Variations In Practice Quality In Five Low-Income Countries: A Conceptual Overview

Despite differences among countries, findings from these studies offer important lessons for improving health care around the world.

by Jishnu Das and Paul J. Gertler

ABSTRACT: Country studies from Indonesia, Tanzania, India, Paraguay, and Mexico document the quality of medical advice and variation in practice quality across a number of dimensions. This overview paper serves three purposes. First, the studies use several different measures; we contextualize these measures and discuss how they relate to each other. Second, we propose a three-way decomposition to analyze variations in the quality of care. These variations can arise from inequalities in access, inequalities in choices, or inequalities arising from discrimination. We discuss common elements across the studies and draw policy implications for future research and advocacy. [*Health Affairs* 26, no. 3 (2007): w296–w309 (published online 27 March 2007; 10.1377/hlthaff.26.3.w296)]

The 2000 Millennium Development Goals (MDGs) created a powerful global consensus to improve the development of poor countries by 2015. Three of the eight goals relate to health outcomes: (1) reduce child mortality by two-thirds, (2) reduce maternal mortality by three-quarters, and (3) reverse the spread of HIV/AIDS, malaria, and other major diseases. By 2005 most countries had already fallen well behind the necessary targets to meet these goals. Each week in the developing world, 200,000 children die of disease; in some sub-Saharan countries, child mortality actually increased during the 1990s.[1]

The development strategy over the past twenty-five years has been to increase the availability of care. Although availability remains a concern in some areas, recent evidence suggests that use of health care is high, even in countries with low per capita incomes and even among the poor.[2] Tellingly, adults in rural Rajasthan—an Indian state with among the worst human development indicators—visit a doctor once a fortnight, a frequency much higher than in the United

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States.[3] In urban India, the poor visit doctors more than the rich do.[4]

Not surprisingly, the urgency with which countries increased the availability of health resources led to a proliferation of medical care providers with very different levels of expertise. This implies that the quality, rather than the quantity, of medical care should now form an important focus of health policy in low-income countries. However, questions relating to practice quality remain unanswered in the literature, because the quality of health care in low-income countries is difficult to measure.[5] Traditional measures of quality have focused on "structural" quality, such as the availability of electricity, the physical condition of the clinic, or the stock of medicines. These measures tell us little about the actual quality of the medical advice patients receive when they visit a doctor.

The papers in this *Health Affairs* collection address this gap by examining variations in process quality across a wide range of geographical and economic settings.[6] Six studies focus on five countries at very different stages of development spread across three continents (India and Indonesia in Asia; Tanzania in sub-Saharan Africa; and Mexico and Paraguay in Latin America). Per capita gross national income (GNI) in the poorest country studied (Tanzania), at $660 (purchasing power parity, or PPP, in 2004 international dollars), is 7 percent of that in the richest (Mexico, $8,980 in 2003). Health care delivery is organized in very different ways, with widespread reliance on the private sector in India, semiprivate facilities operated through social security contributions in Paraguay and Mexico, and the nongovernmental organization (NGO) sector in Tanzania.

Using a variety of techniques to measure the quality of medical advice, these studies document variations in practice quality across income groups, ethnic boundaries, and physician institutional affiliation (whether in the private sector, the public sector, or an NGO). The studies provide a number of insights into the structure of health care in low-income countries. First, they use medical vignettes and patient reports to benchmark the quality of medical advice against a checklist of essential procedures developed in consultation with doctors. Second, they provide information on how practice quality varies across the public and private sectors or across ethnic groups in ways that will allow governments and the international community to better target quality improvements in health care. Finally, they document the differences in care received by the rich and the poor. One justification for the public provision of health care is that the public sector can improve the quality of care accessible to the poor and to minorities and can redress inequalities that arise from price-based systems of private care. How successful are public health care systems at meeting their conceptual goals?

This paper presents a conceptual overview of the six country studies. The next section discusses the different measures of quality used in the country studies (and how they relate to each other). Subsequently, the paper presents a framework for analyzing variation in practice quality, summarizes the key findings from the country studies, and concludes with a brief discussion of policy options.

Measures Of Quality

As is common in the literature, quality can be measured in terms of structure, process, or outcome. Outcomes are slow to move, and data on them are expensive to collect. Structural inputs constrain the ability of a provider to deliver a certain level of care, but they say little about the provider's ability to use those inputs to achieve a certain level of quality.[7] The nature of the advice given is specific to the provider. The presence or absence of drugs (a commonly used indicator of structural quality), for instance, is not informative about the inherent quality of advice or the likely outcome of visiting the facility as opposed to self-medicating.[8] Consequently, the six studies focus on process measures of quality.

