

Monitoring Equity in Health and Healthcare: A Conceptual Framework

Paula A. Braveman

*Center on Social Disparities in Health
Department of Family and Community Medicine, School of Medicine
University of California, San Francisco, 500 Parnassus Avenue, MU-3E
San Francisco, CA 94143-0900, USA*

ABSTRACT

This paper aims at articulating a conceptual framework for monitoring equity in health and healthcare. The focus is on four main questions: What is health equity? What is monitoring? What are the essential components of a system for monitoring health equity? and Why monitor health equity? Monitoring equity in health and healthcare requires comparing indicators of health and its social determinants among social groups with different levels of underlying social advantage, i.e. groups who occupy different positions in a social hierarchy. A framework is presented for formulating the key questions, defining the social groups to be compared, and selecting the health indicators and measures of disparity that are fundamental to monitoring health equity. Although monitoring health equity is a scientific endeavour, its fundamental objective is guided by values; technical challenges should be addressed as part of a broader strategy to confront the political obstacles to greater equity.

Key words: Health equity; Inequalities; Monitoring; Health; Healthcare; Health indicators; Health status

INTRODUCTION

The purpose of this paper is to articulate a conceptual framework for monitoring equity in health and healthcare. It is directed primarily to policy-oriented researchers in the hope that they can use this material to help them generate and apply knowledge leading to greater equity in health and healthcare. It is hoped that the issues raised here will also be of interest to information-oriented policy-makers and advocates, whose demands can shape information systems and the questions addressed by researchers. The focus here is on four main questions: What is equity in health and healthcare? What is monitoring? Why monitor equity in health and healthcare? and What are the essential components of a system for monitoring equity in health and healthcare?

Correspondence and reprint requests should be addressed to: Prof. Paula A. Braveman
Department of Family and Community Medicine
School of Medicine
University of California, San Francisco
500 Parnassus Avenue, MU-3E
San Francisco, CA 94143-0900
USA
Email: braveman@fcm.ucsf.edu
Fax: 415-476-6051

WHAT IS EQUITY IN HEALTH AND HEALTHCARE?

Health refers to both physical and psychological health status. Healthcare as used here refers generally to all the major aspects of health services, including not only utilization but quality, financing, and allocation of resources; healthcare can be thought of as one—but not necessarily the most important—of many determinants of health (1-6). Health determinants include both proximate factors, with direct and relatively immediate links to health outcomes, and factors that may occur and act quite distally from the outcome, near the beginning of what may be a long and complex causal chain. While a health determinant is not necessarily a proximate cause, it must be a plausible critical component on an important causal pathway leading to a given health outcome. Taking diarrhoeal disease as an example, ingestion of pathogenic bacteria or parasites in contaminated water is a common proximate (or 'downstream') cause; by contrast, common determinants of the ingestion of pathogens in water include poverty and lack of national policies ensuring a safe water supply, which represent distal (or 'upstream') determinants.

Equity means fairness (7-10) or justice (8-10). Because these terms are open to interpretation, an operational definition is needed to guide measurement in diverse settings. In operational terms, pursuing equity in health can be defined as striving to eliminate disparities in health between more and less-advantaged social groups, i.e. groups that occupy different positions in a social hierarchy (8). Health inequities are disparities in health or its social determinants that favour the social groups that were already more advantaged. Inequity does not refer generically to just *any* inequalities between *any* population groups, but very specifically to disparities between groups of people categorized *a priori* according to some important features of their underlying social position. For example, individuals may be grouped by their income or material possessions, or by characteristics of their occupations, education, or geographic location, or by their gender, race/ethnicity, or religious group. What all of these factors have in common is that they often are strongly associated with different levels of social advantage or privilege as characterized by wealth, power, and/or prestige (8).

Social advantage overlaps and interacts with both biological and physical features of the environment. People with greater economic resources generally seek out and are able to live and work in geographic areas with more favourable physical and social conditions; hence, particularly within small areas, geographic location often reflects differences both in social advantage and in the physical environment. Social factors also can alter the effects of the physical environment, which includes climate, topography and barriers to transportation, water supply conditions, soil quality, or other natural resources. For example, detrimental consequences can be avoided by ensuring provision of a supply of clean water on a community-wide basis in an environment where safe water would otherwise be scarce, or by building roads and ensuring that public transportation reaches areas to which access to healthcare would otherwise be limited. In addition, while genetic factors are biological, their manifestations can be heavily influenced by social advantage, given the impact of environment on both gene expression and on the potential consequences of genetic conditions (11-13).

