

Child Health: Reaching the Poor

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In most countries, rates of mortality and malnutrition among children continue to decline, but large inequalities between poor and better-off children exist, both between and within countries. These inequalities, which appear to be widening, call into question the strategies for child mortality reduction relied upon to date.

We review (1) what is known about the causes of socioeconomic inequalities in child health and where programs aimed at reducing inequalities may be most effectively focused and (2) what is known about the success of *actual* programs in narrowing these inequalities.

We end with lessons learned: the need for better evidence, but most of all for a new approach to improving the health of all children that is evidence based, broad, and multifaceted. (*Am J Public Health*. 2004;94:726–736)

Substantial progress has been and continues to be made in child health. A child born in 1960 in Latin America or the Caribbean had a 105 in 1000 risk of dying before her first birthday; by 1999, this figure had fallen to 30 in 1000.¹ But progress has been uneven. In the statistics on child health, one common theme emerges: poor children lag behind their better-off peers. Mortality among children aged younger than 5 years (under-5 mortality) currently averages 6 per 1000 live births in the industrialized countries but is as high as 91 per 1000 in the developing world.² Child health also tends to be worse among the poor *within* countries. In southeast and northeast Brazil, for example, over the period 1987 to 1992, among children in the poorest third of the population the under-5 mortality rate was 6 times that among the richest 10% of children (113 vs 19).³ In addition, socioeconomic inequalities in child health appear to be widening. Reductions in infant and under-5 mortality have been fastest among the rich countries,⁴ and there is growing evidence that rates of child mortality and malnutrition have fallen faster among the better-off.^{5–9}

There is broad acceptance that these inequalities are ethically indefensible—they are *inequities*, not simply inequalities¹⁰—and that programs and policies in the future ought to improve the health of *all* children.^{11–14} In this spirit, we review in this article what is known about the causes of socioeconomic inequalities

in child health. These provide the entry points for programs aimed at narrowing child health inequalities. We also review what is known about the success of *actual* programs in narrowing socioeconomic inequalities in child health.

Our search strategy for the review of evidence was as follows. On inequalities in proximate determinants, we aimed to reflect the medical and social scientific literature on (a) the proximate determinants and (b) their socioeconomic distribution. We also aimed to reflect the medical and social scientific literature on (a) the underlying determinants of child health outcomes, (b) their socioeconomic distribution, and (c) the impact and socioeconomic aspects of child health and related programs (e.g., maternal and child health programs, health insurance for children, etc.). We started by pooling our knowledge of these areas, based on research and programmatic work at a variety of institutions. We then undertook targeted searches in Medline, EconLit, and the World Bank's catalog of bank documents and reports (see <http://www-wds.worldbank.org>). We then circulated the document for comment among specialists in child health and equity issues in academia, the World Bank, the World Health Organization, other international agencies, and bilateral donors. This process added to the literature reviewed. We have tried to focus on journal articles in peer-reviewed journals. However, much of the literature on programs

and program evaluation has been produced by agencies such as development banks, and we decided that excluding this material would significantly limit the depth and scope of the paper. Where possible, we have tried to cite only documents in the public domain and with a reference number (which typically implies an element of peer review and quality control).

THE CAUSES OF CHILD HEALTH INEQUALITIES: A FIRST PASS

It has been estimated that more than half of global under-5 deaths are attributable to a few conditions, namely pneumonia, diarrhea, malaria, measles, and HIV/AIDS.¹⁵ Malnutrition is associated with almost 60% of these deaths. These conditions disproportionately affect the poor.^{16–18} This begs the question: what generates this distribution of cause-specific deaths? The distinction by Mosley and Chen¹⁹ between “proximate” and “underlying” determinants of health provides a useful organizing framework for addressing this issue. The former affect child health directly (e.g., feeding practices, preventive activities, care during pregnancy and childbirth), while the latter do so only indirectly through their effect on the proximate determinants (e.g., mother's knowledge, household income, access to health facilities). A good deal is now known about the proximate determinants of child health—the behaviors, preventive practices, and interventions that can improve the health of and reduce deaths among children. Evidence is also starting to emerge about the socioeconomic distribution of these determinants. Together, these 2 literatures provide the explanation—at one level—for the existence of socioeconomic inequalities in child health.

