

REDUCING HEALTH INEQUALITIES IN DEVELOPING COUNTRIES

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This is a review of current professional thinking about health inequalities in developing countries and how to reduce them. It is in four parts. The first provides a brief history of recent trends in concern about health inequalities and related issues. The second is a discussion of the concept of health inequalities, and of the similarities and differences between other distributional measures in current use. The third summarizes what is known about the dimensions and magnitude of health inequalities. The fourth presents a comparable summary of current thought about how best to reduce inequalities. The review closes with a brief conclusion.

I. Recent History

A concern about health inequalities and other distributional aspects of health status and service use has enjoyed varying degrees of attention over the years. During the 1970s and early 1980s, distributional concerns – that is, a concern for about the health status of different socio-economic groups within society as distinct from the overall societal average – were dominant in thought about international health. These concerns then receded for about a decade, from around the mid-1980s to the mid-1990s, as attention turned from equity to efficiency. Now, the pendulum has begun to swing back, and distributional concerns are on the rise.

Beginning in the early 1970s, in the field of general economic development, the traditional focus on overall per capita income growth was vigorously challenged by advocates of “trickle-up” development with an emphasis on basic human needs. In the health field, a similar trend gave rise to what became known as a “Health for All” movement. Codified in what became known in the “Alma Ata Declaration,” named after the venue of a prominent 1978 WHO-UNICEF Conference, the movement featured a strong emphasis on improving the health of the global poor, so that they might enjoy the health benefits already available to the better off. Given the epidemiological patterns then prevailing among the poor, inexpensive services provided by village-based paramedical personnel appeared particularly relevant for the achievement of this goal; these and other similar services came to play a central role in what became known as “primary health care” (World Health Organization 1978). Soon after, UNICEF added its strong advocacy of the “child survival revolution” based on specific primary care measures (Grant 1982). In each case, the emphasis was on free services provided through Government-supported health care services that were to be expanded to cover ever-increasing numbers of people.

By the mid-1980s, the situation had changed. To begin with, the overall development picture was clouded by the severe economic difficulties experienced by

many poor countries, which made it clear that the cherished goal of free government health services for all was not going to be realized, at least not soon. In addition, the momentous changes in economic philosophy in the socialist countries of Eastern Europe and in China eroded the previous confidence in state-led approaches to development. These changes filtered into the health care field and began raising doubts about the appropriateness of a government's central role in health service provision. Also, reality began to replace the euphoria of the early days of "Health for All", and a closer examination of the primary health care record, rightly or wrongly, led many to question its ability to produce the dramatic benefits initially expected of it.

Thus, interest began to shift from "Health for All" and towards what became known as "health sector reform". The point can be overstated, since a concern for the distributional aspects of health status and service use continued to figure importantly in the prominent international health publications of the time, such as the World Bank's *1993 World Development Report* on health (World Bank 1993), WHO's first *World Health Report*, which appeared in 1995 (World Health Organization 1995) and the *1995 Annual Report* of the Director of the Pan American Health Organization (Pan American Health Organization 1995). But increasingly, especially following the appearance of the World Bank's influential *Financing Health Services in Developing Countries* (World Bank 1987) in 1987, the health of disadvantaged groups no longer monopolized the attention of those concerned with developing country health problems. Rather, the focus moved toward sustainability, as reflected in the intensive activity on health financing that took place, and towards efficiency, as seen in the push towards greater cost-effectiveness. In epidemiological terms, the attention moved from the disease burden of the poor to that of the world as a whole, and settled on the demographic-epidemiological transition which was producing new middle and upper classes in the poor countries and whose disease characteristics were more like those of the West than those of the global poor.

Then, beginning in the mid-to late 1990s, came another shift, back toward a concern for the distributional dimensions of health status and service use. An early development was the emergence of over a dozen inter-country research projects on health, poverty, and equity, supported by a wide range of donors and covering over a hundred countries (Carr *et al.* 1999). Another indicator is the importance given to improving the health of the poor in recent international agency statements. One such statement is the World Bank's current strategy for work on health, nutrition and population (HNP), adopted in 1997. According to this strategy, the Bank's first HNP priority is "to work with countries to improve the health, nutrition, and population outcomes of the world's poor" (World Bank 1997). This emphasis has subsequently been reinforced by the Bank's updated overall mission statement, which begins by saying that the Bank's principal objective is to "fight poverty with passion and professionalism with lasting results" (www.worldbank.org/html/extdr/about/mission.htm). Recent pronouncements by the WHO's Director-General, Dr Gro Harlem Brundtland point to a similar shift in that organization's orientation. For example, in her introductory message in WHO's *1999 World Health Report*, Dr Brundtland opened her review of challenges to be addressed in order to improve the world's health by indicating that, "first and foremost, *there is a need to reduce greatly the burden of excess mortality and morbidity suffered by the poor*" (World Health

Organization 1999a). More recently, she has followed up with a January 2000 presentation to the WHO Executive Board outlining the strategy that WHO plans to follow in this regard (World Health Organization 1999b).

As of this writing, the renewed attention to distributional issues reflected in such statements appears likely to continue, at least over the immediate future. This is partly because of increased attention being given to poverty and inequality in the field of overall development, and partly as a result of developments within the international health community.

Within the field of overall development, one reason for anticipating increased attention on poverty and inequality is the focus on poverty in the World Bank's next, 2000/01 annual *World Development Report (WDR)* (www.worldbank.org/poverty/wdrpoverty). If past experience is any guide, this attention can be expected to increase over the remaining months prior to the *WDR*'s appearance and for at least a year or two afterwards, when the *WDR* findings become widely known. The relevance of such attention for health will be particularly significant because notable shift in the definition of poverty that the *WDR* employs, which involves a distinct break with past Bank practice of defining poverty almost exclusively in financial terms. Instead, the new dimension is a multi-dimensional one, in which poor health (along with inadequate education, poor nutrition, and other social dimensions of development) is placed alongside inadequate income or financial assets as a core indicator of poverty. Under this formulation, poor health becomes an integral part of poverty, rather than simply a contributor to it.

Within the health sector, the several publications from the research initiatives described above (Carr et al. 1999) due to appear shortly can be expected to increase awareness about the health of the poor and about poor-rich health inequalities. And the greater the amount of available knowledge, the easier it will be to call attention to issues covered by that knowledge — and, even more importantly, the easier it will be to develop strategies for correcting the problems that are revealed. Further stimulation can be expected from organizations like the Rockefeller Foundation, whose Global Health Equity Initiative has already made a significant contribution, and which has recently selected equity as the principal theme for its future health work (Rockefeller Foundation 1999); the United Kingdom Department for International Development, which is currently in the process of thinking through the implications for health of a recent White Paper which gave highest priority to poverty alleviation; the European Union, which is beginning a similar exercise of examining the implications of its health activities for the poor; and poverty-oriented aid agencies such as those of the Netherlands and the Nordic countries, whose efforts are continuing. Even greater interest appears likely to be generated by WHO and the World Bank. WHO has recently established an agency-wide task force to develop a strategy for dealing with poverty. The World Bank, along with the IMF, is planning a major initiative to encourage developing nations to increase their commitments to health and education for the disadvantaged in connection with the provision of debt relief for heavily-indebted poor countries (www.worldbank.org/hipc).

II. Concepts

While the principal focus of this paper is on health inequalities, it is important to recognize that such inequalities constitute only one of the several indicators of interest to those dealing with the distributional aspects of health status and service use. Two others are health equity and the health of the poor.

These three indicators or concepts are similar in some ways, different in others. Those concerned with different ones of them all share a recognition that in health, as in many other fields, societal averages typically disguise as much as they reveal. Their interest is thus not in health conditions that prevail in society as a whole, but in the condition of different socioeconomic groups within society — especially in that of the lowest or most disadvantaged groups.

But within this shared concern lie a number of distinctions. Those interested with the health of the poor are typically concerned primarily with improving the health of that group alone, rather than with reducing differences between poor and rich. For those oriented towards equality, the principal objective is the reduction of poor–rich health differences. Those concerned with health inequities are concerned with righting the injustice represented by inequalities or poor health conditions among the disadvantaged.

These similarities and differences can most easily be understood by considering each the three indicators and concepts in turn, and then reviewing the practical implications of thinking in terms of one or the other:

A. The Health of the Poor.

A concern for poor population groups has occupied a central role in established thinking about overall socio-economic development for over two decades. It emerged in the late 1960s and early 1970s in reaction to the then-dominant emphasis on countries' overall per capita income growth rates. At the time, a concern for distribution was thought likely to detract from the overall economic growth that was considered a necessary condition for the long-term alleviation of poverty. Concentrate first on overall growth, was the prevailing view. The result might be a rise in inequality over the short term. But eventually, the benefits would trickle down to the poor and, over the long run, the poor would end up better off than under a development strategy oriented towards their immediate needs.

The “trickle-up” and “basic human needs” schools of thought, which emerged to counter the view just presented, advocated dealing directly with the poor as the best means of producing sustainable growth. The many discussions about how best to define the poor population groups of concern produced two approaches:

- *Absolute Poverty.* The first, based on what is often called “absolute

poverty,” takes a universal perspective and defines poverty in terms of a given level of income or consumption which is equally relevant for people wherever they may be. This is usually done by defining a “poverty line” as the lowest amount of money sufficient to purchase the amount of food necessary for a minimally-adequate diet (and still have enough left over to buy other essentials). A well-known practitioner of this approach is the World Bank, which has devoted a great deal of time and effort to defining a suitable international poverty line and estimating the number of people living below it. The current international poverty line stands at an average per capita consumption of US\$ 1.00 per day (in 1985 dollars), as adjusted for purchasing power differences between countries. The consumption level of around 1300 million people of the world’s population lies below this line. Almost all these people — who constitute just under one-quarter of the world’s total population — live in South Asia, sub-Saharan Africa, and China (World Bank 1996).