Because equity is a normative concept, one cannot directly measure equity in health or healthcare; however, one can measure inequalities in health between more and less advantaged social groups. Such inequalities are likely to reflect inequities because they place already

disadvantaged social groups at further disadvantage with respect to their health and/or healthcare. The phrases 'social inequalities in health' and 'health inequalities' have been widely used to refer to health disparities between more and less socially-advantaged subgroups of a population. Although the term 'health inequalities' is more concise, a recent public debate (14-18), discussed later in this paper, indicates the importance of clarity when using these short-hand terms. Researchers at the World Health Organization (WHO) during 1999-2002 used the term 'health inequalities' to refer to disparities in health status between ungrouped individuals; their approach categorizes people only according to measures of health status, without regard for social characteristics, such as wealth, education, occupation, or racial, ethnic or religious group (14,15). By contrast, our focus here is the study of social inequalities in health, which requires that differences in health status be examined according to factors that reflect social advantage and disadvantage—a process that is fundamental to monitoring health equity.

HOW DOES MONITORING DIFFER FROM OTHER RESEARCH? WHAT IS A 'MONITORING SYSTEM'?

Monitoring is a particular kind of research that involves repeated study of a question over time, requiring the ongoing collection of data. Monitoring is explicitly action-oriented, with the primary purpose of keeping policies or programmes on course in relation to an explicit or implicit set of criteria. While monitoring may or may not yield useful information for long-term planning, it is explicitly intended to have practical relevance for policy-making in the shorter-term; in contrast, other types of research may aim to produce information that will be useful in the long run, with less immediate policy relevance.

Another distinguishing feature of monitoring is that the information provided is primarily descriptive rather than explanatory in nature. One generally would not rely on a monitoring system to elucidate previously unknown causal pathways or mechanisms, which would require more in-depth and focused explanatory research. Data from a monitoring system can be used for assessing changes in the magnitude of disparities in a specific health indicator between different social groups over time; monitoring also can yield information about the prevalence and levels of important factors known to influence health—such as poverty, unemployment, living conditions, educational attainment, or use of relevant

health services—that *a priori* would be expected to affect the health outcomes. Based on monitoring information, one generally could not expect to make highly specific causal inferences about how such factors operate, although at times one might be able to make plausible general inferences. For example, an observed decline in health status without corresponding reductions in the use or quality of relevant health services would suggest the need to consider changes in health determinants other than healthcare as more likely causal agents. Clearly, such inferences must reflect findings from other research, in addition to observations derived from monitoring.

The essential components of any monitoring system are a set of research questions, the capability to study those questions on a routine and ongoing basis, and a formal process of periodically examining findings with the express purpose of informing policy. Regardless of the indicators or issues being monitored, any monitoring system must have certain basic attributes. First, as with any research, the information generated must be scientifically sound and reliable, accurately reflecting what it represents. In monitoring, however, precision often will be less important than lack of bias. For example, in many resource-poor countries, births and/or deaths are disproportionately under-reported among the poor, rural, and otherwise disadvantaged population groups, making vital records too biased for use to directly assess equity; if the under-reporting were randomly distributed across social groups, such records could be reasonably useful for assessing equity despite their inaccuracies. In addition to meeting standard scientific criteria for research in general, a monitoring system has other more specific requisites, including *clear relevance for policy*; *simplicity*, so that local personnel can use the techniques for data collection and analysis in an ongoing, routine fashion; *affordability*, considering the resources required for all phases of the monitoring process, not only data collection; *sustainability*, allowing the data collection and analytic activities to be repeated routinely over time; and *timeliness*, considering the time lag between data collection and availability of findings to inform policy. These criteria can be difficult to fulfill, particularly in combination.

