Weak Links in the Chain: A Diagnosis of Health Policy in Poor Countries

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Recent empirical and theoretical literature sheds light on the disappointing experience with implementation of primary health care programs in developing countries. This article focuses on the evidence showing two weak links in the chain between government spending for services to improve health and actual improvements in health status. First, institutional capacity is a vital ingredient in providing effective services. When this capacity is inadequate, health spending, even on the right services, may lead to little actual provision of services. Second, the net effect of government health services depends on the severity of market failures—the more severe the market failures, the greater the potential for government services to have an impact. Evidence suggests that market failures are the least severe for relatively inexpensive curative services, which often absorb the bulk of primary health care budgets. A companion paper, available from the authors (see p. 219), offers a perspective on how government funds can best be used to improve health and well-being in developing countries. It gives an alternative view of appropriate public health policy, one that focuses on mitigating the characteristic market failures of the sector and tailoring public health activities to the government's ability to deliver various services.

The concept called primary health care, or health for all, enshrined at an international conference at Alma Ata (now Almaty, Kazakhstan) in 1978, has dominated much of the discussion of health policy in developing countries for the past two decades. The broad health problems this concept encompasses are pressing, and the solutions it calls for seem obvious. Yet in many developing countries the public budget for health is principally absorbed by public hospitals staffed by doctors expensively trained at public expense who use costly medical technologies to treat conditions of the urban elite, while in those same countries children die from diseases that could have been treated for a few cents or avoided altogether with basic hygienic practices. In developing countries in 1995, more than 9 million children under five

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years old—more than the entire population of Sweden or Zambia—died deaths that could have been avoided.[1]

Individual examples, however, show that primary health care efforts can be successful even in very poor regions. Kerala, a state in India with annual per capita income of only $1,254 in purchasing power parity dollars, has an infant mortality rate of only 31 per 1,000 live births (Agrawal and others 1996; International Institute for Population Studies 1995). This rate is not only 40 percent lower than that in Punjab, another Indian state with twice Kerala's income, but 35 percent lower than that in Brazil, which has more than four times Kerala's per capita income (Macro International 1997; World Bank 1999). Infant mortality in Shanghai, China, is lower than in Manhattan, and the recorded infant mortality rate of 16 in Jamaica is lower than that of African-Americans in the United States. Ceara, one of the poorest states in Brazil, reduced infant mortality by 36 percent in just a few years through an aggressive government program (Tendler and Freedheim 1994).

This combination of experiences has led to a strong consensus among public health specialists who focus on developing countries. They argue that the existing allocation of health expenditures toward curative care in secondary and tertiary facilities, such as hospitals and clinics to which patients are referred, is inappropriate and that a reorientation of government efforts toward primary health care would bring both health gains and cost savings. In this consensus primary health care is typically defined by what it is *not:* it is neither secondary nor tertiary curative care but could be *all* other activities related to health, from nutrition, to sanitation, information, and education, to clinic-based curative care. Even more ambitious definitions include empowerment and social equality (Decosas 1990).

Although the images and statistics that motivate primary health care appear compelling, the gains have rarely been demonstrated in practice. Individual initiatives, such as the expansion of immunization campaigns or the recent efforts to combat river blindness, have been effective in a single region or for a single disease, but the data do not typically show that other aspects of public health care have much impact on health. The implementation of primary health care programs has created a new set of images: empty rural health clinics without staff, drugs, or working equipment; poor people bypassing free primary public clinics to pay for services from private providers; government-supplied drugs for sale on the black market. This disappointing experience raises the question: what was missing from the seemingly compelling logic? There appear to be several weak links in the chain that prevent public primary health care from being delivered to more people. We believe that economists bring to bear two perspectives on this question that are useful for understanding health policy: choices and incentives.

First, the expected impact of primary health care was too often calculated as if health status were entirely a technical affair and individuals were the passive recipients of government action. But individuals are guided by their own knowledge and

resources in judging the quality of their health care (and that of their children). Incorporating their choices into the analysis can change both the expected overall impact of these programs and the importance of various actions, because service delivery and overall effectiveness both depend on the demand for specific services, the price of the services, and the existing (and potential) supply in the private sector.

Second, primary health care advocates assumed that the public sector could deliver whatever the government (or some international forum) decided *ought* to be delivered. In practice, the quality of public health services has ranged from excellent to truly horrific. While an ideal, well-run network of community workers and rural health clinics might have a dramatic effect on health status, the real policy issue is what the public sector is actually capable of providing. Often, health service failures result from a systemic mismatch between the traditional civil service incentive structure and the tasks required in the health sector.

A Simple Framework for Analyzing Public Spending on Health

In general, public spending influences health status by lowering the effective price of health-enhancing inputs (whether information on food cleanliness or a heart transplant). How it does so depends on four distinct mechanisms:

- *Composition of public spending.* The effect of an increase in total public spending on health depends on how that increase is allocated across health inputs. An equal increase in spending on all inputs will have a very different effect from an increase in spending on only the most effective interventions.
- *Output of the public sector.* The next issue is the magnitude of effective health services created by the public spending. Whether a government decides to build a clinic, spray for malaria, mobilize community outreach workers, or buy X-ray machines, it can be more or less effective at translating that expenditure into a real supply of health services. This efficacy will have a country-specific component common to all activities, as well as an activity-specific component, since government might be better adapted to performing some activities than others.
- *Net impact of public sector supply on overall consumption.* Even when government funds are available to provide the service in question, one must assess whether the change in the effective price faced by consumers will translate into increased overall consumption. Public spending on a particular service may not be cost-effective in improving health if additional consumption in the public sector crowds out—in whole or in part—equally effective services from nongovernmental providers. The size of this crowding-out effect depends on how individual demand and private sector supply respond to changes in the price, travel time, convenience, or quality of services available.

