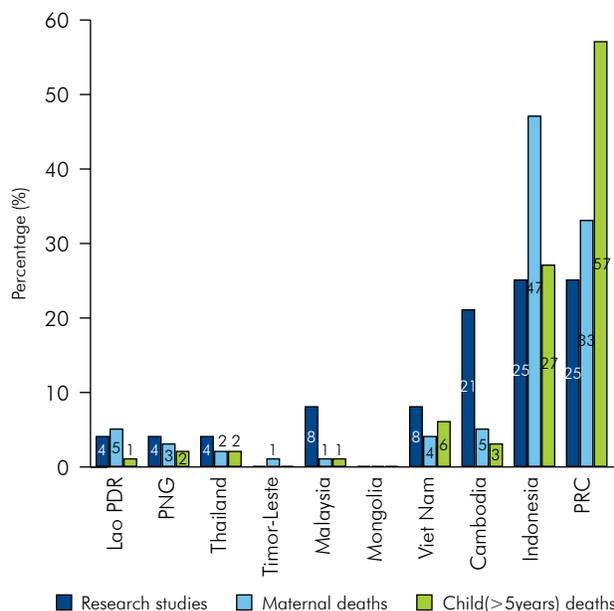
Source: Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

**Figure 4: Percentage Distribution of Research Literature on Maternal, Neonatal, and Child Healthcare Costs, Compared with the Percentage Distribution of Maternal and Child Deaths, South and Central Asia**



Source: Chou et al. 2010; You, Jones and Wardlow 2011; Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

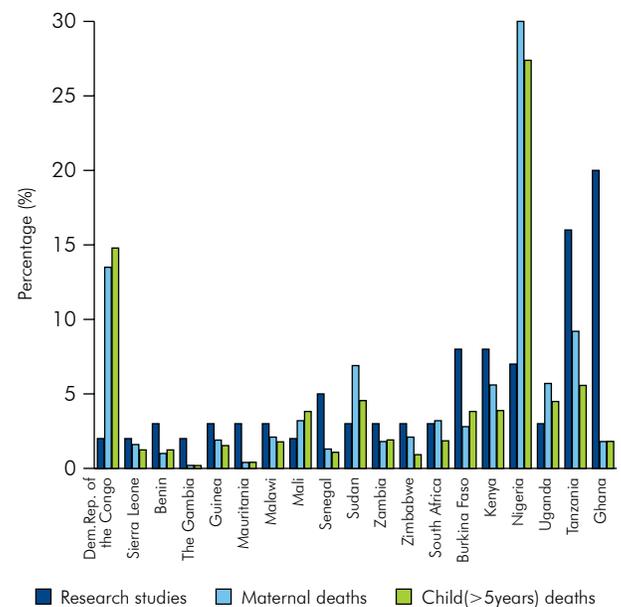
**Figure 5: Percentage Distribution of Research Literature on Maternal, Neonatal, and Child Healthcare Costs Compared with the Percentage Distribution of Maternal and Child Deaths, Southeast Asia and East Asia**



Lao PDR = Lao People’s Democratic Republic, PNG = Papua New Guinea, PRC = People’s Republic of China.  
 Source: Chou et al. 2010; You, Jones and Wardlow 2011; Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

The literature covers a wide range of countries in Sub-Saharan Africa. Despite the available literature (61 studies in total) within the region, there is also a disproportionate distribution of literature in comparison to its MNCH burden. Nigeria, the Democratic Republic of the Congo, Tanzania, Sudan, and Uganda have the largest burden, but the literature coverage is highest in Ghana (20%), Tanzania (16%), Burkina Faso and Kenya (8%), and Nigeria (7%) (see Figure 6 below).

**Figure 6: Percentage Distribution of Research literature on Maternal, Neonatal, and Child Healthcare Costs Compared with the Percentage Distribution of Maternal and Child Deaths, Sub-Saharan Region**



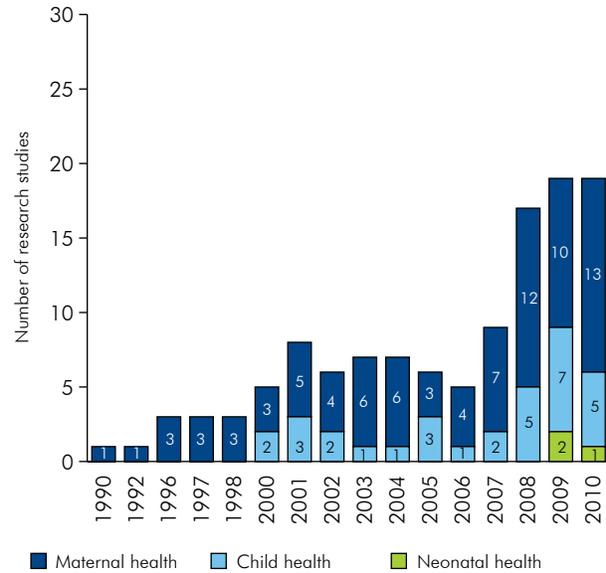
Source:(Chou et al. 2010; You, Jones and Wardlow 2011), Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

### Has the Literature on Maternal, Neonatal, and Child Health Expenditures Increased in Coverage over Time in Response to the Formulation of the Millennium Development Goals?

The database of studies located in this review can be used to assess time trends in research on these topics. The global commitment made to the MDGs in 2000 was associated with increased global and country interest in the policy challenges of improving maternal and child health. Efforts to understand which policy interventions accelerate progress on MNCH have increased during the period since the Millennium Declaration, and there has been growing recognition of the importance of financial barriers to access. This is evident in the increasing amount

of research on the issue of MNCH costs. Figure 7 shows the trends in research studies published on costs related to maternal, neonatal, and child health in 1990–2010, based on the studies identified in this review. The numbers for the years 1990–2000 are not fully comparable with those for later years, as they are based largely on the studies identified in the Somanathan review, which focused only on maternal and neonatal healthcare costs. The trends reveal a continuing growth in research on maternal and child healthcare costs, particularly since 2000 and again since 2006, but a continuing neglect of costs related to neonatal health.

**Figure 7: Global Trends in the Number of Research Studies Published on Maternal, Neonatal, and Child Healthcare Costs, 1990–2010**



Source: Institute for Health Policy literature review of 127 studies for ADB RETA 6515 project.

## IV. Discussion and Conclusions

### Summary of Findings

In most developing countries, mothers and families face financial and nonfinancial costs in gaining access to MNCH services. Such costs include direct costs associated with actual financial expenses, as well as indirect costs involving the opportunity costs of time spent seeking care. These costs frequently impose a severe burden on families and cause considerable hardships, in the immediate and longer term, disproportionately affecting the poor. These costs also influence decisions to seek care and from which provider and how. To many poor households, the costs hinder access to care, deterring patients from seeking essential health services. Even where policies require services to be made available free of charge at the point of use, other costs may continue to burden households.

There is widespread awareness of the issue in the research literature, and there has been a significant increase in research on the topic since the mid-1990s. This research literature covers all major regions reasonably well, including Asia and the Pacific, but, as with subregions within the Asia and Pacific region, there is marked difference in the attention given to specific countries. When considered in relation to the national burden of mortality, the research available on Afghanistan, Pakistan, the Lao PDR, PNG, and Timor-Leste is relatively meager. The costs associated with maternal care are the most well covered, followed by child care costs, but the costs associated with neonatal care have hardly been analyzed, despite the persistent high burden and the need to improve access to neonatal care.

The direct costs of MNCH care consist largely of travel costs, consultation fees, hospitalization charges, and the cost of drug and supply purchases. Treatment costs can also be differentiated on the basis of whether they are formal or informal (unofficial). The relative share of each depends on various factors including, among others, the nature of MNCH care needed, the type of provider from whom care is sought, the proximity of the patient to healthcare providers, and the policies in place that determine fee rates and exemptions. Costs vary across settings within and between countries and regions.

Care sought closest to home tends to be cheaper. As the severity of the condition increases, so do the costs incurred by the household, as well as the unpredictability of such costs. Home deliveries cost the least for households and consist almost entirely of payments in cash or in kind to the birth attendant or midwife. All facility-based delivery costs are subject to a great deal of uncertainty and, despite government efforts to provide free maternal healthcare in

certain contexts, the literature suggests that OOP payments will remain widespread and significant. Informal payments are often made under duress and add to the uncertainty over total costs. Home delivery costs, on the other hand, are more predictable and affordable, with payments in kind usually an option. Care provided at private healthcare facilities is consistently reported to be more expensive than care provided at public facilities. Facility-based deliveries involving complications or C-sections are up to 16 times more expensive than normal deliveries. Hospitalization charges are higher because of longer hospital stays, and the outlays on drugs and medical supplies are larger.

In most countries, medicines and supplies make up a sizable proportion of total direct expenditures on MNCH care, typically accounting for one-third to two-thirds of direct costs incurred by families, and the share of costs increases with complicated deliveries or nonroutine child healthcare. The studies reviewed generally report a higher share of medicines and supplies in total MNCH direct costs in Asian countries than in African countries, although it is not clear whether this is due to different financing policies in the two regions or to other reasons, such as medical culture. A frequent finding is that families do not know how much medicines will cost before visiting a healthcare facility, indicating that this cost component adds considerably to the overall uncertainties over costs in obtaining MNCH care.

Hotel costs, including food and lodging, are expenses often associated with inpatient care for mothers and children, particularly in maternity care. The levels of costs depend on factors such as the type of service and the length of stay. In the case of childbirth, the costs have relatively similar shares in most studies: 10%–20% for normal deliveries and 5%–15% for complicated deliveries (where the actual hotel costs may be higher because of a longer stay, but their share of total costs is lower as all other costs, such as consultation fees, medications, and supplies, also increase). Many studies report that families need to supplement food provided at the hospital with food from outside the hospital.

Travel costs as a share of total direct costs can be substantial, but they vary considerably between studies and countries, depending on geographic setting, distance, and type of terrain. The share of travel costs in total costs is reported to be highest in Nepal, particularly in remote rural and mountainous areas. Travel costs can account for a large proportion of total costs in normal

deliveries and ANC, where treatment-related costs are less significant unless hospitalization is necessary and can be exceptionally high in emergencies, giving households another source of uncertainty about costs. The need to mobilize money for transport, so as not to delay treatment during emergencies, is a factor of particular relevance to reducing maternal mortality. There is little evidence of effective schemes to reduce this burden on households, in the literature reviewed.

The OOP costs of MNCH services to households are generally higher at private providers than at public providers. The composition of costs also varies considerably between public and private facilities. At private facilities, where separate, often quite substantial, charges are levied for consultations, deliveries, and surgical procedures, formal charges account for an overwhelming share of total MNCH care costs. The share of formal charges in total costs is typically much smaller in public facilities, where fees for deliveries and surgical procedures are nominal, if not absent. Instead, purchases of medicines and supplies dominate user costs at public facilities as supply shortages in the facilities make it necessary to purchase supplies from outside the hospital, where prices may be higher. To the extent that hospitalization and surgical procedures are the more unaffordable elements of costs for poor households, the provision of public hospital care that the poor can afford is welfare enhancing, and can protect poor households from the financial burden of MNCH care costs. However, studies in many countries report the large financial burden on families that use public hospital services for mothers and children, indicating that public provision of free care in those countries is not achieving its objective of shielding households from that burden.

Informal payments are a frequent cost of access to MNCH services for families, particularly in public facilities. Informal payments can include payments to staff for consultations, as well as to obtain medicines, tests and other services. In the few studies that attempt to measure informal payments, they compose a significant share of total expenditures on MNCH services, reaching up to one-third of the cost of normal deliveries in Bangladesh. However, such payments are very context specific and need to be addressed through a tailored approach that considers the salaries received by health workers and the nature and transparency of administrative and financial processes, among other factors.