Process quality is measured in three different ways. One is the maximum quality that a doctor can provide, measured by what the doctor knows. This is referred to as provider "competence" and is assessed using medical vignettes. A second measure is what doctors do in practice, assessed using either household reports or direct clinical observation, which records the procedures completed by health care providers for particular types of patients. Mediating between the two is the effort that the doctor exerts, measured through a combination of the time spent, examinations performed, and questions asked in a doctor-patient interaction. These three measures are described in turn, followed by a discussion of how they relate to each other.

■ **Measuring provider competence: vignettes.** For three countries (Indonesia, India, and Tanzania), the quality of medical advice was measured using vignettes: assessments of medical advice for a set of standardized cases with (nonblinded) fake patients. In each of these countries, medical practitioners were visited by researchers who, acting as patients, presented a set of symptoms to the practitioner (who knew that they were researchers). Practitioners were then invited to proceed as they would under normal circumstances—that is, by asking a set of questions, performing examinations, and providing a treatment.[9]

Exhibit 1 details the cases covered, which were chosen from those encountered in the setting studied and ranged from the common (diarrhea in a child) to the less frequent (tuberculosis). In all three countries, the checklist of essential questions and examinations was developed in close consultation with doctors and revised in extensive pilots. The proportion of items on the checklist that were actually covered yielded a measure of the provider's competence.

This competence score was validated by relating the score to the probability of accurate diagnosis and treatment. In Tanzania, a one-standard-deviation increase in competence increased the probability of accurate diagnosis by fourteen percentage points and of accurate treatment by nine percentage points. Similarly, in India, the probability of giving a treatment that was not harmful to the patient increased with competence: Moving from the lowest to the highest quintile of competence, this probability increased from 16 percent to 46 percent for infant diarrhea, from 45 percent to 83 percent for tuberculosis, and from 23 percent to 61

EXHIBIT 1
Cases Covered In Medical Vignettes, Three Countries

	Country covered		
Case presentation	**Tanzania**	**India**	**Indonesia**
Child with diarrhea	●	●	●
Adult with viral pharyngitis		●	
Adult with tuberculosis		●	●
Young female with depression		●	
Pregnant woman with pre-eclampsia		●	
Prenatal care			●
Child with malaria and anemia	●		
Married woman with pelvic inflammatory disease	●		
Eight-year-old girl with pneumonia	●		

SOURCES: Tanzania: K.L. Leonard and M.C. Masatu, "Variations in the Quality of Care Accessible to Rural Communities in Tanzania," *Health Affairs* 26, no. 3 (2007): w380–w392 (published online 27 March 2007; 10.1377/hlthaff.26.3.w380). India: J. Das and J. Hammer, "Location, Location, Location: Residence, Wealth, and the Quality of Medical Care in Delhi, India," *Health Affairs* 26, no. 3 (2007): w338–w351 (published online 27 March 2007; 10.1377/hlthaff.26.3.w338). Indonesia: S.L. Barber, P.J. Gertler, and P. Harimurti, "The Contribution of Human Resources for Health to the Quality of Care in Indonesia," *Health Affairs* 26, no. 3 (2007): w367–w379 (published online 27 March 2007; 10.1377/hlthaff.26.3.w367).

percent for viral pharyngitis.

■ **Measuring provider practice: direct clinical observation and household reports.** Competence measures the quality of medical advice patients would receive if health care providers completed all tasks commensurate with their knowledge. The Mexico and Tanzania studies as well as the prenatal component of the Indonesian study assessed the quality of medical advice dispensed to patients, using surveys of households and direct clinical observation. In Mexico and Indonesia, reports on a checklist of maternal care provided to women who sought attention during their last pregnancy from a medical care provider were recorded in a household setting. In the Tanzania study, for patients reporting with fever, cough, or cold, or some combination, observers noted whether a doctor had performed each of the checklisted items that had previously been covered in the vignettes for similar cases. The Tanzania study allowed for a direct comparison of performance under vignettes and direct clinical observation; the Mexico study differentiated between the quality of medical advice provided to patients from different backgrounds but did not disentangle the potentially separate roles of provider competence and provider effort.

