

PERFORMANCE-BASED INCENTIVES FOR CHILD HEALTH: TAKING STOCK OF CURRENT PROGRAMS AND FUTURE POTENTIALS



March 2012

This publication was produced for review by the United States Agency for International Development. It was prepared by Mirja Sjoblom, Alix Beith, and Rena Eichler for Health Systems 20/20 Project. Abt Associates Inc.

Health Systems 20/20 is USAID's flagship project for strengthening health systems worldwide. By supporting countries to improve their health financing, governance, operations, and institutional capacities, Health Systems 20/20 helps eliminate barriers to the delivery and use of priority health care, such as HIV/AIDS services, tuberculosis treatment, reproductive health services, and maternal and child health care.

March 2012

Download copies of this report at: www.healthsystems2020.org

Cooperative Agreement No.: GHS-A-00-06-00010-00

Submitted to: Scott Stewart, AOTR
Health Systems Division
Office of Health, Infectious Disease and Nutrition
Bureau for Global Health
United States Agency for International Development

Recommended Citation: Sjoblom, Mirja, Alix Beith, and Rena Eichler. March 2012. *Performance-Based Incentives for Child Health: Taking Stock of Current Programs and Future Potentials*. Bethesda, MD: Health Systems 20/20, Abt Associates.



Abt Associates Inc. | 4550 Montgomery Avenue | Suite 800 North
| Bethesda, Maryland 20814 | P: 301.347.5000 | F: 301.913.9061
| www.healthsystems2020.org | www.abtassociates.com

In collaboration with:

| Aga Khan Foundation | Bitrán y Asociados | BRAC University | Broad Branch Associates
| Deloitte Consulting, LLP | Forum One Communications | RTI International
| Training Resources Group | Tulane University School of Public Health and Tropical Medicine

PERFORMANCE-BASED INCENTIVES FOR CHILD HEALTH: TAKING STOCK OF CURRENT PROGRAMS AND FUTURE POTENTIALS

DISCLAIMER

This study and report are made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government, Abt Associates Inc.

CONTENTS

- Acronyms.....vii**
- Acknowledgments..... ix**
- 1. Introduction 1**
 - 1.1 Methodology2
 - 1.2 Structure of the Report2
- 2. Child Health: A Global Snapshot 3**
 - 2.1 Child Health Has Improved Significantly Over the Past Decade 3
 - 2.2 Regional Disparities Persist3
 - 2.3 Causes of Neonatal and Child Deaths.....4
 - 2.4 Remaining Challenges to Improve Child and Newborn Health ..5
- 3. How (Dis)Incentives in the Health System Affect Child Health 7**
 - 3.1 Supply-side Incentives7
 - 3.2 Demand-side Incentives8
 - 3.3 Performance-based Incentives8
- 4. How is PBI Being Applied in Developing Countries to Improve Child and Newborn Health? 11**
 - 4.1 Demand-side Schemes.....12
 - 4.2 Voucher Schemes12
 - 4.3 Supply-side Schemes13
 - 4.4 Role of Community Health Workers.....18
 - 4.5 Performance-based Aid.....20
 - 4.6 Performance-based Inter-governmental Transfers.....21
 - 4.7 Performance-based Contracting of NGOs.....22
- 5. The Impact of PBI Approaches to Improve Newborn and Child Health 23**
 - 5.1 Evidence of Impact of Demand-side Schemes23
 - 5.2 Evidence of Impact of Voucher Schemes.....25
 - 5.3 Evidence of Impact of Supply-side Schemes25
 - 5.4 Evidence of Impact of Performance-based Aid.....26
 - 5.5 Performance-based Inter-governmental Transfers.....26
 - 5.6 Evidence of the Impact of Performance-based Contracting of NGOs27

6. How Can PBI Programs Be Strengthened to Improve Child Health?	29
6.1 Beyond the ‘Low-hanging Fruit’.....	29
6.2 Bring the Health System to Families Using Incentives to Community Health Workers and Community-based Distribution of Child Health-enhancing Products.....	30
6.3 Increase the Focus on Newborn Health.....	30
6.4 Increase the Focus on Nutrition.....	31
6.5 Don’t lose focus on the quality of care.....	33
6.6 Combine Supply- and Demand-side Approaches or Strengthen Supply and Incentivize Demand	34
7. Conclusion	35
References	37

LIST OF TABLES

Table 1: A Snapshot of Supply-side PBI Programs that Aim to Improve Newborn and Child Health Outcomes.....	14
Table 2: Overview of How CCT Programs Can be Strengthened to Target Malnutrition.....	32

LIST OF FIGURES

Figure 1: A Summary of the Key Causes of Under-five Mortality in 2008.....	4
Figure 2: Median Coverage of Effective Interventions Targeting Newborn, Child, and Maternal Health Among 68 Countdown Countries	5
Figure 3: Levels to Consider: from Payer to Recipient	11

ACRONYMS

ASHA	Accredited Social Health Activist
CCT	Conditional Cash Transfer
CHW	Community Health Worker
DPT3	Diphtheria, Pertussis, Tetanus
DRC	Democratic Republic of the Congo
HIV	Human Immunodeficiency Virus
IFFIm	International Finance Facility for Immunization
IPT	Intermittent Preventive Treatment of Malaria
IPT2	Intermittent Preventive Treatment of Malaria second dose
ITN	Insecticide-treated Net
ISS	Immunization Services Support
JSY	<i>Janani Suraksha Yojana</i>
MDG	Millennium Development Goal
NGO	Nongovernmental Organization
OPV0	Polio Vaccine
ORS	Oral Rehydration Salts
PBI	Performance-based Incentive
PMTCT	Prevention of Mother-to-Child Transmission (of HIV)
SM2015	<i>Salud Mesoamerica 2015</i>
TBA	Traditional Birth Attendant
UNICEF	United National Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHT	Women's Health Team

ACKNOWLEDGMENTS

The authors are grateful to Christophe Lemièrre, Jumana Qamruddin, Sunil Rajkumar and Monique Vledder at the World Bank for sharing information about performance-based financing programs supported by the World Bank. Their contributions were important and deeply appreciated. We also would like to thank Lindsay Morgan for her valuable comments on earlier drafts that contributed to strengthening the report. Finally, we are appreciative for the editorial comments by Linda Moll.

I. INTRODUCTION

Health financing strategies that incorporate performance-based incentives (PBI) are being applied in many developing countries, and improving newborn and child health outcomes is often a central goal. Though the global under-five mortality rate dropped from 88 deaths per 1,000 live births in 1990 to 57 in 2010, nearly 21,000 children under five died every day in 2010 (UNICEF 2011). What makes this so tragic is that many of the causes of child death are preventable: it is estimated that up to two-thirds of newborn deaths could be prevented if both mothers and newborns received evidence-based effective interventions during pregnancy and the postpartum period. Such interventions include early initiation of breastfeeding (i.e. within one hour of birth), exclusive breastfeeding during the first six months of life, keeping the newborn warm (e.g., through skin-to-skin contact), hygienic cord and skin care, delayed bathing, and attention to hygiene such as hand washing with soap (WHO and UNICEF 2009).

The persistence of child mortality has spurred momentum around Millennium Development Goal (MDG) 4, which calls on countries to reduce by two-thirds the mortality rate of children under the age of five years between 1990 and 2015. It has also resulted in increased political and financial commitments to child health, which have done much good. However, experience has shown that money and political commitments alone are not enough. Ensuring child health requires knowledge of and demand for services among caregivers, pregnant women, and children as well as multiple interactions with a functioning health system capable of delivering quality health services. Individuals must demand services; health workers must be motivated to deliver care; and the institutions they work for must be encouraged to make the systemic changes required to achieve health goals. The choices they make depend not only on inputs such as training and equipment but also critically on what influences and motivates individuals – on the forces that enable or constrain them and drive their behavior.

Health sector stakeholders – from developing country policymakers to international donors, program managers, and health care providers – increasingly view PBI as an important complement to investing in inputs. It is a way to motivate patients and health workers; focus attention on (and provide demonstrable evidence of) measurable results; strengthen information systems; build local capacity to manage and deliver health services; and, ultimately, improve health outcomes.

Available evidence suggests that programs that address incentives can help to increase the use of essential preventive services, increase the coverage rates of high-impact interventions, and improve quality of care. The first generation of PBI programs have tended to incentivize the “low-hanging fruit” of child health interventions (in addition to other interventions related to maternal health and infectious disease, among other things), namely time-limited actions such as payment for immunizations or for well-baby visits.¹ More can be done to incentivize the pregnancy-delivery-postnatal care-early childhood continuum of care and to improve the quality of services. Incentive programs can help to strengthen focus on the quality of interventions to address newborn health, and to tackle other longer term – and therefore perhaps more challenging – childhood concerns, such as nutrition and prevention and appropriate case management of the three main child killers: pneumonia, diarrhea, and malaria.

This newborn and child health-focused report is one in a three-part series that explores cross-cutting themes in PBI; the other two reports look at the experience of PBI for maternal health, and in sub-Saharan Africa. With examples of PBI schemes and ideas for improving PBI approaches, these reports

¹ Well-baby visits are spaced periodically throughout the baby's first year of life and include activities such as weight check, head circumference measurement, breastfeeding guidance, immunization, and general developmental assessment.

are written for country leaders, donors, and technical assistance providers who are interested in establishing new PBI schemes, or in fine-tuning existing PBI approaches to strengthen their health system and improve health outcomes. Health System 20/20 has also published briefs that summarize each of the three reports; all these publications are available from the project website, www.healthsystems2020.org.

I.1 METHODOLOGY

We reviewed published and grey literature (i.e., external, internal and non-reviewed reports) in English. Literature was identified through PubMed and Google search engines and by checking the references of previous literature reviews. Evidence presented in this paper comes also from responses to an on-line survey, from telephone calls and email exchanges between the authors and program managers, designers, and providers of technical assistance; and from the authors' own knowledge of PBI schemes. Any errors are our own.

I.2 STRUCTURE OF THE REPORT

Chapter 2 provides a global snapshot of progress in improving child health, as well as persisting challenges. Chapter 3 discusses incentives and disincentives around health-seeking behaviors that impact child and newborn health, as well as how PBI might help to realign those incentives. Chapter 4 presents an overview of some of the most interesting programs that incorporate PBI approaches to address newborn and child health in developing countries and Chapter 5 summarizes the evidence on impact. Chapter 6 addresses key gaps and identifies areas where there is potential to strengthen PBI approaches to tackle some of the more complex challenges to improve newborn and child health outcomes. Chapter 7 presents conclusions.

2. CHILD HEALTH: A GLOBAL SNAPSHOT

2.1 CHILD HEALTH HAS IMPROVED SIGNIFICANTLY OVER THE PAST DECADE

The world has witnessed considerable improvements in child health over the past decade. The number of under-five deaths worldwide has declined from more than 12 million in 1990 to 7.6 million in 2010 (UNICEF 2011). Nearly 21,000 children under five died every day in 2010 – about 12,000 fewer a day than in 1990. Since 1990, the global under-five mortality rate has dropped 35 percent - from 88 deaths per 1,000 live births in 1990 to 57 in 2010.

Improvements in child health can be attributed to the implementation and scale-up of a number of evidence-based basic health interventions such as early and exclusive breastfeeding; the use of insecticide-treated nets (ITNs) to prevent malaria; widespread vaccine access (i.e., measles, tetanus, and Haemophilus influenza type B2); vitamin A supplementation; and prevention and treatment of HIV/AIDS (WHO and UNICEF 2009, UNICEF 2008, WHO 2008). New funding mechanisms and increased political commitment have contributed to this positive trend. For instance, the World Health Organization (WHO) estimates that, as a result of GAVI Alliance programs launched in 2000, more than 3.4 million deaths have been averted (WHO 2008).

2.2 REGIONAL DISPARITIES PERSIST

The rate of decline in under-five mortality has accelerated, from 1.9 percent a year over the period 1990–2000 to 2.5 percent a year over 2000–2010, but remains insufficient to reach MDG 4, particularly in sub-Saharan Africa, Oceania, Caucasus and Central Asia, and Southern Asia (UNICEF 2011).

Moreover, significant disparities exist within and between countries. Child deaths are increasingly concentrated in a small number of countries with large populations. In 2008, 75 percent of under-five deaths occurred in 18 countries with about half taking place in only five countries: China, the Democratic Republic of Congo (DRC), India, Nigeria, and Pakistan. India (22 percent) and Nigeria (11 percent) together account for a third of all under-five deaths (UNICEF 2011).

While Northern Africa, Eastern Asia, Latin America and the Caribbean, Southeastern Asia, Western Asia, and the developed regions have reduced their under-five mortality rate by 50 percent or more in the last two decades, in sub-Saharan Africa, one in eight children dies before age five, more than 17 times the average for developed regions (1 in 143) and Southern Asia (1 in 15). West and Central Africa had the highest levels of child deaths globally with one out of six children (169 per 1,000 live births) dying before the age of five (UNICEF 2011).³

² (GAVI Alliance website: http://www.gavialliance.org/media_centre/news/2009_11_28_Scarcity_of_pneumococcal_vaccine_lancet.php. Accessed May 13, 2010.)