Indirect costs include the opportunity costs of time lost during travel and in the course of waiting for and undergoing treatment or looking after sick children or other family members, as well as income lost by caregivers during the period when they cannot do their regular work. The opportunity costs of time discourage mothers from

obtaining facility-based delivery care in Indonesia, and are mentioned as a barrier to access in some studies. They can account for a large proportion of total MNCH costs but, at least until 1995, were often ignored in research. Several studies from Asia suggest that indirect costs can account for as much as half of the costs of treatment for sick children, and also that income losses drive many households to borrow or sell assets. The indirect costs of travel are generally smaller. Methodologies for estimating indirect costs vary and often come with many assumptions that undermine the reliability of such estimates. Further research to develop more sensitive and accurate measures of opportunity costs would increase understanding of the overall cost of MNCH care to households.

Reliable and consistent estimates of the share of MNCH care expenditures in total household spending are scarce, but there has been an increase in research on this topic since 2000, with most of the recent research coming from Asia. Studies on maternal healthcare expenditures are the most common, perhaps because these expenditures can be very large and unpredictable. According to various studies from Asia and Africa, maternal healthcare expenditures can account for 1%–5% of total household expenditures over a year, and if there are complications the costs can be even higher. Many studies report facility-based deliveries costing up to 10%–60% of average monthly household incomes at government hospitals, and higher at private facilities. These costs, in several studies, are catastrophic for many households, but particularly for the poor. In studies in India, maternal health spending is catastrophic for more than half of the affected households. In other studies, all from Asia, serious childhood illnesses frequently result in catastrophic expenditures for the families involved, with one study reporting the very large impact of childhood cancers.

Large MNCH expenditures can be impoverishing if they force households to divert spending from other needed items of consumption, such as food, to finance healthcare, and if the net living standards of the households fall below the poverty line as a result. Focused research on the impoverishing impact of MNCH expenditures is quite limited, probably because of poor availability of survey data that accurately reflect both MNCH expenditures and overall household consumption. The few available studies examine the impoverishing impact of maternal healthcare costs; some of them cover the issue in relation to child healthcare, but none examine the impact of costs for newborn care. Several studies from Bangladesh and Tanzania report MNCH care costs exceeding monthly and annual incomes by well over 100%, particularly for low- and middle-income households. In one study in Nepal, hospital-based deliveries impoverished almost half of all households involved.

To cope with the financial burden associated with MNCH costs, households in almost all settings resort to using available cash and savings at first, but these are rarely sufficient to cover all the associated costs. The sale of assets, particularly livestock and jewelry, is the most commonly used strategy for coping with the financial costs of MNCH care. Where the assets sold are related to the livelihood of the family, household income can suffer over the long term. Households generally prefer not to borrow, but borrowing is often the most feasible way to raise large amounts of cash quickly and can therefore be a common strategy. Many studies from both Africa and Asia report that informal lenders are the main source of borrowing for MNCH costs, especially among poor households. As moneylenders typically charge very high interest rates, families must shoulder this additional burden. Repaying these loans can impose a continuing heavy burden on households by forcing them to divert resources from consumption over an extended period of time. Several studies from Africa and Asia report that households that borrowed to meet MNCH costs had to reduce basic consumption, including the consumption of food, to repay the loans. Other measures reported from Bangladesh include selling assets and taking children out of school. In some contexts, community loan funds have been established to improve access to emergency obstetric care services by providing formal credit, but evidence of their effectiveness is weak and inconclusive. There is also limited evidence on strategies taken by households to cope with the time costs associated with seeking MNCH care. Intra-household labor substitution is reported to be the most common strategy.

Whether MNCH costs bear most heavily on the poor or the rich is not consistent across countries and studies. In absolute terms, the poor generally spend less on MNCH care than the rich because of lower ability to pay and a lower propensity to use private sector services. In most studies, the poor also spent proportionately more, as a share of their income, than the rich, but this was not always the case. In settings where the poor predominantly used inexpensive public sector services while the rich opted for higher cost private sector services, in countries like India and Sri Lanka, the rich spent proportionately more than the poor. In such cases, it could be argued that there is an element of choice. In all other cases, the financial burden of MNCH care did fall disproportionately on the poor. One likely explanation is the differing nature of the public–private mix in different health systems, but better description and assessment is needed. Further research must be done into why this is so, and the context-specific policy framework must be examined with a view to reducing the burden, particularly on the poor.

## Discussion

Expenditures on healthcare are widely seen as financially burdensome to household budgets and contributing to impoverishment. This review examined the evidence on MNCH care expenditures and looked into how and to what extent these expenditures exacerbate poverty. The evidence has significantly improved in quantity and quality over the past decade, but it remains patchy in terms of geography, issues, and methods. Broad generalizations are difficult to make, both globally and for the Asia and Pacific region specifically.

MNCH care expenditures heighten poverty both directly and indirectly. The impact is worst in facility-based delivery and serious childhood illnesses, where more qualified care is required and inpatient stay in the hospital may be extended. The financial and time costs associated with seeking MNCH care directly affect household incomes and consumption. Their indirect impact is felt through the coping strategies that households adopt in response to the financial catastrophe they face. Such coping mechanisms erode the household's asset base, which may not be substantial to start with for most poor households. Periodic illnesses and chronic conditions lead to further erosion of the asset base, leaving the households income poor and asset poor. Being asset poor makes the households more vulnerable to economic shocks as the protective buffer is significantly reduced in size. The need for collateral makes borrowing a less feasible coping strategy for the poor. Nevertheless, the evidence suggests that poor households do borrow, often from local moneylenders at high rates of interest, because borrowing is an effective way of raising large amounts of cash in a short period of time. Interest repayments may force the households into a debt trap. Coping strategies at the household level are clearly inadequate in alleviating the financial burden of access to MNCH care, particularly among the poor.

Although in many countries, free or near-free MNCH services are offered to protect the poor and to promote access, as a matter of policy, access to needed MNCH care is very costly to families, as studies have repeatedly shown. Further analysis could explore the relevance of policy in relation to the incidence of OOP household expenditure and its component parts. These costs not only cause financial hardship, but have also consistently been found to discourage and lessen the use of essential maternal and child healthcare services across countries. A few programmatic interventions intended to reduce the financial costs of MNCH access have been studied. Community-level social safety nets in the form of community insurance schemes have been tried out in many low-income settings. However, there is limited evidence that community insurance schemes are successful in protecting

the poor from the detrimental effects of healthcare expenditures. More studies with robust methodologies are needed to identify approaches that will reduce the financial costs associated with MNCH care, and facilitate universal access. Although the empirical evidence does not offer consistent support for the notion that significantly expanded access to public sector services would protect households from the adverse consequences of spending for MNCH care, the experience of Malaysia and Sri Lanka is worth noting. Both countries provide universal coverage of healthcare, funded through general taxation and characterized by very high levels of access to public sector services and low levels of financial costs for the poor in using MNCH services.

Loss of income and assets and eventual impoverishment compose one set of consequences associated with outlays for MNCH care, the assessment of which is the primary goal of this review. It would be remiss, however, to ignore the negative impact that the potential for financial catastrophe has on households. The evidence examined in this review suggests that households often ignore illness and forgo care in an effort to avoid the financial and time costs. Failure to seek treatment is of particular concern in the context of MNCH, where there is already a considerable lack of informed demand for healthcare and where the burden of mortality remains high. A critical problem in most low- and middle-income settings is the low overall level of sensitivity to maternal and newborn ill health (or poor knowledge of when treatment is required), and the unclear distinction between unqualified and qualified medical providers in patient preferences for medical care. The fact that women are often poorly educated and have limited decision-making capacity compounds the problem. In such demand constrained settings, large expenditure requirements and the potential for financial catastrophe will inevitably worsen the problem of underutilization of MNCH care. This impact may explain a large proportion of the known inequalities in access to MNCH services in many countries, as well as the overall inadequacy of use of those services.

## Strengths and Weaknesses of the Evidence Base

This section assesses the strengths and weaknesses of the evidence base with regard to each of the six research questions posed during the review. Two general weaknesses in the available data are discussed first.

This review of the literature on MNCH costs has revealed a lack of substantial and robust evidence on the expenditures associated with perinatal and newborn healthcare, postnatal care, and pregnancy related care for adolescent mothers. The bulk of the studies located

examine the costs of childbirth and maternal care services, with some, but less extensive, coverage of costs associated with child healthcare. Accurate and reliable findings on the costs of home deliveries, particularly unassisted deliveries, which are main alternatives to facility-based deliveries, are limited. Further, there is virtually no coverage of non income equity considerations in the literature available. The lack of these data represents a critical gap in the evidence base.

A second weakness in the data relates to the use of sample survey data of various kinds in measuring household expenditures, thereby introducing the possibility of significant nonrandom bias when health expenditures are estimated, and when health expenditures are examined in relation to household consumption. There is evidence of quite substantial discrepancies between estimates of total household expenditures obtained from surveys and those obtained from national accounts or national health accounts procedures (Deaton 2004; Rannan-Eliya and Lorenzoni 2010). The existence of a reporting bias in survey based expenditure data calls into question the reliability of the evidence base and highlights the need to invest more in health accounting-based estimates of MNCH care expenditures.

The evidence base with regard to the level and composition of MNCH care costs is strong, with several good quality studies from a range of countries. However, inconsistencies and a lack of clarity regarding which items of costs should be included and how costs should be measured and defined make it virtually impossible to compare the level and composition of costs across settings (Somanathan 2006). Informal costs, which often compose a significant share of total costs, are particularly prone to inconsistent measurement because there is little agreement on how informal costs are defined and because households fail to distinguish between informal and formal costs when reporting them. Another problematic area is the estimation of indirect costs, which is plagued by difficulties in imputing values for women's time in rural settings, where incomes are seasonal and subsistence farming is common. Using the minimum wage to value women's time risks overestimating opportunity costs since women invariably earn below the minimum wage, particularly in the informal sector. What little evidence there is indicates that indirect costs are quite significant as a share of total costs, highlighting the need for improved data collection and estimation techniques.

The evidence base on the size of MNCH care outlays relative to other household expenditures is of medium quality. Only a handful of studies have measured both sets of expenditures using a robust methodology. Detailed estimates of MNCH care expenditures are usually obtained

from small sample surveys specifically designed to collect in depth information on how much households spend on MNCH care, whereas large household consumption surveys are needed to produce reliable estimates of household expenditures, the denominator of interest. The latter type of surveys only rarely collect detailed information on MNCH care expenditures, and even if they do the number of observations related to MNCH episodes may be too small to obtain reliable estimates. The Tanzania 1993 Living Standards Measurement Survey (LSMS) used by Prata et al. (2004) was an exception in that it included a general household consumption module and a separate module for collecting information on MNCH care utilization and expenditures. This allowed Prata et al. to make reliable estimates of the MNCH care share of total household expenditures.

None of the other studies included in this review collected robust information on household consumption. Borghi, Hanson, Acquah, et al. (2003) compared actual MNCH care costs in Benin and Ghana with average annual household cash expenditures taken from national household consumption surveys in each country, as their survey did not collect such information for individual households. The results of Borghi et al. results are reviewed above although the reliability of the results is somewhat compromised by the use of aggregate household consumption as the denominator.