Preventive Activities

Low birthweight is linked to malnutrition of the mother before and during pregnancy,

and micronutrient deficiencies in mothers increase morbidity and mortality among young children.^{20–24} A malnourished child is less able to fight infections, and malnutrition is a contributory cause in at least one third of under-5 deaths.¹⁵ Exclusive breastfeeding from birth through the first 6 months provides required nutrients and reduces infant mortality from infectious diseases and malnutrition.^{25–29} Its protective effect is especially pronounced among the poor.²⁶ Nutrient intake from complementary foods becomes important after the sixth month.^{30,31}

In all aspects of nutrition, the poor tend to be worse off. Maternal nutritional status is significantly worse in poor countries, and among the poor within countries.⁵ Child malnutrition tends to be more common among the poor than among the better-off.^{32,33} Energy intake from complementary food among infants also displays a socioeconomic gradient,³⁴ and the consumption of iodized salt is lower in poorer regions.² The only feeding pattern that has a gradient that is favorable to the poor in the developing world—but not in industrialized countries^{35–37}—is breastfeeding, which decreases with socioeconomic status.³⁸

Hygiene, the use of safe water, and the immediate environment where the child lives, including indoor air pollution, are also important proximate determinants of child health. The safe disposal of feces and hand washing after defecation and before food preparation can protect children from diarrhea³⁹ and other communicable diseases, as can the use of safe drinking water.⁴⁰ Indoor air pollution in family homes is produced by burning coal or biomass fuels (wood, dung, fiber residues) for cooking and heating, in combination with inadequate ventilation. Prolonged exposure to indoor air pollutants increases the risk of pneumonia in children^{41–43} and of low birth-weight.⁴⁴ As with nutrition and feeding, the poor tend to be disadvantaged—hand washing and the appropriate disposal of excreta are more common in better-off households,³⁴ and the poor, who rely disproportionately on agricultural residues and animal dung as sources of fuel, are most at risk of exposure to indoor air pollution.⁴⁵

A number of other key preventive activities are also known to improve child health. Antenatal care and assistance at birth result in

healthier newborns and can help foster healthy feeding practices of newborns, young children, and mothers. Birth spacing can improve the survival prospects of subsequent children.⁴⁶ Measles immunization has been shown to have beneficial effects that go well beyond the prevention of measles mortality,^{47–49} and it has especially pronounced effects among poor children.⁵⁰ Regular use of insecticide-treated nets for the prevention of malaria can reduce illness and deaths from malaria in geographic areas where the disease is common.^{51–55} Each of these preventive activities tends to display a socioeconomic gradient: poorer countries typically have lower rates of antenatal care use, attended deliveries, contraceptive use, and immunization²; within countries, too, gradients are evident between the poor and better-off.^{5,56}

Care During Illness

Some childhood illnesses can be managed at home. Correct home management involves a number of important family practices. Some of these have been investigated thoroughly and shown to be effective, such as giving increased fluids and continuing to feed a child with diarrhea⁵⁷ and providing the appropriate treatment for pneumonia and malaria. Rates of oral rehydration therapy (ORT) (increased fluids plus continued feeding) for children with diarrhea tend to be somewhat lower in poorer countries,² but within countries they do not vary markedly with wealth.⁵ By contrast, receipt of an appropriate antibiotic by children with probable pneumonia does display a socioeconomic gradient, as does the correct use of antimalarial treatment.⁵⁸

Some childhood illnesses require professional care. Poor or delayed care-seeking has been identified as a contributor in up to 70% of child deaths.⁵⁹ The decision to take a sick child to a knowledgeable provider is associated with socioeconomic status.^{5,60} For caregivers who take the child to a provider, additional practices are involved in compliance with the treatment and advice they are given about how to care for the child. For severely ill children, this advice can include referral to hospital. Evidence indicates the existence of a link between treatment compliance and child health outcomes.⁶¹ Unnecessary illness can

arise from incomplete treatment, therapy failure, drug resistance, and the later misuse of leftover medicines. Compliance with treatment advice and referral is associated with parents' socioeconomic status.⁶²

THE CAUSES OF CHILD HEALTH INEQUALITIES: DIGGING DEEPER

At one level, then, the causes of socioeconomic inequalities in child health are clear. A limited number of proximate determinants have been demonstrated to affect the health of children directly. These behaviors, preventive practices, and interventions that can improve child health and reduce child deaths are unequally distributed across socioeconomic groups. But the Mosley-Chen framework prompts the obvious next question: why do these inequalities in the proximate determinants of child health arise and persist? Why, for example, are children in the richest quintile in India 3 times more likely to be immunized despite the existence of a free-of-charge and ostensibly universal government immunization program?⁶³ Digging deeper into the causes of child health inequalities is crucial to identifying the failures of policies to date and to devising successful policies to combat inequalities in child health for the future.

