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Science Bridges Policy Reforms and Children's Health: Lessons From a Policy Experiment in the Philippines

Inaugural Lecture Prince Claus Chair in Development and Equity 21 May 2012

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Stella A. Quimbo

Inaugural Lecture as Professor to the Prince Claus Chair in Development and Equity 2011/2013 delivered on 21 May 2012 at the Institute of Social Studies, The Hague, The Netherlands.

I have chosen to tell you a story about health policy reforms in the Philippines - a country that I know the most about having lived there almost all my life. Many of you may be able to relate to my story as you have lived in a place similar to the Philippines or have experienced it vicariously through research. Many times during this lecture I will be specific, in both detail and context, in attempting to address the concern that what we know today about health sector reforms is not detailed enough to be useful to the policy maker. I hope that my story will illustrate the need to balance two objectives of health policy research – on the one hand answering the how-to questions and on the other hand generating a sufficient amount of rigor to justify adoption, scale-up, or national rollout.

Background

Today, Filipino children continue to die of common illnesses like pneumonia and diarrhoea. These diseases are still among the leading causes of mortality of young Filipino children. In 2008, official statistics indicated that per 100,000 children aged 1-4, 22 and 11 died of pneumonia and diarrhoea respectively (see Table 1). A decade earlier, the mortality figures were markedly higher, particularly for pneumonia.

Table 1. Mortality Rates for Children Aged 1-4 years old (per 100,000 population)

Year	Pneumonia	Diarrhoea
2001	38.7	16.5
2002	33.94	13.87
2003	29.47	10.86
2004	20.16	9.33
2005	23.3	12.03
2006	23.18	12.18
2007	21.57	10.52
2008	22.21	10.72

Source: www.doh.gov.ph/kp/statistics/child_mortality

The technology to prevent and cure these illnesses is available, but unfortunately not within the reach of poorer families. The lack of ability to pay is an obvious barrier to health care, given that over a quarter of all Filipinos are considered poor (National Statistical Coordination Board (NSCB) 2011). There could also be information barriers (see Ensor and Cooper (2004) for specific examples in various developing country settings), which prevent parents from taking their sick children to the clinic or hospital in a timely manner. On the supply side, as illustrated by Weisbrod (1991) in the US context, it is possible that health care providers do not receive sufficiently strong incentives to provide clinically appropriate care.

There are arguably more ways than one to eradicate these barriers, but in this paper we focus only on one: policy. Can policy change the incentives for households to demand health care? Can policy change the way doctors prescribe treatment? Ultimately, we ask: can policy improve health and prevent deaths? After all, the demand for health care is derived from health itself.

We further ask: Will any kind of health policy do? In the context of the Philippines, we believe that it is specifically social health insurance, by its sheer size and inertia, which can be the policy platform for the needed changes in behaviour.

The Philippines' National Health Insurance Program

The Philippines' National Health Insurance Program (NHIP) was created in 1995 by Republic Act 7875. This same law created the Philippine Health Insurance Corporation or PhilHealth, which was mandated to administer the NHIP. PhilHealth subsumed the then existing Medicare Program, which provided compulsory health insurance coverage to the formally employed. Many of the features of the Medicare Program were maintained by PhilHealth – annual renewal of membership, premium collection by payroll tax for the formally employed, reimbursement-type insurance coverage, and a complex set of benefit ceilings by type of procedure, facility, and level of care.

The NHIP's primary mandate was the achievement of universal coverage by 2010. Its strategy towards fulfilling this mandate was to employ multiple programmes of enrolment, each targeted to a specific population group. In 1997, PhilHealth introduced the Sponsored Program (SP), intended to provide fully subsidized premiums for indigent households. Premium subsidies were to be shared by both the local and national governments, with the indigent households to be identified by the local government. The SP is arguably the biggest source of expansion in PhilHealth coverage over the last decade. In 2010, PhilHealth reported that 6.04 million indigent families (equivalent to 22.1 million individuals) had been enrolled through the SP. By 2011, official records suggest that SP coverage increased by over 60 per cent (see Table 2).

The rest of the population, primarily the informal sector, can voluntarily participate in the programme but must pay the full premiums. Today, as it has always been, PhilHealth is the largest insurance provider in the country. Official figures indicate that 82 per cent of the population were covered by the programme in 2011. Based on the 2008 National Demographic Health Survey, these figures could be overstated, but NHIP nevertheless remains the dominant third party payer in the country.

Table 2. Number of Registered Members in the NHIP (in millions), as of 30 September 2011

Sector	Members	Dependents	Total
Employed (including OFWs)	13.13	15.59	28.72
Sponsored	9.73	29.21	38.94
Individual Paying (voluntary)	4.22	5.49	9.71
Retired workers	0.57	0.37	0.94
ALL			78.31

Source: PhiHealth Stats and Charts, 3rd Quarter 2011

Health Insurance, Poverty, and Health

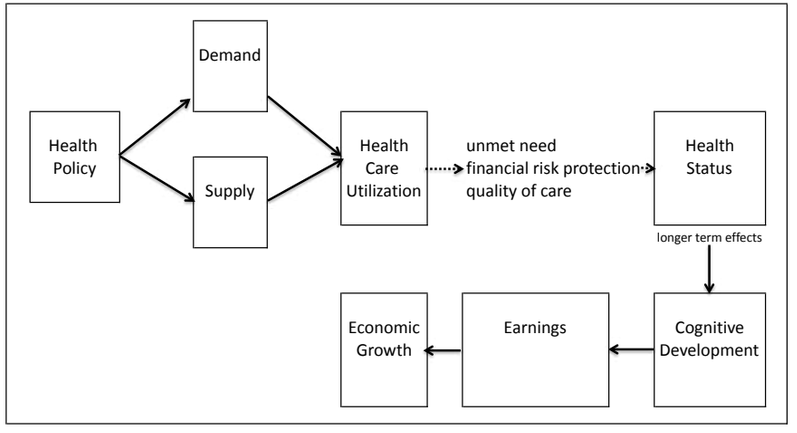
Arguably, there is an even larger context to the question we pose, which is the role of PhilHealth in poverty reduction.

