Routes to Better Health for Children in Four Developing Countries

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Despite the availability of effective, affordable interventions for the most common causes of death, more than ten million children in developing countries die each year. This article describes the circumstances of four countries whose reductions in child mortality exceeded what might be expected from their poor economic circumstances, and it asks whether they followed common routes to improved health for children. The findings suggest that contextual factors, such as the degree of economic development, good governance, and strong health care systems, matter less than do targeted health intervention, foreign aid, and technical assistance. In general, these findings contradict prevailing U.S. foreign policy regarding the circumstances in which progress toward health goals can be made.

Keywords: Child health, developing countries, poverty, delivery of health care, governance.

> We should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life.
>
> Harry S. Truman, January 20, 1949

PRESIDENT TRUMAN'S 1949 PROPOSAL OF WHAT IS known as the Point Four Program of technical assistance to developing nations represents an important milestone in making

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health an explicit component of U.S. foreign policy (Bilger and Sowell 1999). The president's comments recognized the importance to U.S. interests of health in developing nations, and they set in motion what has become more than fifty years of lively health and foreign policy debate about the most effective means to achieve better health in poor countries. During this time, a great deal of theoretical and empirical research has confirmed the importance of contextual factors such as a strong economy, education, adequate nutrition, poverty reduction, equity, and effective government; a functioning public health system that provides sanitation, clean water, and infection control; and a comprehensive primary health care delivery system. Moreover, highly effective, affordable health interventions like oral rehydration therapy have been developed, and barriers to their implementation have been identified (Sachs and McArthur 2005).

Despite this progress, improvements in the health of people in developing nations have come slowly. Even those countries with many resources and few barriers to health improvement, particularly many oil-rich nations, have lagged behind. However, some countries have made great strides, overcoming resource constraints, tropical diseases (e.g., malaria), internal strife, and other obstacles. We review in this article the circumstances of four developing countries that made remarkable improvements in child health during the 1990s. Our goal is to discover whether these countries followed the same routes to reduce child mortality during this period.

Child Health and Mortality

According to the World Health Organization (WHO), between 2000 and 2003 more than 10.6 million children under age five died each year (Bryce et al. 2005). About 37 percent of these deaths occurred during the neonatal period, and nearly three quarters can be attributed to just six causes—pneumonia, diarrhea, malaria, neonatal sepsis, preterm delivery, and asphyxia at birth (Black, Morris, and Bryce 2003; Bryce et al. 2005). Underlying these clinical causes of death, the failure to provide a hygienic environment and adequate caloric and micronutrient intake places children at risk for these and other diseases and thus contributes to the mortality associated with them.

Between 1990 and 2001, the number of childhood deaths fell by an average of 1.1 percent per year, compared with 2.5 percent per year over the preceding thirty years (Black, Morris, and Bryce 2003). Many experts believe that most childhood deaths can be prevented through currently available, cost-effective interventions. Writing for the Bellagio Child Survival Study Group, Jones and colleagues (2003) found that at least one proven intervention was available to prevent or treat each of the common causes of death in children under five and that the universal use of these interventions would reduce child mortality by at least 63 percent. Darmstadt and colleagues (2005) extended these findings to neonatal deaths, suggesting effective interventions that could reduce neonatal mortality by as much as 72 percent if they were universally available and used. According to their estimates, universal breast-feeding alone could reduce childhood mortality by 13 percent (Jones et al. 2003). Other interventions, such as delaying the clamping of the umbilical cord and providing micronutrient supplements to pregnant women and children, seem equally obvious to those familiar with American and European medicine.

These basic facts regarding the risk, causes, and distribution of childhood deaths and the availability of affordable interventions have resulted in several recent reports identifying the barriers to accessing them. Both the WHO Commission on Macroeconomics and Health and the United Nations (UN) Millennium Project cited the scarcity of the financial resources needed for health interventions and contextual factors like inadequate infrastructures for health, education, and agriculture as impeding the improvement of health (Jha et al. 2002; Sachs and McArthur 2005). Poor governance, whether due to abuse, denial of equal protection under the law, corruption, mismanagement, or poor economic policies, also is viewed as an important obstacle (Sachs and McArthur 2005). Other researchers stressed the potential benefits of cooperation between developed and developing nations, beyond the provision of financial resources (Byass and Ghebreyesus 2005), and nearly all observers emphasized the particular needs of the poor and promoted equity as a core principle for both the provision of health services and poverty reduction strategies (e.g., Marmot 2005; Victora et al. 2003).

In the context of this debate regarding the best approaches to continued health improvement in developing countries, we conducted case studies of several countries that had notable reductions in child mortality despite significant economic constraints. The objective of our analysis

was to explore factors at the country level that appear to have helped improve the health status of children in these countries. In contrast to the abundant literature on specific interventions that have been shown to improve health in developing countries, we concentrated on the conditions in four countries that allowed these factors to be pulled together to improve health on a national level. The specific questions that we addressed included the following:

Is economic development necessary to reduce child mortality?