■ **Measuring provider effort: direct clinical observation.** Finally, the Paraguay study used observational data on the time spent, the number of questions asked, and the examinations performed, from doctor-patient interactions. These data were aggregated into a single index of doctor effort using principal components analysis. The extent to which doctor effort is an accurate indicator of quality is an open question, although it is plausible that greater effort is correlated with better-quality medical advice. Indeed, the study found a correlation between higher effort and the likelihood of performing essential procedures.

"The findings are meant to provide evidence on the range of experiences emerging from separate country case studies."

■ **What do these measures measure?** These measures are different and reflect different aspects of the quality of medical advice. An example from India illustrates.[10] One case in the India vignettes was a child presenting with diarrhea, brought in by her mother. In vignettes the doctor was asked to proceed as she would in a normal examination, and relevant questions/examinations that the doctor completed were noted. One month after the vignettes, the same doctors were observed in their practices. Although 33 percent of the relevant questions were asked in the vignettes, only 22 percent were asked in observations. The decline was considerably larger in the (salaried) public sector (47 percent in vignettes compared with 9 percent in observation) than in the (fee-for-service) private sector (29 percent versus 25 percent). The results from the Tanzania study comparing performance in vignettes to that in direct clinical observation were very similar: Of the checklist items that doctors knew to do (from the vignettes), only 53 percent were actually completed when these doctors faced similar patients in practice. Again, the difference was larger in the public than in the private/NGO sector.

Doctors in the private/NGO sector knew less than those in the public sector but were doing approximately all they knew. Doctors in the public sector knew more but did less. The quality of care that patients actually received then varied as a result of differences in competence (what doctors know) and effort (what doctors do). Vignettes (India, Indonesia, and Tanzania) measure competence while practice (Tanzania and Mexico) measures a combination of competence and effort. Finally, the index constructed from doctor-patient interactions in Paraguay is one possible measure of doctor effort.

A cautionary note: These studies were designed to examine practice quality variation within but not necessarily across countries. Consequently, the sampling methods used in each of the five studies were different, which warrants caution for any cross-country comparisons. In brief, the samples from Mexico and Indonesia were larger than those from India, Paraguay, or Tanzania. The samples also differed in the types of providers covered. In the Indonesia and Tanzania cases, providers outside the paradigm of Western medicine were not covered, while in the India and Mexico studies, quality measures were derived for all providers used by households, regardless of their qualifications. In the Paraguay study, only public-sector doctors (all of whom are qualified) were covered. All six studies retained some degree of representation in the sample; however, the findings are meant not to serve as comparisons of practice quality across countries, but rather to provide evidence on the range of experiences emerging from separate country case studies. Retaining the two-way classification of competence and effort, Exhibit 2 summarizes the methods and samples used.

EXHIBIT 2
Measuring Medical Quality, Five Countries

Country	Technique	What does the technique measure?		Types of providers covered	Size of sample
		Competence	Effort		
Mexico[a]	Maternal reports	●	●	All types who provide prenatal care	3,553 women; number of providers unknown
Indonesia[b]	Vignettes	●		Public and private qualified providers	2,435 providers
	Maternal reports	●	●	All types who provide prenatal care	2,451 women
India[c]	Vignettes	●		All types	205 providers
Tanzania[d]	Vignettes	●		Qualified public and NGO providers	104 providers
	Practice through direct clinical observation	●	●	Qualified public and NGO providers	1,078 provider-patient interactions
Paraguay[e]	Direct clinical observation		●	Qualified public providers	286 providers; 2,193 provider-patient interactions

SOURCES: See below.

NOTE: NGO is nongovernmental organization.

[a] S.L. Barber, S.M. Bertozzi, and P.J. Gertler, "Variations in Prenatal Care Quality for the Rural Poor in Mexico," *Health Affairs* 26, no. 3 (2007): w310–w323 (published online 27 March 2007; 10.1377/hlthaff.26.3.w310).

[b] S.L. Barber, P.J. Gertler, and P. Harimurti, "The Contribution of Human Resources for Health to the Quality of Care in Indonesia," *Health Affairs* 26, no. 3 (2007): w367–w379 (published online 27 March 2007; 10.1377/hlthaff.26.3.w367).

[c] J. Das and J. Hammer, "Location, Location, Location: Residence, Wealth, and the Quality of Medical Care in Delhi, India," *Health Affairs* 26, no. 3 (2007): w338–w351 (published online 27 March 2007; 10.1377/hlthaff.26.3.w338).