- *Relative Poverty.* The second approach, more country-specific, deals with what is frequently referred to as “relative poverty”. The practice here is to define the poverty line in terms of relevance for a specific society. This is typically done in one of two ways. One way, analogous to the international approach just described, is to determine how much income one needs to live decently according to some locally-established definition of decency. Poverty lines of this sort are used in the developed as well as in the developing world. In the USA, for example, the Census Bureau estimates that a family of four requires US\$16 000 annually to purchase a minimally adequate diet and meet other basic needs, and that 12.7% of the population falls below this level (Uchitelle 1999). The second approach is simply to define the national poverty line as some proportion — often arbitrarily determined — of a society’s average per capita income or expenditure. In the United Kingdom, a statistic frequently cited to document the prevalence of poverty refers to the proportion of the population (currently just under one-quarter) living at less than one-half the country’s average per capita income (Anonymous 1999).

This distinction between absolute and relative poverty carries over into the field of health. For instance, a careful reading of the previously-cited World Bank HNP policy statement reveals an absolute poverty orientation through its reference to a concern for “the world’s poor,” which is in line with the overall Bank interest in people below the global poverty line as just described. However, others feel that relative poverty and deprivation are just as important, if not more so.

B. Inequality in health

While a concern for improving the health of the poor is widespread, it is by no means universally preferred. Many focus more on reducing inequalities, both in general and with respect to health in particular.

Such a focus has long occupied a particularly important place in thinking about international health issues. To say that the focus has been exclusively on inequality would be to overstate the case; for it is possible to cite expressions of concern for poverty

in prominent international health documents from at least the time of the 1978 Declaration of Alma-Ata onwards. But it is rare for a prominent international health statement not to give at least equal, if not more, weight to inequality reduction. For example, at the same time as the Declaration of Alma-Ata professed its concern for the unacceptable health conditions found among the hundreds of millions among the world's poor, it also advocated primary health care because of its potential "to close the gap between the 'haves' and the 'have-nots'" i.e. to lessen health inequalities (World Health Organization 1978). The previously cited *World Health Report 1995* (World Health Organization 1995), which had a great deal to say about the health of the poor, was subtitled "*Bridging the Gaps*", referring to inequalities between poor and rich. A recent major WHO publication in this area emphasizes the importance of being concerned with poor-rich health inequalities, rather than simply focusing on the health of the poor alone (World Health Organization 1996).

Similarly, health inequalities have played a much more central role than the health of the poor alone in a long European tradition of concern. Thus, for instance, well-known 1980 Black Report in the United Kingdom was titled "*Inequalities in health*" (Department of Health and Social Security 1980), as was the exercise that produced its successor, the 1998 Acheson Report (Independent Inquiry 1998). In the same vein, the 1984 targets of the WHO Regional Office for Europe (EURO) were expressed in terms of reducing poor-rich disparities. "By the year 2000," said the WHO document in which these targets were presented, "the actual differences in health status between countries and between groups within countries should be reduced by at least 25%, by improving the health of disadvantaged nations and groups" (Whitehead 1990).

However, just as there are different approaches to poverty alleviation, so too are there various views about the most appropriate strategies for the reduction of inequalities. Illustrative of the issues that arise in discussing the reduction of health inequalities are questions on the following:

- *The dimensions of inequality that matter most.* The most traditional approach has been to think of differences in health status according to an individual's income or economic standing. However, the economic dimension is by no means the only one that matters, and some would consider other dimensions even more important. Gender inequalities in health status have received a great deal of attention in recent years. Ethnic inequalities in health have been of particular concern in many areas, such as South Africa and the USA. Education and occupation have also been widely used as a basis for dividing populations in assessing inter-group health differentials, although often more as a proxy for economic status than as indicators of interest in their own right. Yet another approach might be called "pure" health inequality — that is, the ordering of people on the basis of their health status, from most to least healthy regardless of income or any other attribute, for the purpose of measuring health diversity in a society. In so doing, people applying this approach are drawing on a long tradition of studies with respect to income distribution.

- *How inequality is to be measured.* There are almost as many statistical

definitions of inequality as there are statisticians; and the different definitions can produce very different interpretations of the same situation or trend. Until recently, one particular measure — the Gini coefficient—has been dominant, at least in economic thinking, supplemented by comparisons between the poorest and richest population quintiles (or between people above and below the poverty line) when the data available were insufficient for the calculation of the Gini coefficient. While the Gini coefficient probably remains the most frequently used indicator even now, its position is slipping, with no clear consensus about a preferred alternative

- *What aspects of inequality are most important.* There are many different views. Some would argue for looking at inequalities in health status as the outcome that counts; others favor focusing on health services, as the determinant of health status which health professionals can most easily influence. Within each of these two streams of thought are further distinctions. Health status, for example, can be determined either through a physical examination or through self-assessment. (The two approaches can produce quite different results, in that people found to be relatively unhealthy through a physical examination do not always consider themselves to be less healthy than people whose health was determined by examination to be considerably better.) With respect to health services, there are distinctions between use and financing; among public, private non-profit, and private for-profit services; and between preventive and curative services. People who come out ahead in one of these respects may lag from another perspective.

- *Whether the focus should be local or global.* A great deal of attention is currently being paid to inequalities within countries. But there is also strong interest in some quarters in differences among countries and regions of the world

C. Health Equity

Poverty and inequality, as described above, are both primarily empirical concepts. Equity, by contrast, is a normative one — a question of values, and closely associated with the concept of social justice. When applied to health, equity has traditionally been most often linked to the reduction of inequalities. Thus, one of the most widely-cited definitions of health inequity is that it “refers to differences in health which...are considered unfair and unjust.” In a similar vein, the above-cited WHO/EURO document on health equity indicated that “equity requires reducing unfair disparities...” and that “pursuing equity in health and health care development means trying to reduce unfair and unnecessary social gaps in health and health care...” (Whitehead 1990).

However, equity need not be exclusively a matter of reducing inequalities. It can also be associated with poverty, since one could argue that it is unjust to allow people to continue living in poverty when adequate resources are available within the society at large to lift them out of it. Such a link figures prominently in general thinking about social justice; and it also appears in writings on health equity.

A particularly well-known example of poverty-oriented general thought about equity is the “maximin” principle of distributive justice posited by John Rawls. That principle and others like it call for resources to be distributed in a way that the worst-off people in society (i.e. those occupying the “minimum” position) get the maximum possible amount of gain. What happens to the better-off through such a pattern of resource distribution is extraneous to the maximin principle (Rawls 1971). A variation on this theme, as applied to health, would consider any health gains among the rich in the course of implementing efforts to improve the health of the poor as welcome side-benefits, rather than regrettable, because of the dilution in inequality reduction which they represent (Marchand *et al.* 1998).

While not many equality-oriented advocates of health equity seem prepared to go this far, almost all incorporate at least traces of such a poverty-oriented equity definition in their statements. The traces are to be seen most clearly in the tendency of equality-oriented discussions to disavow interest in one of the arguably more effective potential ways of reducing poor–rich health inequalities: assassination of the rich. Rather, the focus of all known inequality-oriented health equity proposals is on lessening poor–rich differences through special efforts to improve the health of the poor — a focus which makes the proposals sound suspiciously similar to what one might wish to do under a poverty-oriented health equity approach.

Thus, for instance, the previously-cited inequality-oriented definition of health equity referring to the inequalities of health that are unjust and unfair, was developed in conjunction with the WHO/EURO health equity objective which called for a reduction in health disparities by improving the health of the disadvantaged (Whitehead 1990). And WHO’s 1996 health equity document, while giving primacy to poor–rich health differences, also called for ensuring an adequate standard for the entire population, noting that, “for some, ‘equity’ means that all social groups should have a basic minimum level of well-being and services” (World Health Organization 1996).

However, regardless of whether one considers health equity to be related more to equality or poverty, the introduction of normative or social justice considerations also raises questions. For example:

- *When is an inequality unfair?* Not always, certainly. It is quite possible to imagine a situation marked by health inequalities that are not necessarily inequitable. One example is an inequality that is irremediable (Whitehead 1990). Another might be two population groups with similar incomes but marked differences in life expectancy attributable to different lifestyles. If the less healthy group adopts its lifestyle in full awareness of the risks involved, the resulting differences in life expectancy might be said to be simply a reflection of differences in the social preferences of the two groups, rather than any fundamental inequity. Or, to illustrate the same point by a more general example: if two individuals are in fact unequal in capacity, equal treatment would be unfair to the more capable of the two. In such a case, equity might well call for unequal treatment. In other words, equity and equality are by no means synonymous and need to be carefully distinguished from one another.

- *On what basis can one decide when the resources in a society are adequate to alleviate poverty?* “Adequacy” is not a binary concept, such that there is one level of resource availability above which availability is totally adequate, and below which it is completely inadequate. Rather, there is a spectrum running from a total lack to infinite availability of resources, often with no obvious cut-off point along the way. Also, perceptions can differ: resources that seem adequate to one person may not be so to another

D. The Practical Implications of the Poverty-Inequality-Equity Distinction

What has been said thus far provides a basis for suspecting that, in general, there are only limited practical implications in adopting or the other of the three approaches covered here. As has been noted, even those who seem furthest apart —those giving highest priority to reductions in poor-rich health inequalities in the name of equity, and those concerned with improving the health of the poor — end up sounding rather similar, once one realizes that the approach preferred by advocates of inequality reduction looks primarily to improvements in the health of the disadvantaged.

A more careful look reinforces this view that the poverty–equality–equity distinction is often largely academic. The most obvious situation is in a low-income country where the most cost-effective measures available for the improvement of health in the society as a whole are also those that are especially beneficial to the poor. As pointed out in the *1993 World Development Report*, the contents of minimum service packages that feature such measures — management of the sick child, prenatal and delivery care, family planning, etc. — are especially relevant for low-income groups (World Bank 1993). Where this is the case, adoption of the approach that is most sensible for the poor is also more beneficial for the poor than for the rich, and can thus be expected to produce a reduction in poor–rich differences.

