

Delivering Safer Motherhood: Sharing the Evidence

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Introduction

Every year an estimated half a million women die in childbirth. Unfortunately, this global figure has changed little since the problem was first highlighted in 1987 at the Safe Motherhood Conference in Nairobi, Kenya. These deaths, mostly in developing countries, are primarily from haemorrhage, infection, and complications of abortion.

Progress has been meagre in the poorest countries due to weak health systems, standard quality of care, inadequate human resources, insufficient political commitment and funds, and lack of data to inform and monitor intervention strategies.

In response, safe motherhood experts have proposed a variety of strategies over the last 20 years to help reduce maternal deaths, based on care in health facilities, as well as at home and in the community. Some strategies focus on increasing skilled attendants at delivery to ensure that more women deliver their babies with health care providers with midwifery skills. Other strategies focus on eliminating delays when complications arise by improving, for example, family awareness of danger signs, referral systems, or emergency obstetric services at health centres and district hospitals.

In 2000, world leaders raised the profile of the problem of maternal death within the United Nations Millennium Declaration framework—a blueprint to promote global efforts to meet the needs of the world's poorest people. Of the eight Millennium Development Goals (MDGs), MDG 5 aims to improve maternal health. Progress has been made in some low-income countries, though challenges remain, particularly in the poorest parts of the world. *The Lancet's* Maternal Survival Series recently highlighted three barriers—financial, physical, and functional—to one of the key indicators of progress,



Around the world, poor women need skilled attendants for better childbirth outcomes.

the use of professional skilled care in childbirth. The series concluded that the best strategy for addressing these barriers, and thereby reducing maternal deaths, was to scale up coverage of deliveries by midwives, working in teams in health centres.¹

Impact, a global research initiative, offers new evidence to move us closer to achieving MDG 5. Impact's goal is to improve maternal health and survival in developing countries by providing rigorous evidence of the effectiveness and cost-effectiveness of safe motherhood strategies and their implications for equity and sustainability. The key messages presented here are the culmination of more than four years of Impact research in Ghana, Burkina Faso, and Indonesia.

Impact provides:

- New and enhanced tools and methods for measuring maternal death and other safe motherhood indicators;
- Pioneering information to help design and implement safe motherhood strategies; and
- Strengthened capacity in developing countries for evaluation and evidence-based decision-making.

Impact Key Message:

Robust evaluation of safe motherhood programmes should play an integral role in the national and international drive towards results-oriented and evidence-based resource allocation and is thus essential, not optional.

*The Population Reference Bureau (PRB) acknowledges the contributions of the Impact research team whose work formed the basis of this policy brief. Contact Impact for permission to use data in this policy brief.

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Key Message:

Remove user fees in health facilities to improve the poorest women's access to essential and emergency obstetric care.

Barriers To Skilled Attendance Can Be Overcome

Results from Immpact's evaluations of maternal health strategies in three countries confirm that the three barriers to accessing skilled delivery care are financial, physical, and functional.

The cost of obstetric care presents an important barrier to its use. All countries that have reduced maternal deaths have offered free care.² Immpact evaluated the government of Ghana's delivery-fee-exemption policy, instituted in 2003 to reduce financial barriers to delivery services. The fee-exemption policy covered normal and assisted deliveries, such as caesareans, and complications that arose from deliveries. Transportation, logistics, and supply

costs were not covered by the fee exemption. When user fees were eliminated, delivery in facilities increased between 10 percent and 20 percent in two districts, mirrored by a similar increase in skilled attendants at delivery.

Making deliveries free for all may be a way to protect the poorest women and households. Findings from Ghana show that the delivery-fee-exemption policy especially benefited the poorest households, significantly cutting out-of-pocket payments for normal and caesarean deliveries at health facilities, as well as reducing catastrophic payments, where the costs for health care are more than 2.5 percent of a person's annual income. After the change in policy, total payments for caesareans decreased by 22 percent. For normal deliveries, total payments dropped by 19 percent at health facilities (see Figure 1).