Can targeted health interventions lead to reductions in child mortality, or is systemwide integration required?

Is good government performance a prerequisite to improvements in child health?

What roles have international development partners played?

Methods

Our project proceeded in three phases, beginning with a review of the health and development literature for measures of good health. We then examined several worldwide databases for those developing countries with rapid improvement in health and used a case study approach to examine the underlying conditions that could be associated with overcoming such economic determinism.

Selection of Health Indicators. In planning our project, our initial goal was to discover those factors that contributed to the health of all persons, not just children, and we recognized that selecting health indicators that adequately represented the population's health would be critical to our success. We wanted measurable indicators that would allow for cross-country comparisons over time, and we were looking for indicators that would be considered reasonably accurate, valid, reliable, sensitive to change in underlying policies and practices, and timely.

Although many indicators of health in developing countries are based on measures of births deaths, morbidity, and other variables, we found no measures of the health of an entire country that met all our criteria. For example, we considered several measures of mortality, such as under-5 mortality (U5MR), changes in U5MR between 1991 and 2000, and life expectancy at birth, that appeared to distinguish some countries from others and to be reasonably reliable. Life expectancy has an intuitive appeal and can be accurately estimated from mortality data. However,

for many countries, overall life expectancy may not be demonstrably sensitive to significant changes in health policies or practices that we felt were important to understand. For example, our analysis of world development indicator (WDI) data showed that the rising adult mortality rates in many countries in eastern Europe and Africa offset noticeable improvements in infant and child mortality during the 1990s.

Life expectancy also does not assess the health of a population during life, a concern that has given rise to various indices like the disability-adjusted life year (DALY) and health-adjusted life expectancy. Conceptually, these indices represent a significant advance in measuring population health, but there are many technical problems that limit their usefulness for our research. For example, current estimates of disease burden used to calculate the DALY do not adequately assess many illnesses common in developing countries, do not account for the degree of comorbid disease and the contribution of risk factors in developing countries, and rely on value judgments that may not be appropriate to developing countries (Anand and Jonson 1995).

We also had to be careful to distinguish between the level of health at any particular time and changes in health over time. The data on life expectancy and child health in table 1 illustrate this point. Two distinct groups emerged from these ten developing countries. Some countries,

TABLE 1
Some Representative Health and Spending Indicators in Developing Countries

Country	U5MR 2000[a]	ΔU5MR[b]	LE 2000[c]	ΔLE[b]	HE/Cap ppp[d]
Bangladesh	82	−43%	61.6	8%	47
Bolivia	80	−34%	63.1	12%	145
Ecuador	32	−44%	70.0	7%	78
Egypt	43	−59%	68.3	4%	143
Honduras	38	−34%	66.0	2%	165
Indonesia	48	−47%	66.3	7%	84
Moldova	32	−11%	67.2	−1%	65
Sri Lanka	19	−17%	73.4	4%	120
Syria	29	−34%	70.0	5%	51
Vietnam	38	−22%	69.4	7%	130

Notes: [a]U5MR: Under-5 mortality rate in 2000 in deaths per 1000 births.
[b]Changes are between 1991 and 2000.
[c]LE: Life expectancy at birth in 2000 in years.
[d]HE/Cap ppp: Health expenditure per capita in 2000 in U.S. dollars adjusted for purchasing power.

such as Moldova, had stable indicators of good health over time, whereas other countries, like Ecuador, had more substantial improvements in these health measures. The factors associated with improving health are likely to be different from those that sustain good health, even though, as in the case of Moldova and Ecuador, the final level might be very similar.

Because we were most interested in changes in health over short periods of time, we decided that a change in U5MR best fit our criteria for health indicators. From a policy perspective, there is a long-standing international consensus on the importance of the health of children, and improvement in U5MR was selected by the United Nations as a millennium development goal (MDG). From a research perspective, rates of change in U5MR were broadly distributed, ranging from a 60 percent reduction in Portugal to a 74 percent increase in Botswana, a characteristic that simplified our final country selection process.

Measures of Health Expenditure. Conceptually, many measures of expenditure can be considered "health related," such as spending on water purification or the nonmonetary costs of time spent on community-based health programs. For the practical purposes of this study, we looked at a variety of spending measures using WDI data, including both public and private spending. The WDI data on private expenditures are drawn largely from household surveys conducted by governments or statistical or international organizations. It is important to note that these data may not include all the financial support that goes directly to nongovernmental organizations (NGOs), which would be included in private spending but may not be assessed in household surveys. We considered various measures of spending, including aggregate health spending, health expenditures as a percentage of gross national income (GNI), and health expenditure per capita, both in U.S. dollars and adjusted for purchasing power parity. Although each indicator gave slightly different views, we used health expenditures per capita adjusted for purchasing power (HE/Cap ppp) in 2000 in our country selection process.