However, the record would not be complete without noting that there are at least some circumstances where an interest in improving the health of the poor can imply a different approach from that resulting from a concern for inequality reduction. Two examples can illustrate the point. One concerns inter-regional resource allocations by international agencies; the other deals with disease priorities, whether at the global or the national level.

The inter-regional resource allocation example involves looking at the implications of different approaches for where an international assistance agency might logically apply its health resources. Consider three alternatives:

- *An absolute poverty approach.* According to the World Bank figures cited earlier, some 90% of the world’s 1300 million people living below the poverty line live in Asia and Africa (World Bank 1996).. This being the case, an international agency guided by an absolute poverty objective would wish to put virtually all of its health

resources into those regions. There would be much less justification for working in Latin America; and practically none at all for health activity in the Middle East or in Eastern Europe, where hardly anyone is so poor as to lie below the international poverty line.

- *A relative poverty approach.* Relative poverty exists in every country. From this perspective, there could thus be as strong a justification for supporting pro-poor health activities in one region of the world as in any other.

- *An equality approach.* Assuming that most of the existing health inequalities observed in the developing world are also inequitable and that inequality reduction interventions are equally effective, an equity approach would imply a particularly high priority to countries where health inequalities are greatest. Recent research points to the existence of large country-to-country differences in the degree of health inequality, which in turn suggests that some countries deserve much more attention than others from an equity perspective. According to one recent study (Wagstaff), Brazil, Nicaragua, South Africa, and Nepal have large health status inequalities and would thus be of high priority, while health status inequalities are quite low in Ghana, Pakistan, and Viet Nam which would accordingly merit a low priority.

With respect to the second set of examples, dealing with disease priorities, the available information is unfortunately inadequate to permit citation of “real world” experiences. However, the basic point can be demonstrated through two schematic illustrations, one from a global and one from a national perspective:

- *Global disease priorities.* A global institution focusing on absolute poverty would logically devote primary attention and resources to communicable diseases, since they are the dominant causes of deaths and disability among the global poor (Gwatkin *et al.* 1999, Gwatkin and Guillot 1999). In an institution concerned with relative poverty, there would be a case for a much broader concern. Such an institution would be involved not only with the poor in Africa and Asia, but also with the disadvantaged populations in Eastern European countries, among whom noncommunicable diseases may well be the dominant problem.

- *Disease priorities within advanced developing and transition countries.* While communicable diseases are dominant among the global poor, chronic diseases in advanced developing and transition countries are, as just noted, likely to be responsible for a majority of deaths and disability among the poor — but, in all likelihood, for a smaller percentage among the poor than among the rich. The implications of such a situation can be illustrated by reference to a country where noncommunicable diseases cause 60% of deaths among the poor, 90% of deaths among the rich. From a burden of disease perspective, such figures point to noncommunicable diseases as a natural focus for a program concerned with poverty alleviation, since such diseases cause a majority of deaths. But such a focus, if introduced on a society-wide basis, could well lead to an increase in inequality. This is because noncommunicable diseases are even more important for the rich than for the poor, so that the benefit to the rich of any general, evenly distributed decline in noncommunicable diseases would be correspondingly

greater. Thus, in a situation like this, burden of disease considerations would argue for the highest priority to be given to one type of disease (i.e. noncommunicable diseases) from the perspective of improving the health of the poor, and to a different type of disease (i.e. communicable diseases) from an inequality-reduction perspective.

This example is obviously oversimplified, ignoring cost-effectiveness and targeting considerations that may well be more important than disease burden factors in the establishment of health service priorities. But while lessening the example's relevance for "real world" decision-making, the oversimplification is of value in facilitating understanding of the basic point that remains valid despite it: there is not an inevitable congruity between national-level policy prescriptions that are optimal for improving the health of the poor and those that are best for reducing health inequalities.

III. Inequalities

While the contents of the preceding section make clear that a focus on inequalities is by no means the only one of relevance for approaching developing country health differentials, health inequalities remain of considerable interest and will be the topic of what follows. Since space limitations prevent adequate coverage of the full range of health inequalities that might be considered, the discussion will focus on inequalities by socio-economic status. It will deal with three as illustrations of the different types of such inequalities that exist: current intra-country inequalities in health status by economic class; current intra-country inequalities in the use of government health care services; and trends in inter-country health status inequalities.

A. Current intra-country inequalities in health status by economic class.

Until recently, data limitations have prevented the direct examination of intra-country health inequalities by any of the three indicators typically employed by economists: income, consumption, or assets (wealth). Instead, as noted earlier, indicators like father's occupation or mother's education have served as proxies for economic status in addition to pointing to attributes of interest in themselves.

This is changing, however, and a number of efforts are under way to provide more direct measures of economic status as a basis for assessing intra-country health differentials. Of particular relevance for the present discussion are findings from three multi-country comparative study programs:

- *Country information sheets.* Perhaps the most extensive of the programs is the "country information sheet" project organized by the World Bank (Gwatkin *et al.* 2000). This project features preparation of tabulations, by asset or wealth quintile, for approximately thirty health, nutrition, and population status and service use indicators. The tabulations, designed primarily to provide basic distributional information for the use of policy makers, are currently available for each of forty countries in Africa, Asia, Latin America, and the Near East. Work on an additional, final eight is nearing completion.

The information presented in the sheets is drawn from household data collected through the Demographic and Health Survey (DHS) program sponsored by the U.S. Agency for International Development. This well-known program of comparative country studies, typically covering 5-10,000 households in each country studied, is oriented especially to the collection of information about vital events and maternal/child health. It is considerably less strong with respect to information about economic status, since it contains no questions about income or consumption. However, its standard individual and household survey instruments include a number of questions about household assets – availability of electricity; possession of consumer goods like a bicycle, radio, etc.; flooring material; source of drinking water, etc. Using principal components analysis, these can be combined into a single index of household assets or wealth that is of interest in its own right and that approximates reasonably well the consumption measures that economists tend to prefer. (Filmer and Pritchett, 1998).

In preparing an information sheet, a country's population is divided into quintiles on the basis of the asset index; and the value of each health, nutrition, or population indicator is tabulated for each population quintile. The status indicators include infant and under-five mortality rates; total and adolescent fertility rates; and such commonly-used indices of malnutrition as stunting and low weight-for-age. Typical of the service indicators are immunization rates, medical treatment for diarrhea and acute respiratory infections among children, use of antenatal and professional delivery care, and contraceptive prevalence.

A summary of the available information about infant and under-five mortality, to which the current discussion will be limited, appears in table one. The figures are expressed in terms of two indicators. The first is a poor-rich ratio: the ratio of infant or under-five mortality in the poorest population quintile to that in the richest quintile. The second is a concentration index, a measure similar to the well-known Gini coefficient that is commonly used in measuring income inequalities. As in the case of the Gini coefficient, the value of the concentration index can range from -1.0 (if all infant or under-five deaths occur in the poorest population quintile) to +1.0 (if all deaths are in the richest quintile). (Wagstaff *et. al.*, 1991).

The unweighted poor-rich ratio for all countries together is around 1.9 for infant mortality, about 2.1 for under-five mortality. This suggests that on average the newly-born child in the poorest population quintile of a developing country is roughly twice as likely to die in infancy as is a child born into the richest quintile. The unweighted mean concentration indices are on the order of -.11 or -.12. This is modest compared to the range of around -0.2 to -0.5 or so typically found with respect to consumption as measured by the Gini coefficient. But such modesty is not unexpected, given that mortality rates are much more tightly bounded variables than are consumption measures.

The data also point to considerable country-to-country variation. For instance, the low-high ratio for infant mortality ranges from 1.11 in Namibia to 4.17 in Bolivia. Differences in the concentration index are also large. The range is from -.003 in Namibia to -0.251 in Brazil.

Regardless of which index is used, the data appear to support two generalizations about the variation that exist:

First, intra-country inequalities seem larger for child (1-5) than for infant (0-1) mortality. This can be inferred from the modestly higher level of under-five (i.e. 0-5) mortality relative to infant (0-1) mortality found for both inequality indices in each region (and also in thirty-three of the forty individual countries covered). Infant mortality is nested within under-five mortality and typically contains well over half the deaths on which under-five mortality rates based. Removal of less unequally-distributed infant deaths in order to produce a child mortality rate would thus be likely to increase further the already-larger poor-rich differences seen in the 0-5 rates. This would be consistent with current understanding about the pathogens to which poor children are exposed during the immediate post-weaning period.

Second, intra-country socio-economic inequalities in infant and child mortality appear smaller in Sub-Saharan Africa than in other parts of the world; in Latin America, they seem somewhat larger. This is readily visible from table one, where the average values for both the poor-rich ratio and the concentration index for Sub-Saharan Africa (1.7-1.8; -0.08-0.10) are lower than the global mean (1.9-2.1; -0.11-0.12), and lower still than the Latin American average (2.7-3.0; -0.14-0.17). This can rather easily be explained for Latin America, given the high levels inequality found in that region (Deininger and Squire 1996), and initial findings from other work that confirms the existence of a direct relationship between income and health inequality (Wagstaff 1999). The low degree of health inequality in Sub-Saharan Africa is more difficult to understand, in light of recent findings that income is almost as unequally distributed there as in Latin America (Deininger and Squire 1996).

However, these or any other conclusions that might be drawn from the country information sheet infant or under-five mortality data must be conditioned by at least two considerations. The first is the existence of rather large standard errors in many cases, which means that the concentration indices are statistically different from zero (as measured by a five percent confidence interval) in only about half of the countries covered. This occurred even though the tabulations were based on births during ten years prior to the survey, in order to increase the sample size. The second is the presence of regular or monotonic declines in mortality from the poorest to highest quintiles in only approximately half the countries. The anomalies are usually quite small, often consisting if a high point in the next-poorest quintile that is suggestive of mortality underreporting among the poorest population groups. In a few African countries, however, there is a pronounced “spike” in the middle quintiles that remains to be explained.