The tendency to visualize a monitoring system as hardware and software or as requiring a new source of primary data should be avoided. In the late 1980s, my colleagues and I collaborated with the county (municipality) health department in San Francisco, USA, to develop a system to routinely monitor social

inequalities in health and healthcare in the county. We had expected to develop a sophisticated new information system and perhaps launch a new survey. However, it became clear soon after we began the work that, rather than acquiring new equipment or technology or creating new data sources, what was needed first was to more fully use the existing data; only then would the creation of new sources make sense. At the end of the project, our initial sense was that our objectives had not been completely met because we had not created new hardware, software, or surveys. We subsequently realized, however, that a 'monitoring system' had indeed been developed from this effort. This system, which involved the creative use of existing information, the production of a series of reports, and an accompanying process of public review of the key findings and discussion of policy implications, is still in place in modified form 15 years later. The primary contribution of our project was to help define key questions and to demonstrate effective ways to answer them using data sources, such as birth certificates, that were already available to the health department and other information, including census data, school health records, and hospital discharge data, to which it had ready access.

During the later 1990s, the WHO supported demonstration projects in three lower-income countries with the goal of developing systems for monitoring health equity. In each of the three countries, initial assessment showed that, although the information available to study health equity was subject to tremendous limitations, considerable amounts of data were currently being collected—and often even analyzed—but not used. After three to four years of work, the capabilities of existing data had only been partially explored. In some cases, significant contributions can be made towards developing monitoring capability simply by using available data in more effective ways. In one of these three countries, for example, relevant data had been disaggregated to both province level and district level for some time, but there was no routine process of presenting and considering the implications of this information. Although computers and mapping software were available, multiple personnel shared too few computers and fewer printers, and printing maps using the software was very slow. The research team developed a 'low-tech' but highly effective way of presenting geographically-disaggregated information, by manually labelling maps with information to display differences in health outcomes between provinces and between districts; the labelled maps were easy to produce, and policy-makers and civil society groups found the

maps easy to read and meaningful, allowing them to see their own provinces or districts in comparison with others (19).

WHY MONITOR EQUITY IN HEALTH?

Monitoring the extent of health disparities between ungrouped individuals in a population overall, without reference to social characteristics, would avoid many of the challenges involved with finding or creating data sources that describe both key social characteristics and health. As discussed earlier, researchers at WHO during 1999-2002 proposed replacing the measurement of social inequalities in health to assess equity with measuring health inequalities between ungrouped individuals; the latter would generate a measure similar in some ways to the Gini coefficient, a composite index often used for quantifying income inequalities between ungrouped individuals. As further rationale for their approach, these researchers questioned whether higher priority should be given to the health problems disproportionately affecting socially-disadvantaged persons. They also stated that studying social inequalities in health—i.e. inequalities between population groups that are categorized socially on *a priori* basis—can mask intra-group variation, prejudge causality, and obstruct scientific inquiry into the full range of determinants that influence health (14). These views challenge the conceptual, ethical and scientific basis for monitoring equity in health. Although a recent change in leadership at WHO may alter the positions taken on these issues at WHO, the arguments could be championed from other bases and, thus, it is important to address these here.

First, with respect to whether ill health merits more concern in a socially-disadvantaged person than in a socially-advantaged person (14), one should be equally concerned on an individual and clinical level about suffering, disability, and loss of life regardless of who is affected. At the population level, however, priorities for allocation of public resources must reflect the fact that people in more- and less-advantaged social groups experience unequal opportunities to be healthy based on their underlying social disadvantages. Disease and its consequences afflict all social groups, but extensive evidence demonstrates that, in the population overall, ill health is disproportionately borne by the socially disadvantaged. It would be disingenuous to suggest that the policy-making process—which determines resource allocation—represents the interests of all social groups equally; indeed, information plays a particularly critical

role in stimulating action to address the needs of those individuals and groups with the least political and economic influence. Concern for the health of the disadvantaged, which may be seen as reflecting the ethical principle of distributive justice, is also consonant with principles of human rights, including the right to freedom from discrimination and the right to the highest attainable state of health (which is indicated by the health status enjoyed by the most privileged social groups in a society) (8,20,21).

Second, the arguments about masking intra-group variation and prejudging causation are without foundation. Examining between-group differences in no way precludes examining within-group disparities as well. Combining between- and within-group comparisons is a standard analytic approach in epidemiology; both of these processes are important for scientific understanding. Regarding assumptions about causation, it is obvious that observed associations alone cannot support causal inference. For example, one cannot conclude on the basis of an observed relationship between education and a given health outcome that education *caused* that outcome; rather, the observed findings lead the scientist to ask and investigate further questions: What is it about education that might explain the observed association? Is it education itself, and if so, what aspect, e.g. skills, knowledge, or access to privileged social networks? Or does education represent a proxy for other related factors, such as wealth or prestige?