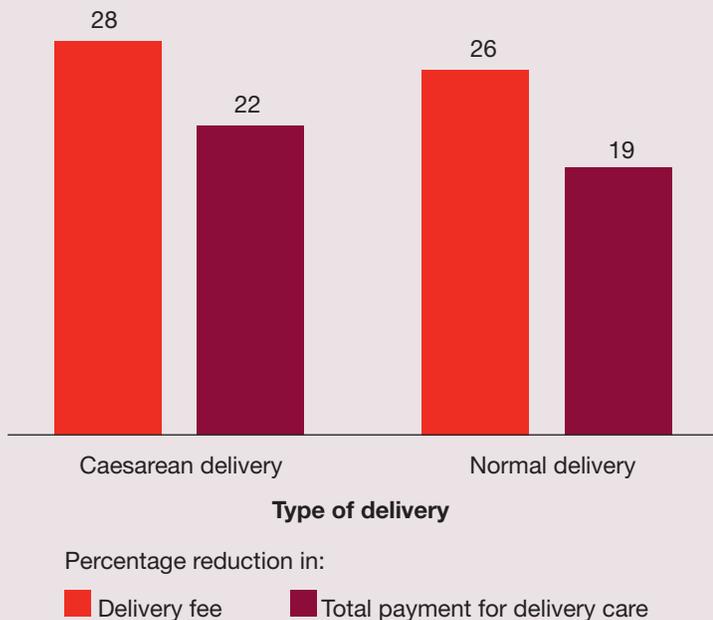
In Indonesia, user fees make up almost 60 percent of the costs to women for maternal care services. Women admitted to hospitals in Indonesia with complications spent an average of US\$255, or about 14 percent of their annual income, while home births with a trained midwife cost US\$51 on average.

The objective of Indonesia's village midwife programme is to eliminate the barrier distance poses to access to skilled care by posting a trained midwife (skilled attendant) in each village in the country. But the user fees present another barrier. Although the programme has resulted in major increases in women's use of skilled attendants at delivery, from 22 percent to 66 percent in urban areas and from 18 percent to 55 percent in rural areas from 1990 to 2003, important financial barriers remain, even when women choose to use a trained midwife at home.

Removing financial barriers through insurance programmes also helps to ensure benefits reach the poor. Indonesia's health insurance programme, which was supposed to cover almost all of the poorest women, alleviated much of the cost for some women of delivering in a hospital (excluding transportation). However, in the community, only a small proportion of the poorest women, 22 percent, obtained a card. The programme was difficult to use and financial coverage was incomplete. In order to pay

Figure 1

Reduction in Out-of-Pocket Payment by Type of Delivery in Health Facilities in Ghana, 2002-05*



*after delivery fee exemption policy was implemented

Note: The **delivery fee** is the total amount paid a delivery service provider. It includes admission fee, drugs, supplies, operating theatre costs, food, tests, and inpatient stay. **Total payment for delivery care** equals the "delivery fee" plus costs for items purchased outside the health facility, including transportation costs, gifts, and other items not listed above, but used in delivery care.

SOURCE: Immpact.

for care that the insurance programme did not cover, women with obstetric complications still accumulated debts.

To improve maternal health, it is also important to remove physical barriers to care. In Ghana, even after the delivery-fee exemption removed significant financial barriers, other obstacles remained, such as the costs and difficulties of travelling long distances to facilities.

Evidence from Indonesia showed that fewer maternal deaths occurred in villages where three or more trained resident midwives provided services compared with villages with no trained midwife, or where trained midwives were shared with other villages (see Figure 2). In fact, women from villages with three or more health workers with midwifery skills had half the risk of maternal death compared with women from villages without such teams.

In Burkina Faso, Immpact assessed the effectiveness of a programme to improve skilled attendance at delivery and demonstrated an increase in institutional deliveries over time, with a significantly larger increase in programme areas compared to a control area. The performance of health facilities was related to use of services. Where facilities functioned well, the number of deliveries was double that in poorly functioning facilities.

Strategies Need to Benefit All Women

Although strategies such as delivery-fee-exemption policies and village midwives have resulted in increased use of services, they can inadvertently increase the rich-poor gap. Overall, Immpact found that many of the poorest women continue to forgo skilled care because of their social and economic status.

