



Effects of Performance Based Financing on Maternal Care in Developing Countries: Access, Utilization, Coverage, and Health Impact

Rapid Review of the Evidence

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February 14, 2011

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Executive Summary

Evidence on the effects of Performance Based Financing (PBF) interventions implemented at national and community levels through public and private systems on maternal services and outcomes is beginning to emerge. Interpretation of the evidence is influenced by varying cultural, political, and social environments and measurement approaches. The USAID TRAction Project has undertaken a rapid review of available evidence on the effects of PBF interventions on the health of mothers to guide decisions on future support of implementation research to address gaps identified.

Key sources have included the USAID-funded Health Systems 20/20 publications, the Results-Based Financing for Health programs supported by the multi-donor Health Results Innovation Trust Fund (HRITF) funded by the Governments of Norway and the United Kingdom and administered by the World Bank, WHO publications, the Joint Learning Initiative, and others. This rapid review includes methodologies used to evaluate the PBF effects and suggests implementation research needed to improve evaluations.

Evidence from case studies indicates that there are various PBF approaches that have been tested, such as vouchers for service users, public and private sector contracting, and other forms of payments for achievement of targeted services, which are leading to increased access, quality, and utilization of services. How they are improving maternal health is not entirely clear because of weaknesses in evaluation methods. There is also emerging recognition of the importance of leadership, especially that at the highest political level, which is required to assure support for PBF to be institutionalized and sustained, using national funding mechanisms.

Research areas that come to the fore are listed in this short review. Broadly these cover how best to design, implement, and manage PBF programs; positive and negative effects of the PBF interventions on maternal services and maternal outcomes such as morbidity and mortality; and the evaluation methodologies to assess impacts of these interventions. Additional research areas for consideration include understanding the relationship between PBF interventions or a combination of interventions and the health systems in which they operate in developing country settings; the role of embedded research to monitor performance of PBF interventions and their impacts in different settings; and to identify critical elements that lead to specific outcomes.

1.0 Background

Evidence on the effects of Performance Based Financing (PBF) interventions implemented at national and community levels through public and private systems on maternal services and outcomes is beginning to emerge. Interpretation of the evidence is influenced by varying cultural, political, and social environments as well as measurement approaches. The USAID TRAction has undertaken a rapid review of available evidence on the effects of PBF on the

health of mothers to guide decisions on future support of implementation research to address the knowledge gaps identified.

1.1 Methodology

Evidence presented in this review is gathered from the USAID-funded Health Systems 20/20 publications, the Results Based Financing for Health programs supported by the multi-donor Health Results Innovation Trust Fund (HRITF), funded by the Governments of Norway and the United Kingdom, and administered by the World Bank; WHO publications; the Joint learning Initiative and others. This rapid review includes discussion of methodologies used to evaluate the PBF effects as well as suggestions for implementation research needed in this area.

For purposes of this review, the term Performance Based Financing (PBF) is used synonymously as Pay for Performance (P4P), Performance-Based Incentives (PBIs), Conditional Cash Transfers (CCTs), and Results-Based Financing (RBF). In this context, payments are made to influence behavior of service providers in private and public settings to increase availability and quality of services, and to influence clients such as pregnant women to demand or utilize such services.

This review also identifies and includes examples of PBF schemes and countries in which such arrangements are occurring.

1.2 Examples of PBF schemesⁱ and countries in which they are being implemented

- **Health care institutions and facilities receive a financial incentive when they achieve predefined service delivery targets (and, in a few cases) quality targets** (Belize, Burundi, Brazil, Democratic Republic of the Congo, Philippines, United Republic of Tanzania, Zambia Benin) or implement quality improvement plans (hospitals in Honduras), and these payments are partly used to reward health workers.
- **Health facilities receive payment on improving quality of services** such as reduction in unnecessary C-sections (South Korea)
- **Health providers receive financial support to attend conferences/workshops as an incentive that is tied to achievement of specific targets** (Egypt)
- **Patients receive financial support to cover costs of transportation, food, and medicine when they present at health services** (Cambodia, India)

- **Pregnant mothers are given vouchers which they present to access maternal services** such as facility delivery or management of complications (India, Kenya, Uganda)
- **District health authorities receive a bonus payment when service delivery outputs in their districts improve** and when district health teams perform specific levels of support to health facilities (Ghana, Rwanda, Tanzania, Zambia)

Major areas of maternal health concerns that may be targeted by PBF interventions include poor quality of delivery care; low rates of delivery with a skilled attendant or in a health facility; inadequate utilization of antenatal care; high caesarian section rates; low coverage of pregnant women receiving three doses of interpersonal therapy (i.e., counseling and support sessions during pregnancy); low coverage of pregnant women receiving iron supplements at antenatal care; and management of obstetric and neonatal complications.