The relevant issue is not whether to categorize social groups *a priori* in studying health inequalities; it is, rather, to determine which categorizations will best describe patterns of population health and most effectively guide research on causal mechanisms and subsequent interventions. Few nations currently conduct routine monitoring of equity in health. Implementing such monitoring systems is challenging, particularly in resource-poor settings. Considerable technical work is needed to enable more countries to systematically and routinely examine and interpret findings on social inequalities in health and changes over time relative to social and economic policies. Without routinely and systematically collected information that describes the health of more and less-advantaged groups separately, there can be no systematic assessment of the differential impacts of policy on these groups. Information disaggregated by social group is necessary, albeit not sufficient.

The debate concerning the recent approach of WHO to health inequalities has been useful in underscoring

the need for conceptual clarity both about what is meant by health inequalities and about one's reasons for measuring them. It suggests a need for caution in the use and interpretation of ambiguous terms, such as 'health inequalities', 'disparities', or 'distributional concerns,' that do not explicitly reflect a concern for how health is distributed according to social disadvantage. Public-health agencies and researchers need to focus explicitly on the issue of *social inequalities in health*, i.e. health disparities among persons with varying levels of social privilege. Levels of health experienced by those who are most socially advantaged can suggest what is possible for everyone. It is an ethical responsibility and consonant with principles of human rights to give special priority to action on important public-health problems that differentially affect those with fewer resources and/or greater obstacles to addressing problems on their own (8). It is expected that terms, such as 'health inequalities', will continue to be used widely because they are more concise and sound less judgmental than 'social inequalities in health' or 'health inequities'. Regardless of the terms chosen, the meaning must be clear.

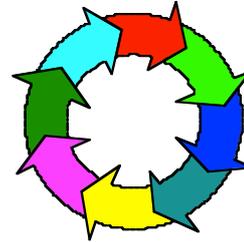
WHAT ARE THE ESSENTIAL COMPONENTS OF A SYSTEM DESIGNED FOR MONITORING EQUITY IN HEALTH AND HEALTHCARE?

Overview and key issues

In addition to the requirements of any system for monitoring, a monitoring system focusing specifically on equity in health and healthcare has several further prerequisites; these include appropriate research questions, adequately identified social groups to be compared, relevant indicators of health and its determinants, appropriate estimates of disparities in those indicators between the different social groups, and an effective process for interpreting and applying findings. The figure illustrates schematically several steps in an ongoing process for monitoring equity and is intended to call attention to several key issues that are specific to monitoring health equity. The subsequent text discusses technical aspects of some of those key issues, but crucial concerns of a non-technical nature are first highlighted here.

A particularly crucial issue is recognizing that information in itself, no matter how technically sound, will not produce greater equity; pursuing equity requires swimming against the tide of prevailing forces, who may feel threatened by efforts to achieve a more equitable distribution of society's benefits. Thus, all efforts to

Fig. Eight steps in policy-oriented monitoring of equity in health and its determinants



- Step 1. Identify the social groups of *a priori* concern. In addition to reviewing the literature, consult representatives of all social sectors and civil society, including advocates for disadvantaged groups.
 - Step 2. Identify general concerns and information needs relating to equity in health and its determinants. Again, in addition to the literature, consult representatives of all social sectors and civil society, including advocates for disadvantaged groups.
 - Step 3. Identify sources of information on the groups and issues of concern. Consider both qualitative and quantitative information.
 - Step 4. Identify indicators of (a) health status, (b) major determinants of health status apart from health care, and (c) healthcare (financing, resource allocation, utilization, and quality) that are particularly suitable for assessing gaps between more and less-advantaged social groups.
 - Step 5. Describe current patterns of avoidable social inequalities in health and its determinants.
 - Step 6. Describe trends in those patterns over time.
 - Step 7. Generate an inclusive and public process of considering the policy implications of the patterns and trends. Include all the appropriate participants in this process (e.g. all relevant sectors, civil society, NGOs).
 - Step 8. Develop and set in motion a strategic plan for implementation, monitoring, and research, considering political and technical obstacles, and including the full range of appropriate stakeholders in the planning process.
- Repeat the entire process from the beginning, incorporating new knowledge and awareness.

obtain information must be placed within the context of an overall strategy for achieving social change that is cognizant of the forces and key actors. Policy-makers must be influenced, and this often requires not only trying to convince leaders but also mobilizing grassroots groups to create and maintain pressure on politicians. In this respect, participatory research techniques may be particularly valuable not only in generating otherwise unavailable information—e.g. about community perceptions of unmet health or healthcare needs—but also by making grassroots groups feel a stake in action to address the problems; thus, they may be more likely to maintain pressure on leaders as long as necessary. Another key issue illustrated by the figure is that monitoring equity is an ongoing, cyclical process that links advocacy and action for change with gathering and analysis of information.