Findings from Ghana show that rich households may benefit more than poor households from the delivery-fee-exemption policy. While the out-of-pocket payments declined for all groups after the policy was introduced, payments by the richest households dropped more than those made by the poorest households (22 percent vs. 13 percent).

In Indonesia, Immpact research revealed a huge rich-poor gap—76 percent of the richest

women gave birth with a trained midwife, but only 9 percent of the poorest did so (see Figure 3, page 4). The large majority of women (71 percent) who gave birth with a trained midwife belonged to the top 40 percent of the wealth distribution. And in Indonesia, public spending also favoured the rich, with 40 percent of public resources for maternal health directed to the richest 20 percent of the population.

A rich-poor gap may also exist in “near miss” cases, when life-threatening complications occur during pregnancy, delivery, or postpartum. Research in Burkina Faso showed that women who experienced a life-threatening obstetric complication were poorer than women who had normal deliveries in the same hospital.

Caesarean delivery rates also reflect a rich-poor gap. The poorest women in many countries have extremely limited or no access to this potentially lifesaving surgery. Where caesarean rates are very low, a high proportion of surgery is carried out to save the mother’s life, according to Immpact research. As rates rise, such as in urban areas or among the rich, a greater share of caesarean deliveries are performed

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Key Message:

To significantly reduce maternal deaths in rural areas, ensure that teams of health workers with essential and emergency obstetric skills practise in facilities close to women’s homes.

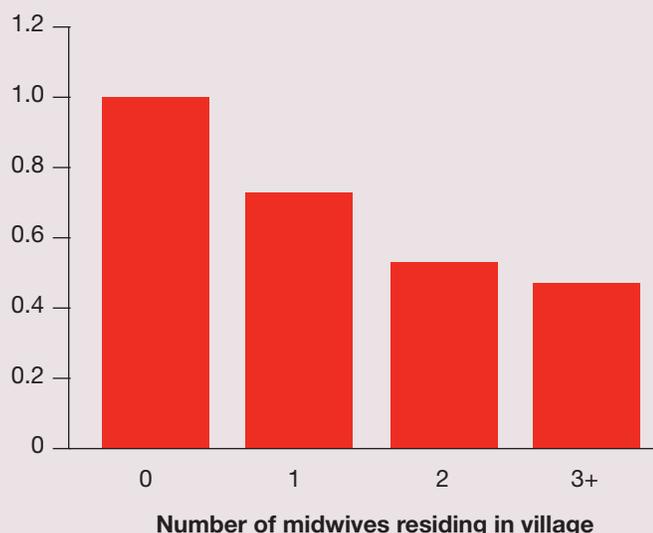
Impact

Key Message:

To increase women’s use of essential and emergency obstetric care, improve how health facilities function.

Figure 2

Relative Risk of Maternal Death by the Number of Midwives Living in Villages in Indonesia, 2005



SOURCE: Immpact.

**Impact
Key Message:**

Maternal care services should be monitored to ensure they can be used by rich and poor women alike.

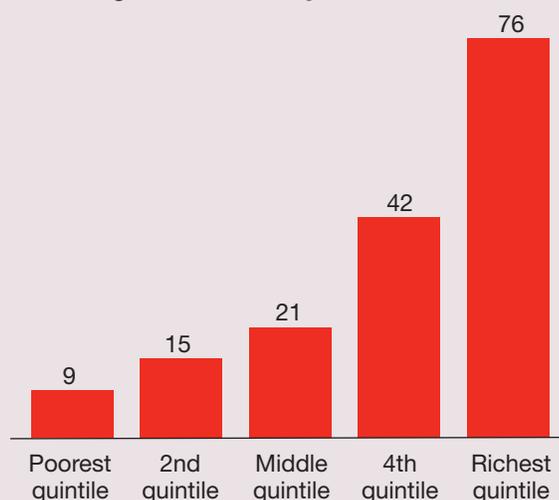
**Impact
Key Message:**

Help the poor and powerless get skilled delivery care to prevent deaths due to pregnancy-related causes.

Figure 3

Use of Skilled Attendants by Wealth Quintile, Indonesia, 2005

Percentage of deliveries by skilled attendant



SOURCE: Immpact.

primarily for foetal or other reasons. In Indonesia, the rich-poor gap in rates of lifesaving emergency obstetric care actually widened between 1986 and 2001, with less than 1 percent of the poor babies delivered by caesarean, compared to 9 percent of the rich ones.