- *Living Standards Measurement Survey Estimates.* The results of the second of the three studies covered in this section are roughly in line with those just presented. The study in question is by Adam Wagstaff of the World Bank and the University of Sussex (Wagstaff 2000). It is based on data sets for nine developing countries. Eight of the sets are from the World Bank Living Standards Measurement

Survey (LSMS) program, which covers approximately twenty-five developing countries. The LSMS survey instruments are oriented toward the measurement of household consumption, so that Wagstaff was able to use consumption as his economic indicator, rather than asset index featured in the DHS-based work just described. On the other hand, because of the less reliable mortality data available through the LSMS, Wagstaff was forced to employ estimation methods that were not necessary in working with DHS data.

Six of the nine countries that Wagstaff covered were among the forty in the DHS-based work described above, making it possible to compare the concentration indices for these countries produced by the two studies. This comparison is presented in table two.

On average, the Wagstaff concentration indices are somewhat smaller than those resulting from the country information sheet exercise, although this is not the case for each country. Perhaps more significantly, there is an overlap between the five percent confidence intervals for the two sets of estimates in eleven of the twelve cases presented (i.e. in all six countries for infant mortality, and in all countries except Vietnam for under-five mortality). By this standard, the two sets of estimates can be considered mutually consistent – although, given the rather large size of the confidence intervals of the two studies, the standard can accommodate considerable variation among figures qualifying for mutual consistency status under it.

- *World Health Organization estimates.* It remains to be seen whether such consistency exists between the country information sheet and Wagstaff estimates on the one hand, and the third set of multi-country estimates to be considered here on the other. This third set of estimates, under preparation by the World Health Organization, employs a very different method from those of the other two.

Rather than relying on household data, as did the two studies thus far discussed, the WHO exercise is based on a cross-country data set. The data sets used consist of two figures for each country in it: the percentage of the population residing below the poverty line, and the country average for a particular health indicator of interest. The application of an adapted variation of a statistical technique known as ecological inference makes it possible to derive from such data an estimate for the level of the health indicators among people above and below the poverty line in each country. If, for example, one knows the percentage of the population above and below the poverty line and the average infant mortality for each country in a data set, it is possible to estimate the infant mortality rate among people above and below the poverty line in each of the countries (WHO 1999; Jamison 1997).

The first data from this exercise have been published, in an annex to the 1999 edition of the WHO *World Health Report*. (WHO, 1999) They provide, for forty-nine developing and transition countries, estimates of under-five and 15-59 mortality for males and females, and of tuberculosis prevalence.

The figures most nearly comparable to those of the country information sheet and Wagstaff exercises discussed earlier are the under-five mortality estimates. Here, the unweighted average poor-nonpoor ratio for all forty-nine countries (male and female combined) is around 6.1 : 1. (Weighting by population size, in lieu of the number of births for which information is not provided, gives a ratio of 5.4 : 1.) About 30% of the people in the forty-nine countries live below the absolute poverty line (whether calculated on a weighted or unweighted basis). Thus, under-five mortality among the poorest 30% or so of the population is on the order of five to six times what it is among the highest 70%.

This appears to be well above the poorest 30%-richest 70% ratio implied by the previously-cited country information sheet finding that, on average, under-five mortality among the poorest 20% of a developing country's population is around twice as high as among the highest 20%. This in turn suggests that the use of country-level household data, as in the country information sheet and Wagstaff exercises, is likely to produce intra-country differentials that are considerably smaller than indirect inferences based on country-level comparisons.

For the moment, however, this can be considered no more than a suggestion, to be confirmed or disproved on the basis of further, more careful examination of the methodology and findings of all three of the study programs. Also to be determined is the relevance for this particular issue of the common view that micro, household-level data are more reliable – or, perhaps more accurately, less unreliable – than macro-, country-level information for policy-oriented analyses.

B. Intra-Country Inequalities in Use of Government Health Care Services by Economic Class.

Concomitant with the rapid increase in research on intra-country socio-economic differentials in health status, as described in the preceding section, has come a growth in concern about differentials in access to health services. Since access is difficult to define and measure, most work in this area has focused on the related issue of health service use. (Use is associated with access but differs from it in that one can have access to services but not use them for any of several reasons – such as, for example, a lack of need for medical care because of continuing good health.)

Of particular interest has been the extent to which Government health services have been able to reach disadvantaged population groups. This is being increasingly studied through the application of a technique, called “benefit-incidence analysis,” borrowed from the field of public finance. Benefit-incidence analysis can be seen as an equity-oriented analogue to cost-effectiveness analysis used to study efficiency: while cost-effectiveness analysis is oriented toward determining how much output a health system produces per unit of input, benefit-incidence analysis seeks to assess how a health system's outputs are distributed across socio-economic classes.

Specifically, the benefit incidence approach measures the financial subsidies accruing to different socio-economic groups through the use of government health services. It combines two types of information. The first consists of data from household surveys concerning the number and socio-economic status of people using different kinds of government services when ill. From these, it is possible to determine the number of per capita visits to a given type of government service, during a specified time period, for each socio-economic group of interest (such as income quintile of the population). The second is information from government financial reports about the total cost of the services in question (net of any income received from user fees), and from service statistics concerning the number of people using those services. These data permit an estimate of the unit cost of the different services – that is, the average cost of providing the services in question to a single individual. The number of per capita visits to a given type of service are then multiplied by the unit cost of that service, and the results are aggregated to produce an estimate of the total financial benefit accruing to each socio-economic group through government expenditures on the range of services covered.

Information is currently available about benefit-incidence surveys on health that have been undertaken in twenty-three countries. This information is summarized in table three.

The most reliable of this information comes from Sub-Saharan Africa, the site of a comparative study of seven countries organized by the World Bank (Castro-Leal *et al.* 2000). Since each of country exercises drew on household data sets collected through similar surveys undertaken by the Bank's Living Standards Measurement Survey program, problems of inter-country comparability appear significantly lower than is the case with respect to the other studies for which findings are available.

The findings from these studies make it clear that the rich clearly benefit financially more than the poor from government health services in Sub-Saharan Africa. This was the case in all seven of the countries covered by the principal systematic research effort thus far undertaken. The difference was particularly notable with respect to hospital services; but even primary care normally benefited the rich somewhat more than the poor. On average, the richest 20% of the population received well over twice as much financial benefit as the poorest 20% from overall government health service expenditures. In all but two of the seven countries, the richest 20% also gained more than the poorest 20% of the population from primary care expenditures.

In Asia, the situation appears mixed. On average, overall government health care expenditures in the five countries with available data appear to favor the rich slightly more than the poor. But this is an average of very dissimilar situations: three (Indonesia, Mongolia, Vietnam) in which the rich gain far more than the poor; two others (Malaysia, the Philippines) where the poor get larger financial benefits than the rich. It should be noted, however, that these findings may be less secure than that just cited for Africa. In part, this arises from the uncertain comparability of the studies cited, more from the fact that the benefit-incidence tradition is less well established in Asia than in Africa or Latin

America. Also, no fully-published findings are available for the two largest countries, China and India.

To judge from the two countries in central Europe with available study data, (Bulgaria, Romania), the situation appears similar to Africa. In each country, the rich gain more than the poor from primary as well as from hospital care. Overall, the financial benefit that government health services convey to the rich is nearly twice as large as that gained by the poor.

In Latin America, the situation appears different. There, information available for seven countries suggests that the poorest quintile gains more than the richest quintile in all but one (Brazil, where government health service coverage is highly regressive). On average, poor in these countries receive twice as much benefit as the rich. However, these figures need to be viewed with caution, especially in comparison with those for Africa just cited, for two reasons. One is that government-delivered health services represent a much smaller percentage of total government health expenditures than elsewhere. Also important are the health benefits that flow through social security systems, on which Latin American governments tend to spend almost as much as on health services they provide directly. (For example, according to one recent review around 17% of Government health expenditures were through social security systems -- compared with 16% for services provided directly by central governments, and 9% for local government services (Suarez-Berenguela 1998).) Since such programs focus on formal sector employees, they tend to be oriented toward the middle and upper classes; and when their benefit incidence is taken into account, the overall impact of government health care expenditures could well be regressive. A second consideration is technical: many of the Latin American studies appear to be based on the benefits accruing to households rather than to individuals. Since poorer families tend to be larger than rich ones, use of the household as the basis of analysis provides an impression of greater progressivity than do findings that refer to individuals.

Such findings are quite instructive but deserve to be interpreted with care, since in addition to the specific considerations indicated with respect to Asia and Latin America, they are shaped by several general characteristics of the benefit-incidence approach. Five are particularly worthy of note. First, in accordance with the tradition of the benefit-incidence literature, the findings are presented in terms of absolute benefit (e.g. pesos per capita) rather than in terms of gain (i.e. percentage of per capita income). In relative terms, the poor are likely to benefit more than the rich because the incomes of the poorest 20% are normally many times greater than those of the poorest 20%. Second, the conclusions are derived from estimates that cover only expenditures. These could differ quite significantly from conclusions that look at the revenue side as well, and measure only net benefits and incidence – that is, the amount a given income group gains from government health expenditures relative to the amount of taxes that the group pays for those services. The potential difference results from the fact that, while the poor may gain less from government health services, they may pay substantially lower taxes since they live outside the organized economy. Third, the distribution of financial benefits covered by the figures is not necessarily the same as the distribution of therapeutic

benefit, which is arguably more relevant. The two would not correspond when, for example, the services that the poor receive consist principally of primary interventions that, although inexpensive, are quite effective in treating illness; while the expensive tertiary care received by the rich is of limited therapeutic value. Fourth, the data provided cover only government curative health care services: hospitals, health posts, and the like. They do not include expenditures on government health education or preventative health programs like immunization campaigns. It remains unclear how much of a bias is introduced by the omission of such activities, since they typically represent a rather small portion of total government health expenditures, and do not necessarily reach the poor all that more effectively than curative programs. However, their omission at the very least significantly increases the possibility of inaccuracy in the benefit-incidence information available. Fifth, figures for the financial benefit accruing to any specific economic group provide no guidance on how well that benefit corresponds to need. For example, to say that the financial benefit accruing to the poor is twice that accruing to the rich sounds progressive; but it may not be if the poor need, say, four times as large a financial benefit as required by the rich in order to compensate for the greater degree of illness that the poor experience (28).