The South Africa-based Global Equity Gauge Alliance (GEGA) deserves special mention here because it illustrates well an approach to monitoring health equity within the context of an overall strategy for influencing policy and programmes (22). The GEGA, funded by the Rockefeller Foundation and the Swedish government's international cooperation agency, is a network of 11 efforts in 10 countries spread across Africa, Asia, and Latin America. Each of the 11 country-based efforts focuses on different issues in health equity. However, the 11 efforts are linked by a common fundamental approach, which emphasizes coordinated action in three areas—assessment and monitoring, advocacy, and community empowerment. Assessment and monitoring includes not only collecting quantitative information, but also making qualitative assessments of the political context in which moves towards greater equity must be made. Advocacy refers to influencing policy-makers and working with civil society groups that influence policy-makers. Community empowerment means working with grassroots organizations to involve them in identifying equity issues that need to be addressed, and ways to address these issues, and in putting pressure on decision-makers to ensure implementation. Although in its infancy, the GEGA already in some countries has had promising results, that reflect well on the underlying strategy (22).

Technical concerns

On a technical level, the complexity of collecting, analyzing, presenting, and interpreting the information must be considered in designing any monitoring system, taking into account the experience and skills of the local

personnel who perform these functions. A theoretically ideal approach will not be practical for monitoring if it cannot be sustained over time by those who must implement it. This concern applies everywhere, but is a particularly severe constraint in resource-poor countries, where trained technical people may be scarce. Resource-poor countries also face constraints relating to infrastructure for collection of information, including costs of both initial purchase and ongoing maintenance of requisite equipment and technology. Despite these constraints, it is possible virtually everywhere, even in the poorest country with the least resources, to do much more with existing data and resources than is currently being done. A 1998 publication of WHO, available online, provides practical suggestions regarding data sources and indicators for monitoring health equity, geared particularly to the needs of researchers in resource-poor countries (19). The publication suggests, for example, using existing data sources, such as the Demographic and Health Surveys and Living Standards Measurements Study, which are conducted in many lower-income countries. These surveys can be used for assessing trends over time in a range of indicators of equity in maternal and child health and healthcare. Other relatively simple techniques, such as exit interviews at health facilities, also can be used for documenting inequities in healthcare delivery. Although some Equity Gauges have been in place only a year or so, the Equity Gauge experience (see above) should soon provide rich and creative examples of approaches to monitoring health equity in resource-poor settings, including strategies to modify the existing surveys.

Research questions to monitor health equity

To monitor equity in health and healthcare, three basic sets of research questions must be addressed. First, how do levels of health vary across different social groups? Second, how do levels of key determinants of health vary across social groups? And third, how have both levels of health and health determinants in different social groups and gaps between the groups changed over time?

The monitoring system must describe and compare the levels of health status experienced by groups with differing degrees of social advantage. To assess inequities in health and healthcare, one needs to know both (a) actual *absolute* values of a given health status measure for each group (e.g. the number of infant deaths per 1,000 livebirths in each of four groups categorized by years of maternal education), and (b) *relative* distribution of those values across groups (e.g. noting that the infant mortality

rate among births to women without any schooling is three times that for women with secondary education or more, or that 90 more infant deaths per 1,000 livebirths occur among those without schooling compared to those with secondary schooling or more). Considering both absolute levels and relative disparities is essential because the significance of a large relative gap between groups can vary depending on how the absolute measures for different groups compare with some minimum level considered to be 'good'; for example, an equivalent relative gap will be of greater concern when the level of health of one group is below that minimum standard. It is important to monitor the levels of health across a range of better- and worse-off groups, and not only in the disadvantaged groups; levels observed for the most advantaged group can be used for indicating what should be possible for everyone.

