

Annotated bibliography

Annotated Bibliography on Equity in Health, 1980-2001

James A Macinko* and Barbara Starfield

Address: Johns Hopkins Bloomberg School of Public Health, 624 North Broadway, Baltimore, MD 21205, USA

E-mail: James A Macinko* - jmacinko@jhsph.edu; Barbara Starfield - bstarfie@jhsph.edu

*Corresponding author

Published: 22 April 2002

Received: 18 April 2002

International Journal for Equity in Health 2002, 1:1

Accepted: 22 April 2002

This article is available from: <http://www.equityhealthj.com/content/1/1/1>

© 2002 Macinko and Starfield; licensee BioMed Central Ltd. Verbatim copying and redistribution of this article are permitted in any medium for any purpose, provided this notice is preserved along with the article's original URL.

Abstract

The purposes of this bibliography are to present an overview of the published literature on equity in health and to summarize key articles relevant to the mission of the International Society for Equity in Health (ISEqH). The intent is to show the directions being taken in health equity research including theories, methods, and interventions to understand the genesis of inequities and their remediation. Therefore, the bibliography includes articles from the health equity literature that focus on mechanisms by which inequities in health arise and approaches to reducing them where and when they exist.

Introduction and Methods

The purposes of this bibliography are to present an overview of the published literature on equity in health and to summarize key articles relevant to the mission of the International Society for Equity in Health (ISEqH). Equity, as defined by the ISEqH, is: "the absence of potentially remediable, systematic differences in one or more aspects of health across socially, economically, demographically, or geographically defined population groups or subgroups." [1]

The intent is to show the directions being taken in health equity research including theories, methods, and interventions to understand the genesis of inequities and their remediation. Therefore, the bibliography includes articles from the health equity literature that focus on mechanisms by which systematic differences arise and approaches to reducing them where and when they exist. Because the International Society for Equity in Health is collaborating with SEIH (Socioeconomic Inequalities in Health) group in the Netherlands to make available an indexed bibliography on the literature of social disparities and so-

cial variations in health, many of these articles are not included in this review.

This bibliography is the result of a literature search on the National Library of Medicine's PubMed database [<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>] conducted in Summer 2001. As a first step, the search was limited to English-language articles from any year, published in peer-reviewed journals, and containing the terms "equity" or "inequity" in their titles. The first search yielded 672 references. Deleting duplicates and incomplete references, and inspecting titles for relevance left a total of 414 articles eligible for inclusion in the review. The list of eligible articles was further reduced by soliciting suggestions from several well-known researchers in the area of health equity.

To a considerable extent, the final choice of articles included was dictated by a decision to provide examples of different approaches to studying health equity rather than identifying an exhaustive list of equity-related articles in each sub-section. Articles were chosen that provide in-

sights into a) definitions and concepts, b) indicators and methods, c) pathways or elucidation of influences, d) policy analyses, and e) evaluations of policy change or interventions intended to enhance health equity.

Within each section, articles are ordered chronologically, with the most recent articles first. Articles from the same year are ordered alphabetically by first author. Summaries were prepared with the interests of the ISEqH membership in mind. If the article's published abstract was sufficiently detailed, the abstract was only slightly modified. A short section of books and government or international organization publications is included for reference purposes.

The authors welcome suggestions on additional articles to be included in subsequent editions of this work. Please direct comments to Dr. Barbara Starfield at [bstarfie@jh-sph.edu].

Executive Summary

Equity in health has been conceptualized and defined in several ways, as its principles derive from the fields of philosophy, ethics, economics, medicine, public health, and others. Common to most definitions of health equity is the idea that certain health differences (most often called inequalities in health) are unfair or unjust. The subset of health inequalities that are judged unjust or unfair constitute health inequities. Although the difference between these two terms is acknowledged in much of the literature reviewed here, many authors are inconsistent in their use of terminology. Two main forms of health equity are identified, vertical equity (preferential treatment for those with greater health needs), and horizontal equity (equal treatment for equivalent needs). By and large, the published literature focuses on horizontal equity.

The fundamental concern about fairness raises another question-how is fairness to be assessed? Whitehead [2] proposes that criteria for assessing which health inequalities are unfair should include whether they are due to inherent biological variation, due to informed individual choices, or are potentially avoidable. Starfield [3] adds that health inequities must be potentially remediable and affect the health status of groups in a systematic way. Others, such as Andersson and Lyttkens 1999 [4], Williams 1997 [5], and Lindholm, et al 1998 [6] try to quantify the concept of fairness, by measuring societal preferences for health equity. Each author finds that societies tend to value health equity, but the magnitude of this value is dependent on both the population interviewed and the characteristics of the group suffering health inequalities. That is, there is no way to assess 'fairness' without imposing some value judgment. For this reason, the ISEqH defines equity as "the absence of systematic and potentially

remediable differences in one or more aspect of health across populations of population subgroups defined socially, economically, demographically, or geographically." [1]

Another contemporary debate on the meaning of health equity concerns whether health equity should be measured at the individual or the group level. The *World Health Report 2000* [7] and its background papers [8,9] present an individually-based rather than a group-based approach to measuring health inequalities. Other researchers [10,11] argue that such an approach can measure health inequalities only. Because individually-based measures only capture the health status of individuals without regard to other characteristics, they do not provide the information necessary to determine whether or not such inequalities are inequitable [12].

In attempting to measure health equity, relatively few articles in the published literature focus on equity in health outcomes or health status. This review deliberately includes several such articles [13–19].

In terms of methodology, the extent of health status inequalities appears to be sensitive to the type of health measure used (see Turrell and Mathers 2001 [13]) and the way in which groups are defined (see Kunst, et al 1998 [14]; Manor, et al 1997 [15]). For the most part, the literature does not assess whether or not these inequalities are unfair or unjust.

The majority of the published literature on equity in health focuses on access, utilization and financing of health services (see Van Doorslaer, et al 2000 [20]; Waters 2000 [21]) sometimes confusing this with equity in health (see Musgrove 1986 [22]). The extent of inequities in access and use of health services appears to be sensitive to measurement issues as well, including 1) whether or not access is adjusted for different health needs and 2) the type of medical care being studied (e.g. primary versus specialist versus hospital care).

In order to explain the global preponderance of health inequities, many authors have attempted to elucidate the pathways by which inequities in health come to be and are perpetuated. One of the most prevalent theories concerns the role of socioeconomic status, measured by education [16], occupation [18], and/or income [13]. Other explanations involve social discrimination based on gender [16,23,24] or race/ethnicity [17,25]. Proposed pathways include the environment in which people live, such as their living conditions and the distribution of income in their country or state [26–28]. Still other hypothesized pathways involve the political and policy context, including the extent of primary care [29], the geographic distri-

bution and mix of health services [30–33], the fairness of health financing [34,35], social policies [18,19,36] and political, social, and economic relationships [37,38]. Several articles point to the importance of complex pathways potentially acting in concert to exacerbate or propagate health inequities, and probably differing in the relative strength of their components within different populations (See Whitehead, et al 2001 [19]; Kawachi, et al 1999 [23]; Sacker, et al 2001 [18]; Shi and Starfield 2000 [29]).

The literature contains a number of policy and program evaluations intended to assess the varied responses of communities and nations to health inequities. Three main types of approaches have been identified, 1) increasing or improving the provision of health services to those in greatest need [39,40], 2) restructuring health financing mechanisms to aid the disadvantaged [41–43], and 3) altering broader social and economic structures intended to influence more distal determinants of health inequities. Few articles in the health literature address the latter approach.

In attempting to assess what works in reducing health inequities, there is a tension between absolute and relative definitions of the concept, i.e. whether success is to be measured only by the size of the reduction in the gap between the better- and worse-off groups, or to improvements in the worst-off group relative to where they started before the intervention. For example, how successful is a program that decreases injuries among the poor by 50 percent, but decreases them for the rich by 75 percent? The absolute conditions are better for both groups, but the health inequity gap has actually increased. Several authors have pointed out this tension and its implications for policy and program evaluation (see Gilson, et al 2000 [41]; Yip and Berman 2001 [40]).

Although research on various aspects of health equity has been part of the published literature for more than three decades, this review suggests that the field is only recently moving forward with greater speed. Most of the more recent articles are clearer in concept and more sophisticated in methods than was the case for earlier studies. The International Society for Equity in Health is devoted to encouraging enhancements in the state of knowledge through well conceived and well conducted research, the findings of which can then be applied to develop and implement better policies and programs to improve equity both across and within countries.

Definitions and Concepts

This section focuses on defining equity and illustrating key concepts of equity in health.

Starfield, B. (2001). Improving equity in health: A research agenda. *International Journal of Health Services* 31(3):545–66.

This article proposes elements of a research agenda on equity in health [3]. The agenda includes a definition of equity in health, "the absence of systematic [and potentially remediable] differences in one or more aspects of health status across socially, demographically, or geographically defined populations or population subgroups." Equity in health services "implies that there are no differences in health services where health needs are equal (horizontal equity) or that enhanced health services are provided where greater health needs are present (vertical equity)." Other elements of a research agenda include the development of a conceptual framework for the determinants of health and its distribution within society, clearly defined variables, elucidation of pathways by which different influences operate to produce health, and analyses specific to different population subgroups. The author suggests that the role of primary care and political influences have been under-investigated in prior studies of equity in health.

The following articles relate to the efforts of the World Health Organization to define and measure health equity. Several articles (Gakidou, et al, 2000 [8]; Murray et al, 1999 [44]) were used as background to the WHO *World Health Report 2000* [7], while others (Almeida et al, 2001 [10]) were written as critiques of the *Report*.

Almeida, C., Braveman, P., Gold, M., Szwarcwald, C., Ribeiro, S., Miglionico, A., Millar, J., Porto, S., Costa, N., Rubio, V., Segall, M., Starfield, B., Travessos, C., Uga, A., Valente, J., and F. Viacava (2001). Methodological concerns and recommendations on policy consequences of the World Health Report 2000. *Lancet* 357 (9269): 1692–7.

The authors present a critique of the WHO *World Health Report 2000* [10]. A main concern is that individual-based measures of health inequalities used in the report a) do not actually address differences across population subgroups, b) may not be valid as they are not correlated with other published measures, c) are of limited policy use because they do not inform decision makers about comparisons between more and less disadvantaged population subgroups, and d) in terms of health financing, do not reflect "a conceptually sound or socially responsible view of fairness". Other concerns are 1) the report's conclusions were not based on adequate data, 2) that important methodological limitations were not acknowledged, and that 3) multicomponent indices were based on questionable assumptions and are not deemed useful in guiding policy. The authors suggest means of improving future health sys-

tem assessments such as incorporating better peer and external scientific review into the report's analyses.