- *The health production function.* Different health inputs are more or less effective in improving health in ways determined by biological and medical facts. This health production function—that is, determinations about which treatments are effective in eliminating which cancers, which vaccines are potent over what period, how micronutrients affect susceptibility to diseases—is the domain of health care professionals. Economists typically prefer to remain agnostic about the particulars of the production function, and in many cases sensible recommendations about public policy need not inquire into the production function.

Within this framework, the consensus argument is that increases in public spending on primary health care are effective in improving aggregate measures of health status, while curative services at secondary and tertiary levels are not.[2] This view can rationalize an increase in funds for primary health care as well as a reallocation of the health budget toward primary health care activities. The argument, however, typically jumps directly from the assumption that if the government spends on the right things, patients will receive the right things. Primary health care advocates rely on evidence showing that when evaluated as interventions, primary health care elements of the health production function are typically more cost-effective than secondary or tertiary activities. But the actual impact of public spending is the product of all four terms described above: allocation of the budget, efficacy of the public sector, market impact on consumer demand for services, and the actual effect of the health services on health. If any one of these is low, the total impact will be low, and the middle two are the weak links.[3]

Has Primary Health Care Been Effective at the National and Local Levels?

Has public spending on health and, more particularly, on primary health care promoted good health? If so, there should be empirical regularities at both the national and local levels. First, given a level of total health expenditures, more spending on primary health care activities and greater access to primary health care services should be associated with lower aggregate mortality. Second, at the local level (household, village) greater access to primary health care facilities should reduce mortality. Third, projects that develop primary care facilities should reduce mortality. None of these regularities finds much support in the data.

It might seem odd that we do not review the literature evaluating primary health care per se. As one recent review of that literature highlights, however, the literature does not permit such an evaluation. Fox (1995:2) analyzed the 87 articles published since 1980 in four major health journals (*Health Policy, Health Policy and Planning,*

International Journal of Health Services, and *Social Science and Medicine*) that included the words "primary health care" in the Medline subject category:

> While there are questions about parts of PHC [primary health care] (e.g. cultural acceptability of community participation ideals, selection processes for PHC workers, community financing critiques, the capture of program planning or implementation by funding agencies, or the ability to have health for all in socially unjust societies), there was no serious questioning in the literature of PHC as a desirable way for Ministries of Health to spend their money. . . . Most of the program evaluations or topic evaluations don't show great technical expertise in evaluation methodology being applied to PHC, but a fair number of articles discuss how such an evaluation would be done, or why it would be difficult.

A similar problem affects the empirical evaluation of "health status." The World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO 1988). Although this is an attractive definition, it is subjective and hard to assess. Mortality is easy to measure, whereas morbidity is not, but (fortunately for people, but unfortunately for research) mortality is rare (except among the very young and very old). Moreover, because death occurs rarely, and only once for each person, it is difficult to study at the individual level. So even though interest focuses on health over an individual's lifetime, empirical studies tend to view infant (or child) mortality or life expectancy as proxies for health status and to rely on mortality or life expectancy rates at an aggregate level (district, province, and country) for comparisons.[4]

Comparisons at the National Level

Cross-national studies of health status have come to a fair consensus on two points. First, socioeconomic characteristics explain nearly all of the variation in mortality rates across countries. A recent econometric study of mortality among children under age five shows that virtually all the cross-national variation in child mortality can be explained by six variables: average gross domestic product (GDP) per capita, a measure of the distribution of income, the level of female education, a dummy variable for predominantly Muslim countries, an index of ethnolinguistic diversity, and a set of five dummy variables for regions (Filmer and Pritchett 1999).

Second, total public spending on health has had much less impact on average health status than one might have expected and certainly less than one could have hoped for. Although the lack of data on public spending has, until recently, limited direct examination of the issue, Musgrove (1996:44) summarizes studies of the effect of public spending on health as follows: "Multivariate estimates of the determi-

nants of child mortality give much the same answer [as his results on life expectancy]: income is always significant, but the health share in GDP, the public share in health spending, and the share of public spending on health in GDP never are." A recent paper on global health from the Population Reference Bureau downplays the role of aggregate spending, stating that "these resources, however, usually do not adequately measure the *effectiveness* or availability of services" (Ratzan, Filerman, and LeSar 2000:36, emphasis added).

Other recent studies support these findings. Using instrumental variables to account for data and endogeneity problems, Filmer and Pritchett (1999) find that public expenditure on health as a share of GDP is a small and statistically insignificant determinant of child mortality. Estimates find that doubling public spending from 3 to 6 percent of GDP would improve mortality by only 9–13 percent. Bidani and Ravallion (1997) show that public spending has a large impact on the health status of the poor, but they estimate the effect of public spending on aggregate health status (of the poor and nonpoor taken together) to be quite small.

We say the consensus is "fair" because there are some exceptions to these two points. First, Anand and Ravallion (1993) could not reject the restriction that average income affected health status only insofar as it affected the level of poverty, highlighting the fact that increased income among the poor is the most effective variable in improving health. The very high correlation between average income and poverty still implies, however, that a country's average income explains most of the variation in health status. Second, an influential study (Preston 1980), based on data from 1940 to 1970, emphasized the low explanatory power of socioeconomic variables. Studies using more recent data, however, including one by Preston (1986), who relied on data from the 1970s, are unanimous about the high explanatory power of socioeconomic basics such as average income and female education.

The cross-national evidence has always been absent or ambivalent on whether health status is improved by a greater commitment to or greater spending on primary health care (or both). First, despite the power of socioeconomic conditions to determine health status, there are still outliers, such as Kerala in India, Sri Lanka, and Costa Rica, whose achievements are potentially replicable. Although these examples suggest possibilities, it was never very clear whether the success stemmed directly from characteristics of their health systems or was instead a social or political phenomenon. Kunstadter (1985:234), participating at a seminal conference that affirmed support for primary health care (at least of the selective variety) on the basis of case studies of the outliers, commented:

> The four case studies [China, Costa Rica, Kerala State, and Sri Lanka] involve societies in which low mortality has been reached without high per capita income. Situations in which low income continues to be associated with high mortality or high income is associated with high mortality were not

considered, nor have we searched systematically for other societies in which relevant social characteristics of the four successful cases are repeated, to see what happened to mortality. Thus the policy prescriptions are relatively weak.