Country Selection. The second phase of our project was selecting developing countries for further study based on health-related spending and changes in U5MR. In our final selection, we made certain arbitrary decisions after reviewing the data. In particular, we made specific trade-offs between those countries that might be considered very low spending but that had higher under-5 mortality and those that spent more on health care but whose health indicators were more like those

of developed countries. Our final inclusion criteria were (1) declines in U5MR of at least 40 percent between 1991 and 2000 and (2) HE/Cap ppp $\leq$ \$150. We excluded countries with very small populations—that is, those with fewer than 750,000 residents such as Cape Verde and Vanuatu—and very large countries—that is, India and China. Because of their size, the latter appear to use various regionally based strategies, so a detailed analysis of each was beyond the scope of our project. Four countries met our final inclusion and exclusion criteria: Bangladesh, Ecuador, Egypt, and Indonesia.

Data and Analysis. The analyses presented here are based on retrospective case studies and a secondary analysis of publicly available data. For the case studies, we prepared a list of desirable data items based on earlier case studies and literature reviews. As the first case study from Ecuador took shape, we added more questions to the list and generated several hypotheses that directed our subsequent data collection. The data for these analyses came from many sources, including prior case studies, evaluations of specific development and public health programs and initiatives, and other documents. They were supplemented by interviews with government officials, program officers, researchers, and aid workers in the countries being studied. These interviews provided clarifying information and valuable insight into the informants' experiences with specific projects or policies. Because we had a specific reason for speaking with each informant, our interviews did not follow a single format or structure. All the interviews were conducted between October 2003 and October 2004. Table 2 lists the data elements for which we searched.

Quantitative data on income and income inequality, health spending, education and literacy, and vaccination rates come from the WDI. At best, these data are imperfect. For example, in Bangladesh, Egypt, and Indonesia, U5MR is estimated using data from the demographic and health surveys (DHSs). The DHSs are nationally representative household surveys with large sample sizes conducted on a regular basis in eighty developing countries. However, in Ecuador where the DHS was last conducted in 1987, official records of child mortality depend on a "verbal autopsy," a self-report mechanism in which a family member must go in person to a regional government office and describe the symptoms before death to an untrained lay recorder who then determines the cause of death. Even so, the WDI data are probably the best available and serve as an adequate foundation for the policy themes important to this article.

TABLE 2
Data Elements for Country Case Studies

Variable	Examples
Political, Economic, and Social Context	
Political	Past colonial rule, stability of government, changes in government through violent and nonviolent means, structure of government and political parties, leadership strength and stability, governance and corruption.
Economic	Per capita GDP, income inequality, foreign aid from bilateral and international development partners, and management and integration of this aid with existing internal resources.
Social	Basic and secondary school education including but not limited to literacy, family-planning policy, social integration and cohesion.
Environmental and physical factors	Factors regarding the physical environment and climate.
Health and Public Health System Factors	
Health system indicators	Access to care, availability indicators, retention of health professionals, management and decentralization.
Policy	Health policy and the determinants of health policy, mechanism of health care financing, subsidies for essential foods and other basic needs, policies on essential drugs, pricing of basic commodities and drugs.
Public health	Access to and effectiveness of immunization, fertility programs, oral rehydration and adequate nutrition, clean water and sanitation projects.

Results

Table 3 provides some basic descriptive data regarding the status of health and other indicators of development in Bangladesh, Ecuador, Egypt, and Indonesia. All these countries share various features. Specifically, each had very significant improvements in child mortality between 1991 and 2000, is relatively poor, and spent less on health than did other countries with much less improvement in health. Table 3 also tells a story of four countries that face many challenges on the road to health improvement. Bangladesh is the world's most densely populated country

TABLE 3
Selected Indicators of Health, Income, Nutrition, and Education in Four Developing Countries

	Bangladesh	Ecuador	Egypt	Indonesia
Population (in millions)	136	13	66	206
U5MR[a]	82	32	43	48
Change U5MR (%, 1991–2000)	−43	−44	−59	−47
GNI/Cap ppp[b]	1600	2960	3560	2830
Annual change GNI (%, 1975–2000)	2.3	0.2	2.8	7.9
HE/Cap ppp	47	78	143	84
U5 underweight (%)	48	15	4	25
Adult literacy (%)	47	92	56	87
Change in adult literacy (%, 1991–2000)	8	29	14	32
Female literacy (%)	40	90	44	82
Change in female literacy (%, 1991–2000)	8	30	14	33
Measles immunization (% of children <1)	76	99	96	44
Change in measles immunizations (%, 1991–2000)	11	56	10	5

Notes: [a]U5MR: Under-5 mortality rate.
[b]GNI/cap ppp: Gross national income per capita in U.S. dollars adjusted for purchasing power.