Even when data are available, assessment of the size of the MNCH care expenditures relative to total household spending during a given recall period is insufficient to capture the full extent to which MNCH care expenses are unaffordable to households (Somanathan 2006). A review paper by Nanda (2002) on the gender dimensions of user fees emphasizes the need to consider the entire consumption profile of the household when assessing household ability to pay user fees, no matter how nominal they are. Russell (1996) argues that people's ability to pay would be constrained when the consumption of other necessities, such as food, water, or education, falls below minimum needs. A longer term perspective is clearly needed when assessing household ability to pay for MNCH care on the basis of budget share. Nanda points out that the ability of households to pay user fees is affected not only by incomes but also by the prices of other goods in the basket of commodities and services consumed by households. For instance, an increase in food prices would severely restrict the share of the household budget available to pay for healthcare. MNCH care may thus be described as affordable only when the consumption of essential commodities does not fall

below levels that may affect future health, earning capacity, or expenditures (Russell 1996).

On the impoverishing effects of MNCH care expenditures, the existing evidence base is of medium quality. Examining expenditures in relation to income in order to assess the extent of impoverishment has important limitations. What is obtained is essentially a snapshot of expenditures and income at one point in time, which does not capture all of the potentially impoverishing effects of health spending. As discussed previously, households often sell their assets to pay for healthcare expenditures, thereby worsening impoverishment over a long period of time. Within the time horizon considered—a year or, in most cases a month—it is not possible to investigate whether health expenditure shocks are absorbed by borrowing or dissaving to smooth consumption (Gertler 2002). MNCH care spending may induce impoverishment over a long period of time if it forces households to run down their asset base or borrow at high interest rates. Impoverishment over the long term has rarely been examined in the literature. Another drawback of this method is that it fails to distinguish between rich and poor households. Expenditures in excess of average monthly incomes may not be as catastrophic for a relatively well-off household as it would be for a poor household, and studies in several countries reported higher MNCH costs and higher catastrophic impact in the nonpoor than on the poor, related to greater use of private services. What is interesting is the extent to which the impoverishing effects of MNCH care expenditures are concentrated among poor households.

The evidence base is quite strong with regard to the types of coping strategies adopted by households, but very weak on the effectiveness of those strategies in the context of MNCH care. The longer-term consequences of coping strategies, such as taking out loans and selling off assets, have rarely been examined. The extent to which social safety nets protect households from the financial burden associated with MNCH care has also received very little attention so far.

With respect to the distribution of the financial burden associated with MNCH costs, the evidence base is of medium quality. Few studies have adequately measured the incidence of spending across households. Moreover, little is known about intra-household allocation of resources for MNCH care and how families deal with the financial and time costs associated with seeking care. This is because most of the household survey data provide information only at the household level, and do not allow for an assessment of the intra-household distribution of resources.

## Policy Recommendations and Areas for Future Research

The overwhelming constraint on better uptake of MNCH services in much of the developing world is a lack of informed demand for effective, modern healthcare services. In such demand-constrained settings, high costs of care and the potential for financial catastrophe associated with care represent additional barriers to access for women, and reinforce deficiencies in health knowledge and health-seeking behavior. The evidence presented in this review suggests that MNCH care expenditures represent a significant financial burden to households, particularly poor ones. Clearly, substantial reductions in costs are necessary in order to shift demand patterns in favor of formal health services for MNCH care. The evidence base is relatively weak with regard to the effectiveness of specific policy instruments. Nevertheless, the following tentative conclusions may be reached with regard to what direction policy should take in order to ensure that MNCH care expenditures do not exacerbate poverty and MNCH care strategies have a pro-poor focus.

There is an urgent need across much of the developing world, but particularly in the Asia and Pacific region, to increase public financing for MNCH care services in order to substantially expand access to services and to lessen the catastrophic impact of health expenditures. Increasing the quantity and quality of services by building more facilities, providing more trained personnel in rural areas, and ensuring that medical supplies are continuously available will help reduce travel costs and time costs associated with traveling long distances to obtain necessary care. The provision of free, accessible public hospital services will protect households from large hospitalization expenses associated with C sections and deliveries with complications. At the same time, increasing public financing will not be enough. There is ample evidence that even if governments commit to providing free MNCH services, this is not achieved in practice, and financial costs still discourage use of services. Much more attention also needs to be given to why services are not free in practice for mothers and children, and what specific actions governments can take to reduce such costs. Where interventions to reduce financial barriers to MNCH care have been tried, they need more robust

evaluation both to measure their impact and to identify critical success factors.

Existing research has focused largely on antenatal and pregnancy care costs, but is characterized by methodological inconsistencies that inhibit comparisons over time and across countries and studies. Ensuring that costs are defined and measured consistently remains a priority for future work in this area. Recent years have seen an increasing number of developing countries compile internationally comparable measures of health spending using a national health accounts framework, which offers an unprecedented opportunity to better define and measure MNCH care costs. Methods based on such approaches, plus the use of better-designed national consumption surveys, are needed to better define MNCH cost levels and financial impact.

Future research should make a greater effort to examine the costs associated with perinatal healthcare, postnatal care, adolescent pregnancies, home deliveries, and child healthcare costs, all of which are areas that have hitherto received less attention than ANC and maternal deliveries. While it is acknowledged that data on care provided outside the formal health sector are more difficult to collect, the lack of such data is critical in settings where a majority of births take place at home, unassisted. Household surveys need to be adapted to collecting detailed information on postnatal and perinatal care, as well as any care provided at home.

A final recommendation for future research is conceptual rather than methodological. There is a pressing need to move away from income-based definitions of household socioeconomic status and impoverishment to more multidimensional ones. Work on MNCH care costs should draw from the poverty literature, which has made a concerted effort to construct multidimensional measures of household welfare in recent years, despite practical difficulties in measurement of such indices. In addition, the time frame used by most MNCH care cost surveys is too short to examine the full impact of costs on households. A greater effort must be made to examine the longer-term effects of catastrophic healthcare payments for MNCH care. Longitudinal surveys of households provide the best means of doing this.

# Appendix 1: Search Strategy and Inclusion Criteria

## Databases

Eldis  
JSTOR  
PubMed  
Research4Development

## Organizations

Asian Development Bank (ADB)  
Australian Agency for International Development (AusAID)  
Partnership for Maternal, Newborn and Child Health  
United Nations Children's Fund (UNICEF)  
World Bank  
World Health Organization (WHO)

## Journals

*Journal of Health Economics*  
*Health Policy*  
*Health Policy and Planning*  
*Lancet*  
*Social Science & Medicine*  
*Bulletin of the World Health Organization*

## Search Terms

health  
AND  
maternal; newborn; neonatal; child; MNCH; MCH  
AND  
access; catastrophic; consumption; cost; expenditure; fee; financial burden; household; impoverishment; income; out-of-pocket

## Inclusion Criteria

*Focal areas:* level and distribution of MNCH expenditures incurred by individuals and households; magnitude of MNCH-related burden in absolute terms and relative to household consumption; incidence of MNCH expenditure on the poor; impact of MNCH on impoverishment and inequity; household coping strategies and capacity to cope with large MNCH expenditures

*Types of studies:* empirical analyses of household survey data; case studies; evaluations; reviews; surveys

*Publications:* peer-reviewed journals; unpublished (gray literature) including study reports

*Population:* low- and middle income countries

*Time period:* 1 January 2000 to 31 December 2010

*Language:* English

## Appendix 2: Summary of findings

Table A2.1: What are the main direct and indirect costs to households from MNCH care:

Reference Location	Study Question	Methods and Data	Key Findings
Afsana (2004) Bangladesh	Examine how the costs incurred in obstetric treatment impede rural, poor women's access to obstetric healthcare.	In-depth interviews, informal discussions and observations of 170 pregnant women and providers	Rural and poor families bear enormous costs on C-sections with drugs accounting for the largest share. Informal payments are significant.
Amin, Hanson, and Mills (2004)	Examines the existence of price discrimination in obstetric services in two private hospitals in Bangladesh, and consider the welfare consequences of such discrimination.	Data on 1,212 normal and caesarean section patients discharged from the two hospitals were obtained.	Two different forms of price discrimination in obstetric services occurred in both hospitals. First, there was price discrimination according to income, with the poorer users benefiting from a higher discount rate than richer ones. Second, there was price discrimination according to social status, with three high-status occupational groups (doctors, senior government officials, and large businessmen) having the highest probability of receiving some level of discount.
Asante et al. (2007) Ghana	Evaluate the economic outcomes of a fee exemption for maternal delivery in Ghana.	Study was based in 2 regions where policy exemption was applied. A household costs survey was conducted comprising women who had delivered in the 18 months leading to the survey. A sample of 1,500 women were surveyed.	There was a statistically significant decrease in out-of-pocket payments for C-sections and normal delivery at health facilities after the introduction of the policy. The incidence of catastrophic delivery payments also decreased. The policy had a more positive impact on the extreme poor than on the poor. While the policy was beneficial to all users of the service, the rich benefited more than the poor.
Bhat et al. (2009) India	Look into maternal healthcare financing in India (Gujarat) and the introduction of a public-private scheme to operationalize the first referrals units and provide skilled birth attendants.	Developed a questionnaire and detailed interviews over a 2-month period; household survey of beneficiaries (n=262) and nonusers (n=394).	Studies indicated that the scheme is well targeted to the poor but that many poor people do not use the services. Among users, average delivery-related savings amount to INR3,000. However, the scheme is not 100% cost free: patients incur OOP expenses for medicines The review recommended that the government increase funding for medicines and offer 2 antenatal and 2 postnatal visits.
Borghi et al. (2004) Nepal	Quantify household costs of delivery at a health facility or at home, financing sources and possible coping mechanisms.	Household survey (720 women); checking of validity of payments against hospital bills.	Home delivery is costly because of payments to attendants and supplies purchased. Costs of facility-based delivery: travel costs and opportunity costs of time. Facility-based C-sections are up to 8 times more expensive than normal delivery.
Borghi et al. (2010) Bangladesh	Examine the costs of home delivery against the costs incurred in healthcare facilities.	Cost data collected through interviews with midwives and from institutional records.	i. The cost of basic obstetric care in the home is cheaper than the facility. ii. Deliveries in the home took more time but was offset by the capital costs associated with facility-based care. iii. Antenatal and postnatal care was much cheaper to provide in the facility than in the home.
Borghi, Bastus, Belizan, et al. (2003) Argentina	Estimate the provider and consumer costs of maternal health services.	Evaluation of provider costs and exit surveys of 40 low-risk pregnant women at 2 hospitals and 2 health centers; measurement of direct and indirect consumer costs of outpatient antenatal care.	With medicines and tests provided free of charge, the total direct costs are much lower relative to the indirect costs associated with the opportunity costs of time spent waiting and traveling.