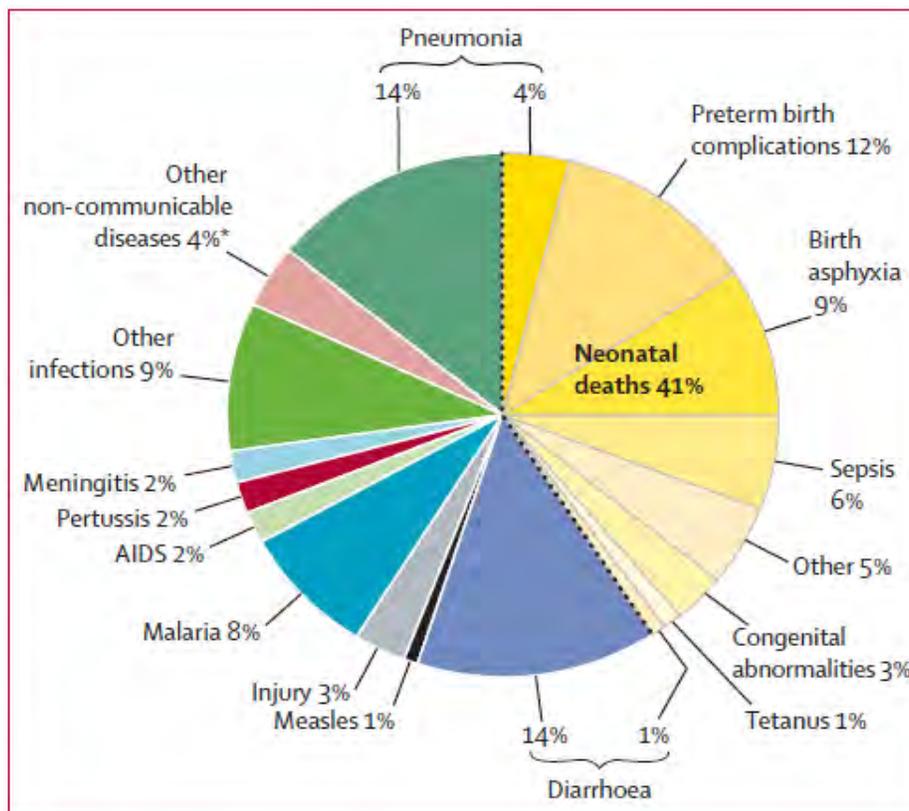
³ Given high total fertility rates and high mortality levels, the absolute number of deaths in West Africa has actually increased during the period 1990–2008, from 4 million to 4.4 million.

2.3 CAUSES OF NEONATAL AND CHILD DEATHS

In 2008, nearly 80 percent of newborn deaths were due to three causes: prematurity and low birth weight, asphyxia and birth trauma, and neonatal infections (Black et al. 2010). Pneumonia, diarrhea, inadequate nutrition, and poor sanitation continue to drive early childhood deaths around the world. Under-nutrition is an underlying cause in more than a third of under-five deaths, and malaria is still a major killer in sub-Saharan Africa, causing about 16 percent of under-five deaths. Recent calls (You et al. 2010) emphasize the need for an urgent re-focus on two of the three most important childhood killers, pneumonia and diarrhea, which continue to cause nearly 40 percent of the 8.8 million under-five deaths estimated in 2008 in developing countries annually (Wardlaw et al. 2009).

As mentioned previously, it is estimated that up to two-thirds of newborn deaths could be prevented if both mother and newborn received evidence-based effective interventions during pregnancy and the postpartum period, such as early initiation of breastfeeding, exclusive breastfeeding, keeping the newborn warm (e.g., through skin-to-skin contact), hygienic cord and skin care, delayed bathing, and attention to hygiene such as hand washing with soap (WHO and UNICEF 2009).

FIGURE 1: A SUMMARY OF THE KEY CAUSES OF UNDER-FIVE MORTALITY IN 2008

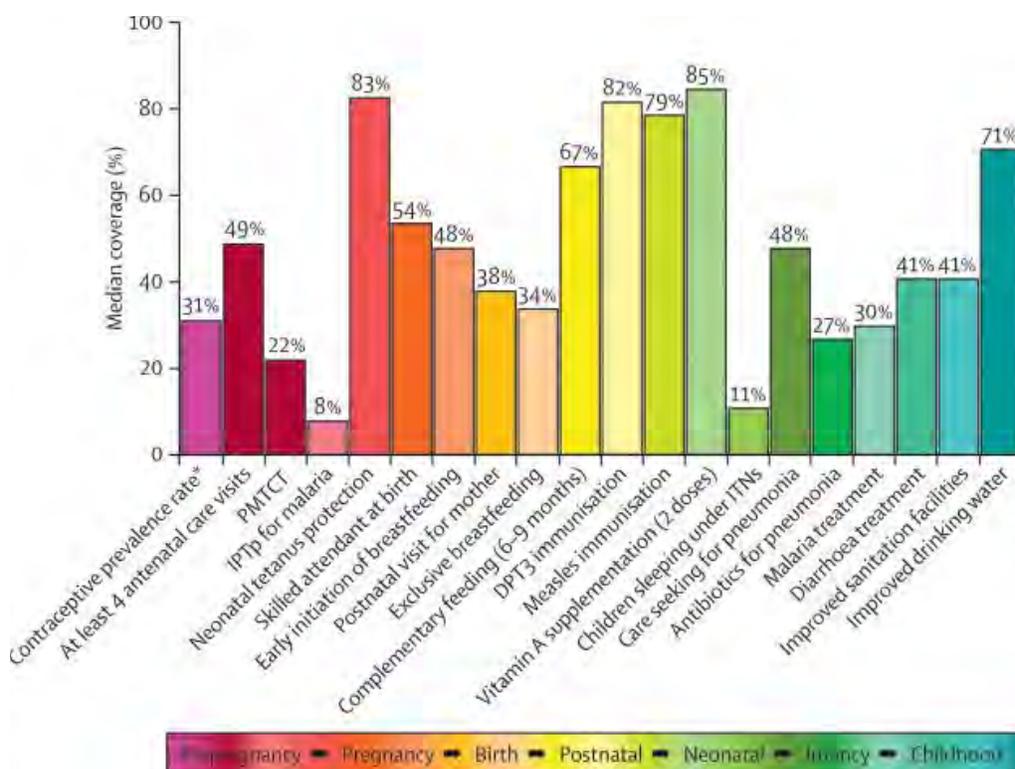


Source: Black et al. (2010)

2.4 REMAINING CHALLENGES TO IMPROVE CHILD AND NEWBORN HEALTH

Though a large share of child deaths can be prevented through the provision of simple, inexpensive, cost-effective interventions, major gaps in coverage persist. Figure 2 shows median coverage of effective interventions targeting child and maternal health among 86 Countdown countries.⁴

FIGURE 2: MEDIAN COVERAGE OF EFFECTIVE INTERVENTIONS TARGETING NEWBORN, CHILD, AND MATERNAL HEALTH AMONG 68 COUNTDOWN COUNTRIES



Source: Bhutta et al. (2010)

Data are most recent available estimates since 2000.

PMTCT=prevention of maternal to child transmission of HIV, IPTp=intermittent preventive treatment for malaria. DPT3=diphtheria, pertussis, and tetanus, ITNs=insecticide-treated bednets

*Target coverage rate is not 100 percent.

⁴The Countdown to 2015 global initiative was formed in 2005 with the aim of holding governments accountable for their commitments to achieving MDG 4. This global initiative was subsequently expanded to monitor progress in MDG 5. The Countdown effort identified 60 priority countries with the highest numbers and/or rates of child deaths. With the expansion of the Countdown effort to focus on maternal mortality, this list was expanded to include countries with the highest numbers and/or rates of maternal deaths. There are now 68 priority countries.

The picture is stark: coverage of prevention of mother-to-child transmission of HIV (PMTCT), intermittent preventive treatment for malaria (IPT), and children's use of ITNs can be improved considerably. The figure also shows that efforts to strengthen appropriate case management of pneumonia, malaria, and diarrhea are also needed. In the 35 countries with the highest child mortality and in which an estimated 120 million cases of childhood pneumonia occur annually, approximately 36 percent of cases did not see an appropriate health care provider (Marsh et al. 2008) and, hence, almost certainly did not receive appropriate treatment.

3. HOW (DIS)INCENTIVES IN THE HEALTH SYSTEM AFFECT CHILD HEALTH

The vast majority of child deaths are preventable. But as shown, coverage of highly effective preventive and treatment interventions unfortunately remains limited.

Additional resources and vaccines are urgently needed. For example, widespread introduction of pneumococcal conjugate vaccine would slow pneumococcal disease, and implementing and scaling up recommendations in the 2003 WHO/UNICEF joint statement on the clinical management of diarrhea (with oral rehydration salts (ORS), zinc, and antibiotics for dysentery) would prevent diarrheal deaths. Challenges include lack of resources to finance initial start-up funds for new treatment (zinc and low-osmolarity ORS), unavailability of products that meet quality standards, and uncertainty about the demand for and uptake of new products at the household level, which affects the willingness to invest (Wardlaw et al. 2009).

But while child mortality is partly due to insufficient inputs, resources, and will, it is also driven by disincentives in the health system that can hinder delivery of interventions that improve the health of children and babies.

3.1 SUPPLY-SIDE INCENTIVES

The rationale for PBI has roots in a branch of institutional economics known as principal-agent theory (Ross 1973), which describes the challenges that occur when a principal (e.g., a national government or foreign aid agency) hires an agent (e.g., subnational government or a health care provider) to pursue the principal's interest (e.g., immunizing children). While this may appear straightforward, there are often misaligned incentives between payers of health services, providers, and patients. Payers, often central-level political actors, who are, in democratic systems, accountable to an electorate, delegate responsibility for delivering health services to bureaucrats at line ministries, who in turn delegate to front-line service providers. The latter two groups of actors do not face the same incentives as elected politicians, since they are not subject to electoral sanction, and therefore, even if they are intrinsically motivated to provide public services, they may use their discretion to behave in ways that do not advance the health of their patients. For example, salary structures that provide relatively low, fixed salaries that do not vary with performance may not spur health providers to take the steps necessary to attract patients or creatively solve problems and may lead to low productivity, absenteeism, poor quality, or lack of innovation. Additionally, in the nonprofit/ faith-based sector, lump sum grants or reimbursement for expenditures can encourage providers to devote energy to securing funds and justifying inputs rather than to expanding coverage, promoting preventive and primary care services, or solving systemic problems, even when they have the intrinsic motivation to do so. Minimal supervision and scant rewards for performance may be further demotivating. The health sector is especially vulnerable to principal-agent issues because different actors have access to different information and expertise. Incentives can be used to align the objectives of the agent with those of the principal. As such, PBI schemes shift some of the risk of not meeting the principal's objective from the principal to the agent, in exchange for providing the agent with more autonomy and greater discretion to carry out his/her task.

3.2 DEMAND-SIDE INCENTIVES

Numerous disincentives exist that may prevent a woman and her children from seeking and reaching care. In what is known as the three delays, women may delay the decision to seek care; there may be a delay in reaching care; and there may be a delay in receiving care once a facility is reached.

Women may delay seeking care because of inadequate knowledge – for example, the value of facility-based delivery may not be sufficiently recognized. Pressure from family and the community to deliver at home with a traditional birth attendant (TBA) may also play a role. There may also be delays in accessing care due to transportation costs, opportunity costs of time off work, and the logistical costs associated with child care for children left at home. Furthermore, user fees are known to lead households to prioritize urgent curative care services and neglect essential preventive care. For facility delivery, for example, even in public facilities where services may be free, it is not uncommon for women and their families to have to purchase necessary medications and provide basic supplies such as gloves, gauze, blankets or sheets, and plastic bags for disposal of waste. Home births have no transportation costs, lower time costs, fewer fees for care providers, no unofficial payments, and are potentially less burdensome to the family than facility-based births. Care costs associated with pregnancy and delivery have been shown to be a primary reason behind delays in accessing care (Kinney et al. 2010).

Studies from developing countries demonstrate that households systematically spend a significant portion of their resources on remedial health care (Dupas 2011). Estimates show that the proportion of households with catastrophic health expenditure (when out-of-pocket health expenditure exceeds 40 percent of income net of subsistence expenses in a given year) is over 10 percent in Vietnam and Brazil, but it is only 0.01 percent in France, 0.09 percent in Canada, and 0.55 percent in the United States (Xu et al. 2003). Studies also show that households in developing countries tend to underinvest in preventive health care. For example, sleeping under ITNs reduces the incidence of malaria by 50 percent and mortality by 20 percent (Morel et al. 2005), yet, and as seen in previous section, bed-net coverage is still limited in malaria endemic countries (it was estimated to be under 10 percent in sub-Saharan Africa by the early 2000s) (Miller et al. 2007), and usage of ITNs remain a challenge.