(950 people/sq. km) and the eighth most populous, with 136 million residents. It is also among the poorest countries in the world and has few resources to devote to health, nutrition, education, and other public services. Ecuador, the least populous of the four countries, with 13 million residents, has nearly 85 percent more income and spends two-thirds more per capita on health compared with Bangladesh. Despite this relative advantage, poverty remains a challenge, with more than half of Ecuador's population living on less than $2 per day in 2000. Egypt, with 66 million residents, has a national income more than twice that of Bangladesh, about half the poverty, and little malnutrition, but Egypt's literacy and other measures of education are comparable to those of Bangladesh. Finally, despite rapid economic development, less than half

of all children under five in Indonesia have been vaccinated against measles, and malnutrition is common.

The Role of Wealth and Economic Development

As we have noted, recent research on health in developing countries has emphasized the critical nature of economic development, and in some cases this research suggests that country-level income growth is necessary, and sometimes sufficient, to improve health. Pritchett and Summers (1996) make perhaps the boldest statement about the importance of economic development in the production of good health, suggesting that "Wealthier Is Healthier," but other studies also indicate that income is a main determinant of health (Filmer and Pritchett 1997; Preston 1986). Wealth and income have been hypothesized to operate through a variety of mechanisms to affect health status. First, a higher income permits public investments in medical care, public health, and education (World Bank 1993). Second, a higher income can reduce the poverty that restricts access to health services and nutritious food. Third, evidence from developed countries shows that income distribution has an independent effect on health, perhaps operating through social capital or other psychosocial factors (Marmot 2002, 2005), but little evidence from developing countries confirms or denies the income inequality hypothesis, and it remains controversial even in developed countries (Deaton 2002; Lynch et al. 2004).

Although money helps purchase medical supplies and may contribute to well-being in other ways, good health has also been proposed as a determinant of country-level income and wealth. The main link between health and wealth appears to operate through increases in the number of healthy workers, especially for labor-intensive industries (Bloom and Canning 2000; Bloom, Canning, and Sevilla 2004; Caldwell 1986). Costa Rica, now among the ranks of upper-income nations, is a case in point, and the pattern is especially apparent in sub-Saharan Africa. Dramatic increases in life expectancy in the 1970s followed by equally dramatic declines accompanying the HIV/AIDS epidemic appear to have paralleled changes in labor force participation and country-level gross domestic product (Jamison, Sachs, and Wang 2001).

Our inclusion criteria determined the finding that wealth as measured by country-level income was not necessary for the observed reductions

in child mortality to occur. Among the twenty-three countries with a greater than 40 percent reduction in U5MR, we found four that met our health expenditure criteria. Consistent with their low levels of spending on health care, each was a low-income country, or nearly so, as is the case with Egypt. Of the remaining nineteen, only Tunisia and Morocco were middle-income countries; all the rest were high-income countries.

Table 4 compares several measures of income and U5MR using health expenditure data from the World Bank for the four countries of interest with four other countries from the same regions. These comparison countries were selected because they had considerably higher incomes and despite spending more on health had much lower reductions in U5MR. Thus, we compared Bangladesh with Pakistan, Ecuador with Guyana, Egypt with Algeria, and Indonesia with Thailand. The contrasts are reasonably clear. Bangladesh had nearly 15 percent less income but three times the improvement in U5MR compared with Pakistan. Compared with Guyana, Ecuador had 30 percent less income but 2.5 times the improvement in U5MR. Compared with Algeria, where U5MR increased during the 1990s, Egypt had nearly 40 percent less income. The decline in U5MR in Indonesia was more than twice that in Thailand, despite 68 percent less income.

We also considered the possibility that income growth, poverty, and equity were associated with better health. The rapid economic growth that occurred throughout Southeast Asia during the 1980s and 1990s could account for much of the improvement in health in Indonesia (World Bank 1993), but the growth there was no greater than that in Thailand. Although Egypt had higher growth in GNI per capita than Algeria did, both Ecuador and Bangladesh had lower rates of growth than Guyana and Pakistan, respectively, did. Moreover, in each comparison the higher-achieving country had a higher percentage of the population living on less than U.S.$2 per day than did the comparison country, often dramatically so. Similarly, if disparities in income were associated with U5MR, then a commonly used measure of economic equity, the Gini coefficient, should be lower for the high-achieving countries. However, these are nearly equal for each of the pair-wise comparisons, except for Indonesia, where inequalities are much lower than those in Thailand.