On average, Filipino households pay about 54 per cent of all health care expenditure in the form of out-of-pocket payments (NSCB 2010). The average hospital expenditure, estimated at 17,000 pesos, is about one-third of the annual income per capita of 51,000 pesos (NSCB 2010), implying that a single hospital confinement can push one into poverty.

And so we ask: does PhilHealth provide sufficient protection against catastrophic health expenditures which are of such a magnitude that they can potentially make one poor? But we ask equally important longer-term questions: Does PhilHealth provide the appropriate demand and supply incentives so that Filipinos experience improvements in health status, children perform better in school, workers become more productive at work, and hopefully, future generations have a better chance of escaping poverty?

Figure 1 below shows an organizing framework for the insurance pathways to health. This framework is simple and linear for purposes of discussion, although feedback effects across boxes and pathways are, of course, possible.

Figure 1. Policy Pathways to Health



Health insurance alters the way people make decisions about buying and selling health care. Insurance reduces the price of health care and would normally expand demand for health care. On the other hand, insurance means that health care providers are faced with potential patients with a greater ability to pay. When the insured patient and health care provider interact, we typically expect an increased use of health care. More profound behaviours of course arise with the increased use of health care, possibly resulting in improved health outcomes.

Increased use of health care can mean reducing the level of previously unmet needs or delays in seeking care. In a comprehensive review of health insurance effects on the sick and poor, Hadley (2003) reports several research findings on uninsured children in the US having considerable unmet needs in both preventive and curative care.

Also, expanded insurance will lead to increased use of health care, but perhaps not at the expense of reduced household consumption. In short, health insurance protects food consumption when households face catastrophic health expenditures. And with adequate food on the table, the health stock of all household members can also be secured. A recent study by Kraft et al. (2012) using Philippine data showed that NHIP coverage helps Filipino households

cope with health shocks by preventing reductions in food consumption that can result from a such a shock.

Expanded insurance can also result in increased use of better technology or higher quality care. This effect appears to cut across levels of economic development and types of services. It has been documented in the US for neonatal care (Currie and Gruber 1997), in Vietnam for paediatric care (Wagstaff and Pradhan 2005), in India for catastrophic care including surgery (Aggarwal 2010) and in Ghana for maternal care (Mensah et al. 2009).

With improved children's health comes improved schooling performance, say, in the form of reduced absence from school (Fowler et al. 1985, Wolfe 1985). Better schooling outcomes can then translate into improved labour productivity, and, in the long run, higher incomes (Schultz 1999). A review by Strauss and Thomas in 1998 already showed evidence of the impact of health on wages and productivity and that the returns to health are likely to be bigger in poorer countries where health levels are still very low. Ultimately, these health gains, as they facilitate an exit from poverty, will benefit future generations. Quimbo et al. (2008) describe these various intra- and intergenerational links between health, education, and poverty and refer to them as an intricate 'poverty web'.

The Birth of QIDS

The simple question 'does health insurance improve health' has of course been asked by others. Yet, as Hadley (2003) points out, there are no definitive answers and 'one must draw conclusions based on the weight of the available evidence (p. 4S)'. Levy and Metzler (2008) further point out that 'the central question of how health insurance affects health, for whom it matters, and how much, remains largely unanswered at the level of detail needed to inform policy decisions (p. 406)'.

Arguably, the economic and medical literature could yield a generous amount of evidence from a wide range of settings, using different types of data, and for the various pieces of our organizing framework. These independent pieces of evidence can, in fact, be tested in a single setting. In other words, our idea was to answer the very general question in a highly specific context in a manner that is useful for policy.

Moreover, by randomizing our health insurance interventions, we carefully address the methodological problems in properly identifying the causal effects of health insurance on health (Levy and Meltzer 2008). Thus, we are able to generate results that can be scaled up or, possibly, applied elsewhere in a similar setting.

In 2003, we thus embarked on the Philippine Child Health Experiment with ample support from the US National Institutes for Health (NICHD #R01HD042117). The experiment later became more popularly known as QIDS, short for Quality Improvement Demonstration Study, a convenient reminder of who the intended study beneficiaries are.

We limit our analysis to inpatient care, because this is the focus of the NHIP. Moreover, while the question of whether health policy reforms feed into the ultimate goal of economic growth and development is the most relevant one, our data will only permit an analysis of reform links with health and IQ.

The QIDS Architecture

In this and the next section, the main features of the QIDS study are presented (see Shimkada et al. (2008) for more details).

Referring again to Figure 1, we designed two hospital-level interventions, each linked to specific insurance pathways to health. The Access Intervention attempts to address unmet health needs, promoting the use of hospital care when ill. In addition, the Access Intervention seeks to provide financial risk protection to households, reducing the burden of out-of-pocket expenditures for hospital care.

The Bonus Intervention was intended to tap into the quality pathway, providing financial incentives to hospital staff for improved quality of care in the study hospitals.