The fact that most of the key proximate determinants of child health are worse among the poor does not necessarily mean that it is low income that is the *cause* of these inequalities. The poor are disadvantaged compared with the better-off on a number of underlying determinants of child health, as well as having less income. The literature reviewed in this section covers a broad range of studies: some use multiple regression methods to parcel out the different effects of the various underlying determinants of child health; some document their inequalities across socioeconomic groups; together, they provide a picture of the underlying causes of socioeconomic inequalities in child health.

Financial Barriers

Income. Measures of child health tend to improve with income, at both the country level^{4,11,64,65} and the child level.^{65–73} Most proximate determinants tend to improve with higher income, including adult energy in-

take^{74,75}; the likelihood of a pregnant woman receiving antenatal care^{76,77}; the timing of antenatal consultations^{77,78}; the likelihood of a delivery taking place away from home^{72,79,80}; the likelihood of a child being immunized,^{81,82} sleeping under an impregnated bednet,⁵⁶ or being given ORT⁸³; and the likelihood of a caregiver seeking care for a child with fever.⁸⁴

It is not just a household's total income that matters but also the degree of the woman's control over its use. Women who exert relatively little control over household financial resources are less likely to receive antenatal care, have fewer antenatal visits, and are less likely to have visits in the first trimester of pregnancy.⁸⁵ It seems likely—though the evidence is weak—that poorer women exert less control over household resources than better-off women.

Price. It is known that a higher monetary price for health care tends to reduce, or at least delay, health service use, especially among the poor, unless accompanied by improvements in service quality.^{86,87} Cost also tends to be a factor in determining the demand for other proximate determinants of child health: cost influences the use of bednets among poor households,⁸⁸ and higher food prices have negative impacts on child survival and malnutrition,^{73,89,90} with the poor being particularly vulnerable.^{73,74}

Health Care Provision

There are several key steps to ensuring accessible and good-quality health services.^{91–95} On each step of this ladder, the poor are disadvantaged.

Geographic accessibility. An important dimension of geographic accessibility is travel time. This depends on the distance households have to travel, and also on the transportation system, the road infrastructure, climate, and geography. Both distance and travel time have a significant impact on utilization and health outcomes.^{73,77,89,90,96–98} The poor tend to have to travel further to get to health facilities and—owing in part to the extra distance but also the difficulty of transportation—longer.^{99,100}

Availability of human and material resources. Services may be geographically accessible, but essential inputs, such as drugs, vaccines, contraceptives, micronutrients, or trained

staff, may be unavailable or in short supply. Child mortality and malnutrition have been found to be sensitive to the availability of drugs in local facilities.^{73,89} This reflects in part the fact that use of services (e.g., antenatal care and vaccinations) is higher in households living in areas where local facilities are well stocked with essential drugs and staff.^{73,89,97} But it also reflects the greater impact that contacts in such facilities have on health outcomes. Facilities serving the poor are less likely to be well stocked with drugs and to be properly staffed.^{73,89,101}

Organizational quality. The way health services are organized (hours of operation, waiting time, gender of providers, lack of courtesy, required under-the-table payments) are cited in qualitative studies as determinants of service use.¹⁰² Health facilities have been criticized by poor people for their long waiting times and rude staff,¹⁰¹ but evidence is scant on whether facilities of a particular type that serve poor people are systematically worse in their organizational quality than those serving better-off people.

Relevance of services. Child mortality and malnutrition have been found to be sensitive to the availability of child health services (e.g., immunization programs, child birth facilities, and growth monitoring) in local facilities.^{73,89} Studies have reported fewer child-specific services being offered by facilities serving poor rural areas than by facilities serving better-off urban areas.^{73,89}

Timeliness of services. Certain key health services—such as emergency obstetric care or referral services for severely sick children, and also immunization and other routine preventive services—must be delivered in a timely manner. Timeliness of service use tends to be worse among the poor, but these inequalities reflect both differences in care-seeking behaviors on the part of households and differences in provider behavior.