The results based on economic measures of income, poverty, and income equity are consistent with our review of each of the countries' economic environment. For example, despite its rich oil resources, Ecuador's economy languished. Between 1980 and 2000, it experienced four

TABLE 4
Regional Health and Economic Comparisons

	Bangladesh	Pakistan	Ecuador	Guyana	Egypt	Algeria	Indonesia	Thailand
U5MR 2000[a]	82	110	32	74	43	65	48	29
Change U5MR (%, 1991–2000)	−43	−14	−44	−18	−59	+23	−47	−28
Income and Income Growth								
GNI/Cap ppp 2000[b]	1600	1860	2960	4280	3560	5910	2830	6230
Avg. annual % change in GNI[c]	2.3	2.7	0.2	0.5	2.8	−.02	8.3	9.2
Poverty								
% below $2/day (2000)	83	66	52	6	44	15	52	33
Equity								
Gini Index (2000)	32	33	44	45	34	35	30	43

Notes: [a]U5MR: Under-5 mortality rate.
[b]GNI/Cap ppp: Gross national income per capita in U.S. dollars adjusted for purchasing power parity.
[c]1975–2000.

severe recessions (1982/83, 1987, 1989, and 1998/99) and three periods of hyperinflation (1983, 1988/93, and 1999/2000). It incurred a high external debt, reflected in various moratoriums on debt payment, exchange rate depreciation, and banking crises. Between 1990 and 2001, Ecuador's official poverty rate increased from 40 to 45 percent (World Bank 2004). Yet despite weakening economic conditions and reduced public and private spending on health throughout the 1990s, the U5MR declined considerably.

The Role of the Health and Public Health Systems

Although many highly successful interventions have been developed to control diarrheal disease, neonatal tetanus, measles, and other fatal diseases throughout the developing world (Levine 2004; UNICEF 2000b), we were not able to identify with any confidence the mechanisms that each country used to select and implement the specific interventions that led to the reductions in U5MR. However, three themes emerged that help inform our understanding. First, data that allowed the targeted use of selected interventions were available in all four countries. Second, multiple interventions were introduced in each country in a highly project-specific manner. Third, none of the countries we studied had well-developed, accessible health care systems.

Research and data appear to have been used to target specific interventions for those most in need of them. For example, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) has had a strong presence in Bangladesh since the 1960s, with Matlab, a rural district southeast of Dhaka, serving as its field station. Villages across the region have been the subject of periodic demographic surveillance studies, research on maternal and child health, and research on service delivery (Fauveau 1994). Early studies in Matlab appear to have resulted in a concentration on family planning and vaccinations as the primary strategies to improve health in Bangladesh during the 1970s and 1980s (Caldwell et al. 1999; Koenig, Fauveau, and Wojtyniak 1991).

Similarly, the surveillance programs of the WHO and its affiliates, the Pan American Health Organization (PAHO) and the South-East Asia Regional Office (SEARO), and the demographic and health surveys (DHS) have shown important directions for improving children's

health. For example, the PAHO's surveillance and monitoring in Ecuador were instrumental in the decision to focus implementation in high-risk areas of the Comprehensive Care for Diseases Prevalent in Childhood on treating children with acute respiratory infections and diarrhea, the leading causes of death of children under five in Ecuador (Pan American Health Organization 2001). Similarly, research showing that only a third of Indonesian women delivered their children with a skilled-birth attendant and that the skills of these birth attendants were inadequate led to the initiation in 1989 of the country's Safe Motherhood Initiative (Koblinsky 2003).

Individual interventions probably account for only a small portion of the health improvements in the countries we studied (Becker and Black 1996). While a detailed accounting of all of the programs implemented in each country was beyond the scope of our project, it appeared as though multiple interventions were introduced in a project-specific and targeted manner. The situation in Bangladesh, where 128 individual health projects were supported by the World Bank in 1998, is especially informative (Health Systems Resources Center 2001). Following the introduction of successful family-planning programs, multiple projects covering diarrheal illness, measles, tetanus, and other leading causes of child mortality were initiated. Efforts to reduce mortality from diarrheal diseases through the introduction of oral rehydration therapy (ORT) are well known (Chowdhury, Vaughan, and Abed 1988). Because the size of the rural population posed enormous distributional challenges, merely distributing oral rehydration solution (ORS) as it had been done in other countries was considered inadequate. Accordingly, in 1980 the Bangladesh Rural Advancement Committee (BRAC) began training thousands of oral rehydration workers, who went door to door training mothers on the "ten points to remember," including information about dehydration and diarrhea, how to make ORS (a three-finger pinch of salt, a fistful of sugar, and a liter of water), when to call a doctor, and when to begin feeding. By 1988, more than 13 million women had learned about ORT, and about half of all Bangladeshi households used ORT in cases of severe diarrhea.