[d] K.L. Leonard and M.C. Masatu, "Variations in the Quality of Care Accessible to Rural Communities in Tanzania," *Health Affairs* 26, no. 3 (2007): w380–w392 (published online 27 March 2007; 10.1377/hlthaff.26.3.w380).

[e] J. Das and T.P. Sohnesen, "Variations in Doctor Effort: Evidence from Paraguay," *Health Affairs* 26, no. 3 (2007): w324–w337 (published online 27 March 2007; 10.1377/hlthaff.26.3.w324).

Interpreting Variations In Practice Quality

To analyze variation in the process measures of quality collected in each of the five countries, we propose a three-way decomposition. Inequalities in quality of care can result from either inequalities in access, inequalities in choices, or inequalities arising from discrimination.

Inequalities in access reflect differences in the quality of care available to different patients. Poor people may live in areas where there are only low-quality doctors, or certain types of patients may be allowed to visit only particular health facilities (in Mexico and Paraguay, only employed people can visit health facilities operated by the ministry in charge of social security).

Even when the poor and rich have access to the same set of providers, quality of care can differ if they make different choices. Within the same village or neighborhood, the rich may visit better (and more expensive) doctors, while the poor visit lower-quality doctors. These inequalities reflect the choices patients make rather than the set of choices available to them in their geographical neighborhood.

Finally, doctors may systematically discriminate against certain types of patients. The Institute of Medicine (IOM) defines a *racial disparity* as a difference in treatment provided to members of different racial or ethnic groups that is not justified by the underlying health conditions or preferences about treatment of the patient.[11] Extending this formalization to patients from different socioeconomic backgrounds, inequalities due to discrimination arise when the poor receive worse care than the rich even when they visit the same care provider.

Measuring and decomposing variations in the quality of care into inequalities in access, choices, and treatment require different data. Testing inequalities in access requires us to link quality of care to the socioeconomic characteristics of the geographical area studied. The studies from India, Indonesia, Mexico, and Tanzania examine variations in the competence and practice of public and private providers located in rich and poor communities.

Examining inequalities in choices requires household-level data on the choices people make, matched to the quality of care they receive. Choices are unequal when rich and poor patients living in the same locality visit very different doctors. The study from India (Delhi) followed 1,600 people over two years and recorded which doctors they visited. These visits were then matched to data on competence for the same set of doctors, allowing the authors to separate inequalities in access from inequalities in choices.

Assessing inequalities due to discrimination requires us to compare how the same doctor treats patients from different socioeconomic or ethnic backgrounds. In Paraguay, surveyors conducted exit interviews with patients, collecting data on their socioeconomic status; this was matched to observational data on patient-provider interactions. By comparing treatments across rich and poor patients who visited the same doctors, the study examines whether doctors treat different patients differently.

Presentation Of Results

The results are presented in two different ways. The studies first present a "benchmarking" exercise that compares quality of care with the expert-compiled checklist of "essential care." In the case of the vignettes, this includes, for instance, the proportion of essential history questions/essential examinations that the doctor asked/performed during the vignettes. Variation in the quality of care was analyzed using a "normalized score." This was calculated as the difference between an individual score and the mean score, divided by the standard deviation of the scores. The resulting number says how many standard deviations a particular score is from the mean of all scores, rather than how far away it is in the original units of measurement.

Expressed as standard deviation (SD) units, quality scores provide a sense of how "far" doctors are from each other: Two doctors who provide 65 percent and 80 percent of required care may be "close to each other" if the overall distribution

ranged from 5 percent to 95 percent (corresponding to a difference of 0.58 SD) and "far from each other" (2.8 SD) if the overall distribution ranged from 60 percent to 85 percent.

The standardized quality scores are at the individual level and provide a distribution of quality, which can then be summarized according to the desired statistic (for instance, the mean quality of different types of practitioners). This normalization—standard in the educational testing and nutrition literature—allows an easier interpretation of how varied the quality of care is across different groups.

The Overall Pattern Of Results

■ **Benchmarking.** The overall quality of care documented in these studies is low, although there is considerable variation across countries and even within countries over time (Exhibit 3). In India, doctors completed only 26 percent of the tasks that were medically required for a patient presenting with tuberculosis and only 18 percent for a child with diarrhea. Similarly, doctors in Tanzania completed less than a quarter (24 percent) of the essential checklist when faced with a patient with malaria and 38 percent for a child with diarrhea. That tuberculosis kills more patients every year than every other infectious disease combined in India and that Tanzania is a country with 63,000–96,000 malaria deaths a year is particularly worrisome in this context.