C. Trends in Inter-Country Health Status Inequalities.

The data currently available can be used to assess trends in some types of country health inequalities – by gender or geographic area, for example. However, they are not sufficient to support any assessment of trends in intra-country inequalities in health status or service use by socio-economic status, which is the focus of the current discussion.

It is possible, though, to investigate trends with respect to inequalities by socio-economic status across countries. This can be done by looking at time series data for the average levels of infant mortality and life expectancy that are regularly published by such agencies as the United Nations Population Division, the World Bank, the World Health Organization, and others.

What follows are two such investigations. One compares time trends in groups of countries. The second looks at changes over time in the distribution of infant mortality and life expectancy across individual countries.

- *Trends among country groups.* Table four presents the summary results of the first investigation, which is a simple exercise based on World Bank data for 1970, 1980, and 1990. The purpose is to provide an initial sense of changes over this period in the size of the infant mortality and life expectancy gaps between the rich and poor parts of the world. To this end, two types of comparison are presented: first, between the rich industrialized countries, and all other; and second, between the rich industrialized countries, and the world's poorest countries (i.e. omitting the more advanced developing countries). In each case, the definitions of country groups are those of the World Bank. Inter-group boundaries are expressed in terms of per capita incomes; and countries were assigned to the appropriate group on the basis of the situation prevailing in 1990.

The results of the exercise vary according to the statistical measure and the indicator of health status used. In both types of comparison, infant mortality differences decline over time in absolute terms but rise in relative terms. For example, the comparison of the richest and poorest country groups shows that the absolute difference in infant mortality falls from around 125 in 1970 to about 95 in 1990. However, the infant mortality gap expressed in relative terms rises. While infant mortality in 1970 was around 6.5 times as high in the poorest as in the richest countries, it was over eleven times as high by 1990. The same is true for the comparison between the richest and all other countries. For life expectancy, both types of country group comparison show a decrease in inequality in both absolute and relative terms.

- *Trends among individual countries.* Table five summarizes results of the second, individual country exercise. The exercise is based on a World Bank data set containing average infant mortality rates and life expectancies in all major countries of the world for 1970, 1980, and 1990. It features the measurement of changes in the degree of inequality among the countries in the data set over the 1970-90 period through the application of a set of standard disparity indices: the standard deviation, the slope index of inequality, the relative index of inequality, the index of dissimilarity, and the concentration index. Two variants of the exercise were undertaken: the first covering all 130 countries; the second dealing with only the approximately 100 developing and transition countries.

As with the earlier exercise, the results are mixed. This is particularly the case with respect to infant mortality, where in each variant the poor-rich country gap widens according to some indicators and narrows with respect to others. The trend in life expectancy is somewhat less ambiguous, narrowing in all but one of the ten cases presented. – although, in some cases, the figures of annex show the narrowing to have been marginal.

- *Summary.* All in all, the findings reported above are far from conclusive. The one possible exception is the moderately clear difference between infant mortality and life expectancy trends – the former mixed, the latter generally pointing to a narrowing gap. This hints at a narrowing in poor-rich country mortality differences at older ages that is faster than, and possibly in a direction different from, the trend at younger ages. But it is no more than a hint, since one cannot rule out the possibility that the difference is a statistical artifact, attributable to the subtleties of the relationship among mortality levels at different ages included in the life expectancy measure.

In brief, about all one can say with confidence is that any change in inter-country mortality inequalities during the 1970-90 period has not been dramatic enough to show up clearly through the application of standard disparity measurement approaches to the data available. Any more definitive statement will have to await more careful and sophisticated data analyses than have been possible within the limited scope of the current review.

III. Reducing Inequalities

Current thought about how to reduce the inequalities discussed in the preceding sections has changed considerably from that which prevailed in the late 1970s and early 1980s, when a concern for health inequalities and the health of the poor was last prominent in international health circles. As noted at the outset, the emphasis at that time was on a single, health sector-based approach: a set of relatively simple, inexpensive, community-based interventions collectively known as primary health care. Present thinking differs from this in two ways. The first is the much larger role accorded to general social and economic development. The second is the existence of a more diverse set of ideas for orienting health sector activities more toward the poor.

The first of these matters – the more central place currently accorded to overall socio-economic development and poverty reduction – can be illustrated through reference to the four-point health and poverty strategy recently proposed by the Director-General of the World Health Organization (World Health Organization 1999b). The first point is “acting on the determinants of health by influencing development policy.” The second is “reducing risks through a broader approach to public health” that is to include not just basic public health services, safe and adequate food, clean water, and sanitation; but also the reduction of violence and environmental hazards, conflicts, and natural disasters. The more traditional health sector approaches come only later, in the third and fourth parts, which are to be “focusing on the health problems of the poor,” and “ensuring that health systems serve the poor more effectively.”

Enough additional examples could be cited to make a plausible case that there is a widely-held consensus, at least at the international level, about the centrality of poverty reduction in strategies to reduce health inequalities. Whether this view is so widely held at the level of the developing countries, the locus of most important health strategy decisions, is considerably less clear; but the absence of any known challenges suggests that it is found to be generally acceptable there, as well.

The second difference between earlier and current thought, concerning the multiplicity of ideas about how to proceed within the health sector, can be illustrated with reference to four approaches that are currently in use or under active discussion. None of the four is exclusive to health, but rather represents the application to health of approaches being used in efforts to reduce inequalities in overall socio-economic status. Two of the four – targeting and participatory approaches – are well-established. The second two – protection against the financial risks of illness and the statement of health objectives in distributional terms – are much newer.

A. Targeted Health Services

The expression “targeting” refers to a set of techniques used to increase the percentage of benefits from a particular intervention that flow to the poor. Health is but one of the many sectors where the techniques are employed. Other common ones include the identification of individuals or groups qualified to receive subsidized food supplies, to

obtain employment through government-supported public works programs, or in some cases to qualify for subsidized loans available through microcredit programs.

Targeting many supporters. But it also has detractors, who are of two types. One type argues that, on the basis of findings like those cited below, targeting techniques do not work very well in distinguishing poor from rich and reaching the former. The second type is concerned with the “top down” nature of targeted measures, which deliver free or subsidized services or commodities. As such, they are thought to represent hand-outs that invite dependency rather than foster the initiative among beneficiaries seen as central for long-term poverty alleviation or health improvement (Sen 1994).

There are many different targeting techniques available, and many ways of categorizing them. One of the more common categorization approaches features a distinction between “individual,” “direct,” or “narrow” targeting on the one hand; and “indicator/characteristic,” “indirect,” or “broad” targeting on the other.

The former type refers to efforts to identify poor individuals and see that as much of the service concerned reaches as many of them as possible. The objective is come as close as possible to the goal of 100% coverage with 0% leakage -- that is, the goal of seeing that all of the poor are served and that all of those served are poor. The latter type of targeting deals with attributes rather than individuals. Rather than trying to identify individuals who are poor, for instance, it might feature the provision of services in slum areas in anticipation that the great majority of recipients will be poor. In doing so, it recognizes that it will not be able to reach all of the poor (some of whom live outside slums), and that at least some of those receiving services will not be poor (since not everyone living in a poor area is her/himself poor). But it accepts these limitations as prices worth paying in order to attain two important advantages. One is administrative practicality or efficiency, through avoidance of the considerable effort typically required to distinguish between poor and non-poor individuals with even a modest degree of precision. The second is political: the belief that poverty-oriented service programs are much more likely to gain the political support needed for survival if members of the middle and upper classes gain enough from them to have an incentive to defend their continuation.

These different targeting methods are not mutually exclusive and are often used in combination. There is no known instance of their achieving or even approaching perfection; but when employed with care and determination, there is considerable evidence that they can increase the percentage of service benefits that accrue to the poor. The best-known instance of this comes from a set of studies covering nearly fifty government and private service programs (including but not limited to health) in Latin America. These studies found that in the eighteen carefully-targeted programs, some 70-75% of benefits accrued to the poorest 40% of households -- compared with 55-60% of the benefits from government primary health care and education projects and 30-35% of the benefits from untargeted food distribution programs. All three of the principal targeting methods used worked equally well; the administrative costs of targeting were typically under 10% of total program expenses (Grosh 1994).

There are many specific targeting techniques available, each with unique features, strengths, and weakness. Three can serve to illustrate the potential and limitations of different options. The three are individual targeting, geographic targeting, and disease targeting.

- *Individual targeting.* Certain forms of individual targeting have long been practiced in the health field. A common example is the use of simple diagnostic measures in screening programs to identify individuals at high risk of serious illness and thus in need of priority attention. More recently, a great deal of attention has been given to the identification of poor individuals in order to exempt them from users' fees introduced in developing country government health facilities during health sector reforms.

The experience of efforts to identify individuals for this purpose has varied widely. There have been more reported failures than reported successes. But there have been successes as well, and rather clear differences in the design of the more and less successful efforts that can serve as guidelines for the design of future initiatives.