Our analysis of WDI data also indicates that other factors have contributed to the improvements in child health in Bangladesh. In 1985, WHO began its Expanded Program on Immunization in Bangladesh, which undoubtedly helped expand childhood immunizations from 2 percent coverage in 1981 to 60 percent in 1997. Between 1990 and 2001 the

percentage of one-year-olds fully immunized against measles increased from 65 to 76 percent. Large-scale public health interventions were especially common in the nongovernmental organization (NGO) sector. Although NGOs make up only 3 percent of health service delivery (measured by payments made by patients or governments), they appear to have significantly contributed to achievements in health promotion, especially in contraceptive use, immunization, promotion of oral rehydration therapy for diarrhea, and nutrition (World Bank and Asian Development Bank 2002).

The health systems in each of the four countries we studied were underdeveloped, inaccessible, and often unpopular. For example, although the public sector in Bangladesh provided more than 90 percent of all health services, most of the services were considered inadequate. Only about 12 percent of people thought to have serious illness received treatment in public health facilities, and in some areas health care providers were absent from work as much as 40 percent of the time (Chaudhury and Hammer 2003). Poor people were particularly unlikely to utilize health services, with only 13 percent seeking care from licensed medical doctors (Begum 1997).

In Egypt, most health services were provided free or at minimal charge in public clinics supervised by the Ministry of Health. Although hospital services were given priority by government health authorities, the distribution of these services was uneven, with high availability in urban areas around Cairo and Alexandria but few hospitals elsewhere (Economist Intelligence Unit 2003b). Public health clinics appeared to be more evenly distributed throughout the country, but these facilities were often understaffed and had antiquated equipment. Long journeys and long waits appeared to be the norm, and once seen, many patients were dissatisfied with the services. According to the Cairo Healthy Neighborhood Program, about half of all pregnancies were completed without prenatal services, and even though out-of-pocket expenses were high, about 60 percent of primary services were provided in private clinics (Boussen 2004).

Unlike the predominantly public systems in Bangladesh and Egypt, Ecuador's health system was a patchwork of public and private institutions. These institutions differed in their management structures, orientation, and financing models and had a significant lack of inter- and intrainstitutional coordination. Nearly two-thirds of the population had no health insurance or resources to pay for health care (LaForgia and

Cross 1993), and about 30 percent of the population did not receive or have access to any formal health services (Pan American Health Organization 2001). Efforts to decentralize health care decision making were rejected by the legislature throughout the 1990s, but limited decentralization of authority was achieved unintentionally because of the central government's ineptness (Pan American Health Organization 2001). Like Ecuador, Indonesia had a mix of public and private insurance and delivery mechanisms and tried to decentralize health care. Although these efforts were relatively successful, federal funding of the resulting community-based system was greatly reduced throughout the 1990s, with more than three-quarters of health expenditures coming from private, mostly out-of-pocket, sources by the end of the decade, significantly limiting many people's access to care (Scheil-Adlung 2004).

The Role of Political Systems and Governance

In a series of detailed case studies funded by the Rockefeller Foundation, Halsted, Walsh, and Warren (1985) and Caldwell (1986) examined three countries (Costa Rica, China, and Sri Lanka) and one state in India (Kerala) that had achieved good health despite great economic obstacles. According to these observers, a strong political commitment to good health was the single most important element underlying the health achievements in each. In this context, five domains—historical commitment to health as a social goal, a social welfare orientation to development, widespread participation in political processes, equity in access and use of social programs, and effective intersectoral linkages allowing for coordination and cooperation—represent the social and political elements that define "political will" (Rosenfield 1985).

Recent conceptualizations of good governance strongly resemble this notion of political will, suggesting that it is characterized by the presence of political stability, effective regulatory mechanisms, and widespread participation in the political process, as well as the absence of violence and corruption (Kaufmann, Kraay, and Mastruzzi 2005). We found little evidence of good governance in the countries we studied, however. For instance, in 2000 only Egypt (at about the fiftieth percentile) ranked above the thirtieth percentile on the World Bank Institute's (WBI) composite governance indicator. Moreover, worsening rather than improving

governance measures, especially in terms of stability and control of corruption, characterized the period from 1996, the first year for which WBI governance indicators are available, to 2000.

The summary scores from the WBI are consistent with the findings from our case studies. Ecuador, for example, is a country of remarkable ethnic and geographic diversity. Throughout most of its history, its three continental regions geographically segregated four distinct ethnic groups, but recent history has been marked by migration-induced conflict and political instability. Moreover, neither equity in the access to health care nor widespread political participation were consistent features of Ecuador's political and social landscape. Finally, political consensus on major policies, including health policy, has been an elusive goal in Ecuador (Stein et al. 2006). Several efforts at health reform failed to make many changes in the system of care. In 1994, the majority of social and political forces throughout the country rejected two reform proposals calling for widespread privatization. The subsequent political debate resulted in a proposal in 1995 for a national health system, with a corresponding national insurance system based on a partnership between the Ecuadorian Social Security Institute, which insures workers, and the MPH, the primary public insurer. The consensus-building process ended with a change in government in 1996. A third effort at reform ended during a 1998 health worker strike for higher wages.