3.3 PERFORMANCE-BASED INCENTIVES

In this context, there is a growing momentum in the development community – both among donors and national governments – to tackle the dysfunctional incentive environments that discourage people from taking actions that would lead to better health and to reorient spending, away from inputs, and towards results. Defined as the “transfer of money or material goods conditional on taking a measurable health-related action or achieving a predetermined performance target” (Eichler and Levine 2009), PBI can realign incentives to encourage actions by women, their families, and health providers to increase health service utilization and improve maternal health outcomes.

Incentives can be given to patients when they take health-related actions (such as delivering in a facility); to health care providers when they achieve performance targets (such as increasing the number of births they attend); or to health managers at the district, provincial, and national level, conditional on such things as timely and accurate reporting, or the performance of the facilities they are responsible for.

PBI is not only a financing strategy: it can also have a significant impact on health systems and be a catalyst for health sector reform. For example, because PBI schemes pay for results, the success of schemes rests fundamentally on the ability to accurately verify those results. Monitoring and verification require the development of robust health information and management systems, so incorporating the PBI concept, even into programs aimed at specific diseases, can reinforce efforts to improve the timeliness, credibility, and accuracy of national reporting and monitoring.

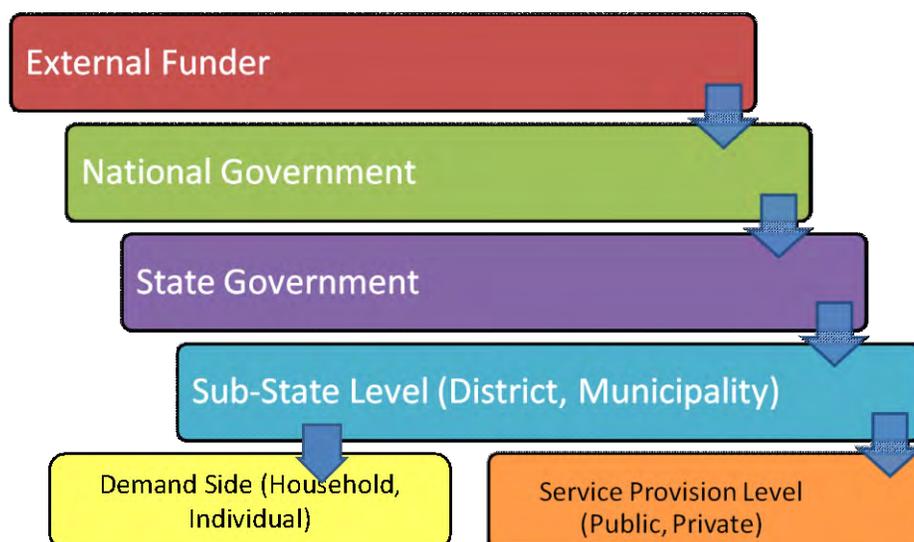
While PBI programs are not new, until recently they have been implemented mostly in developed countries (the U.K., the United States, Sweden, and others). Global commitment to achieve the health MDGs is one of the drivers behind interest in PBI in developing countries as nations recognize that current health systems strengthening/health financing approaches may not produce desired results. Evidence from evaluations of various PBI approaches strongly suggests that PBI can be a powerful tool for accelerating progress on key health issues, including child health. As will be discussed in more detail in Chapter 5, evaluations of conditional cash transfer (CCT) schemes in Latin America have demonstrated that linking income transfers to health and education conditions can produce encouraging results (Glassman et al. 2009). Supply-side schemes that link payment of service delivery nongovernmental organizations (NGOs) to achievement of results in Afghanistan (Sondorp et al. 2009) and Haiti (Eichler et al. 2009) have also delivered results. The increased focus on value-for-money and hunger for results in development cooperation, combined with a growing body of evidence which shows that PBI can be a beneficial approach, has increased the willingness to finance these programs as a complement to the training and investing in inputs that has been much of the focus on health system strengthening in recent decades.

4. HOW IS PBI BEING APPLIED IN DEVELOPING COUNTRIES TO IMPROVE CHILD AND NEWBORN HEALTH?

Many developing countries are currently designing, piloting, or implementing PBI schemes that include newborn and child health components. Some schemes were recently introduced while others have been tested and scaled up. Some are fully private, others are fully public, while still others involve collaboration between public and private sectors. Most programs begin as pilots; some have been expanded to scale and adopted as national policy following promising pilot results.

As Figure 3 shows, PBI schemes can target incentives at many levels in the health system. In some cases, external donors fund countries, subnational levels of government, and NGOs based on performance related to a package of services that include newborn and child health services. Some programs provide transfers from national to subnational levels of government linked to results. There are a number of examples of payment from a government or health insurer to health facilities and to community health workers (CHWs) linked to attainment of health results that include newborn and child health. Also, there are many demand-side PBI programs in which funds are provided to households and individuals to overcome financial barriers to accessing care and to motivate increased utilization of key lifesaving interventions.

FIGURE 3: LEVELS TO CONSIDER: FROM PAYER TO RECIPIENT



This paper will focus on direct child and newborn health interventions such as nutritional counseling and supplementation, growth monitoring, immunization, newborn care, PMTCT, prevention and treatment of malaria, diarrhea, and pneumonia. Deliveries will also be highlighted because of their contribution to enhancing newborn health as well as maternal health. While effective birth spacing through family planning also contributes to child health, this paper will not focus on family planning as it has been featured in a companion paper (Morgan et al. 2011).

The following sections take a closer look at existing PBI programs, presenting a selected number of programs that address newborn and child health to give a sense of what is currently at work. It is intended to highlight interesting examples and is not meant to be exhaustive. It is structured using five overarching types of schemes: demand-side incentive schemes (e.g., CCT programs); vouchers; supply-side schemes to incentivize health facilities and subnational levels of government; performance-based aid; and performance-based contracting of NGOs.

4.1 DEMAND-SIDE SCHEMES

Demand-side schemes are used to increase the demand for health services and typically provide incentives to individuals or households conditional on taking a health promoting action(s). Demand-side programs can remove financial barriers to accessing services and may also motivate people to adopt health enhancing behaviors that have public health externalities and/or long-term health benefits that may be under-valued in the current period.

The most well-known demand-side mechanism is the CCT, which provides regular income support to poor households conditional on their compliance with a number of program requirements intended to enhance the human capital of newborns and children and to reduce both short-term vulnerability and the long-term intergenerational transmission of poverty (Hoddinott and Bassett 2008). Health and nutrition components of CCTs aim to stimulate demand for health services by transferring cash to mothers conditional on their seeking services for themselves and their children at health clinics and attending health education talks that cover family planning, nutrition and sanitation, among many topics. Since 1997, seven countries in Latin America (**Brazil, Colombia, Ecuador, Honduras, Jamaica, Mexico, and Nicaragua**) have implemented and evaluated CCT programs with health and nutrition components (Glassman et al., 2009). CCT programs in Latin American have typically incentivized health visits, school attendance, vaccination, and growth monitoring.

Other CCT programs offer individuals payments when they access discrete services, rather than the Latin American model of ongoing income support. These programs often incorporate incentives to CHWs, who serve as links between patients and facilities and in some cases provide counseling for women, families, and their communities.

For example, in a CCT program in **India**, women receive a payment when they access health services, and deliver their babies in accredited private or public facilities. Other programs provide in-kind incentives: an experimental study (Banerjee et al. 2010) in the state of Udaipur, India gave parents from randomly selected villages 1 kg of lentils per immunization administered and a set of metal meal plates upon completion of a child's full immunization course. Mama-kits, containing products that the mother can use post-delivery, have also been used (in **Zambia and Rwanda**) to incentivize mothers to deliver in facilities.

4.2 VOUCHER SCHEMES

Voucher programs provide incentives to both individuals *and* to health facilities, and thus aim to overcome barriers on both the demand and supply sides. Voucher programs distribute vouchers to the target – usually poor and marginalized – population for free or for a highly subsidized price, which can then be redeemed for health services or products at accredited health facilities (Meyer et al. 2011).

A recent systematic review of voucher programs identified a total of 43 health voucher programs located in 27 countries.⁵ Of those, 14 programs focused on maternity/midwifery services, 13 provided family planning services, 11 targeted bednets for malaria (ITNs, and long-lasting insecticide-treated nets) – but only two focused on the provision of health services, including for children, although programs that provide vouchers for bednets for malaria prevention can have positive implications for child health; these have been implemented in a large number of African countries including **Mozambique, Niger, Senegal, Tanzania, and Zambia**. The programs most commonly provide discount vouchers for bednets to target groups, which typically include pregnant women and children under five years old, and children attending vaccinations.

At the time that the review was written in 2011, at least nine maternal health vouchers schemes were operating in **Armenia, Bangladesh, Cambodia, India** (which has four different programs), **Kenya, Pakistan, and Uganda**. Some maternal health schemes benefit newborn health by providing vouchers to poor, pregnant women to access safe deliveries, and these schemes also typically incentivize antenatal and postnatal check-ups (**Bangladesh, Cambodia, Kenya, Pakistan and Uganda**).⁶

Programs directly targeting child health services are less common. One interesting example, however, comes from **India**, where a voucher was piloted in four slum areas in Kolkata. The program offered a complete package of reproductive and child health services to all female residents and children of selected urban slums.⁷ It provided vouchers to beneficiaries to access private physicians, who practiced in the vicinity of the slum area, at a highly subsidized price (Gorter et al. 2003). In the Yunnan Province in **China**, another program provided vouchers to pay part of the cost for a number of services including the following child health services: outpatient treatment for intermediate and severe diarrhea and pneumonia and inpatient treatment for diarrhea and pneumonia of infants and children under three years (Du et al. 1999).

4.3 SUPPLY-SIDE SCHEMES

Supply-side schemes reward health care providers for achieving predetermined health results (outputs or outcomes). They may provide incentives at different levels of the health system: to regional and district health supervisors; to health centers and hospitals; and to CHWs. These schemes usually target the public sector but may also include private health facilities, managed by NGOs and faith-based organizations. Introduction of performance-based payment is meant to begin to address dysfunctional incentive environments, resolve bottlenecks, and increase productivity of health workers.

Table 1 presents a snapshot of known supply-side PBI programs in developing countries that incorporate newborn and child health components.⁸ As seen in the table, most programs incentivize facility-based deliveries or deliveries with skilled birth attendance (10/16), as well as improvement in immunization coverage (14/16). The **Honduras** program has a strong newborn focus and incentivizes appropriate care of newborns. There are a few programs that reward case management of pneumonia (4/16), diarrhea (2/16), and malaria (2/16) (e.g., **Liberia** and **South Sudan**), but this is the exception rather than the rule. Few programs explicitly focus on malnutrition and Liberia is the only program that incentivizes distribution of zinc.

⁵ The inclusion criteria used was vouchers programs that provided health goods/services to populations in developing countries. The search was conducted from September to November 2010.

⁶ For more information about the schemes that address maternal health see Morgan et al. (2011).

⁷ Including family planning, antenatal and postnatal care, child care and immunization, adolescent and reproductive health, prevention and treatment of sexually transmitted infections and reproductive tract infections, prevention of HIV/AIDS, and general health care for common diseases.

⁸ This table does not include CCT programs and voucher programs. For information on programs using such approaches see subsequent sections (e.g., Table 2. CCT programs).