Differences in sampling and the focus of medical training do not easily allow for

EXHIBIT 3
Benchmarking The Quality Of Care In Four Countries: Illustrative Results

Country	Technique	Categories	Percent of care provided (history and examinations)
Mexico[a]	Maternal reports	MDs in social security facilities	82
		Non-MDs in private clinics	43
Indonesia[b]	Vignettes	Tuberculosis (1993)	53
		Child with diarrhea (1993)	65
		Tuberculosis (1997)	46
		Child with diarrhea (1997)	58
India[c]	Vignettes	Tuberculosis	26
		Child with diarrhea	18
Tanzania[d]	Vignettes	Malaria	24
		Diarrhea	38

SOURCES: See below.

[a] S.L. Barber, S.M. Bertozzi, and P.J. Gertler, "Variations in Prenatal Care Quality for the Rural Poor in Mexico," *Health Affairs* 26, no. 3 (2007): w310–w323 (published online 27 March 2007; 10.1377/hlthaff.26.3.w310).

[b] S.L. Barber, P.J. Gertler, and P. Harimurti, "The Contribution of Human Resources for Health to the Quality of Care in Indonesia," *Health Affairs* 26, no. 3 (2007): w367–w379 (published online 27 March 2007; 10.1377/hlthaff.26.3.w367).

[c] J. Das and J. Hammer, "Location, Location, Location: Residence, Wealth, and the Quality of Medical Care in Delhi, India," *Health Affairs* 26, no. 3 (2007): w338–w351 (published online 27 March 2007; 10.1377/hlthaff.26.3.w338).

[d] K.L. Leonard and M.C. Masatu, "Variations in the Quality of Care Accessible to Rural Communities in Tanzania," *Health Affairs* 26, no. 3 (2007): w380–w392 (published online 27 March 2007; 10.1377/hlthaff.26.3.w380).

cross-country comparisons; nevertheless, it is noteworthy that Indonesian providers performed better than those in India for both patients presenting with tuberculosis and those presenting with diarrhea. This is particularly telling since the Indonesia sample is drawn from both urban and rural areas, whereas the India study sample is drawn from practitioners in Delhi—India's richest state.

The quality of care in Mexico appears to be much higher, with doctors completing close to 75 percent of checklist items for antenatal visits, although there is wide variation across institutions (public and private) and qualifications (MDs versus non-MDs). Since vignettes typically capture the upper bound of what doctors would do in practice, the percentage of checklist items completed in Mexico compares favorably with those obtained in the vignette-based studies from India, Indonesia, and Tanzania.

Although the measure of doctor effort collected in Paraguay is not comparable to the vignettes, some speculation is nevertheless instructive. In Paraguay, doctors spend 8 minutes with every patient, ask 7.97 questions, and perform 2.77 examinations. These "input measures" are similar to levels reported from high-income countries such as Germany, Spain, and the United Kingdom and are much higher than those reported from Nigeria, Tanzania, or India (Exhibit 4).

Finally, in Indonesia, comparisons over time present a disturbing trend. As Susan Barber and colleagues document, a virtual hiring freeze in the public sector led to a decline in the quality of care between 1993 and 1997, with a 7 percent drop

EXHIBIT 4
Doctor Effort: Paraguay And International Comparisons

Sample	Country	Minutes spent with patient	No. of questions asked	No. of exams	Polypharmacy
Paraguay	All doctors	8.00	7.97	2.77	1.56
International comparison	Delhi (India)[a]	3.80	3.20	–[b]	2.63
	Tanzania[c] (2003)	6.95	3.57	–[b]	–[b]
	Nigeria[d]	6.3	–[b]	–[b]	2.8
	Malawi[d]	2.3	–[b]	–[b]	1.8
	Germany[e]	7.6	–[b]	–[b]	–[b]
	Spain[e]	7.8	–[b]	–[b]	–[b]
	Netherlands[e]	10.2	–[b]	–[b]	–[b]
	Belgium[e]	15.0	–[b]	–[b]	–[b]
	U.K.[e]	9.4	–[b]	–[b]	–[b]

SOURCES: See below.