The QIDS policy interventions are conveniently referred to as 'ABC'. A and B denote Access and Bonus Interventions respectively, while C refers to the Control sites. Intervention A was intended to provide full insurance coverage to children confined in a hospital participating in the study. To ensure that there was sufficient PhilHealth enrolment in the A sites, we hired and deployed 'policy navigators' – medical doctors who were tasked to regularly follow-up with local governments on their PhilHealth sponsorship of indigent households. Every week, the QIDS policy navigators visited the mayors and governors and followed-up on their PhilHealth sponsorships, thus performing enhanced social marketing for PhilHealth.

The increase in PhilHealth enrolment at the A sites due to the QIDS policy ranged from 39 to 102 per cent (Solon et al. 2009a). Overall, enrolment at the A sites increased by an average of 36.1 per cent compared to 23.1 per cent in the control sites.

Intervention B provided a mechanism for additional PhilHealth reimbursements for physicians and other hospital staff if the hospital was assessed as having met quality standards.

Regular quality monitoring was an integral component of Intervention B. We developed a simple quality metric, consisting of clinical care quality, patient satisfaction, and case load. Clinical care was assessed through exam-like instruments called 'clinical practice vignettes'. These are written case scenarios followed by questions for doctors to answer on how they would manage a paediatric pneumonia, diarrhoea, or dermatitis case. The vignettes were scored blindly by physicians and the resulting vignette scores constituted a large portion of the quality metric. Quality assessments and bonus payments were carried out on a quarterly basis.

The study ran from 2003 to 2008 and conducted in four central regions of the Philippines, primarily in the Visayas group of islands, covering about one-third of the geographical area of the entire country. The QIDS study sites were in 30 pre-selected hospital districts in 11 provinces. An estimated 1,000,000 households were potential beneficiaries of these study hospitals. Children aged five and under were the primary target population group of the interventions.

Our study sites were carefully selected to minimize spill overs across sites and to maximize the impact for the target beneficiaries. The sites were geographically isolated and sufficiently far from the capital towns, limiting cross-over of people between intervention sites and by-pass of district hospitals in favour of the bigger provincial hospitals typically located in the capital. Most of the sites are rural. Many of the residents are poor and depend on either fishing or farming as their source of income.

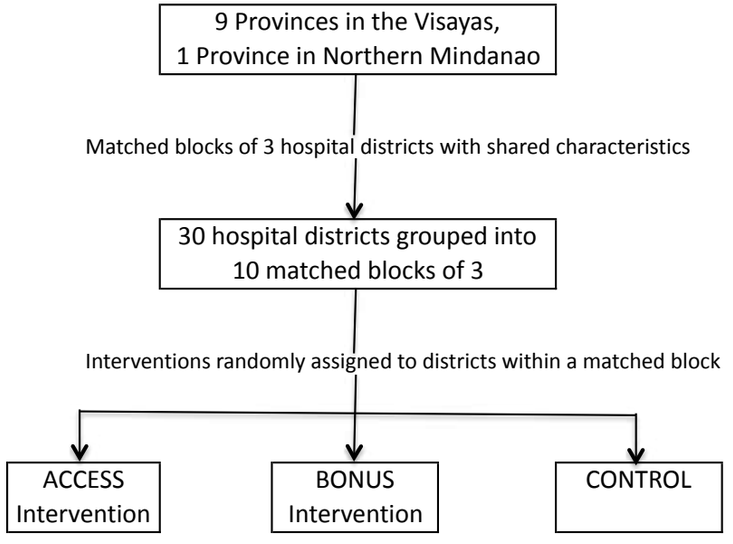
Table 3. Household Characteristics, QIDS Random Households

Household Characteristics	Mean	SD	Min	Max
% Rural	71.2	45.3	0	100
% Living in coastal communities	29.6	45.7	0	100
Annual per capita income (in euros)	1,071	1,137	0	10,367
% Poor	62.8	48.4	0	100

Source: QIDS random sample of households, 2003

In every province, we chose three districts which were carefully matched according to basic demand and supply characteristics such as population, household income, number of hospital beds, PhilHealth accreditation status, and level of hospital care provided. Then, ABC interventions were randomly assigned among the three matched districts (the so-called triplet districts) within every province. In all, we had 10 matched blocks of triplet hospitals (see Figure 2).

Figure 2. QIDS Experimental Design



QIDS Data Collection

We conducted baseline data collection in 2003, starting out with 3,000 hospitalized children interviewed upon discharge. The ABC interventions were subsequently introduced in 2004 and the follow-up survey was done in 2007.

Outcome measures. We collected several outcome measures - short and long term measures as well as sensitive and not-too-sensitive measures. For health status, we collected anthropometrics, subjective health rating, and objective health markers derived from blood tests on the children. The blood tests were specifically used to generate indicators on infection, nutritional status, anaemia, and lead levels. Before any of the blood tests were conducted, we complied with all ethical approval requirements imposed by both the US and Philippine governments.

Subjective health ratings were given by mothers for their sick children. One known advantage of subjective health ratings is that they are rather sensitive measures of health, reflecting small changes in health status over short periods of time. In addition, we found that mothers' subjective health ratings of their children consistently predict the objective health measures (Butrick et al. 2010). Perhaps mothers truly know best in matters affecting their children's well-being.

To measure cognitive development, we conducted standard psychological tests for young children – the Bayley Scales of Infant Development and the Wechsler Preschool and Primary Scale of Intelligence – from which we computed IQ levels.

To identify pathways to health outcomes, we also collected intermediate outcome variables, namely, insurance status and claims, health care use and expenditures, and quality of care.

In addition to these variables, we also needed to control for confounding factors and thus collected socioeconomic information such as household income, education and employment characteristics of parents, age distribution of household members, and housing characteristics.

Sampling design. To address these huge data requirements, we conducted several types of surveys. In every study district, we administered a facility survey in the designated government-owned hospital. In every hospital, we conducted patient exit surveys on the day of discharge, with half of the respondent patients having pneumonia or diarrhoea, our tracer conditions.