TABLE 1: A SNAPSHOT OF SUPPLY-SIDE PBI PROGRAMS THAT AIM TO IMPROVE NEWBORN AND CHILD HEALTH OUTCOMES

Country	Interventions with Potential Impact on Newborn health			Interventions with Potential Impact on Child Health				Other
	Facility-based delivery or del. w/ skilled attendant	Postnatal care visit or coverage*	Other	Immuni-zations	Vitamin A	Appropriate management of pneumonia (p), diarrhea (d), malaria (m)	Well child care (visits)	
Performance-based Aid								
Salud Mesoamerica 2015 (Central America and the state of Chiapas in Mexico)	x	x		x	x			Effective child feeding practices (e.g., survey evidence that families give nutritious food to sick children), exclusive breastfeeding.
GAVI				x				
Performance-based Inter-Governmental Transfers								
Brazil			7 or more prenatal consultations	x		p**		Reduction of hospital admissions for children <5 for acute respiratory infection
Argentina	x		Medical auditing of infant death, Prenatal care services, Apgar score, Quality of prenatal and delivery care	x			x	Inclusion of indigenous populations
Performance-based Incentives in Public Service Delivery								
Benin	x	x	Extra incentive for skilled delivery for indigenous women	x				New curative consultation, growth monitoring for children between 11 and 59 months, distribution of ITNs to pregnant women)
Burundi	x	x	PMTCT	x			x	Infant malnutrition cases investigated, ITNs distributed, latrine constructed, new curative consultations for children <5 years
Egypt	x	x		x				Antibiotics prescribed
Honduras			x***			P, D (assessment and appropriate management)		Newborn attended immediately, registered, and managed

Country	Interventions with Potential Impact on Newborn health			Interventions with Potential Impact on Child Health				Other
	Facility-based delivery or del. w/ skilled attendant	Postnatal care visit or coverage*	Other	Immuni-zations	Vitamin A	Appropriate management of pneumonia (p), diarrhea (d), malaria (m)	Well child care (visits)	
India (JSY)	x	x		x				
Rwanda	x		Prenatal care visits	x			x	Malnourished children referred for treatment during preventive care visit Curative care visits (not child specific)
Zambia	x	x	Antenatal care visit Third dose of malarial IPT	x				HIV-exposed babies administered nevirapine, Curative consultation
NGO Performance-based Contracting								
Afghanistan	x		Availability of key inputs – equipment, drugs and supplies, such as ORS – necessary for appropriate management of newborn and childhood care					Average number of new outpatient visits per month
DRC****	x			x			x	Curative child health visits
Haiti	x			x		D		x (# children weighed and enrolled in nutritional program, reduction in waiting times)
Liberia				x		D (ORS and zinc included)		
South Sudan	x			x	x	D, P, M		<5 sleeping under ITN, identification of underweight children

* In most cases it is not clear whether the postnatal care is for both mother and child, or primarily the mother.

** Actual indicator is “% reduction of hospital admissions for children <5 for acute respiratory infections, which implies improvements in early identification and appropriate treatment/management of respiratory illness in young children.

*** “% of newborns who were attended to immediately according to standards and were registered in the perinatal clinical history” and “% of premature newborns who were managed according to selected standards”

**** DRC has a number of different PBI programs with varying indicators. This table refers to the indicators used in International Rescue Committee program in Katanga. For more information on the various approaches in DRC, please see Bertone et al (2011).

At the time of writing, countries implementing supply-side models with child and/or newborn health components included: **Benin, Burundi,⁹ DRC, Egypt, Rwanda, Senegal, Tanzania, and Zambia.** These programs are in different stages of implementation and development. PBI programs in **Rwanda** and **Burundi** have been ongoing for almost a decade, while **Senegal** and **Zambia** are just beginning to implement pilots.

The **Rwanda** PBI model is one of the most well-developed and influential, and some of the schemes mentioned above share key features with it.¹⁰ In **Rwanda**, PBI began with pilots: two NGOs began implementing PBI experiments in 2002. Growth monitoring, immunization, and treatment of severe malnutrition in children under five were rewarded, among other health activities. Both pilots demonstrated superior results when compared with districts not piloting PBI and, following positive results from a third pilot, the government made the decision to scale up a common national model that incorporated features of each of the pilots as part of the 2005–09 Health Strategic Plan and subsequently incorporated into the National Finance Law (Rusa et al. 2009).

The national PBI model in **Rwanda** (which is similar to the approach used in **Burundi**) pays additional fees to health facilities (per service delivered) for each unit of delivered services on a list that includes 14 primary health indicators and 10 indicators related to HIV/AIDS. The following child health services are incentivized (monetary incentives): child (0–59 months) growth monitoring, preventive care visits (US\$0.18), children who completed vaccination on time (US\$0.92), and malnourished children referred for treatment during preventive care visit (US\$1.83)¹¹. The scheme also incentivizes curative care visits (US\$0.92) although these are not child specific. Newborn health is incentivized indirectly; the scheme pays for four completed prenatal care visits (US\$0.37) and for deliveries in facility (US\$4.59). A number of content of care indicators are also incentivized (Basinga et al. 2010 and Basinga et al. 2011), including:

- Women who received appropriate tetanus vaccine during prenatal care (US\$0.46)
- Women who received second dose of malaria prophylaxis during prenatal care (US\$0.46)
- At-risk pregnancies referred to hospital for delivery during prenatal care (US\$1.83)
- Emergency transfers to hospital for obstetric care during delivery (US\$4.59)
- Other emergency referrals during curative treatment (US\$1.83)

The **Burundi** scheme includes indicators that relate to child health either directly or indirectly: distribution of ITNs, latrines constructed, PMTCT, immunization, as well as three antenatal care visits and a postnatal consultation. The schemes in Rwanda and Burundi also incentivize quality of care. In Rwanda, fees are discounted by quality assessment scores and in Burundi, facilities have the opportunities to earn an additional bonus for performance on quality assessments.

Honduras has implemented a PBI approach that is unique in that it aims to improve *quality* specifically in public hospitals, which impacts on the quality of hospital-delivered child health services. The program consists of monetary payments to hospitals based on their implementation of quality improvement plans, which emphasize appropriate and effective implementation of a package of health services that includes the following newborn and child health activities:

⁹ Similarly to the Rwanda experience, the PBI approach has been adopted as national policy in Burundi.

¹⁰ For more detailed information on the indicators related to child and newborn health that are used in the programs mentioned above, see Table 1, and for more detailed information on the design of current supply-side models in Africa, see Morgan and Eichler (2011).

¹¹ This last indicator is a content of care indicator and referrals must be confirmed by hospitals

- Ensuring newborns are attended to immediately according to standards and are registered in the perinatal clinical history
- Ensuring that premature newborns are managed according to selected standards
- Ensuring that children diagnosed with diarrhea are assessed, classified, and treated according to the degree of dehydration
- Ensuring that standardized management procedures for childhood pneumonia are followed

4.4 ROLE OF COMMUNITY HEALTH WORKERS

The schemes mentioned above typically provide incentives at several levels of the health system – from district management teams to teams of health workers at health facilities. While facility-level payments filter down from the facility to individuals as they are partly used to reward health workers, incentives are also being used at the community level to motivate CHWs. Programs that include incentives to CHWs are being piloted in a number of countries including Afghanistan, India, the Philippines, and Rwanda. CHWs play an important role in identifying local health concerns, in counseling parents and other caregivers of sick children, and in referring sick infants and children to health facilities.

The Indian government-supported *Janani Suraksha Yojana* (JSY) program,¹² which provides PBIs to individual female village-level community health “link” workers is an example of a program targeting CHWs. The program incentivizes Accredited Social Health Activists (ASHA) that serve as liaisons between the community and the government health systems. In terms of absolute number of beneficiaries, the JSY program – translated as “safe motherhood scheme” – is the largest CCT program in the world.

ASHAs are responsible for implementation of a full package of activities along the reproductive continuum of care that are important to both the woman and the newborn’s health directly following birth. Specific ASHA responsibilities related to newborn and child health include:

- Identifying pregnant women as beneficiaries for the JSY scheme;
- Developing and following birth plans for enrolled women;
- Facilitating beneficiaries to receive at least three antenatal care visits, two tetanus toxoid immunizations, and iron and folic acid tablets;
- Escorting the beneficiary to a qualified health facility for delivery and remaining with the beneficiary until she is discharged;
- Arranging the appropriate immunizations for the newborn;
- Registering the birth of the child;
- Conducting a postpartum visit within seven days of birth; and
- Providing counseling for appropriate breastfeeding and options for family planning.

ASHA payments are conditional on completing activities. The government of India recommends that payments be disbursed in two installments, the first (and larger share) once the CHW has accompanied a pregnant woman to the facility and assisted her through delivery and the second (about half the former amount) approximately one month following delivery, during which time the CHW would have helped with postnatal care, birth registration, and newborn immunization. How closely states follow this

¹² For a detailed overview of the JSY scheme, see Dagur et al. (2010).

national guidance is unclear. Nor is it clear whether verification is undertaken to ensure that CHWs have indeed conducted the required postnatal visit, birth registration, and newborn immunization prior to the second payment.

Through implementation of these activities, JSY seeks to promote early identification and registration of complicated cases, establish referral mechanisms and, where necessary, ensure referral transport is readily available in advance. It also seeks to increase facility-based deliveries and ensure more pregnant women are followed from prenatal care to postnatal care, to improve the health of both mother and newborn. The JSY program also provides demand-side payments to women, which is linked to facility-based delivery. Eligibility criteria differ by state.¹³

In the **Philippines**, a team of CHWs called the Women's Health Team (WHT) also receive financial incentives tied to delivery of a package of care that includes appropriate prenatal and delivery care. The teams are composed of a rural health unit midwife, one *barangay* health worker,¹⁴ and one TBA. TBAs, who often influence where women choose to deliver, are incentivized to collaborate with formal health providers, which reduces their motivation to assist with deliveries outside of the WHT mechanism.¹⁵

While the newborn component is not explicitly incentivized – i.e., no payment is received based on an activity that explicitly improves newborn health – it is implicitly incentivized as the rewarded package of care encourages facility-based delivery.

As with JSY, payment to WHTs is not linked to all activities that they are responsible for. Instead, WHT payment is only tied to facility-based deliveries. Provinces have a certain degree of flexibility in how they decide to distribute the WHT payment among team members. For example, in Sorogon province, 60 percent is for the TBA, 20 percent for the midwife, and 20 percent for the *barangay* health worker. In Surigao del Sur, the payment is also shared with the health facility.

In both **Afghanistan** and **Rwanda**, the role of the CHW is more modest than in India and the Philippines: CHWs are responsible for marketing voucher programs, identifying women, and then providing the coupon that women must take with them to the facility. Once verified, the CHW receives payment. In **Rwanda**, CHWs are also incentivized in teams, called community health cooperatives, which collectively have the opportunity to receive quarterly cash payments conditional on progress on indicators related to nutrition monitoring, antenatal care, delivery, and family planning.

In **Rwanda**, incentives are offered to cooperatives of CHWs conditional on them finding, educating, and promoting good health practices among women in hard-to-reach areas.¹⁶ The CHWs are identified and

¹³ The government of India has divided states into two categories based on rates of institutional delivery. The 10 states with the lowest rates of institutional delivery are classified as Low Performing States while the remaining 18 states are High Performing States. Low Performing States are Assam, Bihar, Chattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh, Uttaranchal, and Jammu and Kashmir, while High Performing States are Andhra Pradesh, Arunachal Pradesh, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Tripura, West Bengal.

¹⁴ *Barangay* health workers are individuals who have undergone training programs under any accredited governmental or NGO program and who provide primary health care services in their community after having been accredited to function as such by the local health board in accordance with the guidelines promulgated by the Philippines Department of Health.

¹⁵ In some pilot provinces, further measures have been taken to deter TBAs to assist with delivery where they are not a WHT member – for example, both Sorogon and Surigao del Sur have passed ordinances that make it illegal for TBAs to perform home delivery when a skilled birthing attendant is not present.

¹⁶ These two new PBI interventions in the health sector in Rwanda – this time at the community level – are being funded with additional support from the government of Rwanda, World Bank, Global Fund to Fight Aids, Tuberculosis and Malaria, U.S. Agency for International Development, and U.S. Centers for Disease Control. The Rwandan government is also continuing with its commitment to evidence-based decision making, with a rigorous impact evaluation, also funded by the Health Results Innovation Trust Fund, of the two community health PBI interventions running in parallel to program implementation, with results anticipated in the summer of 2012.

nominated by the local community council and work as volunteers. While the community program mostly targets maternal health services, CHWs are also incentivized for the provision of nutrition monitoring (% of children [6–59 months] monitored [conditional on correct referral to health center for malnourished children]) as well as antenatal care (% of women accompanied/referred to the health center for antenatal care before or during the 4th month of pregnancy).

4.5 PERFORMANCE-BASED AID

Performance-based aid (PBA) refers to development assistance – from an external donor to a government – that is conditioned on performance in achieving agreed outputs or outcomes. PBA embodies assumptions that incentives at this higher level will catalyze changes in leadership, planning, management, and systems that will result in improved health outcomes (Eichler and Glassman 2008).

The **GAVI Alliance** (originally the Global Alliance for Vaccines and Immunization) was a pioneer in the shift from paying for expenditures on inputs to paying for performance on full immunization coverage. GAVI has provided performance-based support to countries through its Immunization Services Support (ISS) window since 2000. The ISS allows countries to access three years of flexible grant funding for an initial investment phase designed to strengthen routine immunization systems. Once this phase is complete, countries enter the PBI stage, whereby they receive \$20 per additional child fully immunized with DTP3 above the previous year’s achieved level of DTP3 coverage. The New and Underused Vaccine Support (NVS) window, another mechanism through which countries can access GAVI support, also has an implicit performance basis as the amount of vaccine provided to countries is conditioned on whether they achieve at least 70 percent DTP3 coverage. Thanks to generous contributions to GAVI during the 2011 pledging conference, GAVI now hopes to accelerate the introduction of new vaccines and is planning to support the introduction of pneumococcal vaccines in more than 40 countries by 2015¹⁷

A new and innovative PBA initiative, which addresses both newborn and child health, is being designed in Central America and Mexico. *Salud Mesoamerica 2015* (SM2015) aims to avoid weaknesses observed with other examples of PBA that failed to ensure that incentives change behaviors where change is most needed, namely at the level of the service delivery-client interface.¹⁸ Through this initiative, payments to governments in **Central America** and the **State of Chiapas in Mexico** will be linked partly to results that will include newborn and child health where these are selected as national or state governments’ priorities. SM2015 aims to enhance equity of health coverage as performance will be rewarded for achieving targets in the country’s poorest municipalities. Countries select indicators from a menu that includes indicators related to increasing facility-based deliveries, attaining at least 95 percent immunization coverage, increasing new vaccine coverage (Hib3, rotavirus, pneumococcal) to national averages, and increasing vitamin A coverage. Postnatal care is rewarded as well as targets for nutrition, child anemia, and exclusive breastfeeding. One of the advantages of this program is that it bases payment to a country on results from household surveys. After 2015 this approach makes it possible to include indicators that can be monitored at the household level rather than the facility level.