NOTE: Polypharmacy is measured as the total number of different medicines given to a patient, either directly dispensed or prescribed.

[a] J. Das and J. Hammer, "Money for Nothing: The Dire Straits of Medical Practice in Delhi, India," *Journal of Development Economics* 83, no. 1 (2007): 1–36.

[b] Not applicable.

[c] Kenneth Leonard, University of Maryland, private communication, 2005

[d] H.V. Hogelzeir et al., "Field Tests for Rational Drug Use in Twelve Developing Countries," *Lancet* 342, no. 8884 (1993): 1408–1410.

[e] M. Deveugele et al., "Consultation Length in General Practice: Cross Sectional Study in Six European Countries," *British Medical Journal* 325, no. 7362 (2002): 472.

in the percentage of checklist items completed in the vignettes.[12]

■ **Patterns of variation.** As with the overall quality of care, there are differences across countries in practice quality variation; concurrently, there are surprising common patterns that emerge.

Competence. Contrary to widespread public belief, doctors in the public sector are not necessarily less competent than those in the private sector. The difference in competence between public and private sectors depends on (1) whether we compare doctors with the same qualifications, and (2) whether we look at curative or preventive services. Doctors in the public sector were found to be no worse than in the private sector in India across all qualifications, but they came out looking slightly worse once comparisons were restricted to those with an MBBS degree (the rough equivalent of an MD in the United States). In Tanzania, doctors in the private sector reported higher competence, but these differences disappeared once qualifications were controlled for. In Indonesia, doctors in the public sector were found to be more competent in providing preventive care, and those in the private sector were more competent in curative care.

Practice. Whether the practice of doctors in the public sector is worse than that in the private sector depends on the country. Although competence may be higher, effort in the public sector in Tanzania was found to be lower than in the private or NGO sector, so that in practice, doctors in the NGO sector came out looking better than their public counterparts. Indeed, it appears that the additional competence arising from medical training can be completely offset through decreased effort in the public sector. This result contrasts with the findings from Mexico, where the practice of private-sector doctors was worse than in the public sector. An open question is whether the differences observed in Mexico reflect variation in competence or in effort.

Poverty and quality. Households in poor areas have access to, and receive, low-quality care from the private sector. In Indonesia, households in the more developed islands of Java-Bali received significantly better care; in Tanzania, the competence of doctors in the private sector was significantly lower in less dense (and poorer) regions; in Mexico, private-sector doctors in poor villages completed significantly fewer essential tasks than those in rich communities. These patterns extend to urban areas: in Delhi, India, private-sector doctors in rich neighborhoods were far more competent than in poor neighborhoods.

Lack of public equalizing efforts. In some countries, the public sector does little or nothing to equalize the imbalance in the private sector. In Tanzania and India, patterns in the public sector across rich and poor areas mirrored those in the private sector, with more-competent public doctors located in richer regions/neighborhoods. In Mexico, the quality in facilities operated by the Ministry of Health was found to be lower in poorer areas, but the quality in social security facilities was similar across rich and poor areas.

Public equalizing efforts. In other countries (Indonesia and Paraguay), the public

sector was found to provide equal access to similar-quality care for both the rich and poor. In Indonesia, this was the result of a stated policy of sending doctors to rural areas; in Paraguay, one explanation is that doctors with low bargaining power within the Ministry of Health (who have to work harder for salary raises) are sent to poorer and more rural areas.

Discrimination. The public sector does not discriminate by wealth, education, or ethnicity. In Paraguay, rich and poor patients who visited the same doctor were treated similarly, receiving equal attention in terms of time, questions asked, and examinations performed. In Mexico, a large and significant difference was found in the quality of care for indigenous and nonindigenous patients in the private sector, but the difference was significantly smaller in the public sector. One interpretation is that indigenous patients visit worse private-sector providers but similar-quality public-sector providers; a second interpretation (in line with the Paraguay study) is that doctors in the public sector do not discriminate among patients, but doctors in the private sector do.

Inequality of choices. The evidence on inequality of choices is mixed. In Delhi, where data on provider visits was matched to provider competence, there was no difference in the choices that poor and rich households made if they had access to the same set of doctors. However, in Indonesia, the poor reported worse maternal care than the rich, even though the providers in poor areas were slightly more competent in delivering prenatal care than those in richer areas. Similar results obtained in Mexico, where the poor received lower-quality prenatal care than the nonpoor. These results are consistent with either of two explanations: (1) that the poor visit less competent doctors, or (2) that doctors discriminate between rich and poor patients.