Moreover, although China's barefoot doctors are famous, it is not obvious that their success can be attributed to a primary health care strategy—nor even that it was related to medical care. The largest declines in infant and child mortality occurred in the 1950s and the first half of the 1960s, before the introduction of the barefoot doctors in late 1965. Further, when the program was abandoned (ironically, at about the time of the Alma Ata conference), health status did not deteriorate (Liu and others 1995). In 1986 Sri Lanka spent 70 percent of its public monies on hospitals, substantially higher than the 56 percent average for comparable countries in South Asia (Griffin 1992). Our regressions for this article suggest that when either the fraction of the budget spent on "local health services" or the "fraction of population with access to local health services" is added to a regression of mortality on income and other country socioeconomic characteristics, it has no statistically or empirically significant impact (Filmer, Pritchett, and Hammer 1998).[5] Although this is weak evidence *against* the effectiveness of primary health care, we know of no published cross-national evidence that lends *support* to primary health care.

Outcomes at the Local Level

A second empirical regularity that would support primary health care would be evidence that the availability of primary-level health facilities or community health workers had a demonstrable impact on the local health status of individuals and communities. Unfortunately, the empirical results about the effect on health status of proximity to hospitals, doctors, and, in particular, public sector clinics, health centers, and rural health workers are, at best, mixed.

A major problem in assessing this evidence is that governments may have systematically located clinics in underserved areas where health status is worst. As a result, the comparison of health status in localities with and without clinics would understate the true impact of such clinics. Conversely, if the government places clinics in villages where the demand is greatest, these sites may be located in areas where health would have been good in any case, and comparisons of sites with and without a facility would overstate the impact of clinics.

Recent studies assess the effect of access to services on child or infant mortality, using methods that take into account the bias resulting from the placement of facilities. Frankenberg (1995) controls for placement effects by comparing randomly matched births from two different age cohorts in a village in Indonesia. She finds that the presence of a maternity clinic or a doctor reduced mortality but that the

presence of a health worker other than a doctor *increased* the probability of death (although this finding was statistically significant only at the 10 percent level). Pitt, Rosenzweig, and Gibbons (1993) compare matched districts in Indonesia and find that villages in a district served by a health center had higher mortality rates, whereas those with a family planning clinic had lower mortality rates; in both cases, the findings are statistically insignificant. When she does not control for selective placement, Frankenberg (1995) finds that the presence of more maternity clinics and health workers (insignificantly) reduced mortality, while more doctors (insignificantly) increased mortality. In uncorrected estimates, Pitt, Rosenzweig, and Gibbons (1993) find that the presence of both health centers and family planning clinics raised mortality rates (insignificantly in the case of health centers).

There are many studies that do not control for selective placement. After controlling for the potential endogeneity of facility usage, Panis and Lillard (1994) find that delivering a baby within a health care institution in Malaysia (the likelihood of which increases with the availability of such facilities) reduced the probability that the baby would subsequently die; puzzlingly, they also find that prenatal care (insignificantly) increased the probability that the child would subsequently die. Benefo and Schultz (1996) find that proximity to a clinic reduced child mortality in Côte d'Ivoire but appeared to increase mortality (statistically insignificantly) in Ghana. Lavy and others (1996) find that proximity to health facilities significantly increased mortality in rural Ghana (although the availability of child services in the closest clinic was significantly positively related to survival). In Malaysia DaVanzo (1984) finds that distance to medical care was (insignificantly) related to infant mortality (conditional on birthweight) but that low birthweight was correlated with the distance to care. Hammer, Nabi, and Cercone (1995) find that public medical facilities in Malaysia were unrelated to mortality, whereas Hossain (1989) reports that the presence of a dispensary and a family planning clinic lowered mortality in Bangladesh.

Rosenzweig and Schultz (1982) find that rural health posts, municipal public and private clinics, dispensaries, and mobile care units were not significantly related to child mortality in rural Colombia. In urban areas, hospitals, clinics, and family planning centers tended to reduce mortality, but this result was not consistent across groups sorted by the age of the mother. Rosenzweig and Wolpin (1982) use data from rural India to find that villages in a district with a family planning clinic and those with a dispensary were associated with lower child mortality but that villages with any "other health facility (health centers, nursing homes, etc. . . .)" were associated with higher mortality. The large National Family Health Survey of India shows no relation between health centers or subcenters and child mortality (World Bank 1998a).

Sastry (1995) finds that the number of general health facilities is associated with higher mortality in northeastern Brazil but with lower mortality in southern and southeastern Brazil (both effects are statistically insignificant). In a study of census

districts in Brazil, Paes de Barros, Da Costa, and Mendoça (1998) find that the availability of public health personnel had no effect on mortality.

Overall, the econometric evidence that clinics have *any* effect on health is mixed. Even where such evidence exists, the impact is too small to explain much of the variation in health status.

Evaluating the Effect of Health Care Programs on Child Mortality

In 1977 a very intensive maternal and child health and family planning program was introduced in a set of treatment villages in the Matlab region of Bangladesh (with a nearby set of villages serving as comparators). In the treatment area mothers and children were visited every 15 days by a female health worker who provided guidance on family planning. Detailed records were kept in both areas. Although mortality among children fell (Muhuri and Preston 1991), analysts exploiting the controlled design of this project attribute the decline almost exclusively to measles immunization (Koenig, Fauveau, and Wojtyniak 1991; Menken and Phillips 1990).