This rapid review focuses on positive and negative effects of PBF on Access; utilization; coverage; quality of maternal services, and impact on maternal health.

2.0 Effects of PBF on Maternal Services

This section presents categories of positive and negative effects of PBF schemes with some examples of programs where these effects have been demonstrated.

2.1 Positive effects of PBF interventions on maternal services

Increased expenditures on maternal services

The Catholic Organization for Relief and Development Aid (Cordaid) program in Tanzania showed an increaseⁱⁱ of overall expenditure on maternal health provided by health facilities linked to Performance-Based Financing. The annual allocation to health facilities under the Cordaid Program in Tanzania was set at 50% as guaranteed financing (base fund) with 50% earmarked as bonus allocation. Cordaid approved a range of ways the PBF funds could be used by health facilities: staff motivation (including housing, training, uniforms, incentives) to a maximum of 50%, which is the bonus allocation based on achieving the targets; equipment, drugs, and supplies (including nonmedical equipment) to a maximum of 30%; infrastructure (such as latrines, incinerators, waiting mothers' sheds) to a maximum of 20%; and operating costs (including maintenance and communication) to a maximum of 10%. The District Health Officers (DHOs) were eligible for 25% of the performance bonus allocation, as realized by health facilities in the Diocese. The bonus or performance incentive was tied to preset targets that

are reported semiannually and verified by an independent consultant hired by Cordaid prior to the allocation of the performance-linked financing.

Based on the 2007 review and in line with inflation, Cordaid agreed to an increase in 2008 for hospitals from 18 million to 21 million Tz shillings for base and bonus; for health centers from 6 million to 7 million; and for dispensaries from 3 million to 3.5 million.

In a sample of 80 treatment facilities in Rwanda, the PBF payments increased overall average expenditures by 22%. On average, facilities allocated 77% of the PBF funds to increase personnel compensation, amounting to a 38% increase in staff salaries. Although not broken down by amounts paid for maternal services, there are increased expenditures on health services and on providers as a result of PBF in Rwanda.

Increased access to ANC or facility deliveries

The Reproductive Health Output-Based Aid (OBA) Voucher Programⁱⁱⁱ implemented in Kisumu, Kiambu, and Kitui districts and in the Korogocho and Viwandani slums of Nairobi offer a Safe Motherhood package of antenatal services and attended delivery by qualified health workers. Uptake for the Safe Motherhood package of services (including normal delivery and caesarian section), as measured by redeemed vouchers, rose to a high of 77% of vouchers redeemed.

In Rwanda, a prospective quasi-experimental design study involving 165 facilities and a random sample of 14 households in each facility's catchment areas for a total of 2,145 households, examined the impact^{iv} of the incentives in the Rwandan PBF scheme. The study found that PBF had a large and statistically significant impact on the probability of institutional delivery, p value 0.074, with 95% confidence. This result supports the hypothesis that financial performance incentives can improve both the use and quality of maternal and child health services. Because the incentive effect was isolated from the resource effect in PBF, the authors conclude that an equal amount of resources without the incentives would not have achieved the same gain in outcomes.

PBFs have also been used to motivate community health workers. These workers play an important role in identifying pregnant women; in counseling women, families, and their communities; and in recognizing problems. Examples of this include both India and the Philippines, where community health workers receive financial incentives^v dependent on their completion of a package of services. In both cases, payment to the workers is accompanied by demand-side payments to increase access to services by removing the financial and social obstacles that poor women face.