Technical quality. The technical quality of care—measured, for example, by the quality of case management—influences the size of health improvement consequent upon a particular health service contact. It can also influence utilization decisions by caretakers. The quality of case management of childhood illness by health professionals varies considerably, and is often very low.^{103–105} In part, this

reflects lack of availability of drugs and human resources. Are the poor reliant on poor-quality facilities? Drugs and human resources are certainly less available in facilities serving the poor. The poor are also heavily reliant in some countries on informal private sector providers.^{5,106} These are known to provide poor-quality care—including inappropriate antibiotic use for diarrhea and noncomplicated acute respiratory infection, and inadequate malaria prescription.^{107–111} However, no evidence is available on whether quality in the public sector is any better.

Maternal Education

In many countries, the mother's education has been found to increase child survival^{66–68,71,72,79,112–116} and to decrease child malnutrition,^{68,116,117} even when other determinants are held constant. There are, however, studies that have found weak or nonexistent effects for one indicator or both.^{68,70,89,90,116–118} Most proximate determinants usually increase with higher levels of maternal education; these include complementary food nutrient intake among infants³⁴; good hygiene, including hand washing and appropriate disposal of excreta³⁴; the likelihood of receiving antenatal care, and of choosing formal care in preference to traditional care; the timing of antenatal consultations^{77,78}; the likelihood of a baby being delivered away from home,^{72,79,80} or by a trained person irrespective of where the birth occurs^{79,80,119}; the use of well-baby clinics³⁴; the likelihood of a child being immunized^{81,82,119}; the ORT use^{83,120}; and the likelihood of a caregiver seeking care for a child with fever.⁸⁴

The link between maternal education and child health, and the tendency for poorer women to be less well educated, is one of the other key explanations of why poorer children die earlier and are less well nourished. The socioeconomic inequalities in maternal education are large both across countries² and within them.¹²¹ In many countries, the gap between the poor and the better-off is larger among women,¹²² whose knowledge is often most important for child health.

Water, Sanitation, and the Home Environment

When other underlying determinants of child health are held constant, improved

drinking water sources (quality, but especially quantity) and adequate sanitation are often typically found to lead to better child health outcomes.^{66,67,89,90,116,123–126} This is hardly surprising, since hygienic behaviors are easier when safe water and a flush toilet or latrine are available in the house. Socioeconomic inequalities in water and sanitation are highly visible between countries and within them.^{2,10}

Other Underlying Determinants and Their Inequalities

A variety of social norms and practices influence women's access to resources, both inside the household (e.g., food, water, time) and in the community (e.g., land, extension services, credit). They also influence their decisionmaking power in the household. These norms influence their capacity to seek health care and to devote time and energy to child care.¹²⁷ Community infrastructure also matters. The likelihood of households having good drinking water and good sanitation is greater if pipes and sewerage systems are in place in the local community. Furthermore, good sanitation in the community reinforces the beneficial effects on nutritional status of good sanitation at the household level.¹²⁸ Electricity has been linked to overall child mortality.^{129–131} In each of these respects, the poor tend to be disadvantaged. In poor communities, for example, attitudes toward women tend to be less favorable to good health outcomes.¹²⁷

WHAT CAN PROGRAMS DO TO NARROW SOCIOECONOMIC INEQUALITIES IN CHILD HEALTH?

Digging below the proximate causes of child health reveals how, ultimately, socioeconomic inequalities in child health can be traced back to a complex web of socioeconomic inequalities in the underlying determinants of child health. The exercise also provides clear pointers to help understand the failure of policies to date, and to help design more promising policies.

Lowering Financial Barriers for the Poor

Raising the income of the poor. As has been seen, income has pervasive effects on child health, operating through a number of key proximate determinants and interacting with other underlying determinants, such as water

and sanitation. Macroeconomic and microeconomic policies that succeed in raising average income—without having adverse effects on its distribution—are thus likely to have payoffs in terms of improved child health outcomes among the poor.

The same is true of policies aimed at improving the living standards of the poor. Social protection programs can also act as anti-poverty programs, as shown by South Africa's pension program. The program was initially designed to provide a relatively generous safety net for Whites who reached retirement age without an adequate employment-based pension. By the end of 1993, the pension had become an important source of income for non-Whites, and it has been found to have improved the health not only of pension recipients but of other members of households where resources are pooled.^{132,133} Among Black children aged younger than 5 years, the pension is estimated to have led to an 8-cm increase in height.