Limitations

The six country studies allow for the measurement of quality within but not necessarily across countries. To the extent that providers are trained to recognize diseases specific to a country, the construction of a measurement tool that can be used across countries requires further development. In addition, the sampling for each study differed in its geographical focus and the types of providers studied.

Furthermore, the data requirements for examining inequalities in choices and in treatment are difficult to satisfy, especially in large, general-purpose surveys. In the India, Tanzania, and Paraguay studies, the authors could match practitioners to individual patients only because the surveys were smaller in scope and limited in their coverage. In the Mexico and Indonesia studies, the received quality of care was related to the care available in the community. Consequently, it was difficult to relate specific provider competence to the kind of care received or to separate out inequalities in choices from inequalities in treatments.

Finally, different studies assessed provider practice through direct observation in the clinic (Tanzania and Paraguay) and through household reports (Mexico and

"Variations in practice quality are likely to explain a large fraction of the variance in outcomes, even in low-income settings."

Indonesia). There are limitations with both types of data. In direct observations, providers may change their behavior because they know they are being observed (Hawthorne effects); with maternal reports, households might not accurately recall the procedures performed by the providers. If changes in provider behavior or problems with recall are correlated with explanatory variables, the interpretation of the results will be biased.

Policy Discussion

These studies present a strong case that despite very different settings, the quality of medical advice can and should be measured. They also provide evidence that increasing the availability of medical care is not enough. Variations in practice quality rather than variations in availability and structural quality are more likely to explain a large fraction of the variance in health outcomes, even in low-income settings. Given the observed poor performance of medical care providers and the large disparities within countries, the gains from increasing performance in these countries are likely higher than in high-income settings.

What policies might feasibly engender better practice patterns in low-income settings? Related to the framework of inequalities in access, choice, and treatment, policies could focus on (1) improving access to quality, (2) empowering patients to make better choices through information, and (3) decreasing discrimination in the private sector. We briefly discuss each, focusing on six potential policy levers.

■ **Improving access to quality.** Additional training, in general, seems to be an expensive proposition. The problem, as amply demonstrated by the Tanzania study, is not that doctors in the public sector do not know what to do; it's that they don't do it.[13] The benefits of getting public-sector doctors to exert more effort are potentially much larger than incrementally improving their competence. In contrast to training in general, as studies from the Integrated Management of Childhood Illness (IMCI) demonstrate, specific training on particular illnesses or types of care might help both public and private providers.[14]

Toward getting public-sector doctors to exert more effort, one possibility is to financially reward providers based on performance. Although such pay-for-performance schemes are still new in the United States, they might be more feasible in low-income settings where there are fewer players and organized vested interests in the provision of health care.

Private-sector doctors' location decisions are determined by the structure of the market; in contrast, government doctors are posted by a central or state bureaucracy. The evidence from Indonesia and Paraguay suggests that policies can be designed that equalize the competence of public-sector doctors in poor and rich

areas. In countries such as India or Tanzania, an urgent imperative is to correct the imbalances inherent in the private sector by reexamining the systems of transfers and postings of public-sector doctors.

■ **Engendering better choices.** These policies assume that consumers know what is good for them, so that they can eventually choose better doctors. However, a portion of the population might be unable to evaluate minimum acceptable standards of care. One of the striking results of our analysis is the relatively poor performance in all countries of private providers without an MD or equivalent qualification, especially in poor areas. The case of Mexico, where poor households are paying more for worse-quality care in the private sector, suggests that governments might want to impose licensing of providers to guarantee a minimum quality standard.

An alternative to licensing and regulation (which has the disadvantage of eliminating a segment of the market) is to provide patients with better information about the quality of medical care providers. Such information might increase quality competition between the public and private sectors and empower patients to hold providers accountable for the quality of their services.[15] The types of measures used in these country studies could be used to implement and monitor such a policy.

■ **Addressing discrimination.** One option to decrease the discrimination that patients from different backgrounds may face is to provide clear guidelines about what to expect from a visit to the doctor. New evidence from Mexico on the effects of "empowering" patients through meetings and discussions suggest positive impacts. In a randomized control-treatment study, mothers who attended meetings on prenatal care asked more from doctors and received higher-quality prenatal care in return. Consequently, there was a large and significant positive impact on birthweight in the treatment group.[16]

In addition, legal policy options could help ensure that private-sector doctors do not discriminate among patients. To the extent that patients who received negligent or harmful treatments can sue for gross malpractice, discriminatory practices of private-sector doctors may decline. As current U.S. debates show, however, the rise of medical litigation might also have unforeseen negative consequences.