¹⁷ <http://www.gavialliance.org/funding/resource-mobilisation/process/gavi-pledging-conference-june-2011/>

¹⁸ Source: discussion with Maria Fernanda Merino of the Inter-American Development Bank on May 12, 2010. See also <http://www.sm2015.org>.

4.6 PERFORMANCE-BASED INTER-GOVERNMENTAL TRANSFERS

PBI also encompasses programs that link incentives to transfers from national to subnational levels of government conditional on state and municipality performance. This may be especially useful in settings where top-down approaches to health are not feasible due to factors such as sheer size of countries or in high levels of decentralization. By linking federal to lower government-level transfers to results, national governments can exert influence by providing incentives to hold the lower levels of government accountable while preserving the principle of direct management of health at the state level. These types of programs have been implemented in **Argentina, Brazil, and India** and, as of this writing, are in the design phase in **Ethiopia and Nigeria**. Effective performance-based transfers can stimulate state health leaders to identify and fix systemic weaknesses and bottlenecks. If not carefully designed and implemented, however, performance-based transfers can have the same challenges as PBA described above, meaning that the incentives themselves do not trickle down. If the incentives do not translate into health improving actions at the interface between providers and clients, performance-based transfers may have little overall impact on newborn and child health outcomes.

Introduced in 2004, PBI in **Argentina** is composed of federal government transfers to provinces. Operating in the poorest regions in the country, a maternal and child health insurance scheme called *Plan Nacer* targets vulnerable population groups, namely children under six years old and pregnant women. *Plan Nacer* expands coverage and access to services by poor women and children. It subsidizes premiums in targeted social insurance program, specifying the rules for transfers of funds from national to province level, and creating health purchasers at the provincial level who negotiate with and pay providers for a defined list of services.

Plan Nacer covers a benefit package that includes 80 health services that target the primary causes of infant, child and maternal deaths. Payment to provinces is based partially on *Plan Nacer* enrollment levels and partly dependent on performance on ten performance indicators (called “tracers”). Four tracers focus on newborn health, while two track child health (see Box 1).

Box 1: *Plan Nacer* Output-based “Tracers”

- Timely inclusion of eligible pregnant women in prenatal care services
- Effectiveness of **early neonatal and delivery care** (Apgar score)
- **Effectiveness of prenatal care and prevention of premature births (birth weight above 2.5 kilos)**
- Quality of **prenatal and delivery care** (testing for sexually transmitted diseases, vaccine program completed for pregnant women)
- Medical auditing of maternal and **infant death**
- **Immunization coverage** (measles vaccine)
- Sexual and reproductive health care
- **Well child care (1 year old or younger)**
- **Well child care (1 to 6 year old)**
- **Inclusion indigenous populations**

Note: Bolded text reflects those indicators linked to newborn and child health

4.7 PERFORMANCE-BASED CONTRACTING OF NGOs

Contracting NGOs and paying partly based on results has proven to be an effective strategy to quickly scale up service delivery and ensure that services reach the population, particularly in fragile states and settings that lack sufficient public health service delivery infrastructure. For example, in **Afghanistan**, **Haiti**, **Liberia**, and **South Sudan**, NGOs are contracted to directly deliver services and/or oversee service delivery with part of their payment conditioned on performance. This sometimes includes paying incentives and providing support to public health teams and public facilities, as well as second-tier contracts to service delivery NGOs. In some settings (Afghanistan and Liberia), NGO contracting has also been effectively used to bolster the steering role of the national Ministry of Health.

The fledgling **Afghanistan** Ministry of Public Health and supporting donors made the decision in 2002 to contract NGOs to provide access to a package of essential health services (which includes child health). The three donors (European Union, World Bank, and USAID) chose to adopt distinct contractual approaches, which allowed for cross-approach comparison (Sondorp et al. 2009). The approach used by the World Bank-funded program explicitly includes a performance-based monetary bonus of 10 percent of the contract value over the life of the project. Annual performance assessments are independently undertaken using a “balanced scorecard,” which captures patient, community, and staff satisfaction, service provision capacity, service provision, financial systems, and overall vision. In the “capacity for service delivery” domain are two indicators that partially relate to newborn and child health: 1) “presence of key equipment, such as weighing scales for children, thermometer, and sterilizer” and 2) “presence of five key drugs (paracetamol, amoxicillin, tetracycline eye ointment, ORS and iron tablets”).

Governments are also contracting NGOs to deliver health services in Liberia and South Sudan. In 2009, a project in **Liberia** awarded contracts to NGOs to oversee delivery, at the county level, of a full package of services that includes infant and child health and is funded with a subset linked to an annual performance payment (see Morgan 2011). There are two potential annual bonuses linked to infant and child health in the Liberia scheme: the “Number and percent of children <12 months who received DPT3” and “Number and percent of cases of child diarrhea treated with: a) oral rehydration therapy (ORT), b) zinc supplements.”

In South Sudan, there are currently two PBI programs under implementation, one supported by the World Bank and one by USAID. Since 2009, the World Bank-supported scheme contracted NGOs to deliver health services partly based on performance. Performance payments are made to NGOs conditional on performance on indicators that include:

- % children 12 to 23 months old who received DPT3/measles vaccine before the age of 12 months
- % children under five sleeping under an ITN the night before the survey
- Vitamin A coverage: among children 6–59 months % receiving it in the last six months
- Treatment of diarrhea, acute respiratory infection, malaria – outpatient visits among <5 per capita
- Underweight (weight for age smaller than within two standard deviations of the mean)
- Skilled birth attendance in a health facility.¹⁹

¹⁹ See Morgan (2010).

5. THE IMPACT OF PBI APPROACHES TO IMPROVE NEWBORN AND CHILD HEALTH

The evidence of the impact of PBI is limited but growing. Much of what we know is based on before and after assessments using baseline and endline data; the design of these assessments is typically too weak to disentangle the effect of the incentive from other contextual factors. There are a few exceptions, however. **Rwanda** conducted a rigorous impact evaluation that showed positive results. **Uganda's** first PBI pilot was rigorously evaluated, as were CCT pilots in **Malawi** and **Tanzania** (all discussed in this report). Many of the CCT programs in Latin America have been rigorously evaluated. And at least seven other countries will rigorously evaluate their PBI programs with funding from the World Bank-administered Health Results Innovation Trust Fund.

There is also growing recognition of the importance of documenting the PBI process – from generating buy-in among stakeholders, to designing a program, to implementation, program learning, revision, and scale-up – as a complement to quantitative evaluations. This is because impact evaluations typically do not provide insight into the *how* and *why* of observed changes that occur. Yet these operational questions are of critical interest to governments, evaluators, practitioners, donors, and the global health community – both as a means to improve and revise the program as you go, and to inform policy.

This section summarizes available evidence and highlight key studies on the impact of various PBI schemes that address newborn and child health. It follows the same structure as the previous section; demand-side incentive schemes, vouchers, traditional supply-side schemes, performance-based aid, and contracting of NGOs.

5.1 EVIDENCE OF IMPACT OF DEMAND-SIDE SCHEMES

There is a large body of evidence on the significant positive impact of CCT programs in increasing the use of preventive services and sometimes directly improving health status. Though CCT programs must be carefully designed to avoid unwanted effects,²⁰ evidence from recent reviews²¹ strongly suggests that CCTs can help to improve child health outcomes.

CCT programs show impressive results in terms of increasing the use of health services for children and women. In all rigorous evaluations of CCT programs reviewed by Lagarde, the increase in percentage of children visiting health centers in intervention areas ranged between 11 percent and 33 percent. For

²⁰ For example, there is evidence that the eligibility criteria for household members to receive transfers, or the understanding of the eligibility criteria by recipients, have had unintended consequences for CCT programs. A CCT program in Honduras, may have resulted in an increase in fertility of 2 to 4 percentage points, because being pregnant was an eligibility criteria for receiving the subsidy. Another example is a program in Brazil, where beneficiaries seem to have misinterpreted the eligibility criteria and thought that having at least one malnourished child was necessary for continued membership of the program. This may be behind the unexpected small negative impact of the Brazil program on children's weight gain. These examples show the importance of careful program design, clear communication to target groups, and constant program monitoring and adjustments in program design if warranted.

²¹ Lagarde et al. (2007) studies the impact of CCT programs in low- and middle-income countries and reviews six studies (four randomized control trials, one quasi-randomized control trial, and one before and after study), of which five were from Latin America and one from Africa. Only the programs in Latin America had child health components.

instance, in the case of a Colombian CCT program, there was an increase in children's preventive health care visits by 23 percentage points for children younger than two years and 33 percentage points for children between two and four years (there was no significant increase for older children.)

CCT programs also have an impact on immunization coverage (in four out of five studies reviewed) although not as robust as the effect on utilization of health services. It may be challenging to increase immunization rates through CCT approaches in settings with already high coverage. But in settings with large disparities between immunization of the poorest and better off, CCTs appear to improve results. For example, the CCT program in Nicaragua showed more than a 30 percentage point increase in DTP3 coverage (from 40 percent to 70 percent) in treatment areas compared to a smaller increase in control areas, with a highly significant impact on the poorest relative to the non-poor (Castro and Regalia 2009).

The review also shows that CCT programs have an impact, mostly positive, on anthropometric measures; however, effects seem smaller and limited to certain subgroups. For example, an evaluation of a CCT program in **Colombia** (Attanasio et al. 2005) shows a mean weight increase of 0.58 kg for newborns in urban areas of the intervention districts, and an increase in height-for-age z scores for infants younger than two years old in treatment districts (by 0.161). There was no impact, however, of the program on the nutritional status of children older than 24 months or on the weight of newborns in rural areas. Similarly, a review (Hoddinott and Bassett) of the impact of CCT programs on nutritional outcomes concluded that the programs in **Mexico** and **Nicaragua** were associated with improvements in child height that are sizeable in magnitude, while the program in Honduras and Brazil had essentially no effects on preschool nutritional status. Moreover, while improvements in iron status were observed in **Mexico**, these were not found in **Honduras** or **Nicaragua**. The evaluation concludes that the impact of CCT programs on nutrition in Latin America could be improved with design modifications.

CCT programs have mixed effect on other measures of health outcomes. For instance, a study (Gertler 2004) based on the Mexican program *PROGRESA* found that children aged 12–36 months were 25 percentage points less likely to be anemic than those in control districts. In **Colombia**, children younger than 48 months in intervention areas have a lower probability of reported diarrhea symptoms, but there was no impact on the probability of experiencing respiratory or diarrhea symptoms in children older than 48 months. The authors of the review (Lagarde et al. 2007) highlight the importance of ensuring a reliable supply of health services in areas where demand-side incentives are implemented, for maximal impact.

Ensuring adequate supply of services is particularly important in the context of recent research (Dupas 2011) suggesting that incorporating demand-side incentives into supply-side programs may improve the impact of both. As mentioned previously, an experiment (Banerjee et al. 2010) in Udaipur, India, added demand-side incentives to a supply-side program. As part of a supply-side intervention focusing on making immunization camps more reliable with consistent opening hours, parents from randomly selected villages were given 1 kg of lentils per immunization administered and a set of metal meal plates upon completion of a child's full immunization course.²² The supply-side intervention (reliable immunization camps) alone increased full coverage of immunization from 6 percent to 17 percent, but the small incentive on the demand side (lentils) increased rates an additional 21 percent, from 17 percent to 38 percent in the intervention villages. The study concludes that demand-side incentives can be effective additions to supply-side programs by providing caregivers with an immediate benefit from adopting a healthy behavior.²³

²² The incentives had a value of about Rs 40 (less than US\$1), which is the equivalent to three-quarters of one day's wage.

²³ Outside of the newborn and child health context, Thornton (2008) observes similar results regarding HIV testing in Malawi.