Increased coverage for maternal services

In India, implementation of Janani Suraksha Yojana (JSY)^{vi} in 2007 to 2008 was highly variable by state, from less than 5% to 44% of women receiving cash payments from JSY. The poorest and least educated women did not always have the highest odds of receiving JSY payments. JSY had a significant effect on increasing antenatal care and in-facility births. In the matching analysis, JSY payment was associated with a reduction ratio of 3.7 (95% CI 2.2—5.2) perinatal deaths per 1,000 pregnancies and 2.3 (0.9—3.7) neonatal deaths per 1,000 live births. In the with-versus-without comparison, the reductions ratios were 4.1 (2.5—5.7) perinatal deaths per 1,000 pregnancies, and 2.4 (0.7—4.1) neonatal deaths per 1,000 live births. The findings of this assessment are encouraging, but they also emphasize the need for improved targeting of the poorest women and attention to quality of obstetric care in health facilities.

In all the States of India, the JSY led to an absolute change in the percentage of births delivered in a health facility by district between 2002–2004 and 2007–2009. Data from rounds two and three of the district-level household surveys ranged from minus 10% to 40% or greater in the percentage of births delivered in a health facility.

Analysis on the effect of the JSY intervention of maternal health did not show a significant effect on maternal mortality at the district level. This may have been attributable to a lack of a program effect or an insufficient sample size to detect a change in maternal mortality during the period of observation. The confidence intervals around the estimated effect of JSY payments on maternal mortality implied that the analysis was only powered to detect very large changes.

Increased deliveries attended by skilled birth attendants

In Burundi, evaluation of a publicly funded supply-side (PBF) program nationwide consisting of payments to health facilities^{vii} showed an increase in the rate of assisted births and the uptake of new family planning services with an overall average increase of 50–60%. Similar findings are reported by Gonzales^{viii} from the Philippines.

In Haiti, as reported by Eichler et al.^{ix} the PBF program achieved about a 19% increase in skilled deliveries under NGO-paid performance-based incentives (PBIs).

The Bangladesh maternal voucher scheme provided vouchers to women. The vouchers were distributed by health workers, entitled mainly poor women to receive skilled care at home or in a facility, and also provided payments for transport and food. After initial setbacks, voucher distribution rose quickly. The data also suggest that the rise in facility-based delivery appeared to be more rapid in demand side financing (DSF) areas than in other non-DSF areas, although the methods do not allow for a strict causal attribution as there might be confounding effects. Demand side financing represents a range of interventions that channel public funds to the

individual or family, thus putting the resources in the hands of those who demand the service and not those who supply it. Fears that the financial incentives for surgical delivery would lead to an over emphasis on Caesarean section appear to be unfounded although the trends need further monitoring.

Improved quality of services

In Rwanda, a PBF evaluation by Basinga et al. showed improved quality of services due to conditioning the PBF payment^x to a quality index score earned by the health facility. The study examined 166 primary care centers over 24 months based on 14 output indicators related to prenatal care, delivery, and child preventative care. These indicators included delivering in hospitals, women being given contraceptives, and expectant mothers receiving tetanus shots. If such indicator tasks were completed, the primary care centers received bonus money based on a formula that also took into account the overall quality of the facility and its services. The quality index score for medical facilities was determined based on quality control visits by government officials and followup surveys of area families who used these medical services. The authors concluded that PBF can improve both the use of and the quality of health services.

Increased utilization of services

In the Philippines, the PBF program, using a regular rapid results approach (RRA) every 100 days to evaluate the program, found that although evidence available to date was not sufficient to determine whether the PBF scheme increases the number of facility-based deliveries,^{xi} a presentation by the Government of Surigao del Sur on one 100 Day RRA period (November 2008–January 2009) estimated a 7.6% increase. In tracking 50% of the eligible population of pregnant women, they found that hospital-based deliveries had increased from 52.8% to 56.62%, and home-based deliveries had decreased from 45.40% to 42.43%. Although the statistical significance of these changes was not provided, the data do indicate a positive trend.

Enhancing equity through targeting

Some of the PBF approaches that have been proposed and tried for reaching the poor^{xii} with maternal services include limiting eligibility to poor families or individuals; focusing on deprived geographic areas; using channels that reach the poor; creating programs that offer services at fixed locations and serve those who appear for them; and in some cases, setting up supplementary outreach campaigns that take services out into communities through mobile camps usually accompanied by energetic information campaigns; and monitoring to determine whether the poor have been reached. The unfortunate reality is that not enough is yet known to predict how a particular strategy for dealing with a particular health problem will deliver benefits to the poor in a particular setting. Therefore, there is a need to develop, test, and monitor an

equity-oriented PBF strategy that makes sense in a given situation in order to see how well it affects specified health outputs and outcomes.