C-section = cesarean, INR = Indian Rupee, OOP = out of pocket

Reference Location	Study Question	Methods and Data	Key Findings
Borgh, Hanson, Acquah, et al. (2003) Benin/Ghana	Estimate the total costs to families associated with spontaneous vaginal delivery and five types of obstetric complications: anemia, hypertension, hemorrhage, sepsis and dystocia. Also assess affordability in relation to household cash expenditures.	Retrospective evaluation of direct and indirect costs among 121 mothers in three hospitals in Ghana; prospective evaluation of direct and indirect costs of 420 pregnant women in two hospitals in Benin.	Medical costs (drugs and medicines supplies; delivery and surgical costs in Benin) account for largest share of total costs.
Borgh, Sabina, Blum, et al. (2006) Bangladesh	Examine the household costs of healthcare during pregnancy, delivery, and the postpartum period in the rural area of Matlab.	Interviews with 446 women who had given birth during the 1995–2002 period: 121 at home, 120 at the ICDDR (where facilities are provided free of charge), 120 in a BEOC, 27 in a CEOC, and 58 in a private hospital.	60% of the women who had delivered at home had either only primary education or no education at all. Over half of those who had delivered at a health facility had at least secondary education. The type of attendant for home deliveries had no impact on household expenditure and was the cheapest option. The study highlighted the need to consider the number of midwives relative to the population. Beside a home delivery, delivery at a BEOC was the second-cheapest option, accounting for only 10% of annual income on average. CEOC facilities were costly for complicated delivery, while private hospitals were the most expensive option.
Borgh, Storeng, and Filippi (2008); Africa and South Asia	Review the evidence on the obstetric care costs to households and seek both the extent to which these costs hinder access to facility-based care for certain groups, and the impact of resulting expenditures on the household economy for those who do reach the facility.	Literature review.	Obstetric care costs in hospitals were shown to be significant. The interaction between official user charges and unofficial costs, transport costs and time costs results in catastrophic expenditures and debt, particularly in the event of complications.
Chai et al. (2009)	Conduct a study of out-of-pocket costs incurred by caregivers of children hospitalized for rotavirus gastroenteritis in a hospital in Malaysia.	Data on the out-of-pocket costs of caregivers were collected from 260 children hospitalized with diarrhea. Stool samples were collected from 198 of these children.	The mean (median; interquartile range) out-of-pocket cost incurred by the caregivers was \$194 (\$169; \$47–\$738), constituting 26% of average monthly income of the households surveyed. Major components of the cost were hospital expenses (45%) and productivity loss (37%).
Das et al. (2010)	Explore factors influencing the choice of home delivery, care practices, and costs, and identify characteristics of women, households, and the environment that might increase the likelihood of home delivery.	Key informant surveillance system to identify expected births in 48 slum communities in six wards of Mumbai, with a population of 280,000.	Most commonly cited reasons for home birth were custom and lack of time to reach a healthcare facility during labor. In an adjusted multivariable regression model, the odds of home delivery increased with illiteracy, inequality, socioeconomic poverty, poorer housing, lack of water supply, population transience, and hazardous location.
Dhakal et al. (2007)	Assess the use of postnatal care in rural communities.	A descriptive, cross-sectional study was carried out in two neighboring villages in early 2006. A total of 150 women who had delivered in the previous 24 months were asked to participate in the study by answering a semi-structured questionnaire.	The proportion of women who had received postnatal care after delivery was low (34%). Less than one in five women (19%) received care within 48 hours of giving birth. Lack of awareness was the main barrier to the utilisation of postnatal care. The woman's own occupation and ethnicity, the number of pregnancies and children, and the husband's socioeconomic status, occupation, and education were significantly associated with the use of postnatal care.
Dhar et al. (2009)	Estimate the direct maternity care expenses of women who had recently delivered in South Delhi and explore the socio-demographic associations.	Survey using the two-stage cluster-randomized sampling technique	The mean expense for a normal vaginal delivery: \$370.7. In private hospital: \$1,035. In government hospital: \$61.1. At home: \$55.3. Caesarean delivery: \$1,331.1. Lowest-income groups spend about 10% of annual family income at government facilities; about 26% at private hospitals. The direct maternity-care expense is high for large subsections of the population.

ICDDR = International Centre for Diarrhoeal Disease Research, BEOC = basic obstetric care, CEOC = comprehensive obstetric care

Reference Location	Study Question	Methods and Data	Key Findings
Ensor and Ronoh (2005)	Review the literature on the effective financing of maternal health services.	Literature review	Financing for maternal health services could improve if systems were implemented to increase transparency, mitigate the demand-side costs of services, and promote transparent charging for services.
Fox-Rushby and Foord (1996)	Compare the costs (provider and out of pocket), effects, and cost-effectiveness of mobile maternal services and the usual maternal care offered in the district.	Questionnaires administered to patients to measure out-of-pocket payments during pregnancy.	Payments toward a revolving drug fund compose the bulk of patient costs at the mobile health service. At the usual maternal health care provider, the main costs are for transport, followed by the revolving fund.
Harving and Ronsholt (2007)	Measure the economic consequences of dengue hemorrhagic fever in Southern Viet Nam at the family level.	Standardized interviews. The study covered 175 children 0–15 years of age, who were confined for 10 weeks in the fall of 2005 at the Children's Hospital No. 1 in Ho Chi Minh City. The children's parents and caretakers were interviewed about expenses related to the treatment of the disease.	Average cost (direct and indirect) to the family of treatment for one child: \$61. On average, the largest expenses were those related to the initial visit at a local general practitioner, the hospital bill from Children's Hospital No. 1 and lost income for the parents.
Hotchkiss (2000) India	Investigate use of RCH services	Household survey of random sample of 1,100 households (6,869 individuals) including a separate questionnaire for women.	Women using government services incur large out-of-pocket expenses, most of which are for drugs and supplies. Pharmaceutical costs of public clients are comparable to those of private clients.
Hussain et al. (2008)	Estimate the costs of treating pneumonia, severe pneumonia, and very severe febrile disease to households.	Collection of data on the duration and economic implications of the illnesses for households, from caregivers of children under 3 years of age who were being treated at a health facility and were enrolled in a surveillance study.	Total societal cost per episode, on average: \$22.62 for pneumonia, \$142.90 for severe pneumonia, and \$62.48 for very severe febrile disease. For household expenditures, medicines constitute the highest proportion (40.54%) of costs incurred during a visit to the health facility, followed by meals (23.68%), hospitalization (13.23%), and transportation (12.19%).
Huy et al. (2009)	Estimate the economic burden of dengue.	Interviews using a standardized questionnaire to determine the related medical and nonmedical costs to households, and the estimated income loss, for a prospective, community-based, matched case-control study.	Hospitalization almost triples the costs of dengue treatment (from \$14.3 to \$40.1) and doubles the costs of treating other febrile illnesses (from \$17.0 to \$36.2). To finance the cost of a febrile illness, 67% of households incur a debt of \$23.5 on average, and higher if hospitalization is involved, compared with about \$4.5 for outpatient treatment. Each household spends an average of \$9.5 per week on food of \$9.5 per household (range 2.5–21.3).
Iyengar et al. (2009) India	Examine pregnancy-related deaths in Rajasthan, India.	Structured interviews with the families of 156 of 160 women who had died during childbirth.	20% of deaths were pregnancy related (77% of these died during the postpartum period) and 74% of the deaths occurred at home. Direct costs accounted for 58% of the deaths, and indirect costs for 29%. Structured questions brought out deficiencies in the quality of antenatal care. For women who did seek care, the median distance to each facility was 20km and the mean distance was 33km. 77% of deaths occurred during the postpartum period, drawing attention to the importance of monitoring during delivery and the 24 hours after.
Kadir et al. (2000)	Measure the extent of out-of-pocket expenses borne by users of obstetric care at government hospitals, and the factors associated with those expenses.	Structured interviews with all patients who were newly admitted or readmitted for obstetric care in July and August 1994 at 4 obstetric units in 3 hospitals run by the Sindh provincial government in Karachi, Pakistan.	Mean out-of-pocket expenses for obstetric services: PRs590, including PRs330 for medicines and PRs24 for user fees. Thirty-nine percent of the patients were willing to spend out-of-pocket for services provided at government hospitals and 39% declined to do so. Of the patients indicating willingness to spend, 98% agreed to do so for medicines.

RCH = reproductive and child health; PR = Pakistani Rupee

Reference Location	Study Question	Methods and Data	Key Findings
Kawaine et al. (1998)	Measure the costs to consumers of cesarean delivery at public, private, and NGO facilities.	Consumer expenditure survey at 1 public, 1 private, and 1 NGO facility. Data were collected throughout the hospitalization period, and follow-up interviews were conducted with the families after the patients were discharged.	Costs were highest at the private hospital and lowest at the public hospital. The charge for the operation was the most expensive aspect of the expenditure at the private and NGO hospitals. The public facility did not charge for the operation.
Khan (2005) Bangladesh	Examine the amount and types of out-of-pocket expenditures of patients for services normally provided free of charge at public hospitals, the factors behind these expenses, and the impact of the expenses.	Interviews with 81 maternity non-patients selected through quota sampling, during hospitalization for reproductive health conditions; data collection from patients with the help of semi structured, open ended questionnaires.	Median total OOP expenditures per patient amounted to \$65 (range \$2–\$350), equivalent to 7% of annual household income. Patients incurred costs for medicines, tests, food, admission fees, tips and travel.
Khan and Zaman (2010) Pakistan	Assess the costs of vaginal and C-section deliveries at a tertiary hospital.	Survey of 133 postpartum mothers at a large maternal and child hospital between 10 April and 10 May 2008, using a pretested, semi structured, in depth questionnaire and interviews.	Average cost of delivery at a hospital: \$40 for vaginal delivery, \$162 for a C-section. Patient costs: \$79 for a normal vaginal delivery, \$204 for a C-section. Patient bears 66% of the cost of normal vaginal delivery, and 56% of the cost of a C-section. Transport and medicines make up the largest expense in normal delivery; medicines, in a C-section. Hospital dues are the second largest expense, and opportunity cost, the third largest.
Kowalewski, Mujinja, and Jahn (2002) Tanzania	Assess the consumer costs of maternity services.	Collection of quantitative cost data through interviews with 21 key informants and 107 women at ANC clinics and maternity wards	Travel costs account for about one-half of all financial costs. Time costs are consistently larger than financial costs.
Kruk et al. (2008)	Identify the main drivers of costs of delivery at a facility and the financial consequences for women of rural households in Tanzania, a country with a policy of delivery fee exemptions.	Data collection through a questionnaire administered to a representative three-stage cluster sample of rural households from Kasulu district	Out-of-pocket payments for delivery-related costs are made by 73.3% of women who deliver at a facility. Transport costs (53.6%) and provider fees (26.6%) are the largest cost components in government facilities. Deliveries in mission facilities are twice as expensive as those in government facilities. Among the women covered by the survey, 48.3%, especially among the poor, said they cut down on spending or they borrow money or sell household assets to pay for delivery.
Larson et al. (2006)	Describe the treatment choices made by rural households for a child with fever, and the related costs to the households.	Estimation of the expected cost of treatment of a child with fever, for households in Kenya in 2002, using a cost-of-illness approach; development of two scenarios to explore how the expected costs would change if more children were treated at a healthcare facility with effective antimalarial medication within 48 hours of the onset of the fever.	Direct household cash expenditures per bout of fever: about \$0.44. Total expected cost to households (cash and time) of a bout of uncomplicated childhood fever: about \$1.91. An estimated mean of 1.42 days of caregiver time devoted to each bout of fever accounts for the majority of the household costs of managing fever.
Levin et al. (2003); Uganda, Malawi, and Ghana	Evaluate the provider and consumer costs of six maternal health services provided in Uganda, Malawi, and Ghana.	Facility-based client interviews at 1 public and 1 mission hospital, and 1 public and 1 mission health center, in 1 district in each of the 3 countries.	User costs, travel costs, and other costs are higher for C-sections than for all other routine services. With the exception of Malawi, costs are higher in mission facilities than in public facilities. User costs are highest at hospitals—higher than the user costs at health centers.
Mubyazi et al. (2010)	Describe the experience and perceptions of pregnant women about costs and cost barriers to access to ANC services, particularly IPTp, in rural Tanzania	Collection of qualitative data through focus group discussions with pregnant women and mothers of infants, and exit interviews with pregnant women at ANC clinics.	Factors limiting the use of ANC services by women: the money and time costs associated with gaining access to ANC clinics; user fees, more or less official, for some services included in the ANC package; and fines and penalties imposed by service providers when service schedules are not adhered to. The time associated with traveling long distances to ANC clinics and ITN retailers and with waiting to be served at the clinics is a major factor discouraging pregnant women from seeking healthcare because it takes them away from their domestic responsibilities.