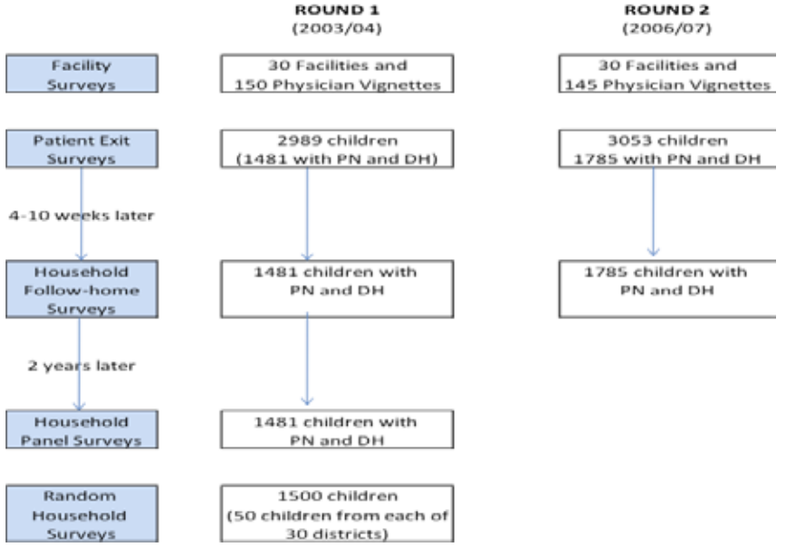
Four to six weeks after the patient exit interview, we conducted follow-up surveys in the patients' homes, carried out another round of blood collection and asked additional questions on the socioeconomic situation of the child. We also performed the IQ tests during these so-called follow-home surveys.

In every hospital we likewise conducted physician surveys, randomly selecting five physicians who typically attended to paediatric patients. In addition to a standard physician questionnaire, clinical practice vignettes were also administered.

These surveys were implemented in both rounds of data collection. During the baseline round, however, we implemented an additional random sample of 1,500 households, in order to address methodological problems that could arise from the systematic selection of children into our patient exit sample. During the second survey round, we also followed-up on a subsample of first round patients who were confined due to pneumonia or diarrhoea.

Finally, smaller data collection efforts were undertaken every quarter, using an abridged version of the patient exit and facility surveys. This was done to monitor the implementation of our interventions (e.g., whether there were sufficient numbers of NHIP-enrolled patients) and to facilitate the computation of patient satisfaction scores and case load factors, both of which were needed to determine the quality metric for the bonus payments.

Figure 3. QIDS Sampling Design



Data quality. By the end of the project, we had collected over 1.5 million pieces of data. Our response rates were better than average, with 89 per cent of eligible respondents actually participating in the surveys. Less than 1 per cent of patients refused the follow-home survey and only 1.5 per cent refused the panel survey. In the four-week interim between the patient exit and follow-home survey, all 45 patients who changed address were found. In the panel survey, 95 out of 114 patients who changed address in the two-year interim were found and interviewed.

We hired a field staff of about 100 individuals, grouped them into teams consisting of medical technologists who drew blood and tested the samples; psychologists who conducted the IQ tests; field supervisors who edited the questionnaires and stored and transported the blood samples; and MD supervisors who provided overall direction to the team and acted as QIDS Policy Navigators.

To ensure that our data was collected with the best effort possible, we paid speed and quality bonuses to our field staff, a policy which we could implement because our data encoding system had built-in consistency checks and could therefore generate quality scores for every field staff. We also performed random audits or repeat surveys of randomly selected respondents.

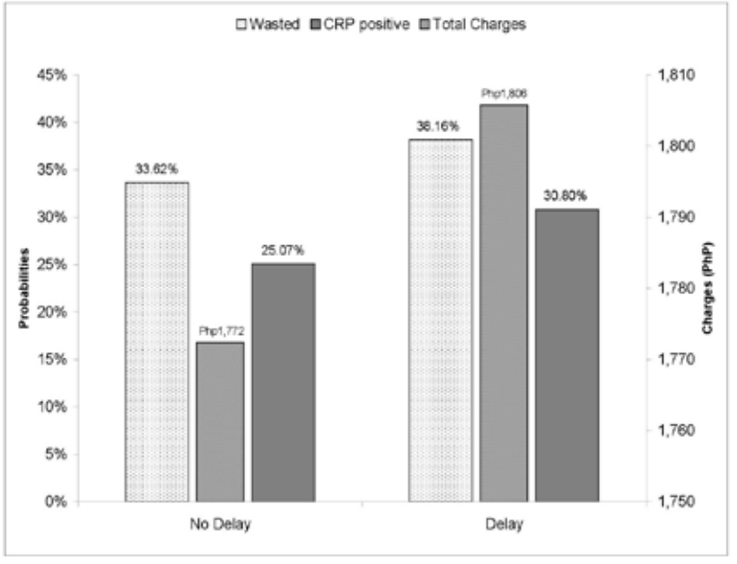
QIDS' Key Findings

To date, we have published our findings in 65 publications, including 19 peer-reviewed articles in international journals and 35 abstracts submitted and presented in conferences. Below are our key findings.

First, unmet needs can be costly. We asked about the cost implications of a delay in seeking care (defined as two days between the onset of symptoms and admission to a district hospital) and found that delay can be costly in terms of peso expenditure and worse health status (Kraft et al. 2009).