Gakidou, E., C. Murray and J. Frenk (2000) Defining and measuring health inequality: an approach based on the distribution of health expectancy. *Bulletin of the World Health Organization* 78 (1): 42–54.

This article stems from a previous work by the same authors [44]. The authors propose measuring health inequality as "differences in health across individuals in the population" [8]. The approach assumes that "we should be concerned with inequality in health, whether or not it is correlated with inequality in other dimensions of well-being". The measure proposed is individual health expectancy—a measure that combines an individual's risks of being in a state of less than perfect health across his or her lifespan and reflects the expected number of years an individual can be expected to live in full health. The authors suggest two types of health inequality measures: 1) the differences between the individual and the mean of the population; and 2) inter-individual differences. Formulae for and illustrations of each measure are discussed.

Braveman, P., N. Krieger and J. Lynch (2000). Health inequalities and social inequalities in health. *Bulletin of the World Health Organization* 78 (2): 232–233.

The authors argue that the approach to measuring inequalities in health advocated by Gakidou, Murray and Frenk (2000) [8], which seeks to "categorize individuals only according to their health, without reference to other characteristics" 1) ignores important social determinants of health inequalities; 2) may prevent social inequalities in health from occupying an important place on the global research and policy agenda; 3) ignores ethical considerations at the population level that would favor guiding resources to those with both poorer health and lower social position; and 4) may undermine current global efforts aimed at the study of the social determinants of health [11].

Murray, C., E. Gakidou, and J. Frenk (2000). Response to P. Braveman et al. *Bulletin of the World Health Organization* 78 (2): 234–235.

The authors reply to Braveman, Krieger and Lynch [11] arguing that their own approach to measuring health inequalities aims to measure the distribution of health expectancy across populations and that this approach is a necessary prerequisite for investigating the causes and solutions to health inequalities [9]. They state: "if health inequality is measured only through social group differences, such as in education, health inequality that is not correlated to the social variable chosen will simply not

be measured." The authors also emphasize that the study of health inequalities will remain on the WHO agenda.

For an alternative, practice-oriented approach to measuring equity in health, see Braveman (1998) [45].

Andersson, F. and C. H. Lyttkens (1999). Preferences for equity in health behind a veil of ignorance. *Health Economics* 8(5): 369–78.

The authors model individual attitudes to distributions of life years between two groups in a society [4]. Subjects are asked to place themselves behind a "veil of ignorance" which is specified in terms of uncertainty about the various states of affairs in each society. Individuals were asked to choose between two scenarios with differing life expectancies for different population groups in each case. The authors found that individuals prefer societies with more equal distributions of health. However, an individual's propensity to prefer a society with improved life expectancy for the worst off is mitigated by the cost of reducing life expectancy for the better off. This finding contradicts Rawl's prediction that when placed behind a veil of ignorance, people would always prefer to improve the situation of the worst-off in society.

Mooney, G. and S. Jan (1997). Vertical equity: weighting outcomes or establishing procedures? *Health Policy* 39(1): 79–87.

Considerations of equity in the health policy literature have mainly focused on horizontal equity (the equal treatment of equals) and as a consequence have tended to overlook vertical equity (the unequal, but fair treatment of unequals) [46]. This paper examines some possibilities for incorporating vertical equity into health care policy through distributive and/or procedural justice. Distributive justice would focus on the distribution of health outcomes across individuals and groups within society. Difficulties with a purely distributive justice orientation to vertical health equity include the possibility that it would advocate "health equality" – that everyone should have the same health status or outcomes regardless of genetic, environmental, or behavioral differences. Procedural justice approaches emphasize fairness with respect to processes (such as access and financing) rather than outcomes. While no firm solutions are offered, the article introduces the concept of "health-fairness" – that individual preferences for health will be different, thus allowing for differential weighing of health status in a distributional justice system – and the idea of "claims" – that because individuals may not perceive that their health is at risk, the strength of society's obligation to an individual may be set by that society independent of the direct harm that individual may or may not perceive. This approach may pro-

vide a basis for establishing a means of weighing procedural justice approaches to health equity.

Williams, A. (1997). Intergenerational equity: an exploration of the 'fair innings' argument. *Health Economics* 6(2): 117–32.

Different equity principles may need to be traded off against efficiency when prioritizing health care [5]. This paper explores one of them: the concept of a 'fair innings'. It reflects the idea that everyone is entitled to some 'normal' span of health (usually expressed in life years). Four important characteristics of the 'fair innings' notion are worth noting: first, it is outcome based, not process-based or resource-based and thus draws on the distributive justice approach to equity; second, it is about a person's whole life-time experience, not about their state at any particular point in time; third, it reflects an aversion to inequality in that it is considered unfair that some will die before the expected span; and fourth, it is quantifiable. Even in common parlance it is usually expressed in numerical terms: death at 25 is viewed very differently from death at 85. But age at death should be no more than a first approximation, because the quality of a person's life is important as well as its length. The analysis suggests that the notion of intergenerational equity requires greater discrimination against the elderly than would be dictated simply by efficiency objectives.

Whitehead, M. (1992). The concepts and principles of equity and health. *International Journal of Health Services* 22(3): 429–45.

This article explores the concepts and principles of equity as understood in the context of the World Health Organization's Health for All policy [2]. The WHO defined inequity as "differences [in health status], which are unnecessary and avoidable, but in addition, are considered unfair and unjust." Of the determinants of health differentials between population groups or individuals, those related to biological variation and freely chosen health-damaging behavior are not likely to be considered inequitable because they are either unavoidable or "fair". These differences are referred to as "health inequalities". Differentials due to health damaging behaviors not based on informed choices, exposure to unhealthy living and working conditions, or inadequate access to health and social services are more likely to be judged avoidable and unfair and thus constitute health inequities. Equity in health "is concerned with creating equal opportunities for health, and with bringing health differentials down to the lowest levels possible." Seven principles of action for addressing global health inequities include: 1) improving living and working conditions; 2) enabling healthier lifestyles; 3) decentralizing power and decision-making and

encouraging citizen participation in policy-making; 4) conducting health impact assessments of multisectoral actions; 5) keeping equity on the global health agenda; 6) assuring that health services are of high quality and accessible to all; and 7) basing equity policies on appropriate research, monitoring and evaluation.

Indicators and methods

This section presents indicators and methods of measuring health equity.

Turrell G. and C. Mathers (2001). Socioeconomic inequalities in all-cause and specific-cause mortality in Australia: 1985–1987 and 1995–1997. *International Journal of Epidemiology* 30(2):231–9.

This study assesses trends in mortality inequality based on socioeconomic status in Australia for men and women aged 0–14, 15–24 and 25–64 years over the period 1985–1987 to 1995–1997 [13]. Socioeconomic status (SES) was operationalized using the Index of Relative Socioeconomic Disadvantage, an area-based measure developed by the Australian Bureau of Statistics. Mortality differentials were examined using age-standardized rates, and mortality inequality was assessed using rate ratios, gini coefficients, and excess mortality measures. For each period and for each sex/age subgroup, death rates were highest in the most disadvantaged areas, but the extent and nature of socioeconomic mortality inequality differed by sex and age group. If it were possible to reduce death rates among the SES areas to a level equivalent to that of the least disadvantaged area, premature all-cause mortality for men in each age group would be lower by 22%, 28% and 26% respectively, and for women, by 35%, 70% and 56%. A mixed pattern appears when examining the change in mortality inequality over the ten-year period. Among women, there was a decline in all-cause mortality inequality for each age group over the ten-year period, while cause-specific mortality inequalities increased for SIDS and traffic accidents. Among men, all-cause mortality inequalities increased over the ten-year period for age groups 0–14 and 15–24, but they decreased for those aged 25–64. For men, cause-specific mortality inequality increased for every condition except perinatal conditions and for drug dependence in those aged 10–14 and 15–24 years. The authors conclude, 1) "the mortality burden in the Australian population attributable to socioeconomic inequality is large and has profound and far-reaching implications in terms of unnecessary loss of life, loss of potentially economically productive members of society, and increased costs for the health care system"; but 2) the "simultaneous occurrence of widening, narrowing, and unchanging inequalities [over time]...is difficult to explain...on the basis of [a single] broad-ranging societal-level explanation."

Wolfson, M. and G. Rowe (2001). On measuring inequalities in health. *Bulletin of the World Health Organization* 79 (6): 553–560.

The authors present an alternative approach to measuring health inequalities, in contrast to the methods used in the *World Health Report 2000* [12]. Health inequalities can be conceived of in two different ways. The univariate or unconditional approach looks only at the health of individuals and views inequalities in health as the dispersion of health status within a population. Whereas the bivariate or conditional approach seeks to establish the distribution of health within a population, but conditional on another factor – whether those with low income also have poorer health, for example. The authors criticize the *World Health Report* approach for advocating univariate approaches, because they do not indicate the causes and social patterning of variations in health. The authors claim an even more significant weakness of the WHO approach lies in its proposed data collection strategy based on small area data. Several conceptual and methodological shortcomings limit the use of small area data, including non-random migration to or from the area, the small number of events such as deaths likely to be observed, and the likelihood that any specific geographical area may be associated with unique social, economic, or political conditions rendering it non-representative of the general population. The authors propose the use of longitudinal cohort-based data combined with micro-simulation-based life table analysis as a more fruitful analytic strategy.

Daniels, N., Bryant, J., Castano, R.A., Dantes, O.G., Khan, K.S., and S. Pannarunothai (2000). Benchmarks of fairness for health care reform: a policy tool for developing countries. *Bulletin of the World Health Organization* 78(6):740–50.

Teams of collaborators from Colombia, Mexico, Pakistan, and Thailand have adapted a policy tool originally developed for evaluating health insurance reforms in the United States into "benchmarks of fairness" for assessing health system reform proposals in developing countries [47]. The benchmarks include: intersectoral public health services and systems; financial and nonfinancial barriers to access to services; comprehensiveness and equity of benefits; equitable financing; efficacy, efficiency and quality of care; administrative efficiency; democratic accountability and empowerment; and patient and provider autonomy. Potential reforms are then evaluated by scoring (using either a "plus" or "minus" sign or a scale of -5 to 5, with zero representing the status quo) according to the degree to which they improve each criterion. The objective is "to promote discussion about fairness across the disciplinary divisions that keep policy analysts and the public from understanding how trade-offs between differ-

ent effects of reforms can affect the overall fairness of the reform." The approach makes no effort to develop a uniform fairness scale across health systems, but could be used as a complement to assessments that do rank different countries according to objective standards of fairness. A striking feature of the criteria and rating process is the wide agreement on the benchmarks among the collaborating sites, despite their large historical, political and cultural differences.