NGO = nongovernmental organization, OOP = out of pocket, C-section = cesarean, IPTp = intermittent preventive treatment against malaria during pregnancy, ANC = antenatal care; ITN = insecticide-treated net

Reference Location	Study Question	Methods and Data	Key Findings
Mugweni, Ehlers, and Roos (2008)	The purpose of the study was to identify factors contributing to low institutional deliveries in the Marondera District, Zimbabwe, among women who attended ante-natal clinics, in order to enhance the number of institutional deliveries.	Descriptive quantitative survey involving, gathering data by conducting structured interviews with 80 women.	Institutional deliveries are low in number because home deliveries can meet women's minimal expectations of cleanliness and noninterference during labor and delivery; institutional deliveries entail travel expenses and separation from the family and the support provided by its members, and are often unable to meet the patient's cultural expectations; women's poor knowledge of the danger signs in pregnancy; and women's negative perceptions of staff working at the institutions.
Nahar and Costello (1998) Bangladesh	Study the costs and affordability of free maternity services at government facilities.	Questionnaire survey and in-depth interviews with 220 postpartum mothers and their husbands, at 5 health facilities.	Free maternal healthcare in Bangladesh involves considerable hidden costs. Travel costs account for 20% of all delivery costs while medicines compose 55% of C-section costs but only 39% of normal delivery costs.
Pokhrel (2007)	Explain, using the discrete choice theory, why some parents in Nepal, more often than others, choose to report their children's illnesses.	Development of an empirical model showing illness reporting decisions as a function of price and income, among others, using data from the first phase of the Nepal Living Standards Survey.	Income and the price that parents expect to pay for the treatment of their children's non chronic ailments determine their decision to report an illness, when other variables are controlled.
Potdar, Fetters, and Phirun (2008)	Describe the loss of productive time and income related to abortion care and care seeking among 110 women presenting at public and private sector abortion providers in Cambodia.	Exit interviews with the women and descriptive analysis to examine time and income lost, against a number of explanatory variables.	For women and their families, high-quality abortion care is too difficult to find and costly to obtain.
Prevention of Maternal Mortality Network (1992) West Africa	Identify barriers to the treatment of obstetric emergencies in rural communities.	Focus group discussions with 184 healthcare providers and community members.	Transport costs are high, particularly when vehicles needed in an emergency are scarce. Ambulances for referral patients are not available.
Renaudin et al. (2007) Mauritania	Look into at the introduction of obstetric risk insurance to assess the financial access women have to emergency obstetric care.	Biannual quality assessment of the obstetric risk insurance program instituted by the Ministry of Health to allow voluntary obstetric risk sharing among pregnant women. The fixed premium is set at \$21.60, for an obstetric package that includes emergency care, as well as hospital and postnatal care. The poorest are enrolled free of charge, ensuring equity.	95% of pregnant women in the catchment area, including 0.5% of the poorest pregnant women, were enrolled and utilization increased over the 3-year period of implementation. Revenue raised from the program allowed the health system to cover all operating costs except salary costs. Staff were offered financial incentives amounting to as much as 121% of their salary. Satisfaction with the program is still high, despite a decline in the quality of care, but women would like to have more information about the services.
Richard et al. (2007)	Describe the implementation of a cost-sharing system for emergency obstetric care in an urban health district of Ouagadougou, Burkina Faso, and analyze its results after 1 year of activity.	Community survey, anthropological study, and use of routine data from hospital files and registers and specific data collected on major obstetric interventions (MOIs) in all hospitals used by the district population, before and after the implementation of the cost-sharing system, to measure service availability and use, service quality, knowledge of the system in the community, and financial viability of the system.	Direct cost of an MOI, including referral cost: \$136 on average, shared through the cost sharing system among families (\$46), health centers (\$15), the Ministry of Health (\$38), and local authorities (\$37). Rate of cost recovery: 91.3%. The number of emergency referrals by health centers increased from 84 in 2004 to 683 in 2005. MOIs per 100 expected births increased from 1.95% in 2003 to 3.56% in 2005, and MOIs for AMI increased from 0.75% to 1.42%.
Richard, Witter, and de Brouwere (2010)	Analyze of eight case studies to understand better current experiments in reducing financial barriers to maternal care.	Analysis of the results of the eight case studies, using published data.	Key ingredients of long-term sustained improvements in maternal health care: local commitment, perseverance and adaptability over time, a holistic approach that addresses demand- and supply-side barriers, and a focus on universal coverage as the ultimate, if not immediate, goal.

C-section = cesarean, MOI = major obstetric interventions,

Reference Location	Study Question	Methods and Data	Key Findings
Rutherford et al. (2009); The Gambia	Assess whether traditional and nontraditional measures of access to healthcare are associated with under 5 mortality rates.	Case-control study within the FDSS, involving children below 5 years of age (n=140) who had died between 31 December 2003 and 30 April 2006. Each case was matched in age and sex with controls. The FDSS covers 17,000 rural and 26,000 urban dwellers.	Of traditional measures of access, only rural vs urban is important, with children from rural areas more likely to die. For nontraditional measures, children are more likely to die if their primary caregivers lack help with meals or have no one who can offer good advice. The study highlighted the importance of reducing travel time and distance to health facilities, and the required improvements in caregivers.
Sauerborn et al. (1995)	Examine the strategies used by rural households in Burkina Faso to cope with the costs of illness, in order to avert adverse effects on household production and assets	51 qualitative interviews, a household time allocation study, and a household survey.	1. Intra-household labor substitution is the main strategy for compensating for labor lost to illness. 2. Only wealthy households were able to fully compensate for labor losses by hiring labor or by investing in equipment to enhance productivity. The sales of livestock is the main strategy for coping with the financial costs of health care. 3. Coping with the costs of illness occurs largely at the household level. Inter-household transfers of resources plays only a small role.
Somanathan et al. (2004) Bangladesh, India, Nepal, Pakistan, Sri Lanka	Estimate public and private expenditures on reproductive health services in South Asia.	Estimation of National Health Accounts focusing on reproductive health care; analysis of household data for Sri Lanka, India, and Bangladesh.	Critical gaps and weaknesses in the evidence base make it difficult to draw any firm conclusions about how and to what extent households are impoverished as a result of payments for MNH care. The review was, however, able to identify several ways in which MNH care expenditures contribute to poverty.
Stekelenburg et al. (2004) Zambia	Determine the extent of use of maternal health services and assess the factors that influence women's choices of where to deliver.	In-depth, semi-structured interviews with 332 women, in addition to focus group discussions.	96% of respondents prefer to deliver in a hospital or clinic but only 54% actually delivered had institutional delivery. Distance, unavailability of transport, and uneven distribution of health facilities significantly delay decisions to visit a clinic. Half of those interviewed said that having to walk more than 2 hours to visit a clinic discourages them from making such visits. User fees for delivery are also too high: 59% of respondents said they could not afford the fees.
Titaley et al. (2010)	Explore community members' perspectives on antenatal and postnatal care services, including reasons for using or not using these services in the Garut, Sukabumi, and Ciamis districts of West Java province.	Qualitative study of six villages in three districts of West Java province from March to July 2009.	Women use antenatal and postnatal care services mainly to ensure the health of both mother and infant. The cost of health services and transportation costs are the main financial barriers.
Titaley et al. (2010)	Explore the perspectives of community members and health workers on the use of delivery care services in six villages in West Java province.	Qualitative study involving 20 focus group discussions (FGDs) and 165 in-depth interviews with 295 participants from six villages in three districts of West Java province from March to July 2009. The participants represented mothers, fathers, healthcare providers, traditional birth attendants, and community leaders.	Some community members prefer to use traditional birth attendants and home delivery despite the availability of a village midwife in the village. Physical distance and financial limitations are major constraints on access to and use of trained attendants and institutional delivery.
Tlebere et al. (2007)	Determine the factors affecting the use of maternal health services in South Africa, through a situational analysis of communities.	Quantitative and qualitative research involving semi structured interviews with households, case studies of women with no antenatal care or home birth, and verbal and social autopsies of maternal and infant deaths, in three diverse sites across the country.	(i) Transport availability and distance to facilities are the biggest problems, particularly in rural areas. (ii) Providers communicate very poorly with families. (iii) Health-seeking behavior is better than expected. (iv) Treatment and care by health providers is uneven in quality. (v) HIV/AIDS is a major issue, but the quality of basic maternity and neonatal services should not be overlooked. (vi) Families and communities are untapped resources for improvements in maternal and neonatal health care.

FDSS = Farafenni Demographic Surveillance System, MNH = maternal and newborn health

Reference Location	Study Question	Methods and Data	Key Findings
van Dijk et al. (2009)	Identify patient characteristics, barriers to care, and treatment responses of HIV-infected children seeking care in rural Zambia.	Cross-sectional analysis of HIV-infected children seeking care at Macha Hospital in rural southern Zambia. Information was collected from caregivers and medical records.	91% traveled more than 1 hour to the hospital and 26% traveled more than 5 hours. Most participants in the study (73%) reported difficulties in gaining access to the hospital because of insufficient funds (60%), lack of transportation (54%), and poor roads (32%).
Ye et al. (2010)	Identify the socio-demographic characteristics, knowledge, attitude, and accessibility factors related to the use of ANC services among pregnant women in Kham District, Lao People's Democratic Republic.	Cross-sectional study using two-stage cluster sampling to collect data from 24 selected villages in the district. Interviews (with the help of structured questionnaires) were held with 310 married women of reproductive age who had at least one child and had delivered the last child within 2 years before the study.	Low use of ANC services due to limited knowledge, insufficiently positive attitude, and misconceptions about the services, among other factors
Young, Ali, and Beckham (2009)	Investigate the potential for obtaining iron supplements for maternal anemia from private pharmacies.	In-depth interviews, surrogate customer encounters, a review of the government's medicine records, and observation of participants, to compare and contrast the care given at private pharmacies and public clinics against six characteristics.	The private sector probably has untapped potential for the reduction of maternal anemia in settings in which public health services fall short.

ANC = antenatal care

**Table A2.2: Is the magnitude of MNCH care costs disproportionately large relative to the other expenditures, including other health/social expenditures?**