Innovative Thinking Is Needed to Meet MDG 5

To reduce maternal mortality by 75 percent by 2015, the target for MDG 5, we must take a fresh look at robust evidence of what has and has not worked in specific health-system contexts. Such evidence depends on coordinated rigorous measurement of programme inputs, processes, and outcomes. Immpact has adapted and tailored tools and methods for collecting and analyzing information, created new tools where necessary, and used them in evaluations in Ghana, Indonesia, and Burkina Faso.

New and Improved Tools for Measuring Maternal Deaths

Immpact developed new and innovative tools that primarily measured differences in maternal death in relationship to various factors including time, space, medical causes, and socioeconomic group. Immpact identified ways to make data collection more efficient at the community and health-facility level, as well as new techniques to analyze information on maternal death.

Sampling at Service Sites

The Sampling at Service Sites (SSS) method is a new way to estimate the level of maternal death. An improvement on conventional surveys, which typically collect data by visiting households, Immpact's new method lets respondents come to the survey, by collecting data at sites where large numbers of women gather, such as hospitals, health facilities, and markets. This approach makes it possible to gather large samples and therefore produce better data within more realistic and feasible time frames.

In Ghana, this sampling method was carried out in health facilities in one region to estimate regional-level maternal mortality. Comparisons to the World Health Survey in Ghana showed that the SSS estimates were credible: SSS measures of maternal mortality in the region were 734 deaths per 100,000 live births, which is close to the upper end of the range for maternal deaths estimated by the World Health Survey for Ghana (between 252 and 723 deaths per 100,000 live births), as might be expected for a comparatively poor region.

MADE-IN/MADE-FOR

Another innovative measurement tool, MAternal Deaths from INformants (MADE-IN) and MAternal DEath Follow-On Review (MADE-FOR), was developed specifically to improve data collection at the community level. This approach uses existing village administrative systems to collect information about the deaths of women of reproductive age. Possible pregnancy-related

deaths are followed up by visits to a relative to verify and collect information about the woman's socioeconomic status and about the circumstances and cause of death.

In Indonesia, this approach was a practical alternative to household surveys, and has the potential to become a routine source of data on maternal mortality. The MADE-IN/MADE-FOR method used in Indonesia estimated pregnancy-related deaths over a two-year period in the two districts where Impact worked. The districts encompassed 708 villages and a total population of 2.9 million.

The preliminary maternal mortality ratio for these two districts was estimated at 429 maternal deaths per 100,000 live births, which is somewhat higher than the 2002-03 Demographic and Health Survey figure of 307 for the country as a whole. The large number of total maternal deaths identified (more than 450) makes it possible to analyse risks according to village characteristics. For example, the rural maternal mortality ratio is estimated to be more than two times the urban ratio.

RAPID

Rapid Ascertainment Process for Institutional Deaths (RAPID) is a multipurpose tool that uncovers underreporting of maternal deaths in hospitals and makes statistics more complete. This approach identifies weaknesses in the reporting system and opportunities for improvement. Impact used RAPID in all three countries and was able to reclassify maternal deaths more accurately. Impact used RAPID to show that a substantial proportion of maternal deaths were not captured by the routine health information system. For example, the number of maternal deaths identified by this tool was between 35 percent and 130 percent higher than those routinely reported.

InterVA-M

Verbal autopsy (VA) is a technique used to reconstruct the causes and circumstances leading to a death. It involves interviewing the relatives of the deceased. As it often takes a physician a long time to review and interpret this kind of data, a suite of computer

programmes to facilitate interpretation of VAs more quickly, reliably, and consistently (InterVA) was developed. Impact adapted and tested the tool to explore the causes and circumstances leading to a maternal death—hence called InterVA-M. Impact used InterVA-M to collect cause of death information with Personal Digital Assistants (PDAs) in Burkina Faso. This PDA-based method could potentially save time and money if widely used in population-based surveys.