See also Caplan, Light, and Daniels (1999) [48], where the authors discuss the benchmark approach for health equity in industrialized countries.

Gissler, M., Keskimaki, I., Teperi, J., Jarvelin, M., and E. Hemminki (2000). Regional equity in childhood health – register-based follow-up of the Finnish 1987 birth cohort. *Health & Place* 6(4):329–36.

In Finland, most surveillance of equity has been performed on adults [49]. This study investigated the extent to which regional health differences among Finnish children could be measured by using population-based longitudinal administrative register data. All children born in 1987 were included in the study (N = 59,546) and followed-up until the age of seven. Outcome measures included mortality, morbidity, and use of health services. Statistically significant regional variation was found for all health indicators but diabetes. Significant variation in use of health services was also found among all regions. Only in the case of mortality could variations be explained by confounders such as maternal age and social class. The authors emphasize that all of the variations observed do not necessarily imply inequity, since variation in genetic predisposition to disease, and greater use of services by those with greater need, would not be considered inequitable. They conclude that administrative registers offer a relatively inexpensive and quick means to monitor health equity, but that further work should go into developing more sensitive indicators of childhood health and service utilization.

van Doorslaer, E., Wagstaff, A., van der Burg, H., Christiansen, T., De Graeve, D., Duchesne, I., Gerdtham, U.G., Gerfin, M., Geurts, J., Gross, L., Hakkinen, U., John, J., Klavus, J., Leu, R.E., Nolan, B., O'Donnell, O., Propper, C., Puffer, F., Schellhorn, M., Sundberg, G., and O. Winkelhake (2000). Equity in the delivery of health care in Europe and the US. *Journal of Health Economics* 19(5):553–83.

This paper presents a comparison of horizontal equity in health care utilization in 10 European countries and the US [20]. It extends previous work by using more recent data from a larger set of countries, uses new methods and

presents disaggregated results by various types of care. Horizontal equity is defined as "equal treatment for equal need". Health is measured by self-report and chronic ill-health. A concentration index measuring horizontal equity is constructed by "comparing each income group's share of need [for medical care] with its share of medical care [obtained]." Need is defined as "health care utilization that an individual on average is expected to receive given her age, gender, and various measures of self-reported health." In all countries, the lower-income groups are more intensive users of the general practitioner (GP) and the hospital. But after adjusting for increased medical need among the lower income groups, the authors find no overall indication of inequity. However, aggregate utilization masks important differences in the various components of medical care. In most of the countries studied, pro-rich inequity exists for physician contacts, because the rich have a higher than expected rate of use of specialist services compared to their health needs. The distribution of GP care across income groups is close to what is expected, although two countries (Belgium and Ireland) show greater than expected use of GPs by the poor – possibly because these countries exempt the poor from co-payments for GP visits. Hospital utilization is higher than expected among the poor, but due to imprecision in the estimates, this finding does not appear to be robust. The authors find no single health system feature (except that of co-payments for GP visits already discussed) to explain variations in equity among different health systems. They conclude, "in the late 1980s and early 1990s, the health care systems of [the countries studied] appeared to perform reasonably well on the horizontal equity criterion as applied in our methods."

Waters, H. R. (2000). Measuring equity in access to health care. *Social Science and Medicine* 51(4): 599–612.

The author proposes several methods to measure equity in access to health services and applies these measures in his analysis of the Ecuadorian General Health Insurance (GHI) program [21]. Equity in access measures include: 1) two egalitarian-based indicators for measuring equity in access to health care – a concentration coefficient derived from the Gini coefficient, and the Atkinson distributional measure; and 2) a weighted Utilitarian social welfare function to measure overall levels of access." The author discusses the derivation, calculation and interpretation of each equity measure in detail. The study found that Ecuador's "GHI program increases overall access to health care, but has a negative impact on equity in the distribution of health services". Potential policy options such as "expanding eligibility to the self-employed makes the benefit more equitably distributed (but still inequitable), and increases overall social welfare considerably. Expanding eli-

gibility to the dependents of the insured person has similar effects."

Kinman, E. L. (1999). Evaluating health service equity at a primary care clinic in Chilimarca, Bolivia. *Social Science and Medicine* 49 (5): 663–78.

This paper links equity with a temporal and spatial analysis of clinic users, supplemented by a community survey [33]. Utilization of the primary care clinic in Chilimarca, Bolivia varied considerably during the first 25 months of operation. Spatially, utilization shifted away from the targeted service area. Within the targeted service area, usage was concentrated in a few blocks of the community and generally diminished with increasing distance from the clinic. The community survey revealed that place of origin, length of residence, and language spoken at home differentiated clinic users from non-users. Failure to include the spatial dimension of utilization would lead to different access and equity conclusions if data had not been decomposed by area. For example, over the period of the study, patients from the core catchment area declined by as much as 90 percent, to be replaced by clients from other areas. This resulted in changes in the average patient socio-demographic characteristics. The author concludes, "spatial analysis of output measures is imperfect and does not necessarily deal with all of the access issues related to acceptability. They do, however, begin to isolate areas of a defined geographic area where further investigation would assist in ascertaining, and subsequently addressing, potential problems related to equal access."

Lindholm, L., M. Rosen, and M. Emmelin (1998). How many lives is equity worth? A proposal for equity adjusted years of life saved. *Journal of Epidemiology and Community Health* 52(12): 808–11.

The objective of the article was to present a formula for equity adjusted years of life saved (EYLS) [6]. Swedish politicians responsible for health care in the county councils were given a scenario describing a trade-off between a health maximization program and one that is less efficient, but eliminates all social inequalities. The principle of health maximization was rejected. Under certain conditions, the Swedish politicians were prepared to sacrifice 15 out of 100 preventable deaths to achieve equity. Based on the results, a formula for EYLS was developed. Before it can be widely applied, the formula must be revised and adjusted to each country's specific conditions and values. The authors suggest that such formulas could be used to incorporate explicit considerations of equity into cost effectiveness analyses.

See also: Lindholm, Rosen, and Emmelin (1996) [50]. The authors find that at least two thirds of the Swedish

politicians interviewed were prepared to accept lower growth in per capita health improvements in exchange for increased equity.

Kunst, A.E., Groenhouf, F. and J.P. Mackenbach (1998). Mortality by occupational class among men 30–64 years in 11 European countries. *Social Science and Medicine* 46(11):1459–76.

The authors present evidence that within-country mortality differences between social classes are not necessarily smaller in European countries with more egalitarian socio-economic policies than in those with less egalitarian policies [14]. The authors compared eleven countries with respect to the magnitude of mortality differences by occupational class and paid particular attention to problems with the reliability and comparability of data available for different countries. Data problems were found to have the potential to substantially bias inequality estimates – especially those for Ireland, Spain and Portugal. In particular, problems in comparability of definitions of social class schemes, exclusion of the economically inactive men from the data sets, and discrepancies between social class definitions used on death certificates and census surveys may contribute to errors in measuring health inequalities. These differences in measurement may bias inequality estimates by up to 2 percent in England to 38 percent in Spain. When national mortality levels were considered, relatively large differences were observed for Finland and Ireland. The researchers found that the pattern of mortality differences varies from country to country and by age group, with the disparities being larger in northern countries than in southern ones (i.e. Italy, Spain, and Switzerland).

Manor, O., Matthews, S., and C. Power (1997). Comparing measures of health inequality. *Social Science and Medicine* 45:761–71.

The authors compared several methods of measuring social inequalities in health within different socioeconomic groups in Britain [15]. Health equity measures included 1) the slope or beta weight in multiple regression; 2) odds ratios; and 3) Agresti's alpha – an associational measure particularly useful for assessing health inequality when the health outcome variable is dichotomous. Each of these methods was compared using data from the British birth cohort. Inequalities in self-rated health, limited long-standing illness, psychological health, respiratory symptoms, asthma and obesity were calculated based on one of two measures of social position: class at birth and educational attainment. Results indicated that the magnitude of health inequalities did not differ significantly based on the type of health inequality measure used. However, the magnitude of health inequalities between

groups did differ when such groups were constructed using different measures of social position; greater inequalities in health were detected between socioeconomic groups when such groups were defined by level of educational attainment rather than by social class at birth. Thus, how social class is specified makes a difference in drawing inferences about the magnitude of inequalities.

Wagstaff, A. (1991). QALYs and the equity-efficiency trade-off. *Journal of Health Economics* 10(1): 21–41.

As the volume of research on quality-adjusted life years (QALYs) has increased, concern has begun to be expressed about the equity aspects of resource allocation decisions based on the results of this research [51]. This paper suggests that a common theme running through the criticisms of the QALY approach is a concern about inequality. The paper describes methods for incorporating concerns about equity and the distribution of the burdens of disease into resource allocation decisions.

Musgrove, P. (1986). Measurement of equity in health. *World Health Statistics Quarterly* 39(4): 325–35.

This article discusses several approaches to measuring equity in resource distribution using data from Peru to illustrate each technique [22]. Equity is defined as "equal treatment for all of the population" and an equitable health care system is one that assures "probabilities [of access, given health need] will be equal across population groups for a given set of health problems". The author emphasizes that equity is "too complex a concept to be reduced to a single indicator" and proceeds to demonstrate techniques for measuring inequity in: 1) the distribution of health care resources such as physicians and hospital beds per capita within different geographic regions; 2) probabilities of treatment given medical need – which is sensitive to differences in type of illness studied, age group examined, and type of treatment investigated; 3) financial measures such as differences in expenditures adjusted for health need, or as a proportion of a household's total budget; and 4) indices such as the Gini coefficient for health care expenditures and availability of medical care. The author concludes that because assessments of equity (as opposed to inequality) require judgments about what is to be considered unfair, summary indicators of overall health system inequity that do not capture the many ways in which inequity can be manifested (even within the same health system) are unlikely to inform interventions geared towards the improvement of inequities in health.

For further evidence and approaches to measuring health inequities, especially in developing countries, see the series of over 40 "Country reports on health, nutrition, population and poverty" produced by the World Bank and

available on-line at [<http://www.worldbank.org/poverty/health/data/index.htm>] . For analyses of these data, see, Gwatkin and Guillot (2000) [52] and Wagstaff (2000) [53].

Pathways

This section includes articles that propose or test models explaining the causes and consequences of inequities in health.

Sacker, A., Bartley, M., Firth, D., and R. Fitzpatrick (2001). Dimensions of social inequality in the health of women in England: occupational, material, and behavioural pathways. *Social Science and Medicine* 52: 763–81.