Reference Location	Study Question	Methods and Data	Key Findings
Afsana (2004) Bangladesh	Examine how the costs incurred in obstetric treatment impede rural poor women's access to obstetric healthcare.	In-depth interviews, informal discussions and observations of 170 pregnant women and providers	Rural and poor families bear enormous costs on C-sections with drugs accounting for the largest share. Informal payments are significant.
Alamgir, Naheed, and Luby (2010)	Estimate out-of-pocket expenditures and explore coping strategies adopted by families in seeking care for children hospitalized with pneumonia.	Survey of caregivers of 90 children and six in-depth interviews with families of children aged 0–5 years admitted to hospital with a diagnosis of pneumonia	Cost of hospitalization as a share of monthly household expenditure: Less than 50% is spent by 75% of all families, and 82% in low income families. Financing cost of care: 76% of families borrow, mortgage or sell assets to finance cost of care. 64% borrowed full cost of admission. 10% borrow at 5–30% of interest rates. Low income families are 10 times more likely than others to borrow.
Amin, Hanson, and Mills (2004)	Examines the existence of price discrimination in obstetric services in two private hospitals in Bangladesh, and consider the welfare consequences of such discrimination.	Data on 1,212 normal and caesarean section patients discharged from the two hospitals were obtained.	Two different forms of price discrimination in obstetric services occurred in both hospitals. First, there was price discrimination according to income, with the poorer users benefiting from a higher discount rate than richer ones. Second, there was price discrimination according to social status, with three high-status occupational groups (doctors, senior government officials, and large businessmen) having the highest probability of receiving some level of discount.
Asante et al. (2007) Ghana	Evaluate the economic outcomes of a fee exemption for maternal delivery in Ghana.	Study was based in 2 regions where policy exemption was applied. A household costs survey was conducted comprising women who had delivered in the 18 months leading to the survey. A sample of 1,500 women were surveyed.	There was a statistically significant decrease in out-of-pocket payments for C-sections and normal delivery at health facilities after the introduction of the policy. The incidence of catastrophic delivery payments also decreased. The policy had a more positive impact on the extreme poor than on the poor. While the policy was beneficial to all users of the service, the rich benefited more than the poor.
Bhat et al. (2009) India	Look into maternal healthcare financing in India (Gujarat) and the introduction of a public–private scheme to operationalize the first referrals units and provide skilled birth attendants.	Developed a questionnaire and detailed interviews over a 2-month period; household survey of beneficiaries (n=262) and nonusers (n=394).	Studies indicated that the scheme is well targeted to the poor but that many poor people do not use the services. Among users, average delivery-related savings amount to INR3,000. However, the scheme is not 100% cost free: patients incur OOP expenses for medicines. The review recommended that the government increase funding for medicines and offer 2 antenatal and 2 postnatal visits.
Bonu et al. (2009) India	Examine the incidence and correlates of catastrophic maternal health expenditure in India.	Uses data from the National Sample Survey of India -2004. The study was restricted to the sub-sample of the women (6,879) who gave birth during the reference period to capture full maternal health care expenditure.	Incidence of families incurring maternal healthcare expenditures greater than 10% of annual household consumption expenditure: 16%. Incidence of those incurring maternal healthcare expenditures greater than 40% of annual capacity to pay: 51%. The second category of catastrophic maternal healthcare expenditures includes all households from the poorest decile and 99% from the second-poorest decile, but only 6% from the richest decile.
Borghini, Bastus, Belizan, et al. (2003) Argentina	Estimate the provider and consumer costs of maternal health services.	Evaluation of provider costs and exit surveys of 40 low-risk pregnant women at 2 hospitals and 2 health centers; measurement of direct and indirect consumer costs of outpatient antenatal care.	With medicines and tests provided free of charge, the total direct costs are much lower relative to the indirect costs associated with the opportunity costs of time spent waiting and traveling.

C-section = cesarean, INR = Indian Rupee, OOP = out of pocket

Reference Location	Study Question	Methods and Data	Key Findings
Borgh, Hanson, Acquah, et al. (2003) Benin/Ghana	Estimate the total costs to women and their families associated with spontaneous vaginal delivery and five types of near-miss obstetric complications: anemia, hypertension, hemorrhage, sepsis, and dystocia. Assess affordability in relation to household cash expenditures.	Retrospective evaluation of costs among 121 mothers in three hospitals in Ghana; a prospective evaluation of costs among 420 pregnant women in two hospitals in Benin; direct and indirect costs measured.	Share of total annual household expenditures: vaginal delivery, 2%–5% in Benin, 1–3% in Ghana; anemia, 8%–18% in Benin, 3%–6% in Ghana; hypertension, 15%–23% in Benin, 4%–8% in Ghana; hemorrhage, 13%–20% in Benin, 5%–8% in Ghana; sepsis, 13%–32% in Benin, 4%–16% in Ghana; dystocia, 23%–34% in Benin, 3%–14% in Ghana.
Hotchkiss (2000) Rajasthan, India	Investigate RCH service use and expenditure patterns among households.	Household survey of random sample of 1,100 households (6,869 individuals), including a separate questionnaire for women.	Share of total household expenditures in Rajasthan: antenatal and postnatal care, 2.4%; childbirth- and pregnancy-related care: 3.1%.
Mota et al. (2009) Zomba, Malawi	Estimate the frequency of use of informal and formal services, medications, and household costs associated with malaria fever among children and adults in rural and urban areas.	Survey of 508 households using interviews. The survey covered 368 children below 5 years old, 665 children 5–14 years old, and 1,310 adults (15 years old and over).	Healthcare costs for malaria episodes as a share of total fortnightly household expenditures: 9%–14% for children below 5 years old, depending on use of formal and informal services; 25% (formal), 11% (informal) for children 5–14 years old; and 18% for adults (15 years and over), for both formal and informal services.
Nanda (2002) Africa	Examine the implications of user fees for women's use of healthcare services, on the basis of selected studies in Africa.	Literature review.	User fees should be examined in relation to the entire consumption profile of households, including the prices of other goods.
Prata et al. (2004) Tanzania	Examine the costs of maternal health care in Tanzania and estimate how much households can be expected to contribute to these expenses if a minimum benefit package were to be implemented.	Regression analysis of data from the Tanzania LSMS 1993 on 5,000 women of reproductive age.	Share of maternal healthcare costs in total expenditure: 4.4% on average.
Saksena et al. (2010) Tanzania	Estimate the magnitude of out-of-pocket expenditures for pediatric hospital admissions.	Interviews with 510 caregivers of children upon discharge from 11 district (government-owned), regional (government-owned), or district-designated (church-owned) hospitals; measurement of the share of admission-related out-of-pocket expenditures in total household expenditures in the previous month.	Share of hospitalization costs in total household expenditures in the previous month: average 35%, 81% for the poorest quintile compared with 12% for the richest quintile. To finance the costs of care, 36% receive money from other family members and friends, 43% use their savings, 11% borrow, and 19% sell assets. A loss of income resulting from a child's admission reported by 71%.
Somanathan et al. (2004) Bangladesh, India, Nepal, Pakistan, Sri Lanka	Estimate public and private expenditures on reproductive health services in South Asia.	Estimation of National Health Accounts focusing on reproductive health care; analysis of household data for Sri Lanka, India, and Bangladesh.	Critical gaps and weaknesses in the evidence base make it difficult to draw any firm conclusions about how and to what extent households are impoverished as a result of payments for MNH care. The review was, however, able to identify several ways in which MNH care expenditures contribute to poverty.
Saulo et al. (2008)	Estimate willingness to pay and ability to pay for artemisinin-based combination therapy (ACT) for children below 5 years old for uncomplicated malaria in an areas not previously reached by ACT at the time of the study (2004).	Structured interviews and focus group discussions with 265 mothers and household heads, healthcare workers, and village leaders. Descriptive analyses with multivariate adjustment for potential confounding factors.	Median share of annual household consumption expenditures, based on 2001 average annual household consumption data: nonsubsidized ACT, 0.9%; subsidized Coartem, 0.1%. The cost nonsubsidized ACT represents 7% of total annual expenditure on food and 33% of total annual expenditure on healthcare. Willingness to pay TZS500 for a child's dose of ACT: 92%.

RCH = reproductive and child health, LSMS = Living Standard Measurement Survey

**Table A2.3: Do MNCH care expenditures have an impoverishing effect on individuals and households respectively?**

Reference Location	Study Question	Methods and Data	Key Findings
Afsana (2004) Bangladesh	Examine how the costs incurred in obstetric treatment impede rural, poor women's access to obstetric healthcare.	In-depth interviews, informal discussions and observations of 170 pregnant women and providers.	Rural and poor families bear enormous costs on C-sections with drugs accounting for the largest share. Informal payments are significant.
Alamgir, Naheed, and Luby (2010)	Estimate out-of-pocket expenditures and explore coping strategies adopted by families in seeking care for children hospitalized with pneumonia.	Survey of caregivers of 90 children and six in-depth interviews with families of children aged 0–5 years admitted to hospital with a diagnosis of pneumonia.	Cost of hospitalization as a share of monthly household expenditure: Less than 50% is spent by 75% of all families, and 82% in low income families. Financing cost of care: 76% of families borrow, mortgage or sell assets to finance cost of care. 64% borrowed full cost of admission. 10% borrow at 5–30% of interest rates. Low income families are 10 times more likely than others to borrow.
Asante et al. (2007) Ghana	Evaluate the economic outcomes of a fee exemption for maternal delivery in Ghana.	Study was based in 2 regions where policy exemption was applied. A household costs survey was conducted comprising women who had delivered in the 18 months leading to the survey. A sample of 1,500 women were surveyed.	There was a statistically significant decrease in out-of-pocket payments for C-sections and normal delivery at health facilities after the introduction of the policy. The incidence of catastrophic delivery payments also decreased. The policy had a more positive impact on the extreme poor than on the poor. While the policy was beneficial to all users of the service, the rich benefited more than the poor.
Bogg, Wang, and Diwan 2002; People's Republic of China	Examine the socioeconomic variables associated with essential maternal healthcare services following health sector reforms.	Cross-sectional and retrospective household survey (N: 5,756) and micro-level observations.	(i) Delivery fees: 10% of the average annual household income; (ii) decrease in use of skilled attendants; (iii) majority of noninsured women delivering out of hospital; (iv) differences in adverse pregnancy outcomes (miscarriages and stillbirths) between women paying out of pocket and those covered by insurance.
Borghi et al. (2004) Nepal	Quantify household costs of delivery at a health facility or at home, financing sources and possible coping mechanisms.	Household survey (720 women); checking of validity of payments against hospital bills.	Home delivery is costly because of payments to attendants and supplies purchased. Costs of facility-based delivery: travel costs and opportunity costs of time. Facility-based C-sections are up to 8 times more expensive than normal delivery.
Borghi, Bastus, Belizan, et al. (2003) Argentina	Estimate the provider and consumer costs of maternal health services.	Evaluation of provider costs and exit surveys of 40 low-risk pregnant women at 2 hospitals and 2 health centers; measurement of direct and indirect consumer costs of outpatient antenatal care.	With medicines and tests provided free of charge, the total direct costs are much lower relative to the indirect costs associated with the opportunity costs of time spent waiting and traveling.
Huy et al. (2009)	Estimate the economic burden of dengue.	Interviews using a standardized questionnaire to determine the related medical and nonmedical costs to households, and the estimated income loss, for a prospective, community-based, matched case-control study.	Hospitalization almost triples the costs of dengue treatment (from \$14.3 to \$40.1) and doubles the costs of treating other febrile illnesses (from \$17.0 to \$36.2). To finance the cost of a febrile illness, 67% of households incur a debt of \$23.5 on average, and higher if hospitalization is involved, compared with about \$4.5 for outpatient treatment. Each household spends an average of \$9.5 per week on food of \$ 9.5 per household (range 2.5–21.3).
Kawaine et al. (1998)	Measure the costs to consumers of cesarean delivery at public, private, and NGO facilities.	Consumer expenditure survey at 1 public, 1 private, and 1 NGO facility. Data were collected throughout the hospitalization period, and follow-up interviews were conducted with the families after the patients were discharged.	Costs were highest at the private hospital and lowest at the public hospital. The charge for the operation was the most expensive aspect of the expenditure at the private and NGO hospitals. The public facility did not charge for the operation.