Mexico's PROGRESA program pays poor families for clinic attendance. This program serves over 20 million people, and the benefits constitute more than 20% of the income of the people served. The program^{xiii} combines a traditional cash transfer program with financial incentives for families to invest in the human capital. The reported analysis referenced here took advantage of a controlled randomized design. In 1998, 506 of the 50,000 PROGRESA villages were randomly assigned to control and treatment groups. Eligible households in treatment villages received benefits immediately, while benefits for eligible households in control villages were postponed until after the year 2000. A pre-intervention baseline survey of approximately 19,000 households with over 95,000 individuals and four followup surveys (at 6-month intervals) of the same households were conducted over the 2-year experimental period. The evaluation suggested that the majority of program benefits have gone to poor families, and that the program has made a significant contribution to health, nutrition, education, and poverty outcomes.

Almost 60% of people reached by PROGRESA belonged to the poorest 20% of Mexico's population; 80% of beneficiaries were in the poorest 40% of the country's population. The principal factors contributing to the highly progressive outcomes reported were the selection of poor villages, as noted earlier; and also the linkage of benefits to education/health program participation by children.

Another example of targeting is the Tanzania Monetary Team Bonus Payment currently under implementation. A review of the feasibility and implementation options for PBF in Tanzania^{xiv} recommended that the payment be dependent on a whole facility reaching facility-specific service delivery targets; that the bonus be paid quarterly and shared equally among health staff; and that it targets all government health facilities at the council level, thus rewarding the Council Health Management Teams (CHMTs) for "whole council" performance. All participating facilities/councils would therefore be rewarded for improvement rather than absolute levels of performance. It was further recommended that the performance indicators not be more than 10; that a "balanced score card" of basic health service delivery be designed to prevent any risk of "perverse incentives"; and that the indicators be readily measurable. The review also recommended that the same set of indicators be used by all, that the CHMTs assist facilities in setting targets and monitoring performance, and that the Regional Health Management Teams (RHMTs) play a similar role with respect to the CHMTs. In addition, the Council Health Administration should provide a "check and balance" to avoid target manipulation and verify bonus payments due. This program will need to be evaluated for impact.

2.2 Negative effects of PBF interventions on maternal services

Unintended effects on maternal services and outcomes

Incentives to change behavior can be powerful, and can lead to unintended negative consequences^{xv} such as misreporting; neglecting services that are not being rewarded; undermining intrinsic motivations of health workers; encouraging women to have additional children because of the cash benefits in a conditional cash transfer program; or creating payment schemes for providers that result in excessive provision of unnecessary or potentially harmful services. Increased facility-based deliveries could be associated with an increase in unnecessary Caesarian sections, although there is no published evidence of this in developing countries.

The literature suggests the need for a strong system to monitor outputs that are not being rewarded with incentive payments as part of any performance incentive intervention. Incentives matter, and thinking through and observing how they work, and why, is an essential part of the design and ongoing management of any performance incentive program.

Coercion

To mitigate possible coercive effects of PBF, the U.S. Government passed the Tiahrt Amendment, a law prohibiting the use of U.S. development assistance to introduce financial incentives to coerce people to limit family size or use contraceptives. In Haiti, in the spirit of encouraging voluntarism, providers were rewarded for having a full menu of modern contraceptives available in the first pilot year. In later years, rewards were added for reducing the rate of discontinuation of contraceptive use. This indicator was initially viewed as complying with the spirit of voluntarism, but was subsequently dropped in response to concerns that it was coercive or could be perceived to be so. The same principle applies to other services that may be seen to be coercive, such as payment for delivering at a health facility.

Undermined team work and content of care among service providers

The Quality and Outcomes Framework (QOF)^{xvi} is a system for the performance management and payment of service providers most widely used in the United Kingdom. Unintended consequences of the framework have included dual QOF-patient agenda within consultations (patient-centered versus physician-QOF-centered); potential deskilling of doctors; decline in doctor/patient continuity of care; resentment by team members not benefiting financially; and concerns about an ongoing culture of performance monitoring. Similar experiences, though undocumented, could be occurring in Africa and elsewhere.