Toward the effective end of the effective-ineffective spectrum lie some of the Latin American projects noted above. Also instructive is the case of Thailand, which has been offering free medical care to low-income groups, through an initiative known as the "Low Income Support Program," since 1975. The program has been modified numerous times as the government has gained experience. In its present form, the program is open to Thai families with monthly incomes of under 2,000 baht, whose members constitute around 25% of the country's population. Local officials of the Ministry of Home Affairs determines who qualifies under the income criterion just noted; and issues identity card, valid for three years, to those families found eligible. The cardholders are then exempted from fees at government health facilities. The cost is covered by a special allocation to the service-providing facilities from the Ministry of Public Health, which allocates around 8% of its total budget to this end. The program now covers some 11 million people, or around 20% of the country's total population and a number equal to about 80% of the eligible poor population. Independent surveys indicate that about 20% of those covered are non-poor who are improperly included. Adjusting for this suggests that, all in all, the program covers about 65% of Thailand's poor; with a leakage rate on the order of 20% (Khoman 1997).

At the spectrum's other end has been a series of casual efforts, especially in Africa. For example, according to a recent questionnaire study of 26 developing countries (most but not all in Africa), close to three-quarters of the countries responding reported at least some kind of official policy to exempt the poor from user fees. But, said the study organizers, "there were numerous informational, administrative, economic, and political constraints to effective implementation of these exemption" (Russell and Gilson 1997). In most countries, for instance, policy guidelines on whom to exempt were quite vague; local exemption administrators found it very difficult to assess household incomes; and/or the potentially eligible were often unaware that exemptions were

available. The findings of other reviews are similar: in general, found one such review, individual targeting efforts in sub-Saharan Africa “have been compromised by a variety of difficulties, including excessive leakage, overly subjective exemption criteria, informal identification and verification procedures, and excessive costs” (Waters 1995)

A plausible explanation of why some individual targeting programs have been more successful than others emerges from a study of twenty-nine such efforts in health. The study suggested two factors that differentiated between the nine efforts considered and the twenty that were not. One was the existence of clear, formal, explicit criteria for eligibility. The second was the determination of eligibility by someone other than the health service provider -- a village council, for example (Willis 1993). A third factor might be hypothesized from the previously-cited Thailand case: the provision of a mechanism and of resources to reimburse health service providers for income foregone in providing free services.

- *Geographic targeting.* The idea behind geographic targeting is straightforward: the poorer the area to which resources are allocated, the greater the likelihood that the individuals who benefit from those resources will be poor. Like individual targeting, geographic targeting is a generic approach, in the sense of being equally applicable to activities in almost any sector rather than being specific to health.

Geographic targeting can be applied with widely varying degrees of precision. The amount of improved accuracy resulting from increases in precision will depend upon the spatial pattern of the distribution of poverty within the society concerned.

Perhaps the simplest, least precise form of geographic targeting is the emphasis often placed on rural areas, where the available information about suggests that poverty is in general considerably more prevalent than it is in the cities. In the world’s low-income countries, for example, World Bank data indicated that in the mid-1990s the agricultural workers who constituted 66% of the labor force produced only 27% of the countries’ economic output. The same appeared to be the case in the middle-income countries, where 32% of the workers were in the agricultural sector that accounted for 11% of national output (World Bank 1998).

Other, more precise forms of targeting involve a focus on poor states or provinces, or subdivisions within each. Typically, these are identified on the basis of data for per capita income or output produced by government statistical offices. Several countries, particularly in Latin America, have sought to be even more precise by identifying villages or other small communities that are especially poor. This has typically be done through construction of a basic needs or similar index based on questions contained in national censuses like literacy rates, education levels, and quality of housing.

Recently, there has been experimentation with techniques to for identifying small areas on the basis of measures more obviously and directly related to consumption, traditionally the indicator preferred by economists concerned with poverty. The

techniques concerned involve combining data from in-depth sample surveys, which ask many questions from a relatively small number of households, and from national censuses, which ask a few questions about all the households in a country. The basic idea is to identify those questions on the household survey instruments that: 1) are also included in the national census; and 2) best predict the consumption levels of the households covered. Then, average values for the questions thus identified can be calculated for individual villages covered by the census data in order to predict the average consumption levels prevailing in those villages; and the poorest villages can be selected on this basis. The use of such techniques is still in infancy, but the initial experience with them has been promising in such widely varying settings as Burkina Faso, Ecuador, and South Africa (Alderman et al. 1999, Bigman et al. 1997, Hentschel et al. 1999).

Finding the areas with the greatest number of poor people is only part of the story, however. Equally important is the development of services that can reach the poor in those areas. This can be challenging, since poor areas frequently lack the capital and physical infrastructures necessary for effective program initiation.

- *Targeting by disease.* As with the geographic targeting just described, there are two steps involved in disease targeting. The first is to identify the diseases that are most important for the poor. The second is to develop delivery mechanisms that reach the poor in order to lessen the impact of those diseases.

With respect to the first of these steps, a recent assessment has established that at the global level, the diseases of greatest importance to the poor tend to be communicable in nature. For example, among the 20% of the global population living in the poorest countries, communicable and related conditions were responsible about 59% of all deaths in 1990, compared with 32% caused by noncommunicable diseases and around 9% attributable to accidents and injuries. In that year, communicable and related diseases were responsible over three-quarters of the global poor-rich mortality gap. Any acceleration in the rate of communicable disease decline, evenly distributed across all global social groups, would benefit the poorest 20% some ten times as much as it would the richest 20%. This stands in sharp contrast to the impact of a comparable acceleration in the fall of noncommunicable diseases would benefit the richest 20% about three to four times as much as the poorest 20%. (Gwatkin and Guillot, 1999).

Thus, at the global level, there is strong justification for emphasizing improved approaches for dealing with communicable diseases. However, the available evidence also indicates that there is a great deal of country-to-country variation of relevance for the establishment of national-level policies.

This is particularly the case in demographically advanced developing and transitional countries. In such settings, where overall mortality levels are generally low, it is quite possible for noncommunicable conditions to be more important than communicable diseases even among the poor. At the same time, however, communicable diseases are still likely to be more important for the poor than for the rich, in the sense of

being responsible for a larger minority of death and disability in the former than in the latter group.

The point can be illustrated by a 1994 Mexico study that provided estimates for rural and urban regions, using a combined mortality-disability measure called disability-adjusted life years (DALYs). Even in the rural population, presumably consisting primarily of poor people, noncommunicable conditions caused somewhat more DALY loss than did communicable diseases (44% vs. 37%); but communicable diseases, even though the minority cause of death and disability in rural areas, were still a considerably larger minority in rural than in the urban group (37% vs. 25% of total DALY loss) (Frenk et. al. 1998).

In such a situation, which appears typical of that prevailing in much of Latin America and Eastern Europe, any country-wide emphasis on noncommunicable diseases would be highly relevant for the poor. However, it would be more likely to increase than to decrease poor-rich disparities since noncommunicable diseases are likely to be still more important for the rich. If the poor are to benefit more than the rich, there would be need to supplement disease targeting with some other targeting approach – such as individual or geographic targeting – to increase the proportion of total benefits reaching the needy. (One would also wish to incorporate cost-effectiveness considerations into any program design in order to ensure the production of adequate health benefits overall.)

The situation is similar with respect to the second of the two issues posed above, concerning the effectiveness of intervention delivery systems in serving the poor. It is not safe to assume that a focus on diseases relevant for the poor will in itself lead to improvements in that group of a country's population, since those diseases also affect upper- and middle-income groups to at least some extent. It is quite possible to imagine a situation in which intervention programs against diseases relevant for the poor fail to develop the outreach capacity required to reach the neediest, so that the program benefits are limited primarily to better-off groups. The available information suggests that this is happening in many, although by no means all places; and that, in places where it is happening, disease targeting will have to be supplemented by geographic, individual, or some other type of targeting if the poor are to be served.

The information containing such suggestions comes from data for the several intervention measures covered in the country information sheets referred to above with respect to infant and under-five mortality. Especially relevant are quintile-specific data for interventions directed against communicable diseases among children – diseases that, as suggested above, are especially important for the global poor. The interventions include immunizations against measles, diphtheria, whooping cough, and tetanus; and curative treatment of diarrhea and acute respiratory diseases. Quintile-specific data are also available for antenatal care and attended deliveries which deal with a condition that is not communicable, at least not in the traditional sense, but that turns out to be concentrated especially among disadvantaged groups.

These data show the situation varies greatly from country to country. Take as an illustration the data for the percentage of children immunized against all the diseases noted above, which are summarized in table six. Looking first at the percentage of children immunized among the poorest 20% of the population, there is only a modest variation among the different regions: from 35% in Africa to about 43% in Asia, the Near East, and North Africa. Within each region, however, the country-to-country variations are dramatic. This is especially the case in Sub-Saharan Africa, where the range is from under 5% (Niger) to over 70% (Malawi, Zambia, Zimbabwe). A review of the poor-rich ratios and concentration indices, which permit a comparison of immunization rates among the poorest 20% with those in higher socio-economic groups, one finds notably smaller disparities in Latin America than in other parts of the developing world. But there are also very large-country-to-country variations within each region. The reasons for the variations remain to be determined.

B. Participatory Approaches to Health Service Planning and Delivery

As noted earlier, targeting is not universally popular among development professionals. To some, it is seen as an outgrowth of the tendency of many public health professionals to determine the most important health issues on the basis of the epidemiological considerations that are important to them, without pausing to determine whether the priorities thus established correspond with the priorities of the intended beneficiaries.

An alternative approach, preferred by people holding the view just described, is to involve the prospective beneficiaries from the beginning. This means determining their priorities as the basis for project development and developing modes of service delivery that they are likely to find congenial. Such a “consumer-oriented” or “client-oriented” approach is often supported on pragmatic as well as conceptual grounds, through reference to the likelihood of increased utilization resulting from the provision of services that people want rather than those which outsiders think they need.