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NOTES

1. World Bank, *Global Monitoring Report 2005, Millennium Development Goals: From Consensus to Momentum* (Washington: World Bank, 2005).
2. M. Makinen et al., "Inequalities in Health Care Use and Expenditures: Empirical Data from Eight Developing Countries and Countries in Transition," *Bulletin of the World Health Organization* 78, no. 1 (2000): 55–65.
3. A.V. Banerjee, A. Deaton, and E. Duflo, "Wealth, Health, and Health Services in Rural Rajasthan," *American Economic Review* 94, no. 2 (2004): 326–330.
4. J. Das and C. Sánchez-Páramo, "Short but Not Sweet: New Evidence on Short Duration Morbidities from India," Policy Research Working Paper no. 2971 (Washington: World Bank, 2003).
5. Insurance claims and data on health outcomes are typically not available in low-income countries, and there is little evidence on the quality of the actual medical advice that patients receive. On the use of structural quality, see P. Collier, S. Dercon, and J. Mackinnon, "Density versus Quality in Health Care Provision: Using Household Data to Make Budgetary Choices in Ethiopia," *World Bank Economic Review* 16, no. 3 (2003): 425–448; or V. Lavy and J. Germain, "Quality and Cost in Health Care Choice in Developing Countries," Living Standards Measurement Study Working Paper no. 105 (Washington: World Bank, 1994).
6. For a listing of the six papers discussed in this overview, see http://content.healthaffairs.org/cgi/content/full/26/3/w296/DC2.
7. Moreover, recurrent spending on medical supplies and infrastructure is small compared to spending on personnel. India spent more than 60 percent of its recurrent health budget (which accounts for 97 percent of all health spending) on salaries in 1990. See K.N. Reddy and V. Selvraju, "Health Care Expenditure by Government in India: 1974–75 to 1990–91" (New Delhi: National Institute of Public Finance and Policy, 1994).
8. One could still argue that infrastructure variables act as a "proxy" measure for the quality of medical advice. However, the country studies from Tanzania and Indonesia found little correlation between process and structural quality.
9. In Indonesia, the procedure differed in that the interviewer asked whether specific health services were provided in a given facility (including adult and child curative care and prenatal care). If so, the respondent identified a health care provider to answer questions about a case, evaluating procedures conducted during the provision of that service. Quality measures are therefore available only at the facility level, not the provider level.
10. The differences between vignettes and observation are also discussed in J. Das and J. Hammer, "Money for Nothing: The Dire Straits of Medical Practice in Delhi, India," *Journal of Development Economics* 83, no. 1 (2007): 1–36.
11. B.D. Smedley, A.Y. Stith, and A.R. Nelson, eds., *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (Washington: National Academies Press, 2002).
12. S.L. Barber, P.J. Gertler, and P. Harimurti, "The Contribution of Human Resources for Health to the Quality of Care in Indonesia," *Health Affairs* 26, no. 3 (2007): w367–w379 (published online 27 March 2007; 10.1377/hlthaff.26.3.w367).
13. Recent studies document absentee rates of public-sector doctors of up to 70 percent in rural Bangladesh; it is hard to argue that doctors need better training to know that they should show up for work. See, for example, N. Chaudhury and J.S. Hammer, "Ghost Doctors: Absenteeism in Rural Bangaladeshi Health Facilities," *World Bank Economic Review* 18, no. 3 (2004): 423–441.
14. S. El Arifeen et al., "Integrated Management of Childhood Illness (IMCI) in Bangladesh: Early Findings from a Cluster-Randomised Study," *Lancet* 364, no. 9445 (2004): 1595–1602; and J.R. Armstrong Schellenberg et al., "Effectiveness and Cost of Facility-Based Integrated Management of Childhood Illness (IMCI) in Tanzania," *Lancet* 364, no. 9445 (2004): 1583–1594.
15. See World Bank, *World Development Report: Making Services Work for Poor People* (Washington: World Bank, 2004).
16. S. Barber and P.G. Gertler, "Empowering Women: How Mexico's Oportunidades Improved Prenatal Care Quality and Birth Outcomes" (Washington: World Bank, 2006).