How is PBF integrated into or aligned with national programs?

PBF country approaches that are not designed to align with local and national development priorities do not maximize the effectiveness and efficiency of the PBF activities and, further, do not ensure local ownership and long-term sustainability. The benefits of such programs are short lived and undesirable.^{xvii}

Decreased access to unrewarded interventions

Interventions that are not paid for by PBF schemes may deteriorate in quality or may be ignored^{xviii} by service providers. Recommended action to offset adverse, avoidable effects include ensuring availability of what is important to the patient; monitoring unwanted provider behavior and intervening; measuring continuity of care; increasing communication; and increasing access.

Extrinsic rewards can undermine intrinsic motivation social responsibility and professionalism^{xix}

There are several related theories about how extrinsic rewards can undermine intrinsic motivation. Individuals might experience financial rewards as an external shift in the locus of control for their actions, causing a sense of impaired self-determination. When rewards are perceived as controlling, people may take less responsibility for motivating themselves. Self-esteem is also weakened when it is no longer one's own idea to perform at a high standard. Deprived of the opportunity to demonstrate personal interest and motivation, individuals might reduce their work effort.

Fraud within PBF schemes

As reported by Kilonzo et al.,^{xx} in the Reproductive Output Based Aid (OBA) Program in Kenya voucher distributors were originally paid based on the number of vouchers they sold, but this contributed to fraud through sales of vouchers to women who did not qualify for the program. To correct this, the OBA program is now transitioning to a system in which voucher distributors are paid a monthly salary, regardless of numbers of vouchers sold.

Anecdotal information from clients and service providers in developing countries suggests the existence of fraud in reporting of performance when payments are made to providers and managers of health facilities based on their performance, but there are no data on the magnitude of this problem in developing countries. In the United States, however, William Corr, J.D., Deputy Secretary on Efforts To Combat Health Care Fraud and Abuse, acknowledged before a Congressional Subcommittee on March 04, 2010, that health care fraud is a national problem, prevalent in Federal, State, and private insurance programs, and that from the committee's work in this area, it appears that fraud is on the rise. Because of the importance

of this matter, in May 2010, the President established a joint task force to strike against hot spots of health care fraud in targeted cities across the country.

Fraud involving PBF schemes is likely to occur and needs to be investigated in the developing world. This calls for rigorous verification systems, which unfortunately might increase the cost of PBF programs.

Under the table copayments for services, even when other payments are made to providers, have been reported anecdotally in many developing countries, but again these are difficult to study. In 1988, the author of this review observed payments being made to registry clerks and nurses at Kenya National Hospital by patients in order to be seen faster or by a more senior doctor.^{xxi}

Measurement of performance and attribution of effects on PBF schemes

Uwe Reinhardt,^{xxii} a Princeton health economist, in discussing PBF, cited difficulties in measuring as a limiting factor in attributing outcomes to effects of PBF. He argued that because the science of outcome measurement has many methodological problems, the current evidence is inadequate to link PBF and outcomes of health programs. He recommended further research into the development of appropriate research designs and measurement tools.

Exclusion of ownership and autonomy

When specifications of targets and outputs for PBF are not developed collaboratively with health providers, the providers are expected to meet the prescribed targets, and not set their own priorities. This may undermine provider ownership and autonomy,^{xxiii}—core principles of the performance-based financing approach.

Finally, these schemes can be politicized by the Government, be overly complex, or suffer from mismanagement.

3.0 Effects of PBF on Maternal Outcomes

Improved maternal health outcomes

Evaluation of a 6-month pilot of pay-for-performance in Belize, which started in 2001, showed that the district with the highest maternal mortality rate prior to the PBF scheme reported no maternal deaths during the first two quarters of 2008. Prior to PBF introduction, many residents of the South Side of Belize City (the poorest part of the city) had never visited a general practitioner. The NHI PBF scheme that contracted with additional clinics provided these people easier access to a clinic and its services.

Because of differences in the ease of measurement, India’s Janani Suraksha Yojana (JSY) did not demonstrate reduction in maternal mortality although there was demonstration in the reduction of perinatal mortality.