The evidence presented in this section suggests that CCT programs have the potential to improve newborn and child health. Demand-side strategies can help to increase the use of health services and improve nutritional and anthropometric outcomes as well as preventive behaviors; however, their impact on overall health status is yet to be determined. Furthermore, when implementing CCT programs, it is important to ensure a reliable supply of services as the demand increases. Recent experiments with combined supply-side and demand-side programs have shown promising results in increasing health services coverage and uptake.

5.2 EVIDENCE OF IMPACT OF VOUCHER SCHEMES

A recent systematic evaluation (Meyer et al. 2011) of the impact of 16 health voucher programs show evidence consistent with the above reported findings on the impact of CCTs. Though few voucher programs directly target child health, most included in the review focus on the use of ITNs and incentivize facility-based deliveries for pregnant women. The review found that voucher programs increase utilization of health goods/services and that there is some evidence that these programs can effectively target subpopulations and enhance the quality of health services.

An evaluation of a voucher scheme in Tanzania, for instance, saw that net coverage of children under-five was significantly higher in the intervention group (84 percent) than in the control group (32 percent) (Kikumbih et al. 2005). The impact of voucher programs on the health of the population is less clear; most evaluations report no effect but the evidence is not robust enough to draw definitive conclusions. Another study conducted in **Tanzania** looked at the net coverage level of the target group (children under-five and pregnant women) with the use of voucher ITN as predictor and found no effect (Marchant et al. 2008). The authors argue that one should not draw the conclusion that this means that voucher programs do not impact health outcomes. Health improvements often take years and therefore may not have been captured in the allotted evaluation period. Furthermore, most aid programs struggle to demonstrate causality between the program and improved health outcomes.

The current evidence base is too small to draw conclusions about whether voucher programs deliver health services/goods more efficiently than other health financing programs.

5.3 EVIDENCE OF IMPACT OF SUPPLY-SIDE SCHEMES

Available evidence on the impact of supply-side programs suggests that incentives can make a (sometimes dramatic) difference. Utilization of time-limited, measurable interventions such as deliveries and immunizations have been shown to increase dramatically in PBI schemes, particularly if these services begin with low baselines, receive high payments, and are reasonably within the control of the provider to influence. For example, the program in **Rwanda** found that health facilities receiving PBI payments had a 23 percent increase in the number of institutional deliveries, a 56 percent increase in number of preventive care visits by children aged 23 months or younger and 132 percent increase for children aged between 24 and 59 months (Basinga et al. 2011). Crucially, the Rwanda evaluation found that the quality of prenatal care, as measured by compliance with Rwandan prenatal care clinical practice guidelines, increased in PBI facilities by 0.158 standard deviations (Basinga et al. 2001).

The Rwanda evaluation study concludes that PBI can increase the utilization and quality of maternal and child health services. The authors of the study also recommend that schemes pay more for verifiable clinical content indicators that are closely related to outcomes, are measurable, and can be controlled by the provider. Similarly to the finding of the experiment in Udaipur (Banerjee et al. 2010), which combined supply and demand side incentives, the **Rwanda** evaluation study highlighted the importance of demand-side incentives and incentives to outreach workers to improve care-seeking behavior of the patient.

A study conducted in four districts in **DRC** (two control and two intervention districts) evaluates the impact of a performance-based payment scheme during the period 2005–08 (Soeters et al. 2011). It concludes that health facilities receiving incentives performed better than control districts, particularly in terms of quality of care, improving financial access for patients and making efficiency gains. However, the study showed mixed results around newborn and child health. Facility deliveries increased more in control districts (29 percent) than in intervention districts (8 percent) during the period 2005–08, while the immunization composite score (100 percent for four indicators) increased more in intervention districts (31 percent) compared to control (12 percent) districts. Increases in facility births in control districts can be attributed to a drop in user fees as well as investments made by NGOs to enhance the delivery of care. The improved performance in intervention districts is particularly noteworthy because control districts actually received more resources than intervention districts: the latter received US\$2 per capita per year, compared to the \$9–\$12 in external assistance received by the control districts.

In general, changes are most dramatic for actions more in the control of the provider and for which payments are relatively high. In **Rwanda**, for example, no change was noted in terms of number of women completing prenatal care visits or of children receiving full immunization, but this may relate to the fact that vaccination rates were relatively high at baseline (65 percent). Thus, to increase this indicator, health providers would have had to enter into the community and actively search for those children that were not vaccinated. Furthermore, since only full immunization was incentivized, the child had to visit the clinic many times over the year before the provider would receive a bonus, which was set at US\$0.92. Hence, a relatively large effort was required by the health provider to complete an immunization. In contrast, institutional deliveries, a one-time event, had a per unit payment of US\$4.95 and in these cases anecdotal evidence showed that providers would work together with CHWs to identify pregnant women in the communities and ensure that they would deliver in the facilities.

5.4 EVIDENCE OF IMPACT OF PERFORMANCE-BASED AID

A recent evaluation of GAVI ISS (Pearson et al. 2011) suggests that investment from the International Finance Facility for Immunization (IFFIm) have had, and are likely to have, a large positive impact on health outcomes, though perhaps not as high as initially anticipated. An additional 76.5 million children were immunized as a result of ISS during 2001–2010 (Chee et al. 2007). The evaluation cautions that the evidence base for measuring the impact of ISS on health outcomes is weak and that the existing models have large shortcomings. However, it also provides evidence that increased DPT3 immunization levels were accompanied by increases in other vaccine, namely measles, coverage (Pearson et al. 2011). The report states that overall impact of IFFIm funded spending is likely to have exceeded, with a factor of at least four, the total costs of IFFIm.²⁴

5.5 PERFORMANCE-BASED INTER-GOVERNMENTAL TRANSFERS

Performance-based transfers have shown some promising results. For example, data from two provinces where *Plan Nacer* has been implemented show increases in the proportions of prenatal visits, in the

²⁴ It remains difficult to draw inferences between these results and the performance-based aid approach per se, given that the largest driver of cost-effectiveness of the IFFIm is the very high cost-effectiveness in the investments being supported, namely vaccines. Furthermore, the methodology of the study does not provide any counterfactual analysis for a ‘what if not PBI scenario.’

proportions of births with APGAR²⁵ scores >6, in birth-weights, and in the probability of a baby (<12 months) care visit, as well as decreased child death at birth (Gertler et al. 2011).

5.6 EVIDENCE OF THE IMPACT OF PERFORMANCE-BASED CONTRACTING OF NGOS

While rigorous impact evaluations of performance-based contracting are few, available evidence suggests that it is an effective tool to complement investment in infrastructure and other inputs, as a means to rapidly scale up service delivery, particularly in fragile states with weak governments.

A study on the introduction of PBI in **Haiti** shows encouraging results (Eichler et al. 2009). Panel regression results (covering eight contract periods), which isolate both for NGO-specific effects and contract period effects, show that the PBI scheme resulted in large improvements in immunization coverage (between 13 and 24 percentage points) and an increase in attended deliveries (between 17 and 27 percentage points).

A quasi-experimental study in **Cambodia** (Soeters and Griffiths, 2003) also finds positive impacts of PBI both in terms of increasing immunization rates and increased equity in access to immunization. For instance, the percentage of children fully immunized increased from 24 percent to 52 percent in a three-year period in one of the intervention districts (Pereang). Similarly the percentage of children with diarrhea who received an ORS package increased from 11 percent to 28 percent. This study suffered from a resource bias, however, where interventions areas had more resources than those in the control group, which mean that resources rather than the PBI mechanism could explain the positive outcome (Soeters and Griffiths, 2003).

Afghanistan has experienced a steady increase in the percentage of facilities providing delivery care and skilled attendance at birth, though it is not possible to attribute improvements solely to performance-based contracting.²⁶ The percentage of facilities with skilled female health workers also increased from 24.8 percent in 2002 to 82 percent in 2008 – a critical development in a country where women cannot typically receive care from male health workers.

²⁵ Apgar is a method for quickly assessing the health of a newborn. The Apgar score is determined by evaluating the newborn baby on five criteria on a scale from zero to two, then summing up the five values thus obtained. The resulting Apgar score ranges from zero to 10. The five criteria are: Appearance, Pulse, Grimace, Activity, Respiration.

²⁶ In Afghanistan, contracting itself helped to expand service delivery rapidly and the PBC model outperformed other schemes (USAID and the EC), but the differences were relatively small. Improvements in Afghanistan were also fueled by a huge increase in health funding levels, which has helped to rapidly expand health service delivery in other countries, such as post-conflict Mozambique where there was no contracting.

6. HOW CAN PBI PROGRAMS BE STRENGTHENED TO IMPROVE CHILD HEALTH?

The past decade has generated a significant body of experience with what could be called the first generation of PBI programs. In some cases, these programs have had a significant impact on indicators that ensure child health: increasing complete immunization coverage; enhancing nutritional status through CCT program; supporting quality antenatal care visits that incorporate prevention of malaria, iron supplementation, and PMTCT; and increasing the likelihood that a woman delivers in a facility. The second generation of PBI programs should build on the success of the past while learning from the pitfalls and addressing the gaps.

6.1 BEYOND THE ‘LOW-HANGING FRUIT’

The majority of PBI programs presented in this review have focused on newborn and child health interventions that are relatively simple to measure and require limited behavioral changes by both patients and providers (Eichler and Levine 2009). Common examples include child immunizations or well-baby visits. While these indicators are important, much more could be done to ensure that PBI approaches also incentivize the more complex determinants of neonatal and child health, including services that require ongoing actions by clients and a combination of client, caregiver, and (often multiple) provider actions and interactions. There is a need to identify ways to incentivize and reward appropriate case management or preventive actions to fight the main child killers, namely pneumonia, diarrhea, and malaria, where coverage rates are currently low. Programs could reward distribution of ITNs, partner with water and sanitation programs to reward attainment of defecation-free communities, and incentivize uptake of low osmolarity ORS and zinc by stimulating both supply and use. Innovative demand-side incentives could be introduced to increase uptake of services that address the main child health illnesses. In Benin for instance, diarrhea treatment kits, containing both ORS and zinc tablets, are currently being introduced (Wardlaw et al. 2009).

In countries with a high HIV/AIDS burden, newborn and child health programs can be better integrated with HIV/AIDS programs. The number of PBI programs that reward PMTCT is growing. The Zambia scheme rewards an HIV/AIDS indicator; Rwanda rewards many HIV/AIDS indicators; and a small pilot supported by the Elizabeth Glaser Pediatric AIDS foundation in Cote d’Ivoire, which incentivizes PMTCT, voluntary counseling and testing, as well as adult and pediatric HIV care and treatment indicators, provide good examples of how PBI can be used to improve HIV/AIDS service delivery (Ghanotakis and Attiah 2010).

To ensure that children benefit from the complete package of essential early childhood health services, PBI program designers may consider moving from paying fees for particular services to rewarding health facilities and/or CHWs’ payment for completing a full cycle of services covering each mother/newborn from conception through the postpartum period.

6.2 BRING THE HEALTH SYSTEM TO FAMILIES USING INCENTIVES TO COMMUNITY HEALTH WORKERS AND COMMUNITY-BASED DISTRIBUTION OF CHILD HEALTH-ENHANCING PRODUCTS

Many of the most effective interventions to treat the main child killers must be administered at the family/community level or through outreach workers or by making essential medicines and commodities available at the village level. This means that the next generation of PBI programs should consider motivating and rewarding the frontline health workers (health promoters and CHWs) that directly interact with communities and increasing availability of key child health products in the communities where they reside.

The CHW programs described earlier, such as the one in India, the Philippines, and Rwanda, provide good examples of such approaches. CHWs could, for instance, be incentivized to expand access to zinc, antimalarials, low-osmolarity ORS, treatment of pneumonia and to strengthen integrated community-based treatment of major childhood illnesses. In some countries (e.g., Zambia) CHWs are linked to health centers that supervise them and provide them with the necessary essential medicines and supplies. Health facilities could pay incentives to CHWs to encourage active promotion of child health-enhancing products and thereby increase access.

CHWs could also play a greater role in postnatal care (which will be discussed more in detail below). Recent studies and the JSY program in India show that these workers can effectively promote healthy behaviors for the baby (e.g., exclusive breastfeeding), provide extra care for low birth weight babies, reduce newborn deaths through early identification and case management of pneumonia where referral is not possible, and provide information to mothers and promote the use of other services such as birth registration and vaccination, ORS, zinc, and ITNs (Warren et al. 2006).

Stimulating demand for antibiotics to treat pneumonia, ORS/zinc to treat diarrhea, and ACTs (artemisinin combination therapies) to treat malaria by educating families and increasing availability in communities could contribute to reducing deaths from these child killers. One possibility worth exploring is to sell child health commodities at subsidized prices to community-based distribution points and allow these local entrepreneurs the opportunity to earn a small markup on sales. To strengthen the link between these distributors and the formal health delivery system, these products could be distributed from health centers to village shops and community-based distributors where the health centers could earn a small fee for selling these highly subsidized products. By doing this, health center staff could incentivize CHWs to stimulate demand by educating caregivers about the danger signs of diarrhea, pneumonia and malaria as well as when to obtain lifesaving products.