This approach has been present in development thought since at least the 1950s when it went by the name of development on the basis of prospective beneficiaries’ “felt needs.” Strong traces of it have also existed in international public health circles, among community medicine specialists who share many of the same concerns about technocratic epidemiology just expressed. The concern of such specialists can be seen in the strong emphasis on community-based approaches appearing in the previously-cited 1978 Alma Ata Declaration.

At present, the approach is gaining strength. Work is going on in many venues, but recent trends can be seen most clearly illustrated with reference to developments within the World Bank. While that institution remains better known for its technocratic orientation than for its participatory instincts, an incipient interest in participation can be seen through three streams of work. Two of these streams are analytical: identifying the poor, through participatory poverty assessments; and determining what the poor want in the way of health services and what they think of the services they currently receive. The

third is operational: increasing reliance on non-governmental or community organizations rather than government agencies to deliver health and other services.

- *Participatory Poverty Assessments.* The basic premise underlying the participatory poverty assessment (PPA) approach is that villagers are much better able to define poverty and identify the poor among them than are outside government authorities. In a sense, PPAs can thus be seen from a technocratic perspective as a way of identifying people who deserve highest priority under an individual targeting program, although the information gathered typically goes well beyond this in helping determine how communities perceive poverty.

PPAs usually employ relatively non-quantitative methods based on guided discussions with village members. The discussions typically proceed in two stages. The first stage consists of reaching consensus about the appropriate indicators of wealth and poverty. The second consists of identifying individual families or people as rich or poor on the basis of the agreed-upon indicators.

By encouraging people first to establish criteria for poverty before identifying individuals who were poor, the PPA seeks to lessen the problem commonly attributed to village-based beneficiary approaches: the alleged proclivity of village leaders to identify their relatives, friends, and political supporters as those most deserving program benefits. Just how well it succeeds in this regard remains unclear.

This approach has thus far been applied in 30-35 countries, especially in Africa, by the World Bank (Robb 1997) and no doubt in countless other locations by other agencies. Among the best-known is Tanzania, where discussions like those described above took place in 87 villages in different parts of the country and involved over 6,000 village residents (Narayan 1997). In each village, the residents produced maps locating the dwellings of those they considered to belong to the poorest of five wealth categories. In Dodoma region, for example, the poor were defined as people who were mostly old, disabled; lived by begging; childless women; and/or mentally unfit. In Kilimanjaro region, participants defined the poor as people who were landless, did not plant crops, depended upon relatives, and lived in substandard housing. The percentage identified as poor through application of these criteria in the study villages ended up closely approximately the percentage defined as living below the poverty line through more formal, consumption-based methods, although there may have been differences in the particular individuals who would qualify as poor.

Another, multi-country PPA is currently under way in connection with preparation of the World Bank's 2000/01 World Development Report, which is focusing on poverty. The exercise is known as "Consultations with the Poor" (<http://worldbank.org/poverty/wdrpoverty/conspoor>). It is in two parts. The first is a summary of some eighty earlier PPAs from around the world involving over interviews with over 60,000 people. The second consists of 23 country studies, covering around 20,000 poor individuals. These new studies cover a wide range of topics, including many that, strictly speaking, are more closely associated with the beneficiary assessments described in the

following section than with PPAs. Reports on the exercise, which contain a great deal of information about how the poor perceive health and health services, are currently nearing completion.

Beneficiary Assessments. While PPAs are oriented primarily (although not exclusively) toward determining just who is poor, beneficiary assessments (BAs) focus more on what the poor want in the way of services, and/or what they think of the services offered to them. Given this focus, they might be considered a type of market research, designed to produce information of value to program managers that can help them design programs corresponding more closely to consumers' preferences.

Like PPAs, BAs also tend to rely primarily on qualitative methods. Commonly-used approaches include informal conversational interviews, participant observation, and focus group discussions. Upon occasion – as with the “Voices of the Poor” exercise describe earlier – a particular qualitative study will include elements of both a BA and PPA, an indication of the fluidity of the distinction between them.

BAs appear to have been undertaken rather frequently in connection with health programs, at least in connection with World Bank health programs. For example, a 1995 review of Bank experience listed some twenty BAs made in the course of developing or evaluating health, population, and nutrition projects, more than twice the number prepared in any other sector of Bank activity (Salmen 1995). An informal reading of subsequent Bank project documents suggest that there have been many more since then. A systematic review of work done by individuals and agencies not associated with the Bank would no doubt uncover many more. Also, in addition to studies considered BAs strictly defined, there exists a vast array of more general village-based anthropological and sociological literature about health that contains information about health priorities of the poor that is of obvious relevance for program development.

Virtually all of the BAs known to have been done this far have been undertaken for project preparation or evaluation rather than for formal publication. Such studies tend to disappear after having served their intended purpose; and this results in a problem of physical inavailability that makes it impossible to provide an overview of findings, to see if there are common themes across countries. One can, however, to give a flavor of what the studies show through a few illustrations from recent studies that remain extant. In Bangladesh, for example, a focus group discussion revealed that the major deterrent to the use of government facilities was the unpredictable volume of under-the-table payments requested by facility employees, thus making it difficult for the prospective clients to know in advance whether they could afford the services. In Lesotho, a study conducted by participant observers found that the village health worker program was having little impact, because the workers were emphasizing preventives services which, while in line with professional thought, were of little interest to villagers. What the villagers wanted were curative services that the workers were not qualified to provide (Salmen 1995).. In Ethiopia, policy makers learned from a beneficiary assessment that the antenatal services they offered were being poorly used because of a cultural belief that pregnant women considered it improper to admit to any pain or discomfort during

pregnancy (Salmen 1995). Anecdotal information based on such surveys in a number of countries suggests that the availability of drugs (and injections) is frequently a factor to which poor patients attract considerable importance.

- *Alternative Delivery Mechanisms.* Frustration over the bureaucratic and political constraint that prevent government ministries from offering services that reach the poor effectively is giving rise to an interest in identifying alternative mechanisms. Typically, this means looking to agencies that have a larger degree of participation by, or that are at least much closer to, the poor clients are the intended beneficiaries. Most attention has thus far gone to two types of agency: non-government organizations, and social funds.

With respect the former, there is a widespread belief that non-governmental organizations are much better at identifying and serving the poor than are government health programs. This is not inevitably the case: Tanzania and Zambia, for example, represent instances where the economic level of people served through the non-governmental health sector appears higher than that of patients in government facilities (Munishi 1997, Diop 1997). But where non-governmental organizations do reach the poor effectively, government grants to or contracts with non-governmental organizations for the delivery of services represents an alternative to efforts to target poor individuals through the government service system. This is not always easy for governments to do, given the resistance that can be expected from government employees who would stand to lose should the practice become widespread. External agencies find it easier to move in this direction and appear increasingly interested in doing so. In Bangladesh, to cite perhaps the most prominent example, a massive volume of donor support has permitted the Bangladesh Rural Advancement Committee -- which now employs some 25-30,000 people -- to become one of the country's principal providers of health and other services in poor rural areas.

Another alternative to direct government health (and other) service delivery is a social fund, a relatively new form of quasi-governmental financial intermediary that channels funds directly to small-scale projects for poor and vulnerable groups operated by local governments, non-governmental organizations, or community groups. Social funds have been created in well over thirty countries, especially in Africa and Latin America, as a way around rigidities in traditional government ministries that prevent the ministries from reaching the poor effectively. Thus far, the Inter-American Development Bank and the World Bank have made over \$3.5 billion in loans to more than fifty countries in support social funds (Jorgensen 1999). Roughly one-third of social fund support has traditionally gone to health, nutrition, and population (Carvalho 1995).

Data limitations prevent any clear assessment of just how well social funds have in fact reached the poor. But such information exists suggests an overall picture quite similar to that presented above with respect to individual targeting in more traditional government programs. That is, social funds that adopt explicit, carefully-designed and implemented approaches to beneficiary identification work much better than those which do not (Carvalho 1995).

C. Protecting the Poor from the Financial Consequences of Illness

A third, more recent approach to dealing with health inequalities differs from the two just described in taking what might be called a financial orientation. That is, the reason for being concerned with the health of the disadvantaged is not an interest in health *per se*, but rather the financial implications of poor health for the people concerned. Lessened health inequality through assistance to the disadvantage is seen less as an end in itself than as a mean toward the end of reduced financial inequality.

The rationale for such an approach lies in the belief, increasingly supported by empirical evidence, that the path out of poverty is not a smooth one. Rather, families do not simply rise steadily out of poverty; and once out of it, follow a steadily upward trajectory. Rather, they often fall back, sometimes temporarily, sometimes permanently, as a result of external shocks over which they have little control.

Often, these external shocks are economic in nature, as in the case of the financial crisis that affected much of Asia in the mid-1990s. Sometimes, the shock is caused by civil strife, as parts of Africa and the former Yugoslavia. But poor health also appears to play a significant role: partly because of the high costs of medical care, partly because of the income lost in those cases where the ill person is a major breadwinner for the family.

The two most complete studies of this issue undertaken thus far are from Bangladesh. One, carried out in an urban slum, found that over 40% of people in the poorest quartile of the population had missed work during the preceding month, and that this had cost them an average of nearly 75% of their families' income during that month. (Pryer 1989). The other, a survey of sixty-plus villages, found that poor health was the principal cause of 15-20% of the cases in which previously non-poor people had slipped into poverty. Many others avoided falling below the poverty line, measured in consumption terms, by drawing down their family assets (Sen 1997).