Although there are data on the effects of PBF on maternal care processes, little research has been undertaken on PBF effects on maternal health outcomes. This same conclusion was arrived at by Glassman et al.^{xxiv} in their review of Performance Based Incentive (PBI) programs implemented in seven countries in Latin America that implemented and evaluated Conditional Cash Transfer (CCT) programs with health and nutrition components. The core of the programs encouraged poor mothers to seek preventive health services and attend health education talks by providing a cash incentive for their healthy behavior (with healthy behavior representing performance). Evaluations of these programs measured outputs in the utilization of services; health knowledge, attitudes, and practice; food consumption; and the supply and quality of services as well as outcomes in vaccination rates, nutritional status, morbidity, mortality, and fertility.

While CCT impact evaluations have provided unambiguous evidence that financial incentives increase utilization of key services by the poor, most evaluations gave little attention to the impact on health-related behaviors, attitudes, and household decision making, or how these factors contribute to or limit impact on health outcomes.

4.0 Summary Effects of PBF on Maternal Services and Outcomes (Table 1)

Table 1: Examples of Effects of PBF on Maternal Services and Outcomes		
	Positive effects due to:	Negative effects due to:
Access	<ul style="list-style-type: none"> • Payments, e.g., vouchers to mothers to use or when they use services (JSY; Kenya, Uganda voucher schemes) 	<ul style="list-style-type: none"> • Reduced use of services not paid for (Kenya voucher scheme) • Sense of coercion and control of choice
Utilization	<ul style="list-style-type: none"> • Uptake and use of vouchers for services high in Kenya and Uganda • Conditional cash transfers to clients • Quality Improvement of services • 21% increase in institutional 	<ul style="list-style-type: none"> • Fraudulent sale of vouchers • Fraudulent reporting • Neglecting services not in the voucher scheme

	delivery in Rwanda	
Coverage	<ul style="list-style-type: none"> • Payments to NGOs, CHMTs, RHMTs and facilities reaching targets • Increased intervention coverage by JSY • Payments to community health workers plus demand side payments to clients 	<ul style="list-style-type: none"> • Government defunding of services not under PBF • Politicization and corruption of PBF payments
Quality	<ul style="list-style-type: none"> • Improved due to motivation and additional resources • Verification and compliance to standards • Reduced C-section rates and increased normal deliveries in South Korea 	<ul style="list-style-type: none"> • Provider behavior on quality dependent on level of payment • Poor team work among providers • Increased unwanted procedures
Health Outcomes	<ul style="list-style-type: none"> • Reduced mortality in Belize • JSY Reduced perinatal mortality • JSY unable to detect any significant effect on number of maternal deaths in district-level analysis 	<ul style="list-style-type: none"> • Unnecessary morbidity due to unnecessary procedures (evidence from USA) • Very few PBF programs aimed at impacting health outcomes of services

5.0 Conclusion

Available evidence shows that PBF interventions are most developed in developed countries, followed by middle income countries, and least developed in the developing world especially in Sub-Saharan Africa. There are indications in the developing world, however, that where there is strong, high-level political commitment, PBF interventions are strongest. There are daunting problems in defining, measuring, and verifying performance reached by clients, providers, and organizations in order to pay for reaching the desired target or quality. Better evaluation techniques to link PBF to improved services and their outcomes need to be developed and tested. TRAction's agenda to support implementation research in PBF interventions aimed at improving maternal services and their outcomes and at finding ways to grow and scale up interventions that work remains necessary as the developing world continues to search for ways toward universal access to quality maternal services and improved maternal health outcomes.

6.0 Recommendations on Research for TRAction

A review by Scheffler^{xxv} of the evidence concerning effects of PBF schemes at this time finds that it is weak. This is due in large measure to the weaknesses of the evaluations. In many cases, multiple changes are impacting services and outcomes, so it is difficult to isolate the PBF impact or lack of impact. This does not mean that PBF is not working or that it could not be made to work. It does mean that the evidence may not be available or that the evidence is weak. Improved research designs are needed.