Microcredit programs have also been discussed as ways of improving maternal and child health. While it is clear that at least some of these programs have indeed reached poor women, doubts have been expressed about the alleged beneficial effects of participation on the use of contraceptives and maternal health services; studies have failed, it is argued, to control for self-selection into the microcredit program and nonrandomness in their placement.¹³⁴

Making transfers contingent on participation in health-promoting activities. In Honduras, a family allowance program known as *Programa de Asignación Familiar* (PRAF) [Family Allowance Program] provides a cash payment to poor households with children or pregnant women that is contingent on continued prenatal checkups, growth monitoring, and vaccinations.¹³⁵ The *Programa de Educación, Salud y Alimentación* (PROGRESA) [the Education, Health, and Nutrition Program] in Mexico and the social protection network in Nicaragua are similar in design.^{135–137} Evidence suggests that these 3 programs have all been well targeted on the poor.¹³⁵ PROGRESA has also been found to have significantly increased use of public health clinics for preventive care, including prenatal care and child nutrition monitoring, with no offsetting reduction in the use

of private providers. It is also estimated to have caused a 12% reduction in the incidence of illness among under-5 children¹³⁸ and an increase of about one sixth in mean growth per year among children aged 12 to 36 months who received multimicronutrient food supplements as well as the conditional cash transfers.¹³⁷

Making health services and other health determinants less expensive. The cost of health care can be lowered through a variety of means, including health insurance, health cards, fee waivers, and vouchers. Whether public,^{139,140} private,¹⁴¹ or community based,¹⁴² health insurance often increases the use of health services. In some studies, use by the poor has been found to be particularly sensitive to coverage by insurance and other schemes that reduce the price of health care. For example, Egypt's School Health Insurance Program appears to have had a marked impact on the probability of a visit to a formal provider among children in the poorest quintile.¹⁴⁰ Indonesia's health card scheme also appears to have had an especially pronounced impact on use among the poor.¹⁴³

Two factors need to be borne in mind. First, it is important to ensure that providers get reimbursed for treating those whose fees have been reduced, which often has not been the case. For example, in the early years of the Seguro Materno Infantil programs in Bolivia and Peru, providers were not fully reimbursed when delivering services covered by insurance.¹⁴⁴ Second, it is important to devise ways to ensure that the poor, and especially the very poor, are covered. The poor are typically left uncovered by social insurance schemes,^{6,145} have insufficient resources to purchase private insurance,¹⁴¹ and are often uncovered even by community-financing schemes,^{94,142,146,147} and fee waivers rarely exempt the poor.^{6,87,148} There are, however, some encouraging trends and examples. In Colombia, although social insurance coverage is still higher among the better-off, the poor were the major beneficiaries of the expansion in coverage during the 1990s.¹⁴⁵ Similarly, the health card scheme operating in Indonesia, which was intended to be targeted toward the poor, has been so in practice.¹⁴³

Policies to reduce the prices of medicines, food, and other proximate determinants of

child health have also had beneficial effects. For some drugs, governments may require the assistance of the global community to help lower the price. In many cases, however, countries may be able to achieve a good deal by themselves, through, for example, deregulation.⁶ In some cases, it may be feasible to subsidize the price of drugs for the poor. Strategies such as the social marketing of bednets can be adapted to include well-targeted subsidies, as in the Tanzania example. In nutrition, a variety of schemes have been employed to reduce the cost of food—either for the population as a whole or the poor in particular. Examples include food stamps, food subsidies, and school feeding programs.¹⁴⁹ In Guatemala City, for instance, the Hogares Comunitario program provides incentives for mothers to improve feeding practices.¹⁵⁰

Improving Health Provision for the Poor

Making services more accessible for the poor. Accessibility can be improved in a number of ways. One way is to reduce travel time to existing health facilities. Evidence on the impact of road improvement projects on health care use and health outcomes is limited, and the evidence available to date is not clear-cut.^{151,152} Another strategy is to expand the coverage of facilities by building new ones, making use of community-based service delivery, or using outreach from existing facilities. This has been a common theme in a number of maternal and child health programs. In the Matlab Maternal Child Health and Family Planning project in Bangladesh, services were delivered in a set of intervention districts through a mixture of government facilities and mobile workers, supported by fieldworkers from nongovernmental organizations (NGOs).¹⁵³ Over the period 1982 to 1996, child mortality fell by over 40% in both the intervention and nonintervention districts. The biggest percentage reduction in the nonintervention districts was in the richest group, while in the program districts the largest reductions were among the poorest group.¹⁵⁴ The use of outreach was also a key feature of the Bamako Initiative in West Africa.⁹² In both Benin and Guinea, evidence suggests that the use of outreach led to significantly higher levels of immunization coverage, although the socioeconomic distribution it is not known.⁹³