Bangladesh's history is also largely characterized by turmoil, political instability, corruption, and poor governance. During its war for independence from Pakistan in 1971, severe famine, periodic floods and cyclones, violent changes in government and political disorder, corruption, and poor economic management appear to have shaped many of the events during the first three decades of Bangladesh's history (Economist Intelligence Unit 2003a). Corruption is widespread in Bangladesh, even in the health system, in which informal, under-the-table payments account for 20 to 30 percent of health care transactions (Killingsworth et al. 1999). Unlike Ecuador, however, Bangladesh has been able to achieve a modest consensus on health policy, including a constitutional requirement that the government focus on health improvement. Although Bangladesh lacks a comprehensive health policy, a series of four, five-year plans provided a direction for health improvement. The first three concentrated largely on family planning, while the fourth was expanded to include other maternal and child health services.

In contrast to Bangladesh and Ecuador, the governments in Egypt and Indonesia have been relatively stable, but at the cost of reducing

political participation in both countries. Egypt's growing authoritarian rule has been a response to threats of Islamist-led militancy in that country (Economist Intelligence Unit 2003b). The response to political instability in Indonesia was the subject of many reports from both advocates and government sources, with arbitrary arrests without trial common in some parts of this highly diverse, multiethnic country throughout the 1990s (U.S. Department of State 2000).

In short, our analysis did not find consistent evidence of political consensus on or a historical commitment to health, nor did we find much evidence of the types of social welfare orientation to development observed by the Rockefeller Foundation. Bangladesh, Ecuador, and Indonesia rank among the world's most corrupt developing nations (Lambsdorff 2005), and we found little evidence for participatory governance and decentralized decision making. These countries have highly centralized health authorities that are part of their government's rigidly bureaucratic systems. Crackdowns on extremists in Egypt and Indonesia led to a tightening of central controls and authoritarian processes. The contrast between the four countries we studied and those highlighted in the Rockefeller case studies is dramatic and suggests that the absence of the fundamental elements of political will can be overcome.

The Role of Development Partners

At the country level, technical assistance and aid can be considered a form of "linking" social capital, defined as alliances with sympathetic individuals in positions of power in a context of mutual cooperation (Woolcock 1998). Despite considerable effort, we were unable to conclusively document the existence of widespread, close relationships between the countries we studied and donors or to confirm that the existing relationships were somehow different from those between donors and less successful countries. There were clues, however, that successful countries formed more effective relationships with donors than did less successful countries. For example, several key informants and one case study suggested that Bangladesh is more receptive to foreign aid and more willing and able than other countries to actively endorse the conditions or stipulations that often accompany such aid (Heitzman and Worden 1989).

Development partners also appear to have provided financial assistance that mitigated the effects of a weak economy and low levels of

TABLE 5
Selected Donor Support for Child Health (U.S.$/child/year)

	Bangladesh	Pakistan	Ecuador	Guyana	Egypt	Algeria	Indonesia	Thailand
UNICEF	1.72	0.60	0.68	6.55	0.74	0.38	0.66	0.08
USAID	0.28	0.16	1.67	0.00	1.69	0.00	0.19	0.03

internal public and private health spending. For example, international aid to Bangladesh accounted for about 35 percent of the Ministry of Health's budget (Buse and Gwin 1998). Although we were unable to quantify systematically the amount of aid for health or child health from all donors (see, e.g., McFarland 1997, who also tried to quantify development assistance), it appeared that international donors made significant health expenditures. Table 5 gives data on aid for child health from the U.S. Agency for International Development (U.S. Department of State 2005) and the United Nations Children's Fund (UNICEF 2000a). Aid from these two sources ranged from $0.85 per year in Indonesia to $2.43 per year in Egypt, compared with considerably smaller sums provided to comparison countries Thailand, Pakistan, and Algeria, which ranged from $0.11 in Thailand to $0.76 in Pakistan. Guyana, with only 100,000 children under age five, received considerably higher sums on a per capita basis from these donors, but the total was modest. We cannot say whether other donors provided larger amounts to these countries.

It also appears that aid may have increasingly bypassed government in favor of direct allocation to NGOs, whose spending may not be reliably included in health-spending data. This phenomenon was particularly apparent in Ecuador, where public and private spending declined precipitously in the second half of the 1990s. Fertility and infant services provide one example. The U.S. Agency for International Development and the Centers for Disease Control and Prevention provided $36 million for the Child Health and Survival Project between 1989 and 2000 (U.S. Agency for International Development 2001). The project had two phases. Phase 1 was implemented entirely through the Ecuadorian MPH and ran through 1994. Phase 2 was authorized in response to changes in the U.S. Agency for International Development's policy regarding sustainable development and because of the recognition that phase 1 had not met expectations. Starting in 1995, emphasis was placed on reforming MPH policies, analyzing and promoting policies, and strengthening the NGOs. During this phase, much of the funding went directly to NGOs.