In addition to assessing health status, it is also essential to evaluate how the key determinants of health are distributed—again, in both absolute and relative terms—across social groups. Monitoring the social determinants of health and health status itself are essential for suggesting general types of factors that should be considered to address inequitable differences. While, in most cases, interventions addressing those factors will require action beyond healthcare, the health sector should assume ongoing responsibility for promoting awareness of the potential health effects of policies in other sectors. At the same time, while the long-range goal should be an equitable distribution of the underlying determinants of health, monitoring health determinants also may highlight cases where health services are needed on at least a temporary basis to buffer the health-damaging effects of conditions, such as poverty, poor housing, and poor nutritional status.

The final set of basic questions focuses on changes over time: How are the absolute levels of health and health determinants changing for different social groups over time? How is the magnitude of the social disparities in both health and its major determinants changing over time? If gaps are diminishing, is the progress sufficiently rapid? Questions regarding changes over time are fundamental for monitoring social inequalities in health; without this information, one cannot evaluate whether policies are on track with respect to the goal of equity. Information on change over time in absolute levels of health and determinants of health is essential, as is information on the change in relative gaps; for example, a gap in life expectancy that is large but diminishing

rapidly over time conveys different information than one that is smaller in absolute terms but increasing or stagnating. Findings from monitoring are generally not sufficient for rigorous evaluation of the impacts of particular policies. However, a monitoring system should indicate whether greater equity in health and healthcare is being achieved through the combined effects of all relevant policies and conditions; it should also serve as a 'warning light' when progress is not being made. The monitoring system should be able to set in motion a process of inquiry about specific problems, rather than provide specific answers itself.

Identifying the social groups

The identification of appropriate social groups to be compared deserves as much attention as the selection of relevant indicators of health and appropriate analytic methods. As discussed earlier, assessing equity requires making comparisons between social groups with different levels of social advantage. Virtually in every society, social advantage—and corresponding position in social hierarchies—varies according to socioeconomic, racial/ethnic, gender, age, and geographic differences. Other dimensions—for example, discrimination based on political affiliation, sexual orientation, or physical or mental disability—are often important as well. In each setting, one should ask: What are the key social groupings in this setting that define underlying social position and privilege? On a practical level, the social factors selected to categorize groups should be relevant for the purposes of targeting policy and programmes. The selected factors should reflect identifiable subgroups of the population, e.g. impoverished persons, unemployed persons, people residing in poor neighbourhoods, members of an ethnic minority, poor rural women, that require particular attention because their underlying social characteristics give them less opportunity to be healthy than their more advantaged counterparts. Less opportunity to be healthy means that they are likely to face greater health risks and/or more obstacles to reducing their health risks without help. Socioeconomic status/position is often measured using household income (or expenditure), education, or characteristics of occupation; sometimes measures of total wealth (home ownership; the size, construction materials, or other characteristics of one's dwelling; or the extent of land-holdings or the number of farm animals or trees) are used. In many resource-poor countries, information on income or even expenditure is not practical because of predominantly barter or subsistence economies; use of measures of

accumulated wealth is particularly important in such settings. Ideally, multiple dimensions of socioeconomic status—income/expenditure, accumulated wealth, education, occupation—should be assessed; while this may not always be possible, it is important to be aware that only a partial image is captured without multiple measures.

Having decided on *a priori* basis which social groups are of greatest concern, one also must decide how to specify these groups using accessible data sources. For example, assuming that there are concerns about health inequities between socioeconomic groups (a safe assumption anywhere), how should people be categorized into subgroups according to different levels of socioeconomic advantage? Are two subgroups (poor and non-poor) sufficient in a given setting, or are at least five or more subgroups (e.g. quintiles or deciles according to income or total wealth; or six different groups defined by educational attainment) needed to capture the range of meaningful differences? The most theoretically-desirable approach is often limited by the groups defined in accessible data sources (which may only describe a few subgroups by one or two social characteristics) and/or by the numbers of people in the subgroups to be monitored; comparisons between subgroups will be unreliable without sufficient numbers. Often, proxies must be used because the most appropriate characteristics are not measured.