A separate project that assessed the impact of health care services for children in Narangwal, India, found that infant mortality dropped 6 percentage points over the three years of the project (from 96 per 1,000) in the treatment area compared with a 1 percentage point increase in the control area (from 107 per 1,000), but the difference was insignificantly different from zero (Taylor and Singh n.d.). The change in the project villages resulted from a 10 percentage point increase in perinatal mortality, a 4 percentage point increase in neonatal mortality, and a 16 percentage point decrease in postneonatal mortality. In the control villages, perinatal mortality rose only 1 percentage point, neonatal mortality fell 21 percentage points, and postneonatal mortality increased 49 percentage points. The last figure leads the authors to question the resulting 1 percentage point increase reported for overall infant mortality. The authors' explanation is that this huge fluctuation was "due to incorrect age classification, . . . since in the control villages . . . investigators who had no access to exact birth information needed to rely on the age at death given by the mother of the family" (p. iv.D.7).

These empirical results suggest that enhancing health outcomes is not simply a matter of providing additional funds or increasing access to primary health care services and facilities. The framework discussed earlier provides two likely explanations for the negligible impact of public spending. Each of these explanations leads to different policy implications. First, the impact of primary health care provision depends on the effectiveness of the service provided. If this is the problem, the solution is an improvement in the quality of the service. The question then becomes: what policy levers are available to increase quality? Second, the impact of the service depends on individual choice and the market for health, that is, private demand may vary by disease condition and the response by private suppliers to public interven-

tion. The question in this case is, what are the factors that affect private supply and individual demand?

Public Sector Spending and the Creation of Effective Health Services

Primary health care may have little impact on health status not because such care is unimportant but because, in practice, the efficacy of government health interventions may be low. Readers in industrial countries without personal experience may find it difficult to appreciate just how poor the quality of public sector services can be. Anecdotal reports describe situations marked by corruption and mismanagement. In one low-income country, for example, a prominent newspaper accused the health ministry of misappropriating $50 million of donor financing. The next day the ministry accused the newspaper of exaggeration for failing to make it clear that this $50 million was misappropriated over a period of three years, not in a single year as the newspaper report implied.

In a second case, a client survey of women who had delivered a child in the past two years at rural health centers in the Mutasa district of Zimbabwe (Mtemeli 1994) listed the most frequently cited disadvantages of giving birth in an institution. These were "ridiculed by nurses" for not having baby clothes (22 percent), "maternity fees" (16 percent), "nurses ordered mothers to wash used linen soon after delivery" (16 percent), and "nurses hit mothers during delivery" (!) (13 percent). Interestingly, when the nurses themselves were asked why they thought mothers did not deliver in health institutions, they cited, first, the distance to the facility and transport problems (20 percent); second, inability to pay (14 percent); and, third, *harassment by nursing staff or fear of nurses* (11 percent).

Moreover, in nearly every country one can find rural health clinics that have no drugs, although government- (or donor-) financed medicines are readily available on the black market. For example, more than 70 percent of the government supply of drugs disappeared in Guinea in 1984 (Foster 1990). Various studies in Cameroon, Tanzania, and Uganda estimated that about 30 percent of publicly supplied drugs was misappropriated; in one case as much as 30 to 40 percent of the public supply was "withdrawn for private use" by staff (World Bank 1994a).

Evidence on Quality

Alderman and Lavy (1996) recently reviewed several empirical studies that examine the link between the quality of and the demand for public facilities; among these studies were Akin, Guilkey, and Denton (1995); Lavy and Germain (1994); Lavy and others (1996); Mwabu, Ainsworth, and Nyamete (1993); and Thomas, Lavy,

and Strauss (1996). Even though the measures of quality are not always satisfactory, the findings confirm that demand is responsive to service characteristics. An example of the problematic nature of some of the measures is that the absence of various types of drugs is often used to indicate inadequacies in public health delivery. Shortages, however, could be caused by high levels of demand, and inferences about the causal relationship are difficult to draw (a problem generally acknowledged by the authors cited above). In addition, there may be important discrepancies between de facto and de jure measures of quality, a result highlighted by Thomas, Lavy, and Strauss (1996), who show the different effects on health outcomes of the actual number of staff members compared with the official number.

Both the ineffectiveness of low-level public sector health clinics and the element of individual choice are highlighted in the phenomenon called "bypassing," which occurs when people choose to bypass the closest public facility in favor of either more costly private facilities or higher-level public facilities. Because detailed information on the health choice behavior of individuals as well as on all potential sources of supply is needed to understand bypassing, there are few empirical studies of this phenomenon. Analyses document large amounts of bypassing in Sri Lanka, where detailed surveys of health care supply and demand were collected (Akin and Hutchinson 1999; Samrasinghe and Akin 1994). Samrasinghe and Akin (1994) show that 31 percent of all episodes of illness were self-treated without medical consultation. Of those people who did seek treatment, only 42 percent were treated at the closest facility—either a predominantly private ayurvedic, or traditional, practice or a government-run, low-level health facility offering a Western approach to care; 58 percent did not go to the nearest facility. Of the non-ayurvedic sources, the public facilities (the type that primary health care would promote) are most frequently bypassed. Most individuals who bypass either a minor or a major public facility do so to visit a private Western facility.

The authors find that the bypassed public facilities had fewer doctors, nurses, and services and less equipment than public facilities that were not bypassed. In contrast, the private Western facilities that were bypassed had more doctors, nurses, and services and higher levels of care. Although this result might seem paradoxical, it is consistent with sophisticated health-seeking behavior. Because prices tend to be lower in the public facilities, patients will bypass high-quality, but expensive, private facilities in favor of public ones when their condition is not serious or quality is not important. For serious conditions, however, or when quality of service is important, individuals are willing to pay—in terms of both time and fees—for higher-quality care.