Slightly more than a quarter of patients were admitted to hospital with delay. In the short run, delay causes hospital charges to increase by about 4.5 euros, five times the daily poverty threshold. Delay also has longer-term cost implications in the form of worse health. It is associated with a 4.6 and 11.2 percentage point increase in the likelihood of wasting (or low weight-for-height ratio) and having an infection (indicated by a positive result from the C-Reactive Protein (CRP) test) at the time of discharge. These effects are not trivial when compared to the baseline figures of 35 per cent and 27 per cent of the children for wasting and having an infection, respectively. The household then has to deal with the child's further health problems beyond hospital confinement and spends an additional amount of money on health care.

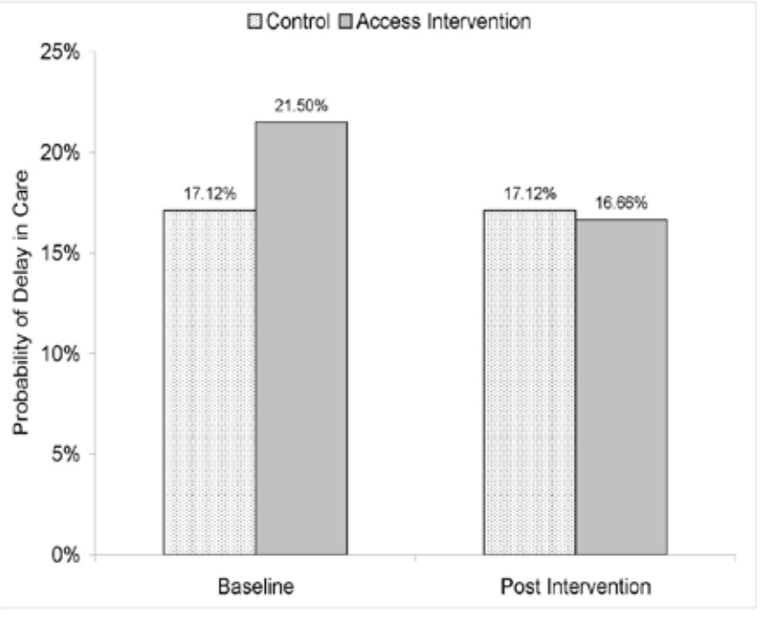
Figure 4. Probabilities of Wasting, Being CRP-positive, and Total Hospital Charges (in Philippine pesos (PhP))



Source: Kraft et al. (2009)

Second, health insurance can reduce unmet needs. We found that expanded insurance benefits in our study hospitals reduced delays by about five percentage points, equivalent to 50 fewer children seeking health care with delay.

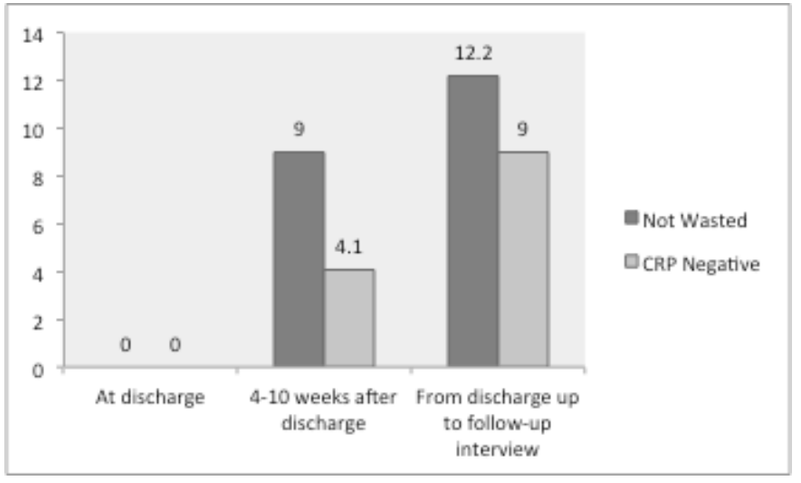
Figure 5. Delay in Care in Intervention and Control Sites



Source: Kraft et al. (2009)

Third, expanded health insurance can improve health outcomes. In Quimbo et al. (2011b), we found no evidence of health status differences across treatment and control sites at the time of the patient's discharge. Perhaps this reflects the expectation that a doctor's discharge decision is mostly clinical in nature, that patients - regardless of financial ability or insurance status - would be discharged after having attained a standard minimum level of health.

Figure 6. Likelihood of Improvements in Health Status (in per cent)



Source: Quimbo et al. (2011b)

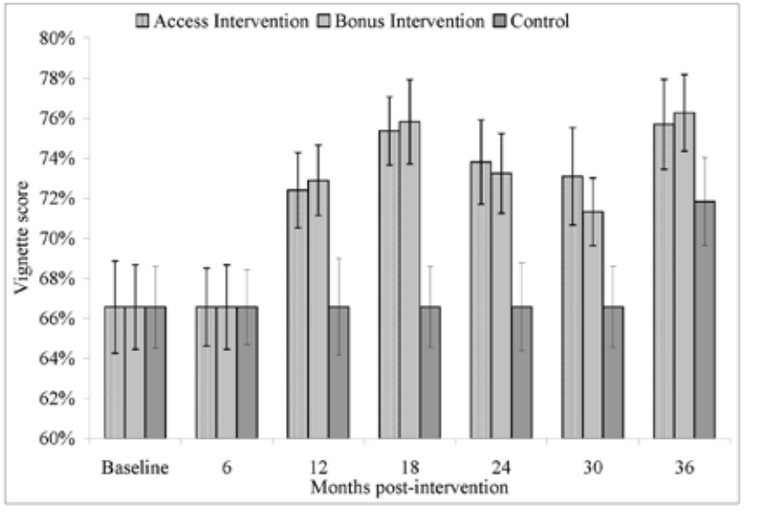
We found, however, that when we compared health status four to six weeks after leaving hospital, health status was better in the treatment sites. Children who were confined in the treatment hospitals were less likely to have an infection and less likely to be wasted. Perhaps health insurance, by taking away the burden of hospital expenditures from households, allows households to maintain their usual food consumption.