A number of recent publications are calling for a paradigm shift in the way research and evaluation are undertaken to demonstrate impacts of PBF schemes. Cesar et al^{xxvi} have proposed a common evaluation framework that utilizes an evaluation platform approach which proposes districts as the units of design and analysis; continuous monitoring at different levels of indicators; additional data gathering before, during, and after program implementation; a range of analytical techniques; and interim summative analysis.

In thinking strategically about monitoring health results-based financing (RBF) schemes, Naimoli et al^{xxvii} identify three key questions that need to be answered: 1. What pre-implementation resources were secured and decisions or actions taken to facilitate implementation? 2. What activities were undertaken to facilitate service use and delivery? 3. What were the facilitating and constraining factors encountered in executing these activities, 4. To what extent were the services linked to performance targets used and delivered, the accuracy of reporting verified, and financial or nonfinancial incentives provided and received as planned? These authors encourage answering these questions in the design phase of PBF programs using specific questions listed in their analysis, including questions related to the unintended effects of PBF schemes. They conclude that answers to such questions, when well disseminated, would lead to improved PBF programs.

In a World Bank publication, Sharan et al.^{xxviii} applied a Quality Assurance Diagnostic Framework that incorporated access, availability, infrastructure, process of care, and management of services to assess health system readiness to meet demand for obstetric care in Eritrea and their implications for Results-Based Financing (RBF) in Eritrea. They concluded that to increase demand and improve quality, PBF programs must ensure that the health system is equipped to meet the anticipated increase in demand satisfactorily and to improve quality, and not cause a diminution of quality and patient satisfaction.

Following is a list of possible research questions/topics that have come up in the course of the review of this subject:

a. PBF evaluation methodologies

- i. How can evaluations of impacts of PBF interventions on maternal health indexes be adequately powered?
- ii. How can research designs to measure impacts of PBF interventions be improved?
- iii. How can studies with controls to measure the benefits of Demand Side Financing (DSF) relative to situations where there is no DSF be best designed?
- iv. Does followup at longer intervals allow the researchers to reveal changes in expenditures on medication, increases in service utilization, and benefits in the health of the target population?
- v. What are the comparative advantages of alternative data collection approaches and of participatory evaluations on PBF interventions?
- vi. How can we develop co-financed or matching grant research studies?

b. PBF effects on maternal services

- vii. Do pay-for-performance schemes increase the quantity of contracted maternal health services delivered?
- viii. Is the quality of PBF contracted health services provided improved?
- ix. Does pay-for-performance contracting decrease the quantity or quality of non-contracted services provided?
- x. How are health indicators impacted by improved access to higher quality services provided through PBF programs?
- xi. Can all critical elements in a PBF scheme that lead or might lead to specific outcomes be identified?

c. Changes in national budgetary allocations for maternal health services as a result of PBF programs

- xii. Do average household out-of-pocket expenditures per service decline as a result of pay-for-performance contracting?
- xiii. How cost-effective are PBF schemes in improving maternal services?

d. Implementation and management of PBF programs

- xiv. How can specific PBF interventions be tailored to different situations?
- xv. What are the PBF interventions or combinations of interventions best suited to various health systems in developing country settings?
- xvi. What is the feasibility of embedded research to monitor and improve the implementation of PBF interventions and their impacts in different settings?
- xvii. What are the ways to adapt success stories such as the SJY of India, the PBF in Rwanda, or Vouchers for Health in Kenya to other countries and settings?
- xviii. How well does an equity-oriented RBF strategy that fits a given situation work?
- xix. What is the role of mobile phone technology in simplifying implementation and reducing overhead costs for voucher distribution, submission and processing of claims, payment to providers, and even followup with clients?
- xx. What type of leadership and management capacity is needed at various levels of the health system to improve PBF schemes?
- xxi. What are the essential core management components of an effective PBF scheme?

e. Maternal health outcomes

- xxii. What is the impact of PBF on maternal health outcomes at the population level?
- xxiii. What is the impact of PBF on facility maternal care outcomes?

7.0 Suggested Next Steps for the TRAction Project

To further elucidate the current evidence and implementation research needs, a consultative meeting of PBF experts needs to be organized. Based on the outcomes of the consultation and prioritization of research needs and topics, an RFA or RFAs to solicit research proposals and provide funding to answer these important questions can then be developed and funding for the research made available.

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