Bypassing can lead to low utilization of available public facilities. A survey (PIEDR 1994:vi) of a rural area of Punjab Province, Pakistan, found that although the physical infrastructure of rural primary health care was in place, "[o]nly about 5 percent of the sick children were taken for treatment to primary health care facilities; half were taken to private dispensers, and another quarter to private . . . doctors. Around 95

percent of deliveries took place at home." Roughly the same percentage of respondents sought treatment from a public rural health facility (5.2 percent) as from a "quack" (4.9 percent) (PIEDR 1994:35). The decision to bypass the public facility did not reflect long queues at those facilities. On the contrary, the typical rural health center saw only about 30 patients a day and the typical basic health center only 11 patients a day—far below their usual capacity, as rural health centers employed an average of 8 workers and basic health units, 5. Two atypically busy rural health centers attracted and serviced an average of more than 450 patients a day.

A study of health centers in Indonesia also found low usage of public facilities. Annual caseloads were low even for facilities located near large local populations (World Bank 1994b). On the basis of detailed case studies, this study identified two principal reasons for the low usage. First, many public facilities were short of equipment, drugs, and appropriate health workers. Second, and more important, detailed assessments on the way public health clinics operated showed that poorly functioning facilities contributed to patients' decisions to seek medical care elsewhere. Respondents in one case study made it clear that public facilities were of low quality. "They were confident that they could get considerate and unrushed care in a pleasant and informal setting in the private practice of doctors, bidans [midwives] and nurses" (World Bank 1994b:10).

Quantitative and focus group techniques in El Salvador found remarkably similar results (Lewis, Eskeland, and Traa-Valerezo 1999:26–27). Respondents consistently complained about the low quality of public health units, especially compared with the services provided by health centers and hospitals. Typical complaints about the public health units were: "Health posts operate only twice a week. Consultation is only until noon. The doctor is not always there. Sometimes only the nurse assistant is present. Waiting time is three hours on average. Only those who arrive by 8 get a consultation." In one locality, Potrero Sula, a respondent is quoted as saying, "The [public health] post here is useless because there is no doctor or nurse, and it is only open two days a week until noon." In contrast, for example, a respondent in El Pinar described the private health center at La Palma as "a little hospital with very good services. It is well equipped. The fee is only 3 colones for consultation and sometimes medication."

The study in El Salvador assessed the effect of intervention at the very lowest level—that of the health worker who lives in the community and provides simple medical services but refers seriously ill patients to larger facilities. Focus group respondents had very little use for these public health workers, and regression analysis found that they had little or no demonstrable effect on individuals' decisions about where to seek medical treatment.

Even when medical care in the public sector is of reasonable quality, it may be tremendously inefficient. A stark example of the kinds of inefficiency possible in the public sector comes from a detailed study of costs and expenditures in a public hos-

pital in the Dominican Republic, measured through careful observations on use of time (Lewis, La Forgia, and Sulvetta 1996). The study showed that although spending on personnel constituted 84 percent of total recurrent spending, actual staff costs for treating patients were only 19 percent of total costs. Gross inefficiency was identified as the cause of this huge discrepancy, an inefficiency that could be explained by the incentives, or lack thereof, facing personnel. There was no accountability for physicians or nurses, no rewards for extraordinary performance, and no punishment for inadequate or nonexistent performance. Salaries were low and undifferentiated. There was no management control over staff and essentially no returns to effective management. Clearly, the private sector also has problems, but the profit motive acts as a powerful incentive for efficiency.

How Can the Public Sector Deliver High-Quality Services?

Even strong advocates of primary health care would agree that governments do not always provide high-quality health services cost-effectively. Conversely, even the most ardent critic of government acknowledges that there are admirable and well-functioning health facilities and agencies in the public sector. Is failure, then, the result of resource constraints, ignorance, and mistakes, or is it a systematic and expected result of (dis)incentives created by institutional and organizational arrangements? If one is convinced that existing public sector problems are easily remediable through larger budgets, earmarked inputs, additional training, or technical assistance of various kinds, there is no reason to back away from public provision as a strategy. But if one is convinced that the failures are endemic and intrinsic to the especially low capability of the public sector, then perhaps the entire strategy for delivering health services needs rethinking.

PAY, EMPLOYMENT, AND PERFORMANCE IN THE HEALTH SECTOR. There is no one right answer about capability in the public health sector. Some public agencies provide high-quality, cost-effective health care. Others are capable of spending unlimited amounts of resources with no health gains. Two tough policy questions must be addressed. First, are the conditions in place for effective public provision of particular health services? And second, if not, is it possible to establish those conditions within a reasonable time horizon? Although some critics have perhaps been overly pessimistic about government capacity, supporters of publicly provided clinical services have paid far too little attention to the first question and have been entirely too sanguine about the second.

The feasibility of linking pay and employment to work effort in the public sector is not a new issue. It is generally recognized that the more essential and the less easily observable is individual effort, the greater is the importance of linking pay and performance (Milgrom and Roberts 1992). Workers in situations where effort is easily

observed and monitored are usually paid wages or salaries, whereas those whose output is observed but whose effort is not, such as salesmen, are usually paid on the basis of outcomes. In addition to the level of pay, there is the question of continued employment. Where output is crucially linked to individual performance and there can be little tolerance for deviations from high quality, continued employment is generally linked to performance. Observation of pay and employment across the public and private sectors tends to reinforce this position. To illustrate, table 1 shows a matrix of jobs and the degree to which pay and employment tend to be related to performance.

Among private sector professionals (lawyers, say, or doctors in medical practices), both pay and employment tend to be highly related to performance; in traditional public sector organizations, neither is. Such an observation is perhaps a commonplace. Yet rarely have policymakers or economists questioned whether the public sector is the most appropriate provider of clinical services, given that outsiders can observe neither health efficacy nor client treatment.