The difference in health improvements across treatment and control groups from the time of hospital discharge up to the time of the follow-home survey are about 12 and 9 percentage points for no wasting and not having an infection (or C-reactive protein negative). Again, these are relatively large effects considering that the baseline averages for wasting and infected upon discharge are 40 per cent and 23 per cent respectively.

Our next set of findings concerns Intervention B, which is a type of performance-based financing (PBF) or pay-for-performance scheme. Although PBF's have become increasingly popular, few studies have rigorously studied their impact. The most comprehensive review of PBF schemes by Witter et al. (2012) assessed our study as the only one with 'a low risk of bias' and pointed out 'statistically significant gains in two of four outcome measures, despite the small magnitude of payments (p.17)'.

Fourth, bonus payments can improve the quality of care. Every six months we administered the clinical practice vignettes on randomly selected doctors in all sites, whether treatment or control. The vignette questions revolved around the physician's typical routine – physical exams, history taking, ordering tests, making a diagnosis, and prescribing treatment. The scores were taken as proxy measures for quality, an interpretation which had been validated by Peabody et al. (2004).

Figure 7. Vignette (Quality) Scores in Intervention and Control Sites, 2003-07



Source: Peabody et al. (2011)

In Peabody et al. (2011), we reported that over the five-year study period, vignette scores (aggregated over all three diseases – pneumonia, diarrhoea, and dermatitis) increased by a maximum of 10 percentage points in the Bonus sites. The quality improvements were observed only 12 months after the project started, but were sustained throughout the remainder of the study period.

Admittedly, there were second-order effects that were previously unexpected. Upon further reflection, however, these gave useful insights. We found that vignette scores also improved in the Access sites. Arguably, increased insurance enrolment due to the Access Intervention increased hospital revenues. Thus, in addition to financial incentives, there could also be system-level behaviour directly stemming from other stimuli (e.g., insurance) that also drives quality improvements.

Finally, we also found a six percentage point improvement in vignette scores in control sites after 36 months. We attributed this improvement to dissemination and feedback, which was carried out in all treatment and control sites.

In sum, hospital quality improved because physicians' income was linked to quality, because the physicians were being watched, and because overall resources available to the hospital increased.

Fifth, bonus payments can improve health outcomes. Were there health gains from the quality improvements in the B sites? We found evidence of improvements in general self-reported health (GSRH) and wasting among children (Peabody et al. 2012).

Table 3. Differences in Health Indicators, by site and survey round

Health Indicator	Baseline	Post-intervention	Difference	p-value
CRP negative				
Intervention	97.69	98.07	0.38	
Control	96.06	95.6	-0.46	
Difference	1.63	2.47	0.84	0.497
Not Anemic				
Intervention	93.8	91.95	-1.85	
Control	89.59	92.61	3.02	
Difference	4.21	-0.66	-4.97	0.253
Not wasted				
Intervention	70.09	69.57	-0.51	
Control	75.02	65.25	-9.77	
Difference	-4.93	4.32	9.25	<0.0001
GSRH at least good				
Intervention	78.5	85.02	6.53	
Control	86.79	85.94	-0.85	
Difference	-8.29	-0.92	7.37	0.001

Source: Peabody et al. (2012)

GSRH is commonly dichotomized into poor health or not, and has been found to be predictive of mortality and health care expenditures (De Salvo et al. 2005). At baseline, mean GSRH was about 80 per cent. Further improvements in GSRH estimated at seven percentage points were found in the Bonus sites.

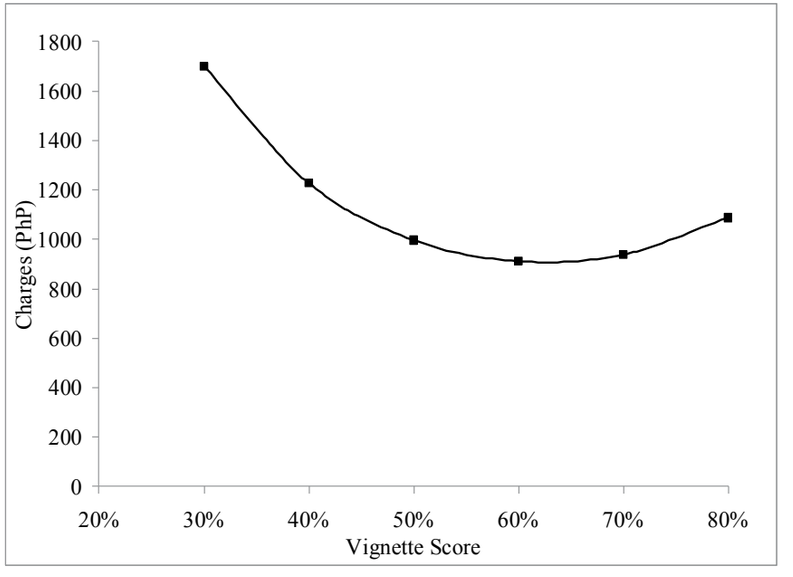
For wasting, the improvements observed in the Bonus sites were, interestingly, about the same magnitude as those found in the Access sites, i.e., nine percentage points, one-third that of the baseline levels. While the quality pathway to health is clearly at work here, we could only hypothesize that when doctors know their stuff better, perhaps children recover faster and are less prone to weight loss.