Adequate measurement can present a serious challenge in research on social inequalities in health, particularly in resource-poor countries and particularly when the goal is monitoring, which unlike a one-time research effort requires that data be routinely available on an ongoing basis. In most resource-poor countries, very few information sources are population-based (i.e. truly represent the entire population, including disadvantaged groups) and provide adequate information on both health and socioeconomic factors. In many low-income countries, vital records do not include socioeconomic information. Furthermore, registration of births and deaths is often incomplete and biased, reflecting substantial under-reporting of births and deaths among disadvantaged groups. Information on cause of death is unreliable, particularly for disadvantaged groups in poorer countries. As noted above, most household surveys focused on health include limited socioeconomic information, and those focused on socioeconomic conditions include little health-related information. Researchers are increasingly making use of the existing surveys, however (23), and efforts are being launched

both to add information to the existing surveys and to develop new surveys (22). Researchers in South Africa have done creative work using census data to characterize socioeconomic features of small geographic areas, and showing how this could be used for guiding allocation of healthcare resources in a more equitable manner (24).

Indicators of health and its determinants

Selecting the indicators of health and health determinants also is fundamental for specifying the research questions in concrete terms. As with any research effort, standard scientific, technical and ethical criteria must be met, including validity and reliability, ethical acceptability of the measurements necessary to obtain the relevant information, and adequate numbers of occurrences (incidence or prevalence) to reliably assess differences between groups. In addition, the indicators must be included in data sources that can be expected to be accessible over time and across the social groups of interest; information on the health measure must be disaggregated at the appropriate level (individual, household, neighbourhood, municipality, province) for the questions being asked. Moreover, because the expressed purpose is to monitor equity, differences in the indicators between groups with different degrees of social advantage should reflect gaps in conditions of public-health importance that put already disadvantaged groups at further disadvantage with respect to health. Addressing these gaps could require policy changes in any sector that influences health, not just healthcare.

Based on the definitions stated earlier, monitoring health equity requires using indicators to reflect not only health status itself, but also major determinants of health, such as economic resources. Given the weight of evidence demonstrating the strength and pervasiveness of the relationship between economic resources and health (1-4,23,25-38), few would question the role of absolute poverty/material deprivation in ill health; in addition, there is growing evidence of associations between relative economic inequalities and health, although there are debates about the mechanisms (39-53). Wealth is, of course, not the only powerful social determinant of health. Education, status of women, supply of clean water, sanitation, food security, housing, and healthcare are examples of other social determinants of health that would be important to monitor in most settings. Healthcare can be considered a social determinant in so far as social policies influence it in important ways. All aspects of healthcare should be considered: the use of

health services, their quality, the burden of payment for health services, and how public resources are allocated to different social groups for healthcare. In investigating equity in healthcare, data obtained from healthcare facilities alone will generally not be acceptable, because they do not cover the groups who do not use health services or who use them less than more advantaged groups.

Often, a significant improvement in capacity to monitor health equity can be made by introducing modest modifications into the existing data sources. Many countries, including lower-income countries, have population-based national household surveys characterizing either living conditions or health. The introduction of one or two socioeconomic measures(s) in such health surveys and addition of health measures in economic surveys, can make these sources powerful resources for monitoring equity. Researchers in Thailand, including participants in a Thai-based Equity Gauge (see above), recently succeeded in working with government agencies to add socioeconomic information to the major national health survey. An Equity Gauge in Chile recently convinced policy-makers to make major modifications in CASEN, an existing population-based survey, to make it more useful for monitoring health equity (22). The addition of socioeconomic information (e.g. education and occupation, which tend to be less sensitive and less difficult to measure than income or wealth) to vital records would be another major improvement worth striving to attain. One product of the earlier-mentioned effort to develop ways of monitoring social inequalities in health in San Francisco was statewide legislation to add information on insurance coverage for maternity care to the California birth certificate; this additional information has been useful for identifying socioeconomic groups (i.e. those without health insurance) who should receive focused attention at policy and programmatic levels.