The authors tested a set of conceptual models to describe how three different dimensions of social position (general social advantage and lifestyle, social class based on employment relations, and material living standards) lead to health inequalities among women [18]. Results include 1) the social gradient in general self-assessed health can be partially explained by social advantage, occupation and material living standards, with the latter accounting for more of the gradient than either of the former measures; 2) risk and protective factors (job strain, diet, exercise, social support, drinking, smoking) were confirmed to be associated with poor general self-assessed health, although these factors did not fully mediate the health impact of social position; 3) each of the three dimensions of social position follows a different pathway to ill-health; 4) the same measures of social position do not apply equally well to women with different levels of labor market participation; 5) women appear to be affected by different pathways to health inequities depending on whether they are within or outside the formal labor sector.

Whitehead, M., Burstrom, B., and F. Diderichsen (2001). Social policies and the pathways to inequalities in health: a comparative analysis of lone mothers in Britain and Sweden. *Social Science and Medicine* 50: 255–70.

This study presents a conceptual framework for describing and comparing individual- and policy-level pathways leading to inequalities in health among a vulnerable population (single mothers) in Britain and Sweden [19]. The authors found that the health of this population (measured as self-reported health status or limiting illness) is generally poorer than that of the general population in both countries. The gap between average population measures of health and that of the study population was approximately the same magnitude in both countries. This is in spite of a more favorable policy environment in Sweden, which "protected lone mothers from poverty and insecurity in the labor market to a much greater degree than the equivalent British policies". Policy pathways ap-

pear to differ between the two countries. In Britain, between 42 and 58 percent of poor health among single mothers can be explained by poverty and joblessness, while in Sweden, these factors explain only 3 to 13 percent of the health gap. The authors suggest that further research is necessary to identify why the extensive set of social protections such as those in Sweden may be necessary but not sufficient to adequately address the health needs of vulnerable populations such as single mothers.

Mackenbach, J.P., A.E. Kunst, et al (1999). Socioeconomic inequalities in mortality among women and among men: an international study. *American Journal of Public Health* 89(12):1800–6.

This study compared differences in total and cause-specific mortality rates by educational level and by gender in seven countries: the United States, Finland, Norway, Italy, the Czech Republic, Hungary, and Estonia [16]. National data were obtained for the 1980s. Age-adjusted rate ratios comparing a lower-educational group with an upper-educational group were calculated with Poisson regression analysis. Total mortality rate ratios among women ranged from 1.09 in the Czech Republic to 1.31 in the United States and Estonia. Higher mortality rates among lower-educated women were found for most causes of death, but not for neoplasms. Relative inequalities in total mortality tended to be smaller among women than among men. In the United States and Western Europe, but not in Central and Eastern Europe, differences in mortality rates between the sexes were largely due to differences in causes of death. For specific causes of death, inequalities were usually larger among men, suggesting that pathways to health inequity may differ between the sexes.

Davey-Smith, G., Neaton, J.D., Wentworth, D., Stamler, R., and J. Stamler (1998). Mortality differences between black and white men in the USA: contribution of income and other risk factors among men screened for the MRFIT. MRFIT Research Group. Multiple Risk Factor Intervention Trial. *Lancet* 351(9107):934–9

This study measured the extent to which differences in socioeconomic position between black and white men screened for the Multiple Risk Factor Intervention Trial contributed to differences in all-cause and cause-specific mortality [17]. The authors found that "socioeconomic position is the major contributor to differences in death rates between black and white men." However, residual differences between blacks and whites remained even after accounting for socioeconomic status. Environmental exposures, lifetime socioeconomic conditions, lifestyle, racism, and/or other sociocultural and biological factors may contribute to this differential. Independent variables included median family income of households by zip-

code, age, cigarette smoking, blood pressure, serum cholesterol, previous heart attack, and treatment for diabetes. Age-adjusted relative risk of death (black vs white) was 1.47 (95% CI 1.42–1.53). Adjustment for risk factors such as diastolic blood pressure, serum cholesterol, cigarette smoking, medication for diabetes, and previous admission to hospital for heart attack decreased the relative risk to 1.40 (1.35–1.46). Adjustment for income (but not the other risk factors) decreased relative risk to 1.19 (1.14–1.24). Addition of other covariates did not alter this estimate. For cardiovascular death, relative risk after adjustment for income was decreased from 1.36 to 1.09; for cancer from 1.47 to 1.25; and for non-cardiovascular and non-cancer deaths from 1.71 to 1.26. For some specific causes of death, including prostate cancer, myeloma, and hypertensive heart disease, the higher death rates among black men did not seem to reflect differences in income. Rates of death for suicide and melanoma were lower among black than white men, as were those for coronary heart disease after adjustment for income. Possible differences in exposure to different types of medical care were not examined.

Income Inequality and Health Equity

There is a large and growing literature on the relationship between income distribution and health differentials. Although many of these studies do not explicitly address health equity, several key articles are included here because 1) the case can be made that inequalities in health status attributable to the distribution of income in society are inequitable because they are both systematic and potentially remediable; and 2) these studies describe one pathway through which health inequities may develop. A good selection of work in this area (including articles disputing the relationship between income inequality and health) is included in Kawachi, Kennedy, and Wilkinson (1999) [54]. See also Wilkinson (1996) [55].

Lochner, K., Pamuk, E., Makuc, D., Kennedy, B.P., and I. Kawachi (2001). State-level income inequality and individual mortality risk: a prospective, multilevel study. *American Journal of Public Health* 91(3):385–91

In this study, income inequality levels within U.S. states were found to be associated with individual mortality risk, even after adjusting for individual-level income [26]. The multilevel study design used the vital status of National Health Interview Survey (NHIS) respondents through linkage to the National Death Index, with additional linkage of state-level data to individuals in the NHIS. The analysis included data for 546,888 persons, with 19,379 deaths. State-level Gini coefficients were used as the measure of income inequality. Individuals living in high-income-inequality states were at increased risk of mortality (relative risk = 1.12; 95% CI 1.04–1.19) compared with

individuals living in low-income-inequality states. In stratified analyses, significant effects of state income inequality on mortality risk were found, primarily for near-poor Whites.

Mellor, J.M. and J. Milyo (2001). Reexamining the evidence of an ecological association between income inequality and health. *Journal of Health Politics, Policy and Law* 26 (3):487–522.

This study examines the country-level relationship between income inequality (measured by the Gini coefficient and income ratios of the bottom 20th percentile to the top 20th percentile) and aggregate health outcomes (life expectancy at birth, infant mortality) across thirty-four U.S. states over five decades, using the Gini coefficient to measure income inequality and all-cause mortality, infant mortality rates, low-weight births, homicides, suicides, and 6 different specific causes of death as dependent variables. At both the international and state-levels, the authors find that, contrary to previous literature, there is no consistent relationship between income inequality and health outcomes. The analysis controls for demographic variables including median income, educational levels, and year-specific effects. The state-level analyses also control for percentage of population that is urban, black, and college educated. In the 54 regression equations reported, income inequality was significantly associated with poorer aggregate health outcomes in only 11 cases but was significantly associated with *better* health outcomes in 15 cases.

Ross, N.A., Wolfson, M.C., Dunn, J.R., Berthelot, J.M., Kaplan, G.A., and J.W. Lynch (2000). Relation between income inequality and mortality in Canada and in the United States: cross sectional assessment using census data and vital statistics. *British Medical Journal* 320(7239):898–902

The association between income inequality (defined as the percentage of total household income received by the less well off 50% of households) and all cause mortality (grouped by and adjusted for age) was examined in 10 Canadian provinces, the 50 US states, and 53 Canadian and 282 US metropolitan areas [27]. Canadian provinces and metropolitan areas had lower income inequality and lower mortality than US states and metropolitan areas. In age-grouped regression models that combined Canadian and US metropolitan areas, income inequality was a significant explanatory variable for mortality in all age groups except the elderly. The income inequality effect was largest for working age populations, in which a hypothetical 1% increase in the share of income to the poorer half of households would reduce mortality by 21 deaths per

100,000. Using within-Canada data only, however, income inequality was not significantly associated with mortality. The authors state that "the lack of a significant association between income inequality and mortality in Canada may indicate that the effects of income inequality on health are not automatic and may be blunted by the different ways in which social and economic resources are distributed in Canada and in the United States."

Shi, L., and B. Starfield (2000). Primary care, income inequality, and self-rated health in the United States: a mixed-level analysis. *International Journal of Health Services* 30(3):541–55.

Using the 1996 Community Tracking Study household survey, the authors examined whether income inequality and primary care, measured at the state level, predict individual morbidity (measured by self-rated health status) while adjusting for potentially confounding individual variables [29]. These authors present one of the few studies including types of exposure to health services among possible variables associated with inequities in health. Results indicate that the state's distribution of income and primary care (measured by primary care physicians to 10,000 population) was significantly associated with individuals' self-rated health. The authors also report a gradient effect – the greater the income inequality, the greater likelihood that individuals would report poorer health. Primary care also exerted an independent effect – individuals living in states with a higher ratio of primary care physicians to population were more likely to report good health than those living in states with a lower such ratio. The authors recommend, "improvement in individuals' health is likely to require a multi-pronged approach that addresses individual socioeconomic determinants of health, social and economic policies that affect income distribution, and a strengthening of the primary care aspects of health services."

Kawachi, I., Kennedy, B.P., Gupta, V., and D. Prothrow-Stith (1999). Women's status and the health of women and men: a view from the States. *Social Science and Medicine* 48(1):21–32.

This cross-sectional ecologic study examines how the status of women in the 50 American states relates to both women's and men's levels of health [23]. The authors concluded that there is higher morbidity and mortality among women living in states where they have lower levels of political participation and economic autonomy. They also found higher mortality rates for men living in these states. Women's status in each state (women's political participation, economic autonomy, employment and earnings, and reproductive rights indices) was each correlated with study outcome measures (total female and

male mortality rates, female cause-specific death rates and mean days of activity limitations reported by women during the previous month). Women's political participation was correlated with lower female mortality rates ($r = -0.51$) and lower activity limitations (-0.47). A smaller wage gap between women and men was associated with lower female mortality rates (-0.30) and lower activity limitations (-0.31) (all correlations, $p < 0.05$). Indices of women's status were also strongly correlated with male mortality rates. The indices of women's status persisted in predicting female mortality and morbidity rates even after adjusting for income inequality, poverty rates and median household income. The authors suggest that gender inequality and limited economic opportunities may be one of the pathways through which the unequal distribution of income adversely affects population health.