Innovative Evaluation Methods For Safe Motherhood Programmes

Because of the challenges to reliably and cost-effectively measuring maternal death, measurement of other indicators is also important for safe motherhood programme evaluation.

Impact research focused on safe motherhood programme indicators at the district or higher level and paid particular attention to data that was easily collected by routine information systems.

However, even when existing indicators are fine-tuned, no single indicator tells everything we need to know. Instead, guidance for improving access to or quality of care should be drawn from a combination of indicators that measure the effectiveness of maternal health strategies. Impact seeks to identify indicators that can help develop the optimal district- and national-level monitoring tool mix for measuring the effectiveness of maternal health strategies.

Near Miss

Near misses are a promising indicator. Near misses in hospitals can inform safe motherhood programmes about the quality of and access to emergency care. Near misses were common in Indonesia and Burkina Faso, representing up to one-quarter of obstetric admissions to two district hospitals in Indonesia, and about one-third of admissions to a teaching hospital in Burkina Faso. The majority of near-miss cases in both countries arrived in a critical state at the hospitals, suggesting that the cases largely reflect a lack of access rather than poor hospital care.

Impact Key Message:

Maternal death can be measured with special effort, and such measurement is crucial to tracking progress toward MDG 5, which calls for improving maternal health.

Impact Key Message:

Use context-specific indicators to monitor and evaluate safe motherhood.

“...sometimes when you come to the labour ward, you won't get anywhere to put your foot, the whole place will be full with the mothers sleeping on the floor...”

—A Ghanaian midwife

Impact Key Message:

Tools to investigate economic aspects of health systems are vital to comprehensively evaluate programmes and make informed decisions for safe motherhood.

Perceived Barriers and Facilitators to Care

Quality of care is another important feature that can inform the design of safe motherhood programmes. Immpact used qualitative approaches to assess community members' and providers' perceptions of barriers to and facilitators of good quality of care.

Results from Ghana were revealing: Ghanaian providers faced multiple stresses that affected the quality of care they provided— heavy workload, limited staff, poor salaries, perceived neglect by policymakers, lack of accommodation, and delays in promotion. These problems were perceived by providers as constraints to service delivery. While the delivery-fee-exemption policy in Ghana increased access to services, it came with great challenges to quality of care and staff motivation in most public facilities. In fact, the quality of care was poor before the policy change and remained so afterwards.

TRACE

To improve understanding of clinical quality-of-care issues, Immpact developed an innovative tool with great versatility across country settings, known as TRACE, for “tracing adverse and favourable events in pregnancy care.” An adaptation of the confidential enquiries approach, this tool involves setting up panels of health care professionals to assess information on care provided in facilities or the community for cases of maternal death and near misses. The panels use a range of data sources.

The TRACE study in Ghana revealed many adverse factors and instances of substandard care, especially in emergencies: Caesareans appeared to be conducted in haste, with poor patient stabilisation and for doubtful indications; inappropriate and ineffective drugs were administered; and efforts to resuscitate were insufficient. Yet the TRACE study also identified good availability of drugs, supplies, and facilities for comprehensive emergency obstetric care with sufficient midwives and nurses and good provider-staff communications.

The success of the village midwives programme in Indonesia depended on a resident midwife with skills to make timely and safe

referrals. Yet the poorest women often do not benefit from these services.

In Indonesia, TRACE results revealed that trained midwives made good diagnoses and appropriate referrals, but that their management of emergencies was poor, not based on existing standards of care, and hindered by inadequate knowledge and skills. Trained midwives delivering in homes through the village midwives programme were constrained by the physical environment, including pressure imposed by families to adhere to traditional norms associated with childbirth and a lack of autonomy in decision-making when the family was present. Other quality-of-care issues included overcrowding that compromised privacy and provision of care, insufficient light, and difficulty transporting drugs and supplies to women's homes.

Tools for Assessing Health Systems and Economic Consequences of Safe Motherhood Programmes

Policymakers need better tools to assess the costs and financial implications of safe motherhood strategies. Immpact has adapted various economic and financial tools to improve measurement of direct programme costs, productivity costs, and financial flows (how money is budgeted and spent in a system). These tools have generated new knowledge about community values, costs to society, and secondary benefits of safe motherhood programmes.