Several Latin American countries—notably Bolivia, Brazil, Mexico, and Peru—have expanded coverage of basic health care to their poor populations on a systematic basis and aimed to improve the relevance and technical quality of care.¹⁵⁵ Rather than extending existing delivery modalities, these programs have involved contracting with community agents of one kind or another. Results in Ceará, in the northeast of Brazil, indicate that substantial improvements occurred in average levels of service use and outcomes following the program's introduction. Service use, for example vaccination coverage, weighing, and ORT use, increased fastest among the poor.^{156,157} Health outcomes, such as diarrhea, stunting, and underweight, improved in all populations, although they improved faster among the better-off.

The use of contractors (including NGOs) has been a feature of other countries' attempts to expand access. In many cases, payment has been linked to results, rather than to contacts. Performance-based contracts with NGOs have been used to deliver community-based nutrition services (growth monitoring, nutrition and education sessions, referral to health facilities of unvaccinated children and pregnant women, and food supplementation) in Senegal and Madagascar.¹⁵⁸ In areas covered by both projects, lower rates of malnutrition were found among children who had benefited from the project compared with those who had not. In Madagascar, poorest children with severe malnutrition gained the greatest benefit from the project. Results from a recent experiment in Cambodia, in which "contracted-out" providers and "contracted-in" providers were compared with traditional Ministry of Health providers, suggest that there may be benefits from contracting, especially for the poor.¹⁵⁹ However, since government spending per person was substantially higher in contracting districts than in Ministry of Health districts, it is not clear whether the improvement overall and the lower inequality was due to the contracting arrangements or to the higher resources available.

Increasing the availability of human and material resources in facilities serving the poor. The Bamako Initiative in Guinea and Benin is one example of a systematic attempt to increase the availability of drugs at first-level facilities.⁹¹

This involved a community-based cost-sharing exercise, the retention of revenues locally to maintain drug supplies, and an essential drug policy focused on generics. The strategy led to substantial increases in immunization coverage and use of antenatal care, although it is not known whether impacts were similar for all socioeconomic groups.¹⁶⁰ Some concerns have been expressed that cost-sharing arrangements in the Bamako Initiative may deter use by the poor. However, the evidence seems to be inconclusive, with one study suggesting that the poor were not deterred more than the better-off from seeking health care.¹⁶⁰ A way of minimizing any negative effects on use among the poor is to couple cost-sharing with a solidarity community tax. In Niger, where this approach was tried, use among the poor actually increased when the revenues from both the fees and the tax were used to purchase drugs for facilities.¹⁶¹

Social Investment Funds (SIFs) have also been used to increase resources—infrastructure, stocks of equipment, medicines, vehicles—in health facilities in poor areas.^{162–164} Through the use of targeting mechanisms, SIFs can, in principle at least, be concentrated on poorer areas. In practice, health investments in the Nicaragua SIF were well targeted, while those in the Bolivian SIF were not. However, in Nicaragua no significant impacts on diarrhea prevalence or malnutrition were found for any of the SIF investments. In Bolivia, by contrast, SIF health investments led to significant improvements in antenatal controls and attended deliveries and to a 26% decline in under-5 mortality.^{162–164}

Geographic resource-allocation formulas also have the potential to increase the resource endowments of facilities serving the poor. These have provided a means of reducing inequalities in resources between poor and better-off regions in industrialized countries.¹⁶⁵ In the developing world, such formulae have not been widely used, although a scheme was introduced in Mexico in 1998¹⁶⁶ and plans are at an advanced stage in several other countries.^{144,167–171} In the absence of such formulae, it is hardly surprising that better-off regions typically receive more public resources than poorer regions.^{144,171}

Increasing technical quality of health care for the poor. In the 1990s, several countries

mounted national control of diarrheal disease programs aimed at improving case management and promoting the use of ORT and preventive interventions. These programs aimed at universal coverage, and some studies suggest that they have had a sizable impact on mortality.^{57,172–175} However, they were not designed to evaluate whether there were similar impacts on the mortality rates of the poorest and the better-off.⁵⁷