Wolfson, M., Kaplan, G., Lynch, J., Ross, N., and E. Backlund (1999). Relation between income inequality and mortality: empirical demonstration. *British Medical Journal* 319(7215):953–5

The authors assessed the extent to which observed associations at the population level between income inequality and mortality are statistical artifacts, as suggested by Gravelle [57]. They find that "observed associations in the United States at the state level between income inequality and mortality cannot be entirely or substantially explained as statistical artifacts [58]. There remains an important association between income inequality and mortality at state level over and above anything that could be accounted for by any statistical artifact." The methods include an "indirect "what if" simulation by using observed risks of mortality at individual level as a function of income to construct hypothetical state level mortality specific for age and sex as if the statistical artifact argument were 100 percent correct". Data from the 1990 census for the 50 US states plus Washington, DC, were used for population distributions by age, sex, state, and income range; data disaggregated by age, sex, and state from the Centers for Disease Control and Prevention were used for mortality; and regressions from the national longitudinal mortality study were used for the individual level relation between income and risk of mortality.

Wilkinson, R. G. (1992). Income distribution and life expectancy. *British Medical Journal* 304, 165–168.

This article presents the argument that income inequality is negatively associated with life expectancy in western industrialized countries [28]. The study found a positive association between life expectancy at birth and the percentage of post-tax income received by the bottom 70 percent of the population in the 9 countries studied ($r = 0.86$, $p < 0.001$). Countries with more equally distributed

income had higher life expectancies. A similar relationship was found for the annual change in life expectancy and percentage of income received by the least well off 60 percent of the population ($r = 0.8$, $p < 0.05$). The relationship held while controlling for gross national product per capita, suggesting that income inequality has an independent effect on life expectancy, distinct from the well-known association between absolute per capita income levels and population health.

Policy Analyses

This section presents studies intended to evaluate policies associated with health equity.

Gravelle, H., and M. Sutton (2001). Inequality in the geographical distribution of general practitioners in England and Wales 1974–1995. *Journal of Health Services Research & Policy* 6 (1):6–13.

The authors measure trends between 1974 and 1995 in inequality of GP distribution, examine how different need adjustments and inequality measures affect the degree of geographic inequality measured, and analyze the impact of policies (increased supply, area inducements and entry regulation) on inequalities in GP distribution [31]. They conclude that inequality in the distribution of GPs in 1995 was less than inequality in other primary care resources, but greater than inequalities in disposable income, standardized mortality ratios, primary school expenditure, and hospital and community health services expenditures. Different inequality measures and different means of needs-adjustment revealed different patterns over time. Decile ratios (an indicator of relative inequality) show little change between 1974 and 1995, Gini and Atkinson inequality indices (both measures of relative inequality) indicate reduction in inequality between 1974 and 1980, but little change thereafter. The standard deviation of need-adjusted GP variation (a measure of absolute inequality) increased over the time period. In general, disparities persisted over time; areas that had the lowest GP provision in 1974 tended to have the lowest in 1995. The analysis suggests that policies intended to improve the geographical distribution of GPs did not lead to a reduction in inequality over the period, either in relative or absolute terms. The authors suggest that unintended interactions among different policies might have reduced their overall effectiveness.

Rice, N., and P.C. Smith (2001). Capitation and Risk Adjustment in Health Care Financing: An International Progress Report. *The Milbank Quarterly* 79 (1): 81–113.

Capitation payments have become an accepted tool in much of the developed world to determine prospective budgets [34]. This article presents an examination of the

current state of the art in 20 countries outside the United States in which health care capitation has been implemented. This examination confirms that capitation has assumed central importance within diverse systems of health care. Capitation is also perceived to address both equity and efficiency objectives. Few of the countries studied use capitation to attain equity in health outcomes, but rather, the focus is on equity in payment for health services. Mechanisms used include transfers between different sickness funds in captive employment-based systems such as in Japan and France; reducing variations in premiums among competitive insurance schemes such as in Germany; and combining central and local government resources to guarantee a standard package of services as in Scandinavian countries. "The purpose of risk-adjusted capitation is to assure that plans will receive the same level of funding for people in equal need of health care regardless of extraneous circumstances such as area of residence and level of income." The authors find, "in practice...the setting of capitation payments has been heavily constrained to date by poor data availability and unsatisfactory analytic methodology."

McIntyre, D., and L. Gilson (2000). Redressing disadvantage: promoting vertical equity within South Africa. *Health Care Analysis* 8(3):235–58

This analysis applies vertical equity principles to the South African health sector [25]. Vertical equity is defined as an approach that recognizes that different groups have different starting points and therefore require different treatment. Two policies are evaluated: public-private sector cross-subsidies and the allocation of government resources among provinces. The authors find that policies since 1994 have done little to reduce government subsidies to the private health sector, which serves a minority of the population. Recent proposals for a national health insurance scheme would only allow minimal cross-subsidies between high- and low-income earners and would not adequately redress inequitable public-private cross-subsidies. Moreover, a vertical equity approach would suggest that the most historically disadvantaged provinces have an even greater claim on government resources than that reflected in the currently proposed formula. The authors also suggest a research and action agenda that would 1) develop explicit governmental equity policy goals, 2) gain better understanding of societal views on equity and redistribution, and 3) plan that managerial as well as financial support will be necessary in order to redress historical inequalities among provinces.

Navarro, V. (1999). Health and equity in the world in the era of "globalization". *International Journal of Health Services* 29(2): 215–26.

The author critically discusses some of the major arguments given for the growth of inequalities in health in the world today [37]. The most significant reason for increased inequalities in health today stem from "public policies that benefit globalization", which have triggered: a) unprecedented growth in wealth and income derived from capital versus labor, b) polarization in wages and an increase in wage dispersion, and c) diminishing impact of redistributive policies of the welfare state. The author questions the "technocratic," "humanistic," and "apolitical" discourse used by international agencies, such as WHO and the IMF, in their analysis of the growing inequalities, claiming that such discourse obscures the actual causes of this growth: the power relations among and within countries. The author suggests that new scholarship should be aimed at "looking at relationships of exploitation and domination, and understanding how exploitation and domination occur and are reproduced", including "how different power relations configure societies and the level of well-being of their populations, and how labor movements and other allied forces in both developed and developing countries are the most important forces in improving health."

van Doorslaer, E., Wagstaff, A., van der Burg, H., Christiansen, T., Citoni, G., Di Biase, R., Gerdtam, U.G., Gerfin, M., Gross, L., Hakinnen, U., John, J., Johnson, P., Klavus, J., Lachaud, C., Lauritsen, J., Leu, R., Nolan, B., Pereira, J., Propper, C., Puffer, F., Rochaix, L., Schellhorn, M., Sundberg, G., and O. Winkelhake (1999). The redistributive effect of health care finance in twelve OECD countries. *Journal of Health Economics* 18(3):291-313.

The OECD countries finance health care through a mixture of taxes, social insurance contributions, private insurance premiums and out-of-pocket payments [35]. This paper presents results on the income redistribution consequences of the health care financing mixes adopted in twelve OECD countries. This is accomplished by decomposing the overall income redistributive effect into 1) progressivity of the overall healthcare financing system; 2) horizontal inequity in the way health care revenues are raised; and 3) ranking of households in terms of pre versus post-payment income distribution. The study found: 1) taxes used to finance health services are generally pro-poor in their overall redistributive effects; 2) private insurance and out of pocket payments have negative redistributive effects; and 3) the overall vertical (tax progressivity) effect is more important than horizontal inequity and ranking in determining the overall redistributive effect of health care finance.

Lindbladh, E., Lyttkens, C.H., Hanson, B.S., and P.O. Ostergren (1998). Equity is out of fashion? An essay on au-

tonomy and health policy in the individualized society. *Social Science and Medicine* 46(8): 1017-25.

This article provides a critical analysis of health policies intended to promote equity [36]. The authors analyze these policies from two theoretical perspectives: "the individualization of society and the fact that individual beliefs and values are connected to one's position in the social structure". The authors find that "these mechanisms influence both the choice of health policy measures and the normative judgments of preventive efforts, both of which tend to be consonant with the views of dominant social groups". The emphasis on individualism tends to produce strategies for health behavior change (such as information provision and taxes on consumption of alcohol or cigarettes) that are consistent with the views of the higher social classes. Increased individualization in society, the authors argue, explains the lack of discourse on socioeconomic and structural policy measures to mediate health inequalities. They conclude, "there is no substantive basis in the individualized society for perceiving health equity as an independent moral principle. [Instead] the driving force behind the professed health equity goal may be...utilitarian....Equality in health is not a policy objective because it is thought to be equitable [morally just]. Instead it is believed to be an efficient way to maximize public health (the common good) on the assumption that you get more health per dollar by aiming at the health of the poor.

Standing, H. (1997). Gender and equity in health sector reform programmes: a review. *Health Policy and Planning* 12: 1-18.

This paper reviews current literature on Health Sector Reform (HSR) in developing countries and its implications for women's health [24]. The author emphasizes gender as a significant marker of social and economic vulnerability, manifested in inequalities of access to health care, and in differences in women's and men's experiences as users and producers of health care. Cassels' (1995) framework is used to analyze components of HSR and apply them to questions of gender equity. The author analyzes gender and women's health issues most likely to be associated with each of the six major elements of HSR. Areas of concern include 1) in terms of improving civil service performance, health sector employment policies are particularly important in promoting more equitable staffing patterns, and in monitoring whether women are disproportionately hurt by reductions in staff; 2) decentralization and resource allocation has not been well studied in terms of who makes decisions and who benefits from them when local governments and communities gain greater control over health resources; 3) trade-offs between efficiency and equity may disproportionately affect

the hard-to-reach, such as rural women; 4) use of generic categories, such as 'the poor' or 'very poor' leads to insufficient disaggregation of the impact of changes in financing mechanisms and user fees; and 5) there is some question as to whether public/private partnerships can be formed to explicitly address women's health issues. The author presents a research agenda on gender and HSR and calls for more carefully focused data collection and empirical research.

Braveman, P. and E. Tarimo (1996). Health screening, development, and equity. *Journal of Public Health Policy* 17(1): 14–27.

Given the worldwide epidemiologic transition and the marketing of medical technology, policy-makers in developing as well as industrialized countries now frequently face decisions on the introduction of screening into routine health services [30]. Concerns regarding development and equity issues may not arise within the scientific, technical, or individually-focused ethical frameworks used in prior work on screening policy. Screening can divert attention from primary prevention of a society's most important threats to health, especially when primary prevention faces political challenges and screening costs are viewed in isolation from the overall strategy required to make it useful. For diseases with easily recognizable symptoms, public education promoting timely self-referral to accessible medical services is preferable to screening unselected populations. In any country, but perhaps especially in developing countries, unnecessary screening may not only waste scarce resources, but also create or exacerbate health inequities.