In summary, programs with PBI approaches can make better use of frontline workers (e.g., CHWs) and community-based distributors by strengthening the links between them and health facilities and incentivizing them to carry out health promotion activities and make lifesaving commodities available closer to the households.

6.3 INCREASE THE FOCUS ON NEWBORN HEALTH

We know that approximately 40 percent of deaths among children under five are estimated to occur during the first month of life and most of these during the first week (WHO 2010). Yet, most PBI schemes only reward improvements in newborn health indirectly – through payments for facility-based births or carried out by a skilled provider. These programs may assume that women who deliver in facilities automatically receive appropriate postnatal care; however, Demographic and Health Surveys show that this is not always the case (Warren et al. 2006).

To encourage interaction with formal health service providers in the first week of life, Tanzania rewards health facilities for increasing the proportion of newborns in a catchment area who receive the polio vaccine (OPV0) in the first week of life. This indicator was designed to encourage outreach to newborns born at home in addition to those born in health facilities. Early interaction with the health delivery system provides an early opportunity to identify problems and provide health messages. OPV0 was considered more feasible to measure and verify than the sometimes used indicator “postnatal care visit.” Other schemes reward postnatal care visits (e.g., Afghanistan, Benin, Burundi, DRC, SM2015, India, Tanzania, and Zambia); however, the content of such visits often is not clear. In future PBI programs, newborn health should receive more attention.

Given the large number of women that deliver at home in developing countries (e.g., two-thirds of women in sub-Saharan Africa) incentives can also be used to increase the demand for postnatal care and build the bridge between the health facility and the home. As of 2006, it is estimated that 72 percent of infants born outside of hospitals do not receive postnatal care (WHO and UNICEF 2009).

PBI approaches for newborn health could explicitly reward the following:

- During antenatal care visits: Counseling on birth-related newborn issues such as pre-term birth, breastfeeding, complications, and HIV (counseling and testing and PMTCT if the patient is positive). Patient incentives can also be used to encourage pregnant women to access care by overcoming financial barriers.
- During birth: Ensure access to emergency obstetric care by incentivizing adequate referrals and transportation; reward high-quality newborn care (kangaroo mother care²⁷ for preterm babies, and HIV care); delivery of steroids to mothers during pre-term labor; and incentivize mothers to stay in the facility for at least 24 hours after birth.
- Newborn care: Motivate high-quality postnatal care (including family planning counseling); reward providers/CHWs for home care visits including identification of danger signs; and incentivize caregivers for bringing infants who are born at home to health facilities as soon as possible after birth.

Some of these services can be included in PBI schemes as indicators others through quality assessment tools. Many of the above mentioned interventions could be added to existing PBI programs, both on the demand and the supply side.

6.4 INCREASE THE FOCUS ON NUTRITION

Nutrition has received increased attention on the global agenda since the groundbreaking *Lancet* series on nutrition in 2008 and after prominent economists concluded, during the 2008 Copenhagen consensus, that six out of the top 10 solutions for global problems were related to nutrition. However, increased global attention has not always translated into effective inclusion of nutrition in health programs. Within PBI programs, nutrition has mostly been addressed through demand-side interventions that often incentivize growth monitoring and promotion, nutrition education, and micronutrient and food supplements. Much more can be done to effectively address nutrition in the next generation of PBI programs. This should be done by including interventions that have a proven record of addressing hunger and malnutrition.

²⁷ Kangaroo care is a technique practiced on newborns of skin-to-skin contact with the mother to ensure warmth and readily accessible breastfeeding.

On the supply side, CHW strategies can be used to improve nutrition and promote nutrition messages at the household level. Furthermore, nutrition counseling can be incorporated into both ante- and postnatal care visits and be monitored through quality assessment tools. There may also be scope for cross-sectoral approaches, wherein families are incentivized to set up community gardens and/or agricultural extension workers are incentivized to promote nutrition in their work.

On the demand side, an excellent review (Hoddinott and Bassett 2008) of CCT programs focusing on nutrition in Latin America, provides some interesting suggestions for how CCT programs can be strengthened to better target malnutrition. Based on best practices from the literature on effective nutrition interventions, it is suggested that one key element is to reorient CCTs to target nutrition-related conditions to the optimal period for nutrition interventions (during the first 24 months), to focus group counseling on age-specific messages with proven impact, to promote hygiene and sanitation, and to provide therapeutic zinc supplementation for children younger than 12 months. A complete list of proposed interventions to improve CCT programs are summarized in Table 2.

TABLE 2: OVERVIEW OF HOW CCT PROGRAMS CAN BE STRENGTHENED TO TARGET MALNUTRITION

General program design
<p>Program conditionality:</p> <ul style="list-style-type: none"> • Conditions focusing on preventing stunting should be applied to pregnant women and children 0–2 years of age. • Conditions related to overcoming iron-deficiency should extend throughout childhood since this condition can affect learning, work performance, and productivity at all stages of life.
Design modifications to address child stunting
<p>Group counseling</p> <ul style="list-style-type: none"> • Focus on key nutrition messages with proven impacts (e.g., complementary feeding). • Provide age-specific messages (e.g., focusing on exclusive breastfeeding for mothers of children 0–6 months, and promoting complementary feeding (including appropriate frequency, consistency, and content) for mothers of children 6–9 months). • Complement counseling with take-home materials with illustrated messages for specific age groups.
<p>Hygiene and sanitation</p> <ul style="list-style-type: none"> • Provide counseling about hygiene and sanitation (e.g., hand washing using soap and at critical moments, hygienic food preparation, and safe disposal of child feces).
<p>Growth monitoring and promotion</p> <ul style="list-style-type: none"> • Seek further evidence as impact results are lacking for this intervention. If this is used as a CCT condition: <ul style="list-style-type: none"> • Provide quality counseling tailored to the child’s circumstances (e.g., adequacy of weight gain, health status, food intake, and caring practices). • Guarantee sufficient training and supervision of staff and volunteers. • Ensure functioning links to the health sector. • Focus on children under two years of age (not older children). • Monitor weight every month for children under 12 months and every two months for children from 13–24 months.
<p>Food supplements</p> <ul style="list-style-type: none"> • Experiment with balanced supplements of energy and protein for pregnant women with low BMI (body mass index) and for children.

Design modifications to address micronutrient deficiencies

Micronutrient supplementation

- Provide iron folate supplements to pregnant women. (Untargeted supplementation is recommended only in areas where malaria is not endemic.)
- Experiment with multiple micronutrient supplements for pregnant women.
- Offer zinc supplements to children and follow emerging evidence on recommended timing and frequency of supplementation.
- Provide dispersible micronutrient preparations, such as *Sprinkles*, to children 6–24 months to improve iron status and promote appropriate complementary feeding.

Complementary supply-side investments

Supply-side interventions

- Focus on areas where services and/or infrastructure are insufficient to support increased demand associated with a CCT or where service quality is poor.
- Test the use of incentives for service providers to determine if this is an effective way to ensure high-quality services (e.g., for delivery of key micronutrients).

Source: Hoddinot and Basset (2008)

6.5 DON'T LOSE FOCUS ON THE QUALITY OF CARE²⁸

The earliest experiences with PBI rarely included indicators related to quality, but that is changing: as programs evolve, measures of quality are increasingly being rewarded.

Schemes often begin with facility-level assessments of structural elements considered to be preconditions necessary to deliver quality services. Elements such as running water, cleanliness, organized stock rooms, essential equipment, and waste disposal are often included. Some schemes have formal accreditation processes (Kenya, Uganda, and Pakistan) while others conduct informal assessments (nearly all other schemes).

Some schemes link performance payment to quality scores as measured by various quality assessment tools. Many countries (e.g., Zambia) have followed the Rwandan example wherein a quality score of less than 100 percent deflates the payment. A different approach is used in Burundi where facilities can earn a bonus of up to an additional 25 percent of the amount earned for the quantity indicators, meaning that the better a facility does on quality, the larger the potential payment.

Quality, in other words, is being increasingly addressed in PBI schemes, but much more can be done. In the area of newborn and child health, the previous section on nutrition provides good examples of areas where the quality of care and/or counseling could be improved, by rewarding content of care. Thus, by conditioning PBI payments on a quality score, providers may be motivated to translate their knowledge about maternal care into better practice.

PBI programs can strengthen quality in the following ways:

- Incorporate quality indicators that measure more than infrastructure and input availability.
- Link payment to the content of visits rather than just to the visits themselves.

²⁸ This section draws on Morgan et al. (2011) and applies to PBI programs addressing maternal as well as neonatal and child health.

- Look for ways to measure patient satisfaction with services and link a small²⁹ portion of facility payment to this measure.
- Measure quality regularly, with a tool that creates a score and reward improvements. Potential incentives could include bonuses for higher scores; higher reimbursement rates for facilities scoring high on quality; or conversely, a portion of payment could be withheld for performance below a defined threshold. Providers could also receive a completion bonus if they succeed in providing the full package of services that cover the continuum of care to voucher clients.

6.6 COMBINE SUPPLY- AND DEMAND-SIDE APPROACHES OR STRENGTHEN SUPPLY AND INCENTIVIZE DEMAND

There are some successful examples of how a combination of demand-side and supply-side incentives can significantly increase the use of health services and improve health outcomes. The Red de Proteccion Social (RPS) in Nicaragua is one example of a combined approach of CCTs and performance-based contracting of NGOs and private providers. An impact evaluation of the program showed encouraging results with an increase in the use of preventive health care services (between 8.4 and 16.4 percentage points) and a large spike in immunization rates (Maluccio and Flores [2005] in Regalia and Castro, 2009).

Another powerful example is the immunization program in Udaipur, India (Banarjee et al. 2010) referred to earlier, which shows that adding a small incentive (1 kg of lentil at a value of Rs.40, i.e., less than US\$1, and a set of metal meal plates upon completion of the immunization) to increase the demand for immunization in the areas where the supply for immunization had increased, helped boost immunization rates from 17 percent (with only the increase in the supply) to 38 percent.

Outside of the newborn and child health sphere, similar observations have been made. A study focusing on HIV/AIDS testing in Malawi found that patients who were offered a monetary incentive (vouchers between US\$0 and \$3) to go to a testing center and obtain their HIV test results after having been administered a free door-to-door HIV test, did go to a higher extent than those who were not incentivized. In fact, the patients who had been offered a voucher were twice as likely to seek the result of their test. Attendance gains were even observed among the group that got the smallest voucher (one-tenth of a day's wage) (Thornton 2008). These studies show that very small rewards can have a disproportionate impact on changing health seeking behavior and improve uptake of health services by providing immediate gratification and resolve time-inconsistency problems (Dupas 2011).

Given this evidence, it is interesting to note that few PBI programs that address newborn and child health combine demand- and supply-side incentives. While the design of PBI programs need to be context specific and it is not certain that combined approaches are appropriate in all environments, policymakers should increasingly see incentives as tools to induce healthy behavior of both health providers and patients. Future PBI supply-side programs could benefit from greater patient focus while demand-side programs could gain from focusing on ensuring quality in the supply of services.

²⁹ Linking more than very small portions of facilities' overall performance payment to the preferences, perceptions, and inclinations of communities, as measured through imperfect patient satisfaction surveys, may be demotivating. Moreover, many aspects of technical quality cannot be evaluated by patients. Still, patient views matter: there may be circumstances in which health workers may provide a high level of technical quality but be rated poorly by patients on humaneness, responsiveness, or satisfaction, and some research has shown that satisfaction is significantly correlated with objective measures of quality. See, for example, Dasgupta et al. (2009).

7. CONCLUSION

PBIs are an important approach to address the demand- and supply-side barriers to improving neonatal and child health. There are a wide range of approaches and still much to learn about what works best. But the evidence so far suggests that PBI approaches can increase use of key neonatal and child health services – especially immunization and institutional delivery – and improve the quality of those services.

Many things are needed to improve neonatal and child health – technological advances, political commitment – but PBI is an important piece of the puzzle for addressing the often neglected drivers that determine health, and strengthening the health of the health system generally, which has positive implications for other areas of health.