Financial flows

Collecting and analysing information on how money is allocated and spent at the national, regional, district, and health-facility level are important ways to assess the effects of health system reforms on maternal health. In Ghana, the success of the delivery-fee-exemption policy was threatened by funding problems. Immpact's analysis of financial flows suggested that when funds were initially available through Ghana's Highly Indebted Poor Countries monies, health facilities increased their revenue, with reimbursements more than matching losses from user fees foregone. However, inadequate provision of budgets led to funds running out, which

in turn drove facilities into debt, and led to the eventual suspension of the policy.

In Burkina Faso, personnel and building expenses were the main costs of facility-based maternal health care. In Indonesia, research estimated that where trained midwives had sole responsibility for a village, since they tend to be more productive, the unit cost per midwife was lower than in villages where the midwife has shared responsibility (US \$48 per delivery compared with US\$59).

Productivity costs

Impact's analysis of productivity costs in Ghana showed that reducing maternal ill-health resulted in losses in women's productivity. Impact research revealed that, on average, 26 days were lost due to illness during pregnancy and 23 days were lost due to postpartum maternal illness. However, between one-third and one-half of the lost productivity was made up by household coping strategies in which members of the household, or wider community, undertook the tasks of the ill woman.

Incentives to deliver services

Maternal-health services are staff-intensive. Impact learned from surveys about the importance of incentives and motivations in ensuring that current maternal-health programmes succeed and are sustainable.

While private incentives in Indonesia, such as payments for services outside of the village midwives programme, may bolster midwives' income, these incentives present a barrier to service use by poor women. Despite the relatively equitable distribution of public resources to maternity care, when village midwives work outside the programme, they do not serve their poorest clients.

Capacity Strengthening

Complex evaluations of intervention strategies will always require researchers to develop or adapt tools and methods so they fit the purpose and context. Impact has paid a great deal of attention to strengthening research capacity in countries where it works. Impact demonstrated that it is feasible for all key

stakeholders in low-income countries to be jointly involved in setting the priorities for and researching key health issues. Such a participatory process enables local stakeholders to develop context-specific recommendations that policymakers and health professionals can use. By working with country collaborators in Ghana, Indonesia, and Burkina Faso, Impact has built a large resource base of both developing- and developed-country researchers competent in using the tools.

Strengthening the capacity of developing countries to carry out research is critical, but some challenges remain. They include balancing research objectives with the partners' long-term interests, managing the need for fast results with the process of competency building, and conducting joint needs assessments of capacities and priorities.

Capacity strengthening continues to be one of Impact's goals. For long-term sustainability and to ensure that skills, techniques, and evaluation approaches to safe motherhood programmes are put to maximum use, Impact will be managed in the future through two distinct, but linked, suborganizations.

Impact's research activities will evolve as researchers conduct further work on measuring maternal deaths and evaluating safe motherhood programme strategies. The other suborganization, Impact, will provide technical assistance and training to support evaluations of maternal-health projects and programmes. Through the knowledge accumulated on strategies to reduce maternal death, Impact can help achieve success elsewhere. The capacity and skills to use Impact tools and techniques will be developed through these evaluations and programme implementation.

Research and Evaluation Needs for the Future

It is clear from Impact's research that there is no "quick fix" for preventing maternal deaths. Instead multiple strategies must be undertaken, evaluated, and adapted to specific countries and situations. Impact responds to decision-makers' need for better information about the magnitude and trends in maternal death and

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Key Message:

In-country research groups should be strengthened to conduct objective and robust evaluations of health programmes effectively and to increase local ownership of the process.

programme design and evaluation. Decision-makers need Immpact's evidence to monitor progress toward MDG 5.

Clearly, Immpact has made significant achievements by answering some key questions regarding maternal health and survival, and has added to the evidence base of the field. However, much work remains. Research is still needed to:

- Improve the capture and measurement of quality of care;
- Improve the capture, measurement, and understanding of nonfinancial barriers to use of services;
- Improve programmes to reduce these nonfinancial barriers;
- Better understand the links between contexts, processes, and outcomes, in order to enhance programme design; and
- Improve the measurement of stillbirth and early-newborn deaths so that these can be given due attention.

References

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