Carr-Hill, R. (1994). Efficiency and equity implications of the health care reforms. *Social Science and Medicine* 39 (9): 1189–1201.

This paper reviews literature and data on the efficiency and equity impact of health care reforms in both developed and developing countries [59]. The author contends that "among OECD countries, there is little evidence that variations in the levels and composition of health service expenditure actually affect levels of health and equity in financing and delivery appears to mirror equity in other sectors in the same countries." Failure of health reforms may be partly due to the lack of clear operational definitions of equity and efficiency. Features of health reform in Northern countries include trends toward using public finances and geographical redistribution of resources. In spite of these efforts, inequalities in health appear to remain in most countries, although the author laments the poor quality of the data and analytic techniques used in current analyses. Health reform in the developing world includes the introduction of user charges, which are de-

scribed as flawed because 1) they are unlikely to raise a significant fraction of overall revenue; 2) exemptions intended for the poor do not always work; and 3) other economic trends are likely to exacerbate poor health system coverage and performance. The final section reflects on the pressures for increased accountability. According to the author, "emphasis on consumerism in the North has led to an increasing number of poorly designed 'patient satisfaction' surveys; in the South, there has been...increasing rhetoric on community participation, but little sign of actual devolution of control. "

Vagero, D. (1994). Equity and efficiency in health reform. A European view. *Social Science and Medicine* 39(9): 1203–10.

The importance of equity targets has been questioned in both Eastern and Western Europe [60]. The author reviews the literature and finds that in Eastern Europe, the previously strongly held equity goals were "largely a façade", masking systems of differential privilege, a development that the author feels "has brought equity as a concept into disrepute." In Western Europe, "equity has been seen as inevitably linked to non-market systems of health care. In moving towards market solutions equity has come to be seen as conflicting with efficiency goals." The author finds that the equity-efficiency debate does not stand up to critical examination, because it confuses strategic goals (equity) with the implementation of those goals (efficiency). Efficiency in particular, has been confused with cost-containment. Instead, health systems should look to the most efficient ways of financing, managing and delivering medical services to achieve equity. The reduction of systematic inequalities in health can be seen as an overall strategy for the improvement of a population's health, and as helpful in the development of its human capital.

Taylor, C.E. (1992). Surveillance for equity in primary health care: policy implications from international experience. *International Journal of Epidemiology* 21(6): 1043–9.

The author presents experiences in China, India, Kenya, and Haiti showing that health agencies can promote community-based surveillance for equity [61]. Equity is defined as, "distribution of benefits according to demonstrable need." The author argues that promoting equity can actually strengthen the efficiency of primary health care services when it is linked with practical surveillance tools. According to the cases reviewed, local and community-based surveillance can mobilize political will and community participation by providing practical data for local, district and national decision-makers. The approach to surveillance should include: 1) district-level management; 2) simple data collection methods such as "verbal autopsies" and rapid assessment procedures; 3) a

focus on the most vulnerable; 4) explicit links to action if equity targets are not met. The Model County Project in China shows how a systematic extension process can test procedures in experimental areas and adapt them for general implementation. Surveillance can help bureaucracies maintain capacity for flexible and prompt response if decentralization promotes decision-making by local units and holds them responsible for meeting equity targets. The author suggests that the policy implications of this approach are that "if international agencies condition their aid on surveillance for equity their assistance will more likely go to those in greatest need. This is a more efficient and effective way of tracking their money than the previous tendency to set up vertical programs, which generally have poor sustainability."

Giraldes, M. (1988). The equity principle in the allocation of health care expenditure on primary health care services in Portugal: the human capital approach. *International Journal of Health Planning and Management* 3(3): 167–83.

This article examines the equity principle as it could be applied to the financing of primary health care resources in Portugal [62]. Three resource allocation criteria are considered: demand for and utilization of services; health status and outcomes; and coverage by health services. With data based on health service expenditure, district-by-district, for 1983, the article shows that different results would emerge from the selection of one criterion over another. In particular, a policy of vertical equity (the author uses the term, "positive discrimination") would reallocate resources towards the north rather than the south of Portugal. Differences would still emerge between districts and between specific activities provided within the framework of primary health care.

Evaluation

This section presents articles that evaluate the impact of a range of programs on health inequities.

Politzer, R.M., Yoon, J., Shi, L., Hughes, R.G., Regan, J., and M.H. Gaston (2001). Inequality in America: the contribution of health centers in reducing and eliminating disparities in access to care. *Medical Care Research Review* 58 (2):234–48.

The authors assess published literature, site-level data, patient interview surveys, and medical record reviews to evaluate the ability of health centers in the United States to improve access to a regular and usual source of care for approximately 8.7 million medically underserved Americans [39]. The authors conclude, "the safety net health center network has reduced racial/ethnic, income, and insurance status disparities in access to primary care and preventive screening procedures" and contributed to the

reduction of low birth weight disparities for African American infants. Users of health centers were found to be predominantly uninsured, poor, and from racial and ethnic minority groups. The data presented suggests that users of health centers reported fewer unmet medical needs than people of similar socioeconomic and health insurance status, and were more likely to receive counseling on lifestyle habits (diet, smoking, alcohol and drug use, sexually transmitted diseases) and receive cancer screening (especially for women) than the general US population. The authors conclude, "health centers are successful in reducing and eliminating health access disparities by establishing themselves as their patients' usual and regular source of [primary] care" and are thus an effective means to reduce health status disparities in the United States.

Yip, W., and P. Berman (2001). Targeted health insurance in a low-income country and its impact on access and equity in access: Egypt's school health insurance. *Health Economics* 10(3):207–20.

In Egypt, the School Health Insurance Program (SHIP) is a government-subsidized health insurance system that targets school children [40]. The primary goals of the SHIP include improving access and equity in access to health care for children while, at the same time, ensuring program sustainability. Using the Egyptian Household Health Utilization and Expenditure Survey (1995), this paper empirically assesses the extent to which the SHIP achieved its stated goals. Findings show that the SHIP significantly reduced differentials in visit rates between the highest and lowest income children. However, only the middle-income children benefited from reduced financial burden. Moreover, by targeting the children through school enrollment, the SHIP increased inequalities between the average level of access between school-going children and those not attending school. Children not attending school tend to be poor and living in rural areas. The study highlights the need for carefully defined targets in programs designed to reduce inequity.

Gilson, L., Kalyalya, D., Kuchler, F., Lake, S., Oranga, H., and M. Ouendo (2000). The equity impacts of community financing activities in three African countries. *International Journal of Health Planning and Management* 15(4):291–317.

This three-country study, undertaken in Benin, Kenya and Zambia in 1994/95, was initiated to evaluate the equity impact of Bamako Initiative programs intended to introduce user financing in primary care clinics [41]. The authors found that in Benin the Bamako Initiative program can be judged as successful in terms its own (limited) equity objectives, but the other two countries' schemes had clear equity problems. Criteria for evaluation included 1)

retention of revenue at the site collected and its use for community-perceived quality improvements, 2) flexibility/adaptability of the payment scheme, 3) mechanism(s) subsidize the poorest groups, 4) community involvement, and 5) support from other levels of the health systems (e.g. referrals). Informants were selected through purposive samples in selected geographical areas in each country and additional data on utilization collected during the course of the study (Kenya) or drawn from other available studies (Benin and Zambia). In Benin, the poorest experienced the greatest improvement in curative, immunization and antenatal care. But overall levels of utilization were still low among the rural poor. Results suggest relative affordability gains in Kenya, but these gains were not sustained over time. No gains were identified in Zambia. In addition, none of the programs studied were able to implement effective exemption mechanisms to protect the poorest from the burden of payment, or establish community decision-making bodies "that effectively represented the interests of all groups, including the poorest." The evaluation suggested that Bamako Initiative equity objectives are not clearly identified; evaluation will depend on clarifying whether such programs are more concerned with providing the greatest good for the greatest number of clients or with improving the health of the most disadvantaged.

Hippisley-Cox, J. and M. Pringle (2000). Inequalities in access to coronary angiography and revascularisation: the association of deprivation and location of primary care services. *British Journal of General Practice* 50(455):449-54.

This study examines inequality in relation to primary care services, particularly access to coronary angiography and revascularisation. (Coronary artery surgery reduces re-infarction rates and mortality in patients with ischaemic heart disease) [32]. A cross-sectional survey was conducted in all 180 Nottinghamshire practices in the Trent region between 1993 and 1997. The numbers of coronary bypass grafts, angioplasties, and angiographies were determined from the regional National Health Service database and linked to a database of general practice characteristics. Poisson regression analysis was used to determine the relationship between the angiography and revascularisation rates and the following practice characteristics: deprivation score, distance from nearest secondary or tertiary referral centre, medical cardiology admission rate for ischaemic heart disease, fundholding status, and partnership size. Multiple linear regression analysis was used to determine the relationship between practice characteristics and the waiting times for revascularisation and angiography. Practices with high deprivation scores had significantly lower rates of utilisation of angiography and revascularisation procedures. Their patients also waited

longer for angiography. Practices that were 20 km or further from a revascularisation centre had significantly lower angiography and revascularisation rates. On average, their patients had to wait more than twice as long for an angiography compared with patients from nearer practices. The results suggest that there may be some under-investigation and/or treatment of patients with ischaemic heart disease from 'deprived' practices and for those from practices far from a secondary or tertiary referral center.

Liu, Y., Hsiao, W.C., and K. Eggleston (1999). Equity in health and health care: the Chinese experience. *Social Science and Medicine* 49 (10):1349-56.

This paper examines the change in equality of health and health care in China during its transition from a command to a market economy [63]. Evidence suggests a widening gap in health status between urban and rural residents, correlated with increasing gaps in income and health care utilization. For example, the rural to urban ratio of morbidity measured by number of days ill in the last weeks increased by 12 percent over the period 1985-1993. Data from three national surveys in 1985, 1986, and 1993 were combined with complementary studies and analysis of major underlying economic and health care factors. The gap in disposable income between rural and urban residents grew in absolute (though not relative) terms. The authors discuss possible explanations for these trends, including changes in health care financing and organization, dramatic reduction of insurance coverage for the rural population, decreased supply of health providers, increased financial barriers to access in rural areas, and diminished publicly-financed public health programs.

Onwujekwe, O.E., Shu, E.N., and P.O Okonkwo (1999). Willingness to pay for the maintenance of equity in a local ivermectin distribution scheme in Toro, Northern Nigeria. *Public Health* 113(4): 193-4.