A central strategy of these programs is to improve the skills of health staff as a means of improving the technical quality of care in health facilities serving poor children. The Integrated Management of Childhood Illness (IMCI) strategy seeks to improve provider skills, by combining elements of improved treatment for the major killers of children aged younger than 5 years with prevention through assessment of immunization status, improved feeding practices, and protective behaviors.^{176–181} The quality of care provided by health workers trained in IMCI has been found to be significantly better than the quality provided by nontrained health workers in several settings^{182,183} (Ministry of Health, Bolivia, unpublished data, 1999). No published evidence is yet available on the impact of IMCI on health outcomes, either among the population as a whole or among the poor in particular, since IMCI has yet to be taken to scale. The ability of health systems to effectively implement IMCI and other basic health services is limited without investment in the health system overall.¹⁸⁴ The identified impediments to the successful delivery of quality health services, including IMCI, are high level of staff turnover, inadequate mechanisms and incentives to maintain health worker performance, inadequate drug supply, and inadequate management capacity at the central and district levels (D. Robinson, MD, unpublished data, 2001). These problems are especially pronounced in poorer areas.¹⁸⁵

Bringing About Behavior Change

Maternal education has pervasive effects on child health, operating through a number of key proximate determinants and interacting with other underlying determinants, such as water and sanitation. Increasing the educational levels of girls is highly likely, therefore, to have major payoffs in terms of improved

child health outcomes among the poor. But behavior change can be brought about through means other than formal education.

Mild and moderate malnutrition can be eliminated or controlled through relatively simple changes in dietary and food hygiene practices that are targeted by behavior-change strategies.¹⁸⁶ For example, in Accra, informal education was found to mitigate the negative effect of poverty and low maternal schooling on children's nutritional status.¹⁸⁷ In Brazil, the provision of nutrition education and counseling by IMCI-trained health workers resulted in improved knowledge on the part of mothers, better feeding practices, and improved nutritional status of children after 18 months.¹⁸⁸ In peri-urban Mexico City, exclusive breastfeeding practices were improved following home-based peer breastfeeding counseling.¹⁸⁹ What is less clear is how far the nutritional status of poor children can be improved through these means, given that severe malnutrition is more concentrated among the poor than moderate malnutrition.³²

Hygiene is another area where information, education, and communication interventions have proved effective in changing behavior. Recent reviews of the evidence¹⁹⁰ found that 12 hand-washing interventions in 9 countries achieved a median reduction in diarrhea incidence of 35%, while measures aimed at increasing the safe disposal of feces achieved a median reduction of diarrheal disease of 26%, a median reduction in all-cause child mortality of 55%, and a median reduction in mortality from diarrhea of 65%. There is some evidence that this approach benefits the poor—in Central America, the social marketing of soap resulted in higher reductions in diarrheal incidence rates among poor children.¹⁹¹

Improving Water, Sanitation, and the Home Environment Among the Poor

There is also scope for improving child health through improvements in infrastructure at the household and community levels. A recent study of piped water in India highlights how the impact of piped water on child health varies with income and maternal education.¹⁹² Among poorer children, piped water reduces the incidence of diarrheal disease only among those whose mothers had education above primary level. This high-

lights the importance—especially among poor households—of behavior-change strategies to accompany water infrastructure projects. The above-mentioned SIFs in Bolivia and Nicaragua also included sanitation, and the Bolivia SIF included water projects too.^{162–164} In both countries, the sanitation investments were poorly targeted, being disproportionately concentrated in better-off areas, but water projects were well targeted. No significant impacts of either water or sanitation projects on diarrhea were found in Nicaragua, but in Bolivia water investments are estimated to have resulted in a 41% reduction in under-5 mortality. Investments in improving the home environment are also likely to have payoffs. A recent study in Kenya demonstrated that the use of cleaner fuels and improved stoves can reduce the prevalence of acute respiratory infections and conjunctivitis among children younger than 5 years of age.¹⁹³

CONCLUSIONS

The facts on child health inequalities are sobering. Large inequalities between poor and better-off children exist, both between and within countries. These inequalities appear to be widening rather than narrowing. These data call into question the strategies relied upon to date.

There is, as we have shown, solid knowledge on most of the key proximate determinants of child health. For the most part, poor children fare worse than better-off children. At one level, then, the causes of socioeconomic inequalities in child health are clear. We have also shown how disparities in the proximate determinants of child health are caused by a complex web of socioeconomic inequalities in the *underlying* determinants of child health.