The three other known studies focused on medical costs, and dealt only directly with foregone income. Two cover poor rural areas in China. Each of these studies found that medical costs borne by poor families in era following the collapse of rural medical cooperatives is extremely high. One study reported that medical costs represent over 15% of total expenditures among poor families. One-third of the families had to dip into assets in order to cover the costs; 70-90% of the ill who did not seek care gave the care's high cost as the reason. (Fu *et al.* 1995). The other Chinese study found that the average cost of a one time hospitalization equaled well over the annual income of a poor peasant; that costs of other care received by the poor cost them around 10% of their incomes; that 80% of poor people needing hospitalization did not obtain it because of the expense. The study concluded that "illness is a major reason why peasants become impoverished or (why) those who have made their way out of poverty revert to being poor." (Expert Committee for the Study of Policy and Administration 1996). The third study is from Mexico. There, over 4% of the poorest 30% of the population experienced medical

expenses equal to over one-half of their incomes during the first half of 1992 -- a percentage far higher than experienced at higher income levels (Frenk et al. 1998).

Beyond this are indications that, regardless of how important or unimportant the financial consequences of ill health might be when measured empirically, the poor worry a lot about them. In the interviews conducted with 20,000 poor people throughout the world in connection with the previously-described "Consultations with the Poor" study, the fear of ill health because of its potential financial implications arose again and again. In these interviews, ill health was the most-frequently-cited reason why families became impoverished (Narayan 2000).

Findings like these argue for a concern with protection against severe or catastrophic illness, whose costs, in the form of medical expenses and/or lost income, can easily drag families down into poverty or prevent their rising out of it. Several mechanisms for providing such protection are currently under consideration. They include the development of risk-pooling or insurance plans and subsidized or free secondary medical care for income-earning adults.

D. Establishing Health Objectives in Distributional Terms

A final, still more recent approach is oriented toward health planners and policy-makers at the national and international levels. Its focus is on the way health objectives are established in macro-level economic and health development plans.

Typically, such health objectives are established in terms of society-wide averages: reduction of a country's overall infant mortality rate by XX%, an increase in a society's average life expectancy by YY years, etc. While averages like these are informative about conditions prevailing in a society as a whole, they say nothing about the inequalities that prevail in it. As a result, they are poorly suited for the development of strategies or the assessment of progress toward inequality reduction, or the improvement of conditions among the poor.

A recent exercise, based on a set of international development goals established in connection with a 1995 global Social Summit conference in Copenhagen, suggested that this is considerably more than an academic quibble. The health goals appearing in the set included a call for a two-thirds reduction in the average infant mortality rate in all countries by the year 2015. When examined from an intra-country inequality perspective, using the data on inter-quintile differences presented in section II.A., there proved to be several combinations of decline in different quintiles that could result in both a two-thirds reduction in overall infant mortality and a significant widening in inter-quintile differences. Under some circumstances, the two-thirds reduction in infant mortality could be attained without any significant decline in the rate prevailing in the poorest quintile (Gwatkin 2000a).

This has led to an interest in finding an alternative way of stating health objectives: say, in terms of an XX% reduction of the difference in infant mortality

between the poorest and richest quintiles, or a YY-year improvement in life expectancy among people below a society's poverty line. A statement of health objectives in such terms would be consistent with current thinking about economic development objectives, which are increasingly expressed in poverty or distributional terms rather than with regard to societal averages. (The economic goals of the Social Summit, for instance, refer not to increasing average per capita incomes, as was the earlier convention, but rather to decreasing the numbers of people living in poverty.)

A restatement of goals would not in itself save lives, however. Restated goals would be of value only to the extent to which they succeed in directing the attention of policy-makers toward health inequalities and the health of the poor, thereby preparing the way for the development of effective interventions to deal with those issues. This implies a need not just for restated goals, but also the use of those goals to shape policies and programs.

V. Conclusion

This review began with an argument, in section I, that a concern for health inequalities has recently begun to rise to prominence after a decade during which it attracted little attention. In closing, it is appropriate to ask what will be required to ensure that it remains at the center of attention and leads to effective action.

Had this question been posed a year or two ago, the temptation would have been strong to respond that effective action would require progress with respect to all three of the other topics covered in this review. That is, there appeared to be a clear need for closer agreement on what should be the governing concept for activities in this area, particularly whether reducing health inequalities or improving the health of the poor, as discussed in section II; for a better understanding of the magnitude and dimensions of health inequalities, which was the topic of section III; and for improved program approaches for reaching the poor and improving their health, to supplement the approaches mentioned in section IV.

Since then, there has been very rapid progress on the second of these areas. Thanks to the research findings reported in section II, all of which are less than a year old, there is now a much better understanding of health inequalities in developing countries.

This understanding remains far from perfect, to be sure. But the progress has been sufficient to support an argument that of understanding now represents less of a constraint than does lack of consensus on concepts and the lack of proven policy and programmatic approaches. These two latter issues thus stand out as the ones now most in need of attention.

Overlying both of these is the much larger question of political commitment. If the importance currently being attached to poverty-oriented overall development is

correct, major progress in reducing health inequalities will require not just a reorientation of the health sector, but also a broad social determination to alleviate poverty.

Table One

Intra-Country Disparities in Infant And Under-Five Mortality

A. Infant Mortality

Region	No. of Countries	Poor-Rich Ratio		Concentration Index	
		Mean	Range	Mean	Range
Sub-Saharan Africa	21	1.67	1.11 to 2.46	-.081	-.003 to -.141
Asia/Near East/North Africa	9	2.33	1.42 to 3.93	-.125	-.051 to -.195
Latin America/Caribbean	11	2.66	1.26 to 4.18	-.145	-.043 to -.251
Total	40	1.87	1.11 to 4.18	-.106	-.003 to -.251

B. Under-Five Mortality

Region	No. of Countries	Poor-Rich Ratio		Concentration Index	
		Mean	Range	Mean	Range
Sub-Saharan Africa	21	1.79	1.27 to 2.60	-.095	-.040 to -.164
Asia/Near East/North Africa	9	2.69	1.69 to 4.60	-.147	-.084 to -.210
Latin America/Caribbean	11	2.99	1.55 to 4.67	-.167	-.071 to -.259
Total	40	2.06	1.27 to 4.67	-.124	-.040 to -.259

Source: Gwatkin et al. 2000

Table Two

**Concentration Indices for Infant and Under-Five Mortality
within Six Developing Countries as Measured
by Different Studies**

Country	Infant Mortality		Under-Five Mortality	
	Country Info. Sheets	Wagstaff	Country Info. Sheets	Wagstaff
Côte d'Ivoire	-0.107	-0.095	-0.115	-0.096
Ghana	-0.093	+0.018	-0.135	-0.028
Nepal	-0.060	-0.109	-0.096	-0.132
Nicaragua	-0.094	-0.150	-0.124	-0.162
Pakistan	-0.051	0.000	-0.084	-0.017
Vietnam	-0.143	-0.009	-0.159	-0.016
Unweighted Mean	-0.091	-0.064	-0.119	-0.076

Sources: Wagstaff 2000; Gwatkin et al. 2000

Table Three

**Percentage of Financial Subsidy from Government Health Services Accruing
to Poorest and Richest 20% of the Population: Regional Averages**

Region	Primary Care		Hospital Care						Total Health Care	
			Outpatient		Inpatient		Total			
	Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile
Africa	15 (7)	23 (7)	12 (2)	36 (2)	16 (2)	34 (2)	10 (5)	33 (5)	12 (7)	30 (7)
Asia	21 (2)	16 (2)	7 (1)	41 (1)	5 (1)	41 (1)	13 (1)	22 (1)	19 (5)	21 (5)
E. Europe	16 (2)	22 (2)	--	--	--	--	12 (2)	29 (2)	13 (2)	27 (2)
Latin America	--	--	--	--	--	--	--	--	29 (8)	14 (8)

Note: Each figure in parentheses appearing in the regional average section of table fourteen indicates the number of countries included in the average that appears immediately to the parentheses' left.

Source: Gwatkin 2000b

Table Four

Trends in Health Inequality between Country Groups, 1970-1990

Comparison		Change in Infant Mortality Rate Disparity		Change in Life Expectancy Disparity	
Countries	Percentage of Global Population (approx. 1990 Figures)	Absolute	Relative	Absolute	Relative
High-Income Countries vs. Low-, Middle-, and Upper-Middle Income Countries	Richest 16% Remaining 84%	-	+	-	-
High-Income Countries vs. Low-Income Countries	Richest 16% Poorest 56%	-	+	-	-

Note: A plus sign indicates that the disparity in question increased between 1970 and 1990; a minus sign indicates a decline in the disparity over that period.

Source: Tabulations of World Bank data by Nathan R. Jones

Table Five

Trends in Health Inequality among Countries, 1970-1990

Comparison		Indicator				
Countries	Percentage of Global Population (approx. 1990 Figures)	Standard Deviation	Slope Index of Inequality	Relative Index of Inequality	Index of Dissimilarity	Concentration Index
Infant Mortality: All Countries	100%	-	-	+	+	+
Infant Mortality: Developing Countries Only	Poorest 84%	-	-	+	+	+
Life Expectancy: All Countries	100%	-	-	-	-	+
Life Expectancy: Developing Countries Only	Poorest 84%	-	+	-	-	+

Note: A plus sign indicates that the disparity in question increased between 1970 and 1990; a minus sign indicates a decline in the disparity over that period.

Source: Tabulations of World Bank data by Nathan R. Jones.

Table Six

Levels and Intra-Country Inequalities in Immunization Rates

Region	No. of Countries	Immunization Rate among Poorest 20% of Population		Rich-Poor Ratio		Concentration Index	
		Mean	Range	Mean	Range	Mean	Range
Sub-Saharan Africa	20	35.0%	4.6 to 73.0%	2.07	1.17 to 11.11	.160	.022 to .434
Asia/Near East/North Africa	9	42.8%	17.1 to 69.3%	1.71	1.05 to 3.80	.117	.012 to .262
Latin America/Caribbean	11	39.7%	18.8 to 55.8%	1.45	1.03 to 2.62	.084	.001 to .177
Total	39	37.1%	4.6 to 73.0%	1.84	1.03 to 11.11	.128	.001 to .434

Source: Gwatkin et al. 2000

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