One reason for this lack of inquiry is that sometimes the most obvious and seamlessly working features of a system are invisible and are taken for granted when the system is functioning well. As a consequence, when one attempts to extrapolate from one set of social, legal, and political conditions to another, very different, set, the key features may be missed. For example, why will local health workers do the right thing even though there is no disciplining device of consumer choice? They are underpaid, and there are no effective institutional controls or legal restraints (for example, malpractice suits). The common (implicit) answer is often something like "because they are trained health professionals." Indeed, in well-functioning systems this is most likely the right answer. Doctors and nurses do not perceive themselves as performing for the money, or because of threats or close scrutiny, but out of professional pride and affiliation. The underlying factors of compensation and punishment are invisible not because they are weak or absent but precisely because they are so strong and effective that gross deviations from appropriate behavior are rare, and hence the need

Table 1. *Various Types of Employment and Compensation Schemes*

Degree to which employment is linked to performance	*Degree to which pay is linked to performance*		
	Low	*Medium*	*High*
Low	Traditional civil service arrangements (postal workers, administrators)	Large, stable organizations	Piece rate (agricultural workers, salesmen, contract workers)
High	"Up or out" organizations (U.S. military)	Most private sector organizations	Professionals (law firms, medical practices)

Source: Authors' summary.

to invoke explicit punishment is similarly rare. When the underlying control mechanisms are weak or nonexistent, however, professionalism is not a powerful enough inducement.

The second incentive issue involves the proper mix of public and private providers. Such a mix is advantageous because mobility between the two sectors can act as a disciplining device on the behavior of individuals in the public sector. Doctors working in a public hospital when there is a large and effective private sector do not want to damage their reputations by performing noticeably worse than their colleagues. With either too little or too much interchange, however, this regulating mechanism will cease to be effective. The former effect may be due to a small private sector, the latter to a large private sector with professionals working in both sectors and with no standards or monitoring of the public part of their practice.

LEARNING FROM SUCCESS. What are the lessons from those instances in which the public sector is effective at improving health outcomes? Close examination points to the importance of social, political, and institutional factors in motivating effective performance from health workers. However, although the declaration at Alma Ata stated that one manifestation of these factors, "community participation," was a key feature of the primary health care strategy, it appears to be more the exception than the rule.

The role of social and political factors in generating the effective performance of government agencies in Kerala is well described in Heller (1996). Earlier, Caldwell (1986) described instances in which Keralans held health workers accountable through strong-armed means: "Doctors and others who provide village services (for instance, bus drivers plying regular routes) know stories of their fellows who were treated violently or hurt in protests about their having failed their duty" (p. 199). He quotes from a colleague working in West Bengal, where success was achieved "because [the state's communist government] appointed cadres at every health center to report on doctors or nurses who did not put all their time and effort into their services or who discriminated between patients" (p. 203).

A second example comes from an assessment of a major health intervention in Ceara State, northeastern Brazil, that contributed to a 36 percent fall in infant mortality in only a few years. Tendler and Freedheim (1994:1777–78) identify three primary reasons behind this success. First, the state used a merit hiring system and a large advertising campaign to create "a sense of 'mission' around the program and remarkable respect for its workers in the communities in which they served." Second, flexibility in job descriptions allowed workers to take on tasks that, although "sometimes viewed as distractions by experts, formed the basis for relations of trust between workers and citizens." Third, job candidates who were rejected were educated about what to expect from workers, supervisors, and elected officials, turning them into "informed public monitors of a new program in which the potential for

abuse was high." For example, job applicants were told, "Those of you who are not selected must make sure that those who are chosen abide by the rules. . . . If these rules are breached we want to hear about it. . . . [W]e are keeping all the applications, just in case any of those we hire do not perform well."

Motivating public (and private) sector workers to deliver high-quality services is a long-standing issue (and not just in the health sector), especially in situations where monitoring performance is difficult or costly. In the examples here, such motivation seems to have been achieved through direct monitoring with the threat of job loss, community monitoring with various threats, and community oversight and participation with the threat of job (and prestige) loss.

Public Sector Provision and the Total Use of Services

Why does the evidence show that even large-scale provision of some types of primary health care services has little or no impact on health status? One reason is that extending publicly funded health care could merely crowd out the consumption of equally effective private services. Even if the government were to deliver health services effectively, the health impact would depend not on the total use of public services but rather on how public provision affected total use of all services.

Although one might think at first blush that overall service use would increase by the same amount as the increase in government service capacity, the net effect of increasing public supply is always less than one for one. Only if there were no private sector or if there were no substitution between public and private services would total service increase by the same amount as the increase in government service. The degree to which public spending affects overall health services depends on four factors.[6]

- *The smaller the overall elasticity of demand for health services, the smaller the impact of public spending.* Low elasticity of demand (demand that is unresponsive to price and distance) may well be the crux of the matter. Economists tend to shy away from discussions of "need" because it is not directly observable and is an emotionally charged term. But if an individual "needs" something, she or he is likely to forgo other consumption in order to satisfy that need. If income falls or prices rise, consumption of such a good will be protected, and the adjustment will be greater with regard to other uses of money and time. Because it is assumed that individuals place a high value on necessary health services (or at the very least those that alleviate unpleasant symptoms), the demand for them would be fairly insensitive to circumstances such as price or availability. Therefore, for those health services that are a matter of life or death, low price elasticities of demand should be expected. To the extent that severe symptoms are associated with health problems that are best treated in a clinic (which is not always the case),

these are the problems that are likely to be treated more or less successfully, regardless of a public presence. Makinen and Raney (1994:17) summarize five studies of medical care demand and find consistently that "price influences choice among providers and does so more strongly than its influence on whether or not to use services at all."

Indeed, in China (Cretin and others 1990), Indonesia (Gertler and Molyneaux 1995), and the United States (Manning and others 1987; Newhouse 1995), studies confirm that the demand for treatment is less elastic for serious conditions than for less serious conditions. Market failures associated with the treatment of serious health problems are likely to manifest themselves in ways other than bad health. For example, people may be overcharged, service may be inconvenient, or assets may be liquidated at inopportune moments (to get ready cash). All of these may result in inefficiency. But the impact on health, especially mortality, will be small.