As highlighted in a recent review of child health programs, 2 broad themes emerge from our analysis.¹⁹⁴ The first theme is that households—and in particular caregivers—play a crucial and *dual* role: as “producers” of child health and as “demanders” of health services. Understanding the behavior of caregivers provides the key to modifying caregiver behavior and is thus a crucial process in improving child health outcomes. The education of the caregiver plays a major role, as does the availability of a good water supply and adequate

sanitation facilities. In all of these respects, the poor are disadvantaged. Tackling these disadvantages can help poor households as producers of child health to achieve more from the “inputs” they currently use (e.g., getting a more nutritious diet from the food they already have) and to obtain more “inputs” where necessary (e.g., additional food, insecticide-treated nets, antibiotics, antimalarials). It can also help the poor to make more and better use of health services—for example, to fully immunize their children and to get antenatal care and a safe delivery.

The second main theme is that providers and health systems matter too. They matter in part because they influence caregivers’ decisions—inaccessible, poorly stocked facilities with rude and inattentive staff will not be widely used, even by poor people. The delivery strategy—not only strengthening facilities but also building community-based preventive activities and service delivery structures that are properly linked to facilities—is also crucial. The implications of service delivery characteristics for caregivers’ decisions on health care use have not been given enough attention to date. Caregivers have been often seen as passive actors.

The *productivity* of health care providers—the amount of health improvement they confer on a child as result of a contact—is important. The knowledge and skills of providers are clearly necessary but not sufficient. Providers also need to be properly motivated. Incentives matter. In recognition of this, many governments, when expanding coverage to the underserved, have explored alternative contractual arrangements to the more traditional salaried employee model. Getting the right mix of skills, resources, management, accountability, and motivation is a major challenge. It is especially problematic in poorer communities. For example, relying on local communities to finance efforts to staff and stock the facilities serving them is less of an option for poor communities than better-off communities. Some mechanisms of solidarity in health financing between the poor and better-off are needed. Likewise, in designing incentive schemes for providers serving poor communities, it needs to be borne in mind that reaching the poorest is not straightforward. The poorest households may be more

dispersed and less well-informed about the benefits of key child health interventions.

LOOKING FORWARD

Because the underlying determinants of child health are many, and because the poor are disadvantaged in all, there are *several* pressure points to explore when devising policies to tackle child health inequalities. These can be as diverse as income transfers, micro-credit for poor women, health cards or health insurance for the poor, outreach to poor rural areas, behavior-change projects, quality of services, water and sanitation infrastructure investments, and others. Many of these have been found to have a positive impact on child health outcomes or utilization decisions in specific country settings, and in some cases a larger impact has been found for the poor than the less poor. Some have been found to be inadequately targeted at the poor. Although the evidence base on which to construct programs to reduce socioeconomic disparities in child health could be firmer, enough is known about what makes for a successful set of programs and enough positive examples of actual programs are already available for us to do more and better *now* to reduce rates of mortality and malnutrition among poor children.

But it is not just the large array of possible pressure points. They are potentially *synergistic*, so it makes sense for the approach to be *multifaceted*. Focusing on just one underlying determinant is unlikely to have such a big impact per dollar as tackling several disadvantages simultaneously. It is possible—the evidence is not yet available—that, per dollar of public expenditure, a policymaker could achieve more by, for example, making income transfers contingent on participation in activities aimed at improving child health than by simply making an unconditional income transfer.

Finally, better evidence is needed on how well programs are reaching poor children, and how far they are improving poor children’s health. It is unrealistic to expect every program to analyze the socioeconomic distribution of beneficiaries and evaluate impact for different socioeconomic groups. But more needs to be done. Evidence is also needed on

the influence of *contextual factors* on program targeting and impact, such as the policy environment, the quality of governance, implementation capacity, resources, and the degree to which the system is focused on and responds to results. Many child health programs have narrowed child health inequalities, but they can do better. ■

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Contributors

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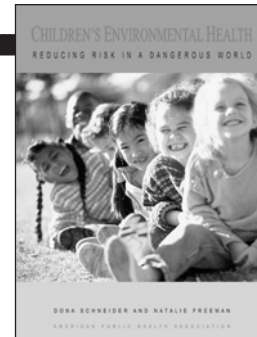
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