C-section = cesarean, NGO = nongovernmental organization

Reference Location	Study Question	Methods and Data	Key Findings
Kowalewski, Mujinja, and Jahn (2002) Tanzania	Assess the consumer costs of maternity services.	Collection of quantitative cost data through interviews with 21 key informants and 107 women at ANC clinics and maternity wards.	Travel costs account for about one-half of all financial costs. Time costs are consistently larger than financial costs.
Nahar and Costello (1998) Bangladesh	Study the costs and affordability of free maternity services at government facilities.	Questionnaire survey and in-depth interviews with 220 postpartum mothers and their husbands, at 5 health facilities.	Free maternal healthcare in Bangladesh involves considerable hidden costs. Travel costs account for 20% of all delivery costs while medicines compose 55% of C-section costs but only 39% of normal delivery costs.
Nanda (2002) Africa	Examine the implications of user fees for women's use of healthcare services, on the basis of selected studies in Africa.	Literature review.	User fees should be examined in relation to the entire consumption profile of households, including the prices of other goods.
Perkins et al. (2009)	Estimate out-of-pocket expenditures for facility-based maternity care in Burkina Faso, Kenya, and Tanzania.	Two population-based surveys; interviews with women who had given birth in the recent past (6,345 in 2003 and 8,302 in 2006).	Share of monthly household expenditures for normal delivery: Kenya, 17%; Burkina , 8%; Tanzania, 6%. For complicated delivery: Kenya, 35%; Burkina Faso, 16%; Tanzania, 10%. In the three countries, women in the poorest quintile do not pay significantly less for maternity costs than those in the richest quintile.
Prata et al. (2004) Tanzania	Examine the costs of maternal health care in Tanzania and estimate how much households can be expected to contribute to these expenses if a minimum benefit package were to be implemented.	Regression analysis of data from the Tanzania LSMS 1993 on 5,000 women of reproductive age.	Share of maternal healthcare costs in total expenditure: 4.4% on average.
Quayyum et al. (2009)	Examine household expenditures for obstetric care, their economic impact on households, and, the protective effect of insurance on the poor.	Survey of women (372 near-miss cases, 146 normal deliveries, 98 cesarean sections) using patient records in three hospitals, and follow-up interviews over a 6-month period.	Average cost of a complicated delivery at two public hospitals: 23%–32% of the annual household income at the subsistence level. Among the respondents, 28% had incurred catastrophic expenditures of more than 40% of disposable income. 68% of the poorest households would be making catastrophic payments if there was no insurance.

ANC = antenatal care, C-section = cesarean, LSMS = Living Standard Measurement Survey

**Table A2.4: What are the main coping strategies that households make use of when catering for MNCH care expenditure?**

Reference Location	Study Question	Methods and Data	Key Findings
Alamgir, Naheed, and Luby (2010)	Estimate out-of-pocket expenditures and explore coping strategies adopted by families in seeking care for children hospitalized with pneumonia.	Survey of caregivers of 90 children and six in-depth interviews with families of children aged 0–5 years admitted to hospital with a diagnosis of pneumonia.	Cost of hospitalization as a share of monthly household expenditure: Less than 50% is spent by 75% of all families, and 82% in low income families. Financing cost of care: 76% of families borrow, mortgage or sell assets to finance cost of care. 64% borrowed full cost of admission. 10% borrow at 5–30% of interest rates. Low income families are 10 times more likely than others to borrow.
Afsana (2004) Bangladesh	Examine how the costs incurred in obstetric treatment impede rural poor women's access to obstetric healthcare.	In-depth interviews, informal discussions and observations of 170 pregnant women and providers.	Rural and poor families bear enormous costs on C-sections with drugs accounting for the largest share. Informal payments are significant.
Benjamin, Sapak, and Purai (2001); Papua New Guinea	Examine the effects of user charges on the use of obstetric care services in the national capital district.	Interviews with 482 women attending antenatal and postnatal clinics or wards.	24% of women who were interviewed were unable to pay the user fees. Spouses and relatives typically help with the health expenditure costs.
Borghi et al. (2004) Nepal	Quantify household costs of delivery at a health facility or at home, financing sources and possible coping mechanisms.	Household survey (720 women); checking of validity of payments against hospital bills.	Home delivery is costly because of payments to attendants and supplies purchased. Costs of facility-based delivery: travel costs and opportunity costs of time. Facility-based C-sections are up to 8 times more expensive than normal delivery.
Borghi, Hanson, Acquah, et al. (2003) Benin/Ghana	Estimate the total costs to women and their families associated with spontaneous vaginal delivery and five types of near-miss obstetric complications: anemia, hypertension, hemorrhage, sepsis, and dystocia. Assess affordability in relation to household cash expenditures.	Retrospective evaluation of costs among 121 mothers in three hospitals in Ghana; a prospective evaluation of costs among 420 pregnant women in two hospitals in Benin; direct and indirect costs measured.	Share of total annual household expenditures: vaginal delivery, 2%–5% in Benin, 1–3% in Ghana; anemia, 8%–18% in Benin, 3%–6% in Ghana; hypertension, 15%–23% in Benin, 4%–8% in Ghana; hemorrhage, 13%–20% in Benin, 5%–8% in Ghana; sepsis, 13%–32% in Benin, 4%–16% in Ghana; dystocia, 23%–34% in Benin, 3%–14% in Ghana
Borghi, Storeng, and Filippi (2008) Africa and South Asia	Review the evidence on the obstetric care costs to households and seek to both the extent to which these costs hinder access to facility-based care for certain groups, and the impact of resulting expenditures on the household economy for those who do reach the facility.	Literature review.	Obstetric care costs in hospitals were shown to be significant. The interaction between official user charges and unofficial costs, transport costs and time costs results in catastrophic expenditures and debt, particularly in the event of complications.
Chuma, Okungu, and Molyneux (2010) Kenya	Look into the barriers to prompt and effective treatment of malaria.	A cross sectional survey (n=708 households) along with focus group discussions, semi structured interviews with health workers (n=34) and patient exit survey (n=359) in four poor malaria endemic districts.	Coping strategies: borrowing money and getting treatment on credit.
Fofana et al. (1997) Sierra Leone	Evaluate an intervention involving loans to the community to promote the use of obstetric services.	Review of maternity admissions (major obstetric complications) records for 1 year before and after the intervention, and community loan fund and non-loan fund chiefdoms.	Use of referral hospitals through loan fund chiefdoms by women with pregnancy complications more than doubled pre and post interventions. On the other hand, the use of referral hospitals through non-loan fund chiefdoms resulted in little difference in pre and post interventions.

C-section = cesarean

Reference Location	Study Question	Methods and Data	Key Findings
Huy et al. (2009)	Estimate the economic burden of dengue.	Interviews using a standardized questionnaire to determine the related medical and nonmedical costs to households, and the estimated income loss, for a prospective, community-based, matched case-control study.	Hospitalization almost triples the costs of dengue treatment (from \$14.3 to \$40.1) and doubles the costs of treating other febrile illnesses (from \$17.0 to \$36.2). To finance the cost of a febrile illness, 67% of households incur a debt of \$23.5 on average, and higher if hospitalization is involved, compared with about \$4.5 for outpatient treatment. Each household spends an average of \$9.5 per week on food of \$9.5 per household (range 2.5–21.3).
Iyengar et al. (2009) India	Examine pregnancy-related deaths in Rajasthan, India.	Structured interviews with the families of 156 of 160 women who had died during childbirth.	20% of deaths were pregnancy related (77% of these died during the postpartum period) and 74% of the deaths occurred at home. Direct costs accounted for 58% of the deaths, and indirect costs for 29%. Structured questions brought out deficiencies in the quality of antenatal care. For women who did seek care, the median distance to each facility was 20km and the mean distance was 33km. 77% of deaths occurred during the postpartum period, drawing attention to the importance of monitoring during delivery and the 24 hours after.
Kowalewski, Mujinja, and Jahn (2002) Tanzania	Assess the consumer costs of maternity services.	Collection of quantitative cost data through interviews with 21 key informants and 107 women at ANC clinics and maternity wards.	Travel costs account for about one-half of all financial costs. Time costs are consistently larger than financial costs.
Nahar and Costello (1998) Bangladesh	Study the costs and affordability of free maternity services at government facilities.	Questionnaire survey and in-depth interviews with 220 postpartum mothers and their husbands, at 5 health facilities.	Free maternal healthcare in Bangladesh involves considerable hidden costs. Travel costs account for 20% of all delivery costs while medicines compose 55% of C-section costs but only 39% of normal delivery costs.
Nanda (2002) Africa	Examine the implications of user fees for women's use of healthcare services, on the basis of selected studies in Africa.	Literature review.	User fees should be examined in relation to the entire consumption profile of households, including the prices of other goods.
Perkins et al. (2009) Africa	Estimate out-of-pocket expenditures for facility-based maternity care in Burkina Faso, Kenya, and Tanzania.	Two population-based surveys; interviews with women who had given birth in the recent past (6,345 in 2003 and 8,302 in 2006).	Share of monthly household expenditures for normal delivery: Kenya, 17%; Burkina Faso, 8%; Tanzania, 6%. For complicated delivery: Kenya, 35%; Burkina Faso, 16%; Tanzania, 10%. In the three countries, women in the poorest quintile do not pay significantly less for maternity costs than those in the richest quintile.
Sauerborn, Adams, and Hien (1996)	Examine rural household strategies for coping with the costs of illness.	51 qualitative interviews, household time allocation study and household survey.	Main household strategies for coping with the financial and time costs of illness: sale of livestock and intra-household labor substitution. Households often avoid costs by ignoring illness or forgoing care.
Somanathan et al. (2004) Bangladesh, India, Nepal, Pakistan, Sri Lanka	Estimate public and private expenditures on reproductive health services in South Asia.	Estimation of National Health Accounts focusing on reproductive health care; analysis of household data for Sri Lanka, India, and Bangladesh.	Critical gaps and weaknesses in the evidence base make it difficult to draw any firm conclusions about how and to what extent households are impoverished as a result of payments for MNH care. The review was, however, able to identify several ways in which MNH care expenditures contribute to poverty.

C-section = cesarean, INR = Indian Rupee, OOP = out of pocket

**Table A2.5: Does the financial burden associated with MNCH ill health fall disproportionately on the poor and other vulnerable groups?**

Reference Location	Study Question	Methods and Data	Key Findings
Alamgir, Naheed, and Luby (2010)	Estimate out-of-pocket expenditures and explore coping strategies adopted by families in seeking care for children hospitalized with pneumonia.	Survey of caregivers of 90 children and six in-depth interviews with families of children aged 0–5 years admitted to hospital with a diagnosis of pneumonia.	Cost of hospitalization as a share of monthly household expenditure: Less than 50% is spent by 75% of all families, and 82% in low income families. Financing cost of care: 76% of families borrow, mortgage or sell assets to finance cost of care. 64% borrowed full cost of admission. 10% borrow at 5–30% of interest rates. Low income families are 10 times more likely than others to borrow.
Amin et al. (2004) Bangladesh	Examine price discrimination for obstetric care in two private hospitals	Hospital patient records of 1212 women who delivered normally or by C-section surveyed using a structured questionnaire.	Two systems of price discrimination: (1) income based with poorer users receiving discounts at higher rates than wealthier users (2) occupational status based where high and middle-income earners received discounts.
Amin, Hanson, and Mills (2004)	Examines the existence of price discrimination in obstetric services in two private hospitals in Bangladesh, and consider the welfare consequences of such discrimination.	Data on 1,212 normal and caesarean section patients discharged from the two hospitals were obtained.	Two different forms of price discrimination in obstetric services occurred in both hospitals. First, there was price discrimination according to income, with the poorer users benefiting from a higher discount rate than richer ones. Second, there was price discrimination according to social status, with three high-status occupational groups (doctors, senior government officials, and large businessmen) having the highest probability of receiving some level of discount.
Ansah et al. (2009) Ghana	Assess the impact of free healthcare on use and health outcomes in relation to malaria in children in Ghana.	Household-randomized, controlled, unblinded trial involving 2,194 households with 2,592 children below 5 years of age. Outcome measures: moderate anemia, use of healthcare.	Free primary healthcare has altered the healthcare seeking behavior of households assigned to the intervention group that sought formal healthcare more. Introducing free primary healthcare has not led to any measurable difference in health outcomes.
Barros, Santos, and Bertoldi (2008) Brazil	Assess the means of financing delivery and the magnitude of the associated out-of-pocket expenditures.	Birth cohort study; perinatal interviews with 4,189 women and 3-month follow-up interviews with 3,946 women; gathering of information on delivery financing and health plan coverage and expenditures.	High level of equity in maternal healthcare provision among wealth groups: 95% of the 40% poorest mothers financed through free national health system with less than 1% reporting some out-of-pocket expenditure; among the richest 20% households, 50% financed by health plans, 33% by national health system, and 17% through out-of-pocket expenditures.
Bhat et al. (2009) India	Look into maternal healthcare financing in India (Gujarat) and the introduction of a public–private scheme to operationalize the first referrals units and provide skilled birth attendants.	Developed a questionnaire and detailed interviews over a 2-month period; household survey of beneficiaries (n=262) and nonusers (n=394).	Studies indicated that the scheme is well targeted to the poor but that many poor people do not use the services. Among users, average delivery-related savings amount to INR3,000. However, the scheme is not 100% cost free: patients incur OOP expenses for medicines. The review recommended that the government increase funding for medicines and offer 2 antenatal and 2 postnatal visits.