The study examined willingness to pay (WTP) for the maintenance of equity in a local ivermectin distribution scheme in a community financing program in Toro, Northern Nigeria [42]. The authors provide evidence that the proposed community financing scheme would not increase inequities, since more wealthy community members indicated that they would be willing to pay enough to cover the costs for those who were unable to pay. Study participants consisted of 214 randomly selected heads of households, or their representatives. The study elicited information on the respondents' WTP for their own household needs. This information was then used to determine WTP to maintain equity in the community financing scheme. Contingent valuation was used for the exercise, and WTP was elicited using an open-ended question.

Nearly all of the respondents (97.2%) were in favor of paying more for the program so that the poor could benefit from the scheme. The maximum WTP amounts varied from 5 Naira (\$0.06) to 100 Naira (\$1.25). The mean WTP to maintain equity was 29.00 Naira (\$0.36) while the median was 20.00 Naira (\$0.25). Given these figures, the authors estimated that the program could raise enough revenue to subsidize the poorest community members' participation.

Keskimaki, I. Salinto, M. and S. Aro (1995). Socioeconomic equity in Finnish hospital care in relation to need. *Social Science and Medicine* 41(3): 425–31.

This study evaluates the success of Finnish health care policy in establishing socioeconomic equity in the use of hospital inpatient care [43]. The authors find that Finnish health care policies in the late 1980s seem to have been successful in providing hospital care equitably. Data on population at risk were obtained from the 1987 census. Hospital utilization was measured by annual risk of hospitalization, discharge rate, and inpatient days. Patient data were linked with socioeconomic indicators from the 1970–1987 population censuses. The socioeconomic distribution of hospital utilization according to need was assessed by mortality and morbidity data. The same data were used to calculate vertical inequity indices. The study found that low socioeconomic groups used more hospital services than did those high in high socioeconomic groups in all age-groups and both genders. Socioeconomic differences in hospital utilization were similar to gradients in death rates and the prevalence of poor self-perceived health and limiting long-standing illness. When use was measured in relation to need, lower socioeconomic groups used at least as much inpatient care as the higher groups, demonstrating a relatively equitable distribution of hospital services with respect to health need.

Further Reading

The following represent a selected list of books and other publications that are not included in the bibliography, but which are recommended reading.

Evans, T., Whitehead, M., Diderichsen, F., Bhuiya, A., and M. Wirth. (Eds.) (2001). *Challenging inequalities in health: from ethics to action*. New York: Oxford University Press.

This volume collects the work of the Rockefeller Foundation's Global Health Equity Initiative (GHEI) [64]. It "provides new perspectives on the idea of health equity, the scale of the inequalities and the ways in which gender, social context and globalization impact the health of populations in thirteen countries. The studies seek to expose health disparities within countries, revealing stark social inequalities in life expectancy and health status." Themes

include values and ethics, assessing and analyzing the health divide, tackling root causes, and building efficient, equitable health care systems. Case studies cover China, Japan, USA, Chile, Russia, Tanzania, South Africa, Kenya, Bangladesh, Sweden, Britain, Mexico and Vietnam. Selected chapters and a summary are available from the Rockefeller Foundation website at [<http://www.rockfound.org/display.asp?Collection=3&context=1&DocID=424>].

Pan American Sanitary Bureau (PAHO) (2001). *Equity and Health: Views from the Pan American Sanitary Bureau*. Occasional Papers, Number 8. Washington, DC: PAHO.

This collection of essays on health equity in Latin American and Caribbean countries is organized into three sections: "Conceptual and Contextual Aspects of Health Equity," "Priorities for Incorporating Equity into Technical Cooperation in Health," and "Making Health Equity Work at the Country Level" [65]. The preface states, "The authors have attempted to show how equity and the insights it yields into the distribution of health – dependent as this is on differences in education, income, class, ethnicity and race, geographic location, gender, and other distinctions – can underpin the Bureau's work at the operational level and be incorporated into technical cooperation activities." The entire text is available on-line at [<http://www.paho.org/English/DBI/OP08.htm>].

Navarro, V. (ed.) (2001). *The Political Economy of Social Inequalities: Consequences for Health and the Quality of Life*. Amityville, NY: Baywood.

This volume collects essays and studies on the reasons for worldwide increases in inequalities and its consequences for the well-being of populations [66]. Scholars from a variety of disciplines and countries analyze the different dimensions of this topic. This includes examination of: the historical evolution of the political context in which scientific studies on social inequalities have evolved; causes for the growing inequalities; how the growth of inequalities is rooted in power relations within and among countries and their reproduction through the state; the role of the World Bank, IMF, WHO, and other international agencies' roles in promoting neoliberal policies; and major debates in the scientific literature on the relationship between inequalities and health.

Oliver, A. (2001). *Why Care about Health Inequality?* London: Office of Health Economics.

This short monograph covers the basic issues in health inequalities [67]. Its topics include: evidence of health inequalities in the UK, causes of health inequality across social classes, why health inequalities should be reduced

and whether all inequalities are inequities, what equity in health means, the Acheson Report (UK), and evaluating policies to address health inequalities. Its concise style and readability make it a useful primer on the subject of equity in health, particularly from the viewpoint of policy at least in one industrialized country. It is available from Office of Health Economics, 12 Whitehall, London SW1A 2DY, United Kingdom.

Leon, D.A., Walt, G., (eds). *Poverty, Inequality and Health: an International Perspective*. Oxford: Oxford University Press, 2000.

This "text addresses issues of the relationship between poverty, inequality and health. It compiles the work of an international group of scientists, and covers such topics as positive and negative effects of social capital, and poverty alleviation programs and health" [68]. Topics covered include: – linking economic and social forces and health status-ethical concerns and inequalities in health – macro-level features of inequalities in health within and between countries – an overview of the main body of work on inequalities in health in developed countries and those in transition within Europe – specific pathways and mechanisms at the individual level that link poverty and inequality to health status – the interaction of social and biological influences on health status throughout life-specific disease-specific links – issues of policy and interventions aimed at reducing inequalities in health.

Sen, A. *Development as Freedom*. Oxford: Oxford University Press, 2001.

"The premise of the book is that human freedom is not only the primary end of development, it is also the principle means. Development consists in enhancing the quality of human life and increasing the substantive freedoms we enjoy, and therefore freedom is constructive in development (that is, the process of development is the process of making our freedoms larger). But, in addition, freedom of one kind tends to facilitate freedoms of other kinds. For example, economic opportunities, political liberties and social facilities strengthen each other, in addition to each being directly important in increasing the individuals' freedoms" [69]. The book provides a good introduction to Sen's thinking on equity and other issues.

Websites of Interest

U.K. Health Equity Network – "This site is a resource for all those interested in equity and inequality in health, aiming to provide comprehensive and well organized links to relevant information and organizations".
[<http://www.ukhen.org.uk>]

Southern African Regional Network on Equity in Health (EQUINET) – "Seeking to develop and widen the conceptual understanding of equity in health, Equinet identifies critical areas of work and policy issues and makes visible existing unfair and avoidable inequalities in health." Policy papers and newsletter are also available on-line.
[<http://www.equinet.org.zw>]

International Society for Equity in Health (ISEqH) – "The purpose for which ISEqH is formed is to promote equity in health and health services internationally through education, research, publication, communication and charitable support." [http://www.iseqh.org]

The World Bank – The guide to country information on equity, poverty and health presents studies and data sets on health equity in developing countries.
[<http://www.worldbank.org/wbp/health/data/guide/guide.htm#projects>]

Global Health Network – An on-line resource for global health information, policy discussions, and funding.
[<http://www.pitt.edu/HOME/GHNet/GHNet.html>]

Appendix: The International Society for Equity in Health (ISEqH)

Purposes of ISEqH

ISEqH is organized under the Maryland, United States of America, law and regulation exclusively for charitable, educational, and scientific purposes, including for such purposes, the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future tax code.

The purpose for which ISEqH is formed is to promote equity in health and health services internationally through education, research, publication, communication and charitable support.

- (a) to promote equity and expose inequity in health and in health care services internationally;
- (b) to facilitate scientific interchange of, and disseminate conceptual and methodological knowledge on issues related to equity in health and health care services;
- (c) to advance research related to equity in health; and
- (d) to maintain corresponding relationship with other relevant international and regional organizations

Working Definitions

Equity in Health: the absence of potentially remediable, systematic differences on one or more aspects of health

across socially, economically, demographically, or geographically defined population groups or subgroups.

Inequity in health: Systematic and potentially remediable differences in one or more aspects of health across socially, economically, demographically, or geographically defined population groups or subgroups.

Equity (policy and actions): Active policy decisions and programmatic actions directed at improving equity in health or in reducing or eliminating inequalities in health.

Equity (research): Research to elucidate the genesis and characteristics of inequity in health for the purpose of identifying factors amenable to policy decisions and programmatic actions to reduce or eliminate inequities.

For more information, visit the International Society for Equity in Health website at: [<http://www.iseqh.org>].

Acknowledgements

The authors wish to thank Dr. Paula Braveman for suggestions on an earlier draft of this document.

This work was partially supported by the International Society for Equity in Health.