The reasons for the links between donor agencies and countries differed, and they were not always altruistic. Egypt is viewed, especially by the United States, as being important politically in the Arab world, and this recognition has resulted in a great amount of development aid in addition to military assistance. Since the 1979 signing of the Camp David accords, Egypt has received $1.5 billion annually from the United States in aid—about 15 percent of all U.S. foreign aid and equaled only by the United States' aid to Israel (Brainard 2003). Although much of it goes for purposes other than health, the amount is roughly equal to the service on Egypt's foreign debt, an amount that undoubtedly relieves the country of considerable financial constraints.

Discussion

In this article, we described the circumstances of four countries whose reductions in child mortality rates exceeded what might have been expected from their poor economic circumstances, and we asked whether they followed common routes to improve their children's health. Our findings suggest that targeted health intervention and foreign aid matter more than do contextual factors, including the degree of economic development, good governance, and strong health care systems. In this regard, our stories of the four countries offer several important lessons for health and foreign policy.

The first lesson is that economic growth, poverty reduction, and economic equity did not consistently contribute to declining U5MR during the 1990s. Although there may be other benefits from the current focus on economics and poverty reduction in developing countries, these were not necessary elements of strategies to reduce child mortality. We cannot say, however, whether economic development or poverty reduction alone would be sufficient to improve health under some circumstances. Moreover, although a sound economy may not be necessary to improve health, much of the spending on health may have mitigated the effects of a poor economy.

A second lesson from our case studies is that the absence of political will or good governance does not doom efforts to reduce mortality in developing countries. Violent political change, corruption, and ineffective government were common features of each of the countries we studied, and participation in the political process was rare, a finding consistent with a recent World Bank report that political participation is

less important to successful development than was once thought (World Bank 2005).

Third, foreign aid and technical assistance appear to be important to improved health outcomes. Each of the countries received considerable financial assistance. Technical assistance in the form of disease surveillance was especially important to targeting interventions to those most in need. Consistent with other foreign policy imperatives, cooperation with donors was independent of the donors' motivations. The donors' goals may have been humanitarian in Bangladesh, but they were political in Egypt, a critical strategic partner deemed vital to U.S. security interests (Brainard 2003).

The fourth lesson is that public health and medical services matter, but they do not require the comprehensive framework, or the attendant level of coordination and bureaucracy, currently endorsed by the International Monetary Fund, the WHO, and the World Bank. Comprehensive services also do not appear to be necessary and may be counterproductive. As one key informant from Pakistan told us, trying to accomplish everything dilutes resources and efforts, making it less likely that anything will be done well.

We also note that although each of the countries we studied had remarkable achievements, none has reached the levels of child mortality seen in Costa Rica, Cuba, and Sri Lanka. This probably is not a coincidence. The frustration that has driven each to reform its health sector over the past decade was born in the inefficiencies and duplication of the project-oriented approaches. Bangladesh, Egypt, and Indonesia have now advanced toward implementing reforms that would allow more integration; Ecuador spent much of the decade trying to achieve the necessary consensus without succeeding. These changes will be worthy of further study.

The conduct and limitations of our project also offer important lessons for future research. Our project was limited by the absence of a consensus summary measure of health and a lack of data for many of the domains of interest. For example, we found only scant data on the amount of foreign aid or on effective mechanisms for interactions between donors and developing countries. Using both low income and health improvement as selection criteria introduced a bias into the analysis that limited our ability to make causal inferences about the nature of the relationship between health and the factors of interest. Comparisons will be necessary in order to determine cause and effect. Finally, we acknowledge the

limitations of an approach that relied mostly on official documents that may have glossed over aspects of context that may have influenced outcomes. Despite these limitations, we feel that our case study approach adds new insights to the policy debate regarding the best mechanisms to provide development assistance.

We conclude with the implications of our analysis for current U.S. foreign policy and for current trends in development assistance based on economic development and limited direct financial assistance in countries meeting certain criteria regarding government effectiveness, control of corruption, encouraging economic freedom, and other contextual factors (Kolbe 2003; Radelet 2002). Much of the aid and debt relief from international development agencies such as the World Bank and the International Monetary Fund is now tied to development strategies focusing on economic growth and poverty reduction. Although these organizations appear to recognize that poverty is both a cause and a consequence of poor health, health-related recommendations rarely provide specific mechanisms for health improvement and monitoring (Walford 2002). This is not the route followed by the countries studied here, for which foreign aid supported targeted introduction of effective interventions despite great poverty, weak economies, turmoil, corruption, and governance that would be considered poor by current definitions. Rather, our results indicate an alternative approach that places priority on explicit setting of health goals and use of targeted interventions.

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