REFERENCES

- Attanasio, Orazio, Luis Carlos Gómez, Patricia Heredia, and Marcos Vera-Hernández. December 2005. *The short-term impact of a conditional cash subsidy on child health and nutrition in Colombia*. The Institute of Fiscal Studies. <http://www.ifs.org.uk/publications.php>. Accessed Oct 2011.
- Banerjee, Abhijit, Esther Duflo, Rachel Glennerster, and Dhruva Kothari. 2010. Improving immunization Coverage in Rural India: A Clustered Randomized Controlled Evaluation of Immunization Campaigns with and without Incentives. *British Medical Journal* 340:c2220.
- Basinga, Paulin, Paul J. Gertler, Agnes Binagwaho, Agnes L.B. Soucat, Jennifer Sturdy, and Cristel M.J. Vermeersch. 2011. "Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation." *The Lancet* 377: 1421–28.
- Basinga, Paulin, Paul J. Gertler, Agnes Binagwaho, L.B. Soucat, Jennifer Sturdy, Christel M.J. Vermeersch. 2010. *Paying Primary Health Care Centers for Performance in Rwanda*. Policy Research Working Paper 5190. Washington D.C.: World Bank.
- Beith, Alix, Rena Eichler, Ellie Brown, Dane Button, Catherine Connor, Natasha Hsi, Parsa Sanjana, Kimberly Switlick, and Hong Wang. July 2009a. *Pay for Performance (P4P) to Improve Maternal and Child Health in Developing Countries: Findings from an Online Survey*. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc.
- Bertone, Maria Paola, Anatole Mangala, Dieudonné Kwété, and Yann Derriennic. 2011. *Review of Results-Based Financing Experiences in the Democratic Republic of the Congo*. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc.
- Bhutta Z.A., M. Chopra, H. Axelson, P. Berman, T. Boerma, J. Bryce, F. Bustreo, E. Cavagnero, G. Cometto, B. Daelmans, A. de Francisco, H. Fogstad, N. Gupta, L. Laski, J. Lawn, B. Maliqi, E. Mason, C. Pitt, J. Requejo, A. Starrs, C.G. Victoria, and T. Wardlaw. 2010. Countdown to 2015 decade report (2000-2010): taking stock of maternal, newborn and child survival. *The Lancet* 375(June 5).
- Black, Robert. E., Simon Cousens, Hope L. Johnson, Joy E. Lawn, Igor Rudan, Diego G. Bassani, Prabhat Jha, Harry Campbell, Christa Fischer Walker, Richard Cibulskis, Thomas Eisele, Li Liu, and Colin Mathers. 2010. Global, regional and national causes of child mortality in 2008: a systematic analysis of progress towards the Millennium Development Goal 5. *The Lancet* 375(9730, June 5): 1969–1987.
- Canavan, Ann, Riku Elovainio, Jurrien Toonen, and Petra Vergeer. 2009. *Performance-based financing for health: Lessons from sub-Saharan Africa*. Cordaid Multi-country review.
- Castro, Leslie and Fernando Regalía. 2009. Performance-based Incentives for Health: Demand- and Supply-Side Incentives in the Nicaraguan Red de Protección Social. In Eichler, Rena and Ruth Levine. *Performance Incentives for Global Health – Potentials and Pitfalls*. Center for Global Development. Baltimore, MD: Brookings Institution Press.
- Chee, Grace, Natasha Hsi, Kenneth Carlson, Slavea Chankova, Patricia Taylor. 2007. *Evaluation of the First Five Years' of GAVI Immunization Services Support Funding*. Bethesda, MD: Abt Associates Inc.
- CORE Group, Save the Children, BASICS, and MCHIP. 2010. *Community Case Management Essentials: Treating Common Childhood Illnesses in the Community. A Guide for Program Managers*. Washington, D.C.

- Dagur, Vikas, Katherine Senauer and Kimberly Switlick-Prose. 2010. Paying for Performance: The Janani Suraksha Yojana Program in India. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc. <http://www.healthsystems2020.org/content/resource/detail/2609>
- Dasgupta, Basab, Ambar Narayan, et al. August 2009. *Measuring the Quality of Education and Health Services: The Use of Perception Data from Indonesia*. World Bank Policy Research Working Paper 5033.
- Du K, K. Zhang, and S. Tang. 1999. Summary of “A Draft Report on a MCHPAF Study in China.” Poverty Net Library, a World Bank on-line, web accessible library of reports and documents devoted to poverty in the developing world.
- Dupas, Pascaline. 2011. Health Behavior in Developing Countries. *Annual Review of Economics* (volume 3).
- Eichler, Rena and Ruth Levine, eds. 2009. *Performance Incentives for Health: Potentials and Pitfalls*. Center for Global Development.
- Eichler, Rena, Paul Auxila, Uder Antoine, and Bernateau Desmangles. 2009. Haiti: Going to Scale with a Performance Incentive Model. In Eichler, Rena and Ruth Levine. 2009. *Performance Incentives for Global Health – Potentials and Pitfalls*. Center for Global Development. Baltimore, MD: Brookings Institution Press.
- Eichler, Rena and Amanda Glassman. September 2008. *Health Systems Strengthening via Performance-Based Aid: Creating Incentives to Perform and Measure Results*. Brookings Institution Global Economy and Development Working Paper: Global Health Financing Initiative. Working Paper 3.
- Gertler, Paul. 2004. Do conditional cash transfers improve child health? evidence from PROGRESA’s control randomized experiment. *American Economic Review* 94(2): 336-341.
- Gertler, Paul, Sebastian Martínez, Pablo Celhay. 2011. “Paying Provinces for Performance in Health: The Plan Nacer in Argentina. Results from the Provinces of Misiones and Tucuman” Impact Evaluation 2011 Conference. PowerPoint: <http://www.impactevaluation2011.org/forum/wp-content/uploads/2011/06/TS-9-file-1.pdf>
- Ghanotakis, Elana and Joseph Attiah. 2010. *Performance-Based Financing: A Promising Strategy to Improve HIV Service Delivery*. Technical issue briefs. Washington D.C.: Elizabeth Glaser Pediatric AIDS Foundation.
- Glassman, Amanda, Jessica Todd, and Marie Gaarder. 2009. “Latin America: Cash Transfer to Support Better Household Decisions. In Eichler, Rena and Ruth Levine. *Performance Incentives for Global Health – Potentials and Pitfalls*. Center for Global Development. Baltimore, MD: Brookings Institution Press.
- Gorter, Anna, Peter Sandiford, Zillyham Rojas, and Micol Salvetto. 2003. *Competitive Voucher Scheme for Health Background Paper*. Instituto Centro Americano de la Salud. Background paper for the World Bank. Available at: www.icas.net
- Hoddinott, John and Lucy Bassett. November 2008. *Conditional Cash Transfer Programs and Nutrition in Latin America: Assessment of Impacts and Strategies for Improvement*. Available at SSRN: <http://ssrn.com/abstract=1305326>.
- Kikumbih, N., K. Hanson, S. Mills, H. Mponda, and J.A. Shellenberg. 2005. The economics of social marketing: the case of mosquito nets in Tanzania. *Social Science & Medicine* 60(2): 369-381.
- Kinney M.V., K.J. Kerber, R.E. Black, B. Cohen, F. Nkrumah, H. Coovadia, P.M. Nampala, and J.E. Lawn, on behalf of the Science in Action. June 2010. Saving the lives of Africa’s mothers, newborns and children working group. Sub-Saharan mothers, newborns and children: where and why do they die? *PLoS Medicine* 7(6). Available at <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1000294>
- Lagarde, Mylene, Andy Haines, Natasha Palmer. 2007. Conditional Cash Transfers for improving Uptake of Health Interventions in Low- and Middle-Income Countries: A Systematic Review. *Journal of the American Medical Association* 298(16):1900-1910.

- Maluccio, J. and R. Flores. 2005. *Impact Evaluation of a conditional cash transfer program: The Nicaraguan Red de Proteccion Social*. FCND Discussion Paper 184. Washington: International Food Policy Research Institute.
- Marchant, T., J. Bruse, R. Nathan, H. Mponda, Y. Sedekia, and K. Hanson. 2008. *Monitoring and Evaluation of the TNVS: Report on 2008 Household, Facility services and Facility Users Surveys*. Ifakara Health Institute.
- Marsh D., K.E. Gilroy, R. Van de Weerd, E. Wansi, and S. Qazi. 2008. Community case management of pneumonia: at a tipping point? *Bulletin of the World Health Organization*. 86; 381-389.
- Meyer, C., N. Bellows, M. Campbell, and M. Potts. 2011. *The Impact of Vouchers on the Use and Quality of Health Goods and Services in Developing Countries: A systematic review*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Miller John M., Eline L. Korenromp, Bernard L. Nahlen, and Richard W. Steketee. 2007. Continent-wide Malaria Coverage Targets Required by African Households to Reach Estimating the Number of Insecticide-Treated Nets. *Journal of the American Medical Association* 297(20): 2241-2250.
- Morel, Chantal M., Jeremy A. Lauer, and David B. Evans. 2005. Achieving the millennium development goals for health: Cost effectiveness analysis of strategies to combat malaria in developing countries. *British Medical Journal* 331: 1299.
- Morgan, Lindsay and Rena Eichler. 2011. "Performance-based Incentives in Sub-Saharan Africa Experiences, Challenges, Lessons". Unpublished draft Health Systems 20/20.
- Morgan, Lindsay, Alix Beith, and Rena Eichler. November 2011. *Performance-Based Incentives for Maternal Health: Taking Stock of Current Programs and Future Potentials* Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc.
- Morgan, Lindsay. May 2011. When the Hustle Gets Rough: Performance-based Contracting in Liberia. Washington, D.C.: World Bank.
- Morgan, Lindsay. November 2010. A Contract Too Far? Will Performance-based Contracting (Really) Work in Southern Sudan? Washington, D.C.: World Bank.
- Pearson, Mark, Jeremy Clarke, Laird Ward, Cheri Grace, and Daniel Harris. 2011. *Evaluation of the International Finance Facility for Immunisation (IFFIm)*. Geneva: GAVI Alliance.
- Rajkumar, Sunil. 2011. *Results Based Financing (RBF) in Sub-Saharan Africa (SSA): The Case of Burundi*. Washington, DC: HNP (AFTHE)/World Bank. July 13.
- Ross, S. 1973. The Economic Theory of Agency: The Principal's Problem. *American Economic Review* 63(2): 134-139.
- Rusa, Luis, Miriam Schneidman, Gyuri Fritsche, and Laurent Musango. 2009. Rwanda: Performance-Based Financing in the Public Sector. In Rena Eichler and Ruth Levine, eds. *Performance Incentives for Health: Potentials and Pitfalls*. Washington, D.C.: Center for Global Development.
- Soeters, Robert and F. Griffiths. 2003. Improving Government Health Services Through Contract Management: A Case From Cambodia. *Health Policy and Planning*. 18: 74-83.
- Soeters, Robert, Peter Bob Peerenboom, Pacifique Mushagalusa, and Célestin Kimanuka. 2011. Performance-Based Financing Experiment Improved Health Care In The Democratic Republic Of Congo. *Health Affairs* 30: 81518-1527.
- Xu, Ke, David B. Evans, Kei Kawabata, Riadh Zeramdini, Jan Klavus, and Christopher J.L. Murray. 2003. Household catastrophic health expenditure: a multicountry analysis. *The Lancet* 362(9378): 111-7.

- Sondorp, Egbert, Natasha Palmer, Lesley Strong, and Abdul Wali. 2009. Afghanistan: Paying NGOs for Performance in a Postconflict Setting. Chapter 8 in Eichler, Rena and Ruth Levine, eds. 2009. *Performance Incentives for Health: Potentials and Pitfalls*, Washington D.C.: Center for Global Development.
- Thornton, Rebecca L. 2008. The Demand for, and Impact of, Learning HIV Status. *American Economic Review* 98(5): 1829–63. <http://www.aeaweb.org/articles.php?doi=10.1257/aer.98.5.1829>
- UNICEF (United Nations Children’s Fund). 2011. Levels and Trends in Child Mortality, Report 2011, Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. New York.
- UNICEF (United Nations Children’s Fund). 2008. "Releasing Declining Numbers for Child Mortality, UNICEF Calls for Increased Efforts to Save Children’s Lives." Press release. September 12, 2008. Accessed October, 12, 2011.
- Wardlaw T., P. Salama, C. Brocklehurst, M. Chopra, and E Mason. 2009. Diarrhoea: why children are still dying and what can be done. *The Lancet* 375(9718, October 14): 870-872.
- Warren, Charlotte, Pat Daly, Lalla Toure, and Pyande Mongi. 2006. Postnatal Care. Chapter 4 in WHO. *Opportunities for Africa's newborns: Practical data, policy and programmatic support for newborn care in Africa*. Geneva. Available at: http://www.who.int/pmnch/media/publications/aonsectionIII_4.pdf.
- WHO (World Health Organization). 2008. *Report on GAVI Progress 2000-2007 and projected achievements 2008-2010*, Department of Immunization, Vaccines, and Biologicals. Geneva.
- WHO (World Health Organization). 2010. *World Health Statistics 2010*. Geneva.
- WHO (World Health Organization) and UNICEF (United Nations Children’s Fund). 2009. "Home Visits for the Newborn Child: A Strategy to Improve Survival." WHO–UNICEF joint statement. Geneva and New York.
- You, Danzehen, Tessa Wardlaw, Peter Salama, and Gareth Jones. 2010. Levels and trends in under-5 mortality, 1990–2008. *The Lancet* 375(9709, January 9): 100-103.
- .