Estimating the disparities

Some key issues regarding estimating the magnitude of health disparities were discussed above, including the importance of selecting (a) appropriate social groups to be compared and appropriate ways of categorizing the groups and (b) data sources that permit the most conceptually and empirically-sound approaches. In addition, researchers who wish to monitor health equity must measure the size of the gaps between the different social groups. Many approaches can be taken to estimate the size of social inequalities in health and its determinants. One can compare the groups at the

extremes—the most and the least advantaged groups—in absolute terms, by calculating the difference in rates of the relevant health indicators between the two groups, and in relative terms, by calculating a ratio of the rates in the two groups. Both absolute and relative differences can be informative. Whenever possible, levels in the most advantaged social group, rather than an average for the whole population or an average for the non-poor population, should be used for comparison; as noted earlier, the levels of health enjoyed by the most advantaged social group reflect what is possible for all groups. However, in some resource-poor settings, information may be available on the poor (e.g. urban poor living in shanty towns) and on the population average (e.g. average for a city), but it may be too difficult or expensive to obtain information specifically on the health of the most advantaged group. In such circumstances, comparing the poor/disadvantaged with the population average may be worthwhile to make a crucial point, but one needs to keep in mind that such comparisons will underestimate inequity.

The examples so far have involved only comparing groups at the extremes, e.g. the poorest and the richest; the least educated and the most educated. When only groups at the extremes are compared, however, important information about the remaining groups is lost. To address this problem and to reflect both absolute level and relative level of the selected health indicators, a number of composite indices of health equity have been developed, including the concentration index/curve (54), the relative/slope indices of inequality (55-56), and the population attributable risk (57). Mackenbach and Kunst summarize the advantages and disadvantages of these indices (57). Pamuk illustrates the use of the relative and slope indices of inequality which she developed (55,56); Wagstaff *et al.* provide another useful reference on 'summary', i.e. composite, measures of the size of disparities (54). We believe that the composite indices are the most useful tools for researchers to verify that conclusions based on simpler measures hold up when a fuller range of information is considered. These composite indices are generally less suited for presenting results to policy-makers or other non-technical audiences, who are unlikely to find such measures intuitively meaningful. However, the risk attributable to population expressed in simple terms as the reduction in ill health in a population that could be achieved if all social groups experienced the level observed in the most advantaged group, can be useful for presenting information on equity to policy-makers. The essential information that must

always be presented, however, comes from simple measures—the absolute levels of a health indicator in different social groups, and the relative disparities between the groups (as a rate ratio and/or a rate difference). Composite measures can be useful supplements to such basic information but can never replace it.

Interpretation and application of findings

Finally, because the goal of monitoring is to provide information to keep policies and programmes on course in moving towards greater health equity, an effective monitoring system should include the additional steps required to disseminate findings to policy-makers, programme managers, public advocacy groups, and organizations representing stakeholders who will use the information to achieve greater equity. Ideally, a range of stakeholders would be involved, not only in interpreting the findings from monitoring but also in defining the questions to be asked by the monitoring system; when involved in framing the questions, key social actors are more likely to be actively invested in addressing the issues revealed by the findings. Appropriate stakeholders should be determined using 'political mapping,' a careful process of evaluating who currently has and could have power to influence the issues under consideration. Because factors outside the direct control of the health sector are crucial in determining health equity, representatives of sectors outside healthcare should be involved on a routine, ongoing basis. While it is not the role of the health sector to specify the interventions needed by other sectors, an essential health-sector function should be to stimulate action in any sector that impacts health.

CONCLUSION

This paper presents a conceptual framework to guide the development of approaches to monitoring equity in health and healthcare. While not sufficient for effective action to achieve greater equity in health, information can play an important role. Moving towards greater equity requires selective attention to the needs of disenfranchised groups, and more powerful groups are likely to resist such efforts. To meet this resistance, information on health equity must be scientifically sound and technical strategies for monitoring equity must be placed in the context of a broader strategy to address formidable political obstacles. Efforts to obtain, analyze, and disseminate information on equity must consider where, how, and who to involve to intervene most effectively against the tide of prevailing forces. On an

encouraging note, while striving for greater equity in health involves facing tremendous challenges, the challenges are likely to be fewer than if the focus were on equity in wealth, since most societies exhibit far less tolerance for disparities in health than in wealth (58).

The technical challenges encountered in trying to monitor health equity can be daunting, particularly given a dearth of existing data sources that are population-based and include adequate information on both social groups and health indicators that are most relevant in a given setting. While better data and methods are needed to monitor equity, in virtually every country in the world—even the poorest nation with the most limited data—far more can be accomplished with the existing data and simple methods, given conceptual clarity about what we want to monitor and why. Monitoring health equity is a scientific endeavour, but its fundamental objective is guided by values—the ethical principle of distributive justice, and concerns of human rights, including non-discrimination and the right to health.

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