References

1. International Society for Equity in Health. *Working definitions* 2001
2. Whitehead M: **The concepts and principles of equity and health.** *International Journal of Health Services* 1992, **22(3)**:429-45
3. Starfield B: **Improving equity in health: A research agenda.** *International Journal of Health Services* 2001, **31(3)**:545-66
4. Andersson F, Lyttkens C: **Preferences for equity in health behind a veil of ignorance.** *Health Economics* 1999, **8(5)**:369-78
5. Williams A: **Intergenerational equity: an exploration of the 'fair innings' argument.** *Health Economics* 1997, **6(2)**:117-32
6. Lindholm L, Rosen M: **How many lives is equity worth? A proposal for equity adjusted years of life saved.** *Journal of Epidemiology and Community Health* 1998, **52(12)**:808-11
7. World Health Organization: **World Health Report 2000.** Geneva: World Health Organization 2000
8. Gakidou E, Murray C, Frenk J: **Defining and measuring health inequality: an approach based on the distribution of health expectancy.** *Bulletin of the World Health Organization* 2000, **78(1)**:42-54
9. Murray C, Gakidou E, Frenk J: **Response to P. Braveman et al.** *Bulletin of the World Health Organization* 2000, **78(2)**:234-35
10. Almeida C, Braveman P, Gold M, Szwarcwald C, Ribeiro S, Miglionico A, et al: **Methodological concerns and recommendations on policy consequences of the World Health Report 2000.** *Lancet* 2001, **357(9268)**:
11. Braveman P, Krieger N, Lynch J: **Health inequalities and social inequalities in health.** *Bulletin of the World Health Organization* 2000, **78(2)**:232-33
12. Wolfson M, Rowe G: **On measuring inequalities in health.** *Bulletin of the World Health Organization* 2001, **79(6)**:553-60
13. Turrell G, Mathers C: **Socioeconomic inequalities in all-cause and specific-cause mortality in Australia: 1985-1987 and 1995-1997.** *International Journal of Epidemiology* 2001, **30(2)**:231-9
14. Kunst A, Groenof F, Mackenbach J: **Mortality by occupational class among men 30-64 years in 11 European countries.** *Social Science and Medicine* 1998, **46(11)**:1459-76
15. Manor O, Matthews S, Power C: **Comparing measures of health inequality.** *Social Science and Medicine* 1997, **45**:761-71
16. Mackenbach JP, Kunst AE, Groenof F, Borgan JK, Costa G, Faggiano F, et al: **Socioeconomic inequalities in mortality among women and among men: an international study.** *American Journal of Public Health* 1999, **89(12)**:1800-6
17. Davey-Smith G, Neaton JD, Wentworth D, Stamler R, Stamler J: **Mortality differences between black and white men in the USA: contribution of income and other risk factors among men screened for the Multiple Risk Factor Intervention Trial (MRFIT).** *Lancet* 1998, **351(9107)**:934-9
18. Sacker A, Bartley M, Firth D, Fitzpatrick R: **Dimensions of social inequality in the health of women in England: occupational, material, and behavioural pathways.** *Social Science and Medicine* 2001, **52**:763-81
19. Whitehead M, Burstrom B, Diderichsen F: **Social policies and the pathways to inequalities in health: a comparative analysis of lone mothers in Britain and Sweden.** *Social Science and Medicine* 2001, **50**:255-70
20. van Doorslaer E, Wagstaff A, van der Burg H, Christiansen T, De Graeve D, Duchesne I, et al: **Equity in the delivery of health care in Europe and the US.** *Journal of Health Economics* 2000, **19(5)**:553-83
21. Waters H: **Measuring equity in access to health care.** *Social Science and Medicine* 2000, **51(4)**:599-612
22. Musgrove P: **Measurement of equity in health.** *World Health Statistics Quarterly* 1986, **39(4)**:325-35
23. Kawachi I, Kennedy B, Gupta V, Prothrow-Stith D: **Women's status and the health of women and men: a view from the States.** *Social Science and Medicine* 1999, **48(1)**:21-32
24. Standing H: **Gender and equity in health sector reform programmes: a review.** *Health Policy and Planning* 1997, **12**:1-8
25. McIntyre D, Gilson L: **Redressing disadvantage: promoting vertical equity within South Africa.** *Health Care Analysis* 2000, **8(3)**:235-58
26. Lochner K, Pamuk E, Makuc D, Kennedy B, Kawachi I: **State-level income inequality and individual mortality risk: a prospective, multilevel study.** *American Journal of Public Health* 2001, **91(3)**:385-91
27. Ross N, Wolfson M, Dunn J, Berthelot J, Kaplan G, Lynch J: **Relation between income inequality and mortality in Canada and in the United States: cross sectional assessment using census data and vital statistics.** *British Medical Journal* 2000, **320**:898-902
28. Wilkinson RG: **Income distribution and life expectancy.** *British Medical Journal* 1992, **304**:165-68
29. Shi L, Starfield B: **Primary care, income inequalities, and self-rated health in the United States: a mixed-level analysis.** *International Journal of Health Services* 2000, **30(3)**:541-55
30. Braveman P, Tarimo E: **Health screening, development, and equity.** *Journal of Public Health Policy* 1996, **17(1)**:14-27
31. Gravelle H, Sutton M: **Inequality in the geographical distribution of general practitioners in England and Wales 1974-1995.** *Journal of Health Services Research & Policy* 2001, **6(1)**:6-13
32. Hippisley-Cox J, Pringle M: **Inequalities in access to coronary angiography and revascularisation: the association of deprivation and location of primary care services.** *British Journal of General Practice* 2000, **50(455)**:449-54
33. Kinman E: **Evaluating health service equity at a primary care clinic in Chilimarca, Bolivia.** *Social Science and Medicine* 1999, **49(5)**:663-78
34. Rice N, Smith P: **Capitation and Risk Adjustment in Health Care Financing: An International Progress Report.** *The Milbank Quarterly* 2001, **79(1)**:81-113
35. van Doorslaer E, Wagstaff A, van der Burg H, Christiansen T, Citoni G, Di Biase R, Gertham UG, Gerfin M, Gross L, et al: **The redistributive effect of health care finance in twelve OECD countries.** *Journal of Health Economics* 1999, **18(3)**:291-313
36. Lindblad E, Lyttkens CH, Hanson BS, Ostergren PO: **Equity is out of fashion? An essay on autonomy and health policy in the individualized society.** *Social Science and Medicine* 1998, **46(8)**:1017-25
37. Navarro V: **Health and equity in the world in the era of "globalization".** *International Journal of Health Services* 1999, **29(2)**:215-26
38. Lynch J, Davey Smith G, Hillemeier M, Shaw M, Raghunathan T, Kaplan G: **Income inequality, the psychosocial environment, and health: comparisons of wealthy countries.** *Lancet* 2001, **358**:194-200

39. Politzer RM, Yoon J, Shi L, Hughes RG, Regan J, Gaston MH: **Inequality in America: the contribution of health centers in reducing and eliminating disparities in access to care.** *Med Care Res Rev* 2001, **58(2)**:234-48
40. Yip W, Berman P: **Targeted health insurance in a low-income country and its impact on access and equity in access: Egypt's school health insurance.** *Health Economics* 2001, **10(3)**:207-20
41. Gilson L, Kalyalya D, Kuchler F, Lake S, Oranga H, Ouendo M: **The equity impacts of community financing activities in three African countries.** *International Journal of Health Planning and Management* 2000, **15(4)**:291-317
42. Onwujekwe OE, Shu EN, Okonkwo PO: **Willingness to pay for the maintenance of equity in a local ivermectin distribution scheme in Toro, Northern Nigeria.** *Public Health* 1999, **113(4)**:193-4
43. Keskimaki I, Salinto M, Aro S: **Socioeconomic equity in Finnish hospital care in relation to need.** *Social Science and Medicine* 1995, **41(3)**:425-31
44. Murray C, Gakidou E, J F: **Health inequalities and social group differences: what should we measure?** *Bull World Health Organ* 1999, **77(7)**:537-43
45. Braveman P: **Monitoring equity in health: A policy-oriented approach in low- and middle-income countries.** Geneva: World Health Organization (Division of Analysis, Research and Assessment) 1998
46. Mooney G, Jan S: **Vertical equity: weighting outcomes or establishing procedures?** *Health Policy* 1997, **39(1)**:79-87
47. Daniels N, Bryant J, Castano R, Dantes O, Khan K, Pannarunothai S: **Benchmarks of fairness for health care reform: a policy tool for developing countries.** *Bulletin of the World Health Organization* 2000, **78(6)**:740-50
48. Caplan RL, Light D, Daniels N: **Benchmarks of fairness: a moral framework for assessing equity.** *International Journal of Health Services* 1999, **29(4)**:853-69
49. Gissler M, Keskimaki I, Teperi J, Jarvelin M, Hemminki E: **Regional equity in childhood health – register-based follow-up of the Finnish 1987 birth cohort.** *Health & Place* 2000, **6(4)**:329-36
50. Lindholm L, Rosen M, Emmelin M: **An epidemiological approach towards measuring the trade-off between equity and efficiency in health policy.** *Health Policy* 1996, **35(3)**:205-16
51. Wagstaff A: **QALYs and the equity-efficiency trade-off.** *Journal of Health Economics* 1991, **10(1)**:21-41
52. Gwatkin D, Guillot M: **The burden of disease among the global poor.** Washington, DC: International Bank for Reconstruction and Development/World Bank 2000
53. Wagstaff A: **Research on equity, poverty, and health outcomes: lessons for the developing world.** Washington, DC: The World Bank; 2000
54. Kawachi I, Kennedy B, Wilkinson R, editor: **The society and population health reader: Volume 1: Income inequality and health.** New York: The New Press; 1999
55. Wilkinson RG: **Unhealthy Societies: The afflictions of inequality.** London: Routledge, 1996
56. Mellor JM, Milyo J: **Reexamining the evidence of an ecological association between income inequality and health.** *Journal of Health Politics, Policy and Law* 2001, **26(3)**:487-522
57. Gravelle H: **How much of the relation between population mortality and unequal distribution of income is statistical artefact?** In: *The society and population health reader* 1999, 99-104
58. Wolfson M, Kaplan G, Lynch J, Ross N, Baclund E: **Relation between income inequality and mortality: Empirical demonstration.** *British Medical Journal* 1999, **319**:953-57
59. Carr-Hill R: **Efficiency and equity implications of the health care reforms.** *Social Science and Medicine* 1994, **39(9)**:1189-201
60. Vagero D: **Equity and efficiency in health reform. A European view.** *Social Science and Medicine* 1994, **39(9)**:1203-10
61. Taylor C: **Surveillance for equity in primary health care: policy implications from international experience.** *International Journal of Epidemiology* 1992, **21(6)**:1043-9
62. Giraldes M: **The equity principle in the allocation of health care expenditure on primary health care services in Portugal: the human capital approach.** *International Journal of Health Planning and Management* 1988, **3(3)**:167-83
63. Liu Y, Hsiao W, Eggleston K: **Equity in health and health care: the Chinese experience.** *Social Science and Medicine* 1999, **49(10)**:1349-56
64. Evans T, Whitehead M, Diderichsen F, Bhuiya A, Wirth M, editors: **Challenging inequalities in health: from ethics to action.** New York: Oxford University Press; 2001
65. Pan American Sanitary Bureau (PAHO): **Equity and Health: Views from the Pan American Sanitary Bureau.** Washington, DC: PAHO, 2001
66. Navarro V, editor: **The political economy of social inequalities: consequences for health and the quality of life.** Amityville, NY: Baywood; 2001
67. Oliver A: **Why care about health inequality?** London: Office of Health Economics; 2001
68. Leon D, Walt G, editors: **Poverty, inequality and health: an international perspective.** Oxford: Oxford University Press; 2000
69. Sen A: **Development as freedom.** New York: Alfred A. Knopf; 1999

Publish with **BioMed Central** and every scientist can read your work free of charge

"BioMedcentral will be the most significant development for disseminating the results of biomedical research in our lifetime."

Paul Nurse, Director-General, Imperial Cancer Research Fund

Publish with **BMC** and your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours - you keep the copyright



Submit your manuscript here:
http://www.biomedcentral.com/manuscript/

editorial@biomedcentral.com