The degree to which people take care of their health problems depends on the time elapsing between the onset of symptoms and treatment. In emergency situations, to take an extreme case, the effectiveness of treatment is tightly time-bound, allowing no opportunity to shop around. The demand for treatment will be inelastic to its effective price. However, other dimensions of access that act as barriers to emergency care, such as emergency transport or credit, might be amenable to government interventions.

Health problems that can be treated if detected early but that have symptoms which are relatively minor at early stages may generate a demand for examinations that is highly elastic with respect to price or accessibility. In such cases a different dynamic provides another way in which government subsidies may well increase the socially optimal use of services. Screening for hypertension and some cancers falls into this category. This line of reasoning relies on subtle interactions of the severity of symptoms, the effectiveness of treatment, and, most important, the responsiveness to price and distance of the demand for care. In general, however, one would expect more serious illnesses to be associated with more inelastic demand for public services and, therefore, less potential influence of government policy on health status.

- *The larger the private sector, the smaller the impact of public spending.* According to the *World Development Indicators* (World Bank 1999), between 1990 and 1997 private (nongovernment) spending made up the largest percentage of health spending in nearly all poor countries, accounting for 59 percent in low-income countries (those with gross national product per capita of $785 or less in 1997) and almost 75 percent in South Asia (table 2).

Direct evidence on visits and treatments is hard to come by. A study in five Indian states, summarized in table 3, shows that in rural areas 82 percent of treated illness episodes were treated by private providers and that expenditures

Table 2. *Share of Total Health Expenditures That Is Private*

Category	*Average (percent)*	*Number of countries*
All countries	50.9	123
Income group		
Low income	58.7	34
Lower middle income	40.2	34
Higher middle income	47.9	24
High income, non-OECD	49.1	8
High income, OECD	33.3	23
Regions		
East Asia and Pacific	47.2	14
Latin America and the Caribbean	58.5	35
Middle East and North Africa	48.8	12
South Asia	74.9	5
Sub-Saharan Africa	51.7	22
Other	28.5	35

Notes: Values are population-weighted means of country averages for the 1990–97 period. OECD, Organisation for Economic Co-operation and Development.

Source: Derived from the World Development Indicators 1999 database.

for nonhospital treatment were nearly two-thirds (65 percent) of all out-of-pocket expenditures (World Bank 1995a). Note that private providers receive a larger part of these nonhospital expenditures (86 percent) than of expenditures as a whole because people can pay out of pocket for relatively minor illnesses but are less able to cover hospital expenses.

- *The greater the extent to which people see the private sector as a substitute for the public sector, the smaller the impact of public spending.* In addition to the size of the private sector, there is mounting evidence on the substitutability between public and private health care providers. Users may substitute private for public providers on the basis of price, location of facility, or quality of services. Several studies on the effect of increases in fees at (or distance to) public clinics look at the probability that a sick individual will attend a public versus a private clinic (table 4). Although results are not the same across all countries, both sets of characteristics have an effect on demand for care from private providers. The "cross-price" effect—for example, the impact of a change in fees at private clinics on the use of public clinics—is not negligible, especially if compared with "own-price" effects. For example, in Nigeria 100 percent of those who are deterred by higher prices in the public sector sought care from the private sector; in Ghana 60 percent of those deterred went to private providers; in El Salvador the fraction was 50 percent. Clearly, there is a high degree of substitutability between the two types of providers. Similarly, construction of new public facilities closer to consumers (reducing travel distance) can also displace demand from private

Table 3. *Demand for Private Sector Health Care in Five Indian States*

Area	*Gujarat*	*Maharashtra*	*Tamil Nadu*	*Uttar Pradesh*	*West Bengal*	*Weighted average*
Rural						
Percentage of treated illness episodes going to private providers	69	78	71	91	83	82
Percentage of out-of-pocket spending going to nonhospital treatment	62	64	74	59	74	65
Percentage of out-of-pocket spending going to private nonhospital treatment	48	55	68	51	65	56
Percentage of out-of-pocket spending on nonhospital treatment going to private treatment	77	86	92	86	88	86
Urban						
Percentage of treated illness episodes going to private providers	82	75	69	85	78	79
Percentage of out-of-pocket spending going to nonhospital treatment	61	60	69	57	63	61
Percentage of out-of-pocket spending going to private nonhospital treatment	53	51	62	46	54	52
Percentage of out-of-pocket spending on nonhospital treatment going to private treatment	87	85	90	81	86	85

Source: Adapted from World Bank (1995a).

providers in the vicinity of the new facility. This effect is estimated to be substantial in Ghana and Kenya.

Another factor influencing the degree of substitutability between public and private providers is the absolute (expected) expense of the treatment sought. As discussed above, patients bypass both public and private facilities depending on their circumstances. Without insurance, people cannot afford to pay for expensive treatments when hospital care is essential; there is no plausible alternative to a public facility. For relatively cheap treatments, a private sector can thrive even without health insurance, and it is for such treatments that substitution between the sectors will be high.