Our findings may have more profound implications. As shown by De Salvo et al (2005), small changes in GSRH could indicate increased future health expenditures. Another study has shown that improvements in anthropometric outcomes, such as wasting, are predictors of less chronic disease later in life, better educational performance, and higher labour productivity and income attainment (Victora et al., 2008).

For other health status indicators such as presence of infection and anaemia, there were no statistically significant differences found in the Bonus sites over time.

Sixth, improved quality can be cost-reducing. In one of our studies (Peabody et al. 2010), we exploited our fully matched data sets and linked about 1,000 paediatric patients with 43 physicians. The relationship between patients' health care spending and the vignette scores of physicians was then analyzed.

Figure 8. Vignette (Quality) Scores and Hospital Charges



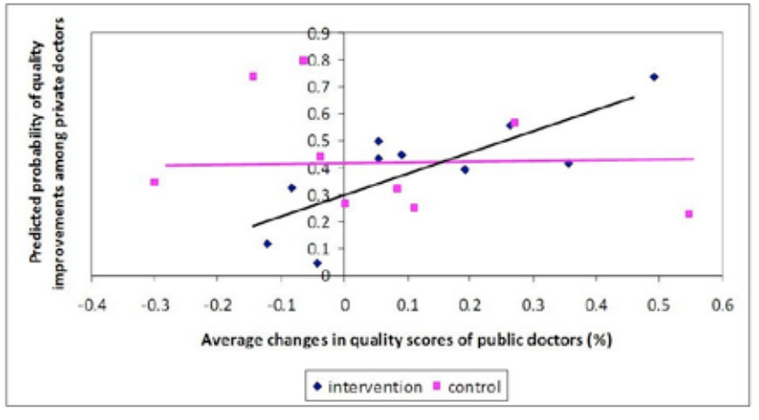
Source: Peabody et al. (2010)

We found a U-shaped relationship between costs and quality of care. At low levels of quality (below 60 per cent), every 10-percentage point increase in quality is associated with an average 20 per cent decline in charges. Beyond a threshold (60 per cent), every 10-percentage point increase in quality is associated with an average 22 per cent increase in charges.

While it is not very clear why the cost function is U shaped - whether at low levels of quality improvements in quality could mean fewer tests ordered before a correct diagnosis is made or whether the upward part of the cost function could mean even higher quality is costly but health effects are larger - this finding may have useful and simple policy implications. For instance, it can justify the spending of public funds to pay out bonuses when the initial quality levels are low, since the initial outlay can be recouped anyway by potentially larger, future cost savings. If some money is spent today on financial incentives for doctors, more money can be saved tomorrow because doctors do a better job.

Seventh, public policy can affect quality of privately-provided care. In Quimbo et al. (2011a), we reported on an important subtle effect of the QIDS interventions. We found that when quality improved in public hospitals there was a 41 per cent increase in the probability that quality would improve among private doctors. We posited that market forces are at work: when a policy intervention improves quality in public hospitals, patients previously using private facilities are induced to shift to public hospitals. In a bid to protect their market share, private hospitals need to respond by improving quality as well.

Figure 9. Quality improvements among public versus private doctors



Source: Quimbo et al. (2011a)

We find this result useful, particularly for countries where the private sector is self-regulated and where it is very costly for government to use direct instruments of influence over the private sector.

Eighth, bonus payments can be relatively cost-effective. In an on-going study we ask whether Access (expanded insurance enrolment and coverage) or Bonus (performance-based payments for hospital staff) is more cost-effective, where effectiveness is defined in terms of health improvements. As shown earlier, Access and Bonus were found to have a comparable magnitude of impact on wasting. However, the nature of the costs of Access and Bonus markedly differ. The additional cost of implementing the Access Intervention consisted of the salaries of policy navigators and insurance payments. On the other hand, the costs of the Bonus Intervention included the bonus payments as well as the one-time cost of developing the clinical practice vignettes and the routine costs of administering the vignettes every semester.

When computing costs per capita, however, 'per capita' for the Access Intervention means the NHIP member while for Bonus sites 'per capita' means any potential user of the hospital, whether NHIP member or not. In other words, the Bonus Intervention, as we had designed it, had greater spill over effects. By contrast, the Access Intervention was a highly targeted publicly financed and privately consumed good.

Taking all of this into consideration, we found that the QIDS Bonus Intervention was more cost-effective than the Access Intervention. Per percentage point reduction in wasting, the Access Intervention cost 1.4 euros per capita versus 0.65 euros per capita for the Bonus Intervention.

Reflections on reforms

In the global development context, one might ask whether the QIDS experience can be used to generalize about reforms across settings. As Glennerster and Kremer (2011) point out, 'that is an empirical question, and the growing body of evidence is helping us answer it scientifically. Hundreds of randomized evaluations of anti-poverty programs are now being conducted all over the world. While each evaluation is carefully crafted to describe one part of the development puzzle, many pieces are starting to come together.' We offer QIDS as merely one such piece of the puzzle.

Perhaps some of the lessons we learnt from the experiment – particularly on how we ran it – can be generalized: some of the lessons have been offered as insights to other experiments in different countries.

It takes a village to initiate reforms. QIDS was made possible through a partnership that was forged between highly diverse groups. The Department of Health (DOH)

defined the overall direction of reforms, PhilHealth implemented and mostly financed the interventions (with a formal approval from its Board of Trustees), while two academic institutions - the University of California in San Francisco's Institute for Global Health and the UPecon Foundation (to which I belong) - constituted the study team and secured the funding for the research activities.

In addition, there were nine local governments each of which signed a Memorandum of Agreement indicating their voluntary participation in the study which included randomized interventions.