C-section = cesarean, INR = Indian Rupee, OOP = out of pocket

Reference Location	Study Question	Methods and Data	Key Findings
Alamgir, Naheed, and Luby (2010)	Estimate out-of-pocket expenditures and explore coping strategies adopted by families in seeking care for children hospitalized with pneumonia.	Survey of caregivers of 90 children and six in-depth interviews with families of children aged 0–5 years admitted to hospital with a diagnosis of pneumonia.	Cost of hospitalization as a share of monthly household expenditure: Less than 50% is spent by 75% of all families, and 82% in low income families. Financing cost of care: 76% of families borrow, mortgage or sell assets to finance cost of care. 64% borrowed full cost of admission. 10% borrow at 5–30% of interest rates. Low income families are 10 times more likely than others to borrow.
Amin et al. (2004) Bangladesh	Examine price discrimination for obstetric care in two private hospitals	Hospital patient records of 1212 women who delivered normally or by C-section surveyed using a structured questionnaire.	Two systems of price discrimination: (1) income based with poorer users receiving discounts at higher rates than wealthier users (2) occupational status based where high and middle-income earners received discounts
Amin, Hanson, and Mills (2004)	Examines the existence of price discrimination in obstetric services in two private hospitals in Bangladesh, and consider the welfare consequences of such discrimination.	Data on 1,212 normal and caesarean section patients discharged from the two hospitals were obtained.	Two different forms of price discrimination in obstetric services occurred in both hospitals. First, there was price discrimination according to income, with the poorer users benefiting from a higher discount rate than richer ones. Second, there was price discrimination according to social status, with three high-status occupational groups (doctors, senior government officials, and large businessmen) having the highest probability of receiving some level of discount.
Ansah et al. (2009) Ghana	Assess the impact of free healthcare on use and health outcomes in relation to malaria in children in Ghana.	Household-randomized, controlled, unblinded trial involving 2,194 households with 2,592 children below 5 years of age. Outcome measures: moderate anemia, use of healthcare.	Free primary healthcare has altered the healthcare seeking behavior of households assigned to the intervention group that sought formal healthcare more. Introducing free primary healthcare has not led to any measurable difference in health outcomes.
Barros, Santos, and Bertoldi (2008) Brazil	Assess the means of financing delivery and the magnitude of the associated out-of-pocket expenditures.	Birth cohort study; perinatal interviews with 4,189 women and 3-month follow-up interviews with 3,946 women; gathering of information on delivery financing and health plan coverage and expenditures.	High level of equity in maternal healthcare provision among wealth groups: 95% of the 40% poorest mothers financed through free national health system with less than 1% reporting some out-of-pocket expenditure; among the richest 20% households, 50% financed by health plans, 33% by national health system, and 17% through out-of-pocket expenditures.
Bhat et al. (2009) India	Look into maternal healthcare financing in India (Gujarat) and the introduction of a public-private scheme to operationalize the first referrals units and provide skilled birth attendants.	Developed a questionnaire and detailed interviews over a 2-month period; household survey of beneficiaries (n=262) and nonusers (n=394).	Studies indicated that the scheme is well targeted to the poor but that many poor people do not use the services. Among users, average delivery-related savings amount to INR3,000. However, the scheme is not 100% cost free: patients incur OOP expenses for medicines. The review recommended that the government increase funding for medicines and offer 2 antenatal and 2 postnatal visits.
Bonu et al. (2009) India	Examine the incidence and correlates of catastrophic maternal health expenditure in India.	Uses data from the National Sample Survey of India -2004. The study was restricted to the sub-sample of the women (6,879) who gave birth during the reference period to capture full maternal health care expenditure.	Incidence of families incurring maternal healthcare expenditures greater than 10% of annual household consumption expenditure: 16%. Incidence of those incurring maternal healthcare expenditures greater than 40% of annual capacity to pay: 51%. The second category of catastrophic maternal healthcare expenditures includes all households from the poorest decile and 99% from the second-poorest decile, but only 6% from the richest decile.

C-section = cesarean, INR = Indian Rupee, OOP = out of pocket

Reference Location	Study Question	Methods and Data	Key Findings
Borghji et al. (2004) Nepal	Quantify household costs of delivery at a health facility or at home, financing sources and possible coping mechanisms.	Household survey (720 women); checking of validity of payments against hospital bills.	Home delivery is costly because of payments to attendants and supplies purchased. Costs of facility-based delivery: travel costs and opportunity costs of time. Facility-based C-sections are up to 8 times more expensive than normal delivery.
Ensor et al. (2008) Indonesia	Examine whether the poor are adequately benefiting from resources allocated for maternal healthcare.	Public funding flow analysis and population-based survey of 1,230 women who had delivered in the 24 months leading up to the survey.	Poor households have unequal access to skilled attendants at delivery. The high cost of midwifery service charges deters poor women from gaining access to skilled delivery care.
Huy et al. (2009)	Estimate the economic burden of dengue.	Interviews using a standardized questionnaire to determine the related medical and nonmedical costs to households, and the estimated income loss, for a prospective, community-based, matched case-control study.	Hospitalization almost triples the costs of dengue treatment (from \$14.3 to \$40.1) and doubles the costs of treating other febrile illnesses (from \$17.0 to \$36.2). To finance the cost of a febrile illness, 67% of households incur a debt of \$23.5 on average, and higher if hospitalization is involved, compared with about \$4.5 for outpatient treatment. Each household spends an average of \$9.5 per week on food of \$9.5 per household (range 2.5–21.3).
Kawne et al. (1998)	Measure the costs to consumers of cesarean delivery at public, private, and NGO facilities.	Consumer expenditure survey at 1 public, 1 private, and 1 NGO facility. Data were collected throughout the hospitalization period, and follow-up interviews were conducted with the families after the patients were discharged.	Costs were highest at the private hospital and lowest at the public hospital. The charge for the operation was the most expensive aspect of the expenditure at the private and NGO hospitals. The public facility did not charge for the operation.
Manzi et al. (2005) Tanzania	Examine the determinants of out-of-pocket expenditures for under-5 healthcare and their variation across wealth groups and health facilities.	Two household surveys covering 2,400 households in 1999 and 2002; multiple linear regression; measurement of magnitude of out-of-pocket payments.	Household SES is positively associated with out-of-pocket payments. Least-poor families are 2.5 times more likely to seek care than the poorest households, suggesting non-affordability of healthcare among poorer groups.
Mayhew et al. (2008) Afghanistan	Examine the factors that determine the use of skilled birth attendants.	Cross-sectional surveys of 617 health facilities and 13,843 households in 2004; covering 9,917 women who gave birth in the 2 years leading up to the survey; multivariate analysis.	The use of skilled birth attendants in Afghanistan differs substantially between wealth quintiles: 42% among the richest households vs 6% among the poorest.
Nanda (2002) Africa	Examine the implications of user fees for women's use of healthcare services, on the basis of selected studies in Africa.	Literature review.	User fees should be examined in relation to the entire consumption profile of households, including the prices of other goods.
Prata et al. (2004) Tanzania	Examine the costs of maternal health care in Tanzania and estimate how much households can be expected to contribute to these expenses if a minimum benefit package were to be implemented.	Regression analysis of data from the Tanzania LSMS 1993 on 5,000 women of reproductive age.	Share of maternal healthcare costs in total expenditure: 4.4% on average
Ronsmans et al. (2009) Indonesia	Examine the determinants of maternal mortality and assess the use of skilled delivery care.	Estimation of maternal deaths using an informant-based approach and the capture-recapture method; population-based survey of households to identify women with a live birth or stillbirth in the recent past; midwife census; case-control and cohort analyses to determine maternal mortality trends.	Percentage of women from the highest-income group delivering with skilled attendants: 71%, as opposed to 10% for women from the lowest-income group. Maternal mortality ratio is extremely high for women in the lowest wealth quartile, even among those who gained access to professional care. Limited access to emergency obstetric care, birth traditions, and high direct and indirect costs of delivery care deter poor women from obtaining timely care.

C-section = cesarean, NGO = nongovernmental organization, LSMS = Living Standard Measurement Survey

Reference Location	Study Question	Methods and Data	Key Findings
Rutherford et al. (2009) The Gambia	Assess whether traditional and nontraditional measures of access to healthcare are associated with under 5 mortality rates.	Case-control study within the FDSS, involving children below 5 years of age (n=140) who had died between 31 December 2003 and 30 April 2006. Each case was matched in age and sex with controls. The FDSS covers 17,000 rural and 26,000 urban dwellers.	Of traditional measures of access, only rural vs urban is important, with children from rural areas more likely to die. For nontraditional measures, children are more likely to die if their primary caregivers lack help with meals or have no one who can offer good advice. The study highlighted the importance of reducing travel time and distance to health facilities, and the required improvements in caregivers.
Somanathan et al. (2004) Bangladesh, India, Nepal, Pakistan, Sri Lanka	Estimate public and private expenditures on reproductive health services in South Asia.	Estimation of National Health Accounts focusing on reproductive health care; analysis of household data for Sri Lanka, India, and Bangladesh.	Critical gaps and weaknesses in the evidence base make it difficult to draw any firm conclusions about how and to what extent households are impoverished as a result of payments for MNH care. The review was, however, able to identify several ways in which MNH care expenditures contribute to poverty.
Taffa et al. (2005) Nairobi, Kenya	Understand the determinants of health-care seeking for childhood illnesses among slum dwellers.	Data derived from Nairobi Urban Demographic Surveillance System (NUDSS).	Families with the lowest monthly expenditures are 20%–30% less likely to seek healthcare, depending on the perceived severity of the illness.

FDSS = Farafenni Demographic Surveillance System, MNH = maternal and newborn health

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### **For More Information**

This AusAID financed ADB RETA 6515 project conducted a number of analyses on the impact of out-of-pocket expenditures on maternal, newborn, and child health access in Asia and the Pacific.

Other publications from this project are available from:  
[www.adb.org/publications/](http://www.adb.org/publications/)

## **Impact of Maternal and Child Health Private Expenditure on Poverty and Inequity**

Review of the Literature on the Extent and Mechanisms by which Maternal, Newborn, and Child Healthcare Expenditures Exacerbate Poverty, with Focus on Evidence from Asia and the Pacific

Reducing the burden of poor maternal, neonatal, and child health ill-health requires improvements in both the supply and use of effective maternal, newborn and child health (MNCH) services. The financial costs of treatment are known globally to be a major barrier to accessing essential care, potentially imposing considerable burdens on households. To find out what was known about the scale and impact on families of out-of-pocket expenditures in accessing MNCH care in the Asia-Pacific region, this study undertook a systematic review of the global and regional evidence. The findings show that despite significant progress in improving coverage in the region, millions of families in the region continue to face financial barriers to accessing essential MNCH care, and experience significant financial hardships as a result of out-of-pocket payments. It points to areas where the research needs to be improved both methodologically and in terms of geographical coverage, and where better policies might make a difference.

### **About the Asian Development Bank**

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