- *The larger the private sector response to public intervention, the smaller the impact of public spending.* Changes in the price or availability of government interventions may induce a private supply response that can mitigate any actual impact on health outcomes. A case-control experiment in Indonesia showed that increasing user fees in public facilities caused a decline in use of those facilities and an expansion of the private health care sector; as a result, the effect of a user fee

Table 4. *Studies on the Probability of Provider Chosen: Percentage Deterred from Public Facilities Who Go to Private Facilities*

Sample	*Change*	*Percent*
Increase in price		
Benin (rural)	Community health center fees	61
Bolivia (urban)	Fees in Ministry of Public Health facilities, effect on adults 16 and over	33
	Fees in Ministry of Public Health facilities, effect on children 15 and under	0
	Fees in Ministry of Public Health facilities, effect on children 4 and under	0
El Salvador (urban)	Fees in Ministry of Health facilities, effect on males	56
	Fees in Ministry of Health facilities, effect on females	50
Ghana	Public fees	60
Kenya (rural)	Fees in government facilities from 0 to 10 Kenyan shillings, effect on adults 15 and over	37
Nigeria	Public prices, effect on adults 16 and over	100
Pakistan (urban)	Government clinic price, effect on children 5 and under	71
Increase in distance or time		
Bolivia (urban)	Waiting time in Ministry of Public Health facilities, effect on adults 16 and over	100
	Travel time to Ministry of Public Health facilities, effect on children 15 and under	20
	Waiting time in Ministry of Public Health facilities, effect on children 4 and under	20
Ghana	Distance to nearest public facility	50
Kenya (rural)	Distance to government facilities	44

Note: See Filmer, Pritchett and Hammer (1998) for more details on the results in the underlying studies

Sources: Derived from the following sources: Benin—Bolduc, Lacroix, and Muller (1996); Bolivia—Ii (1996); El Salvador—Bitran and McInnes (1993); Ghana—Lavy and Germain (1994); Kenya—Mwabu, Ainsworth, and Nyamete (1993); Nigeria—Akin, Guilkey, and Denton (1995); Pakistan—Alderman and Gertler (1989).

increase on overall health outcomes was very small (Gertler and Molyneaux 1995). In Tanzania, after the provision of health care was liberalized in 1991, the number of private sector providers skyrocketed; the number of nonprofit units operated by "approved voluntary organizations" increased from 697 to 780, and the number of private, for-profit facilities increased from 41 to 1,340 (Munishi 1997). The private sector expansion was dominated numerically by lower-level facilities such as dispensaries (from 36 to 1,313), but the number of private, for-profit hospitals also increased, from 4 to 20, while the number of government hospitals remained constant at 77.

A review of public spending in 13 regions in the Philippines (World Bank 1995b) from 1983 to 1990 found that public spending on health improved infant mortality in regions with lower incomes but had virtually no effect in richer regions. This result is consistent with substitutability of the private and public sectors in higher-income regions, with a resulting highly elastic private supply (and small impact on outcomes) and a less elastic supply response in poorer regions, with a substantial impact of public spending (Hammer 1997).

Although analyzing the potential impact of public sector interventions on the private sector might seem an obvious undertaking, it often has been ignored. A recent internal review of the World Bank—an institution with a large number of economists—found that of 217 appraisals of Bank health projects since 1970, *only 4* (all of these since 1995) had developed hypotheses regarding (or even considering) potential crowding-out (or crowding-in) as a result of the public supply of health inputs (World Bank 1998b).

Conclusion

Why is the evidence so thin for the seemingly plausible argument that primary health care is the best way to improve health in developing countries? We have argued that there are two weak links in the chain between providing public money for primary health care activities and achieving better health outcomes. The first is that governments often find it difficult to translate public spending into effective services, and the second is that of all the types of health services that the public sector might provide, primary care is the one that the private sector is likely to move away from as a result of any increase in public supply. Neither of these points is usually considered when discussing the applicability of a primary health care paradigm to a particular country.

What can be done? An alternative way of looking at policy in the health sector focuses on a careful analysis of the characteristic market failures in a country's health sector, the degree to which policy benefits reach the poor, and the government's ability to provide various kinds of services. Improvement of the quality of government health services depends on pressures outside the bureaucracy—citizen voice and consumer choice. From this perspective, clear recommendations can follow. First, public health activities should emphasize control of infectious diseases, largely through environmental changes. Second, public health programs should include demand-side mechanisms to improve routine clinical care. And third, policymakers should reconsider the role of hospital services as a practical means for governments to address inadequacies in insurance markets. The details of these arguments are available in a companion paper, "A Prescription for Health Policy in Poor Countries" (available from the authors).

Notes

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1. This statistic is based on a comparison of average mortality rates for children under five in low- and middle-income countries with rates in high-income countries (World Bank 1999; see also Gwatkin 1980).

2. An entirely different viewpoint, also common in the literature, is that medical care of any sort—public or private—has had little, if any, impact on overall health measures. In this view, the large declines in mortality in the West preceded the development of medical treatments effective in combating its major causes. Better nutrition and housing conditions resulting from higher income as well as better hygienic practices are more likely responsible. We do not dispute this interpretation and note that it argues even more strongly for getting the first link right—making sure the composition of spending is geared toward basic hygiene—safe water, sanitation, and education.

3. Along with nearly all of the rest of the literature, we assume a fixed budget and avoid the problem of maximizing welfare, as that would endogenize the budget and require valuing health versus nonhealth goods.

4. In addition, the huge effort to create measures of disability-adjusted life years (DALYs) has led to some additional information on morbidity (Murray 1994). However, the correlation between DALYs lost and life expectancy or infant mortality is a high 0.93 across the eight regions for which DALYs have been calculated (World Bank 1993).

5. In that analysis, two-stage least-squares estimation was used to address the potential problems of measurement error and reverse causation. The estimates will be biased toward zero if these variables are measured with error (this is likely because a value for 1985 is sometimes used in place of one for 1990). In addition, the estimates will be inconsistent if there is reverse causation—if, for example, high mortality rates induce the government to spend more on access to local health services.

6. In other language, if D is total demand, S_i is public supply, ε_D is the elasticity of demand, ε_S is the elasticity of supply, and D_v is the demand for private services, then, allowing public and private services to be imperfect substitutes, with the elasticity of demand for private services with respect to public services $\varepsilon_{vi} < 0$, leads to $(dD/dS_i) = 1 + [(\varepsilon_S \times \varepsilon_{vi})/(\varepsilon_S - \varepsilon_D)] \times D_v/S_i$.

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