These institutional partners clearly have very diverse interests. The DOH at that time had its Health Sector Reform Agenda to steer. PhilHealth was open to the idea of innovation, but any action taken had to be 'cost-neutral'. The local governments were represented by governors who at the time of buy-in had re-election to worry about. The academics, of course, were under constant pressure to produce publications.

But beyond these parochial interests was a single development goal that effectively bound everyone: the welfare of our children. It was clear from the very beginning that the research had to be conducted in such a way that diverse interests would be recognized. Conflict would naturally arise at times and the task at hand was, in the language of economists, 'to optimize in the face of participation constraints'.

Timing is of the essence. QIDS was fortunate to have been conceived at a time when funding of the required magnitude was available in the US, when the Philippine government was seriously considering health care reforms, and when the DOH was led by an advocate of evidence-based reforms.

In 2003, the research agenda of the DOH was mostly focused on how-to questions, having had a relatively large baseline study undertaken in the 1990s and already having in place a huge policy platform called the NHIP.

Both academic institutions at that time had sufficient capacity to undertake a huge scientific study that was logistically complex. In the case of my institution, it had benefited from previous capacity building efforts through a USAID-funded programme that ran from 1991-1996.

The time was ripe for a policy experiment.

Simple reforms can be powerful ones. The QIDS interventions were carefully designed in a way that current PhilHealth operations would be minimally disrupted. This reduced implementation difficulties, the need for new processes and new paper forms. The training needed at regional offices where insurance claims are processed was minimal.

The Access Intervention, which expanded insurance benefits, was done by a simple re-classification of patients in QIDS sites. Those who would typically fall under the 'ordinary' classification were re-classified as 'catastrophic', which automatically implied larger insurance ceilings.

The Bonus Intervention, which gave additional insurance payments to physicians, was again accomplished by re-classifying 'general practitioners' as 'specialists', triggering larger payments under the existing fee schedule of PhilHealth.

Unlike many of the existing quality metrics, the QIDS quality score was a simple and straightforward measure encompassing only three numbers (see Solon et al. 2009b for more details) – vignette scores, patient satisfaction scores, and number of patients served. Because of its simplicity, hospital staff easily understood how they would be assessed. More importantly, they soon figured out how to move the quality metric upwards.

Simplicity reduces the costs of implementing reforms and reduces resistance among the ranks.

A sense of ownership is needed for sustainability. Reforms stand a greater chance of succeeding if they are self-imposed. The QIDS proposal was jointly submitted to the US NIH for funding by the DOH, PhilHealth, UCSF and UPecon. The QIDS interventions were also jointly conceptualized and eventually formalized in an operations manual by managers of key operating units in PhilHealth and the QIDS study team. Still, there were sectors within PhilHealth which, up to the very end of the project, questioned their participation in QIDS or the rationale of the interventions, suggesting that there were, in fact, some issues of ownership.

As I reflect on why PhilHealth has not yet acted upon the substantial evidence that QIDS has so far produced, I wonder whether the explanation is related to the rather fragile sense of ownership over QIDS, with fewer than expected champions from within PhilHealth to support a scale up of QIDS interventions.

Science bridges reforms and children's health. So, can health insurance improve health? Yes, we believe so. Our carefully planned and executed experiment illustrates that, indeed, policy can improve health. And the science behind the QIDS experiment ensures that the bridge linking reforms and health is causal one.

Beyond the science, our take-away messages are as follows:

1. Expanding health insurance participation and benefits reduces unmet health needs and improves the quality of health care.
2. Paying doctors more but linking the additional payments to quality will actually improve quality.

These health interventions are worthy investments because they represent cost savings based on quality improvements. In the short run, they reduce hospital bills. In the long run, health status improvements defray future health expenditures.

Many times we have asked ourselves whether the undertaking was worth the tremendous amount of effort and resources. And every single time, we say yes, it was. From our collective experience, we know that policy-making is typically devoid of scientific evidence and is the product of the political process and personal opinion rather than careful analysis. In the past, policymakers have made costly mistakes. Evidence-based policy-making might be more expensive in the short-run, but results in cost-effective policies in the long run.

QIDS officially closed in 2008 but we would like to think that we have left an important mark on the Philippine health policy arena. Our findings have set the bar of decision-making higher and triggered a deeper commitment to health sector reforms. Some of the policy debates continue, but QIDS findings now form part of the growing evidence-base of Philippine health policy.

Agenda for future research

There are still many questions to ask which can be answered with existing data. Will the gains from expanded insurance and performance-based financing translate ultimately into cognitive development? Will expanded insurance result in sufficient financial risk protection? Did the poor benefit more than richer households?

There are also important questions that can be answered but for which additional data is needed. Can reforms directed at outpatient care produce similar results? Will the gains from expanded insurance and performance-based financing result in long-term health effects such as reduced mortality rates? Will these gains result in improved schooling performance so that we can begin to think about these initiatives in a broader development context? After QIDS had stopped paying bonuses to doctors, did quality of care deteriorate? There are clearly many more questions that can be asked, beyond the context of the Philippines.

It would certainly be a pleasure to pursue the future research agenda with a community whose commitment to the pursuits of development and equity is unquestionable.

Words of thanks

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Professor John Peabody and Professor Orville Solon are not here today but I certainly cannot end this lecture without a profuse thank you to them. They were the Principal Investigators of QIDS who got me involved in a major way even before QIDS officially started. I was a newly hired assistant professor then, with hardly any project and publications experience, but they chose me anyway. QIDS was an important part of my life for close to eight years. It was my family, teacher, student, and source of joy, pain, and pride all profoundly rolled into one. Thank you, John and Orville, for making me a part of QIDS.

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