



## Commentary

## Pathways of influence on equity in health

Barbara Starfield

*Johns Hopkins School of Hygiene and Public Health, Baltimore, USA***Abstract**

An increasing number of studies are documenting the existence of inequities, and attention is now turning to exploring pathways through which they are generated and might be attacked. This appears to be an opportune time to consider what has been learned and what future directions might be taken by researchers to fill gaps in knowledge and make research more useful for policy interventions.

This commentary briefly reviews some of the main contributions of past research that have possible relevance to pathways, considers what those pathways might include, and concludes with implications for future research (doi:10.1016/j.socscimed.2006.11.025, doi:10.1016/j.socscimed.2006.11.026, doi:10.1016/j.socscimed.2006.11.028). It makes the case for a conceptualization of influences on equity that explicitly includes distribution of health as an outcome as well as characteristics of the society as influences.

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**Contributions of the literature to knowledge about the genesis of inequity in health**

Recent definitions of equity in health characterize it as the absence of systematic and potentially remediable differences in one or more aspects of health between groups of people characterized socially, geographically, or demographically (*International Society for Equity in Health, undated*).<sup>1</sup> This conceptualization points to ways to describe its existence and assess its correlates in a more standard way than was previously possible. A recent review of the health equity literature (*Starfield, 2006*) indicates a few apparently consistent findings that

suggest possible pathways by which inequity is generated and maintained.

- (1) The extent of inequities across countries varies according to the measure of health and the relative frequency of different types of illness; inequities appear to be greater for severity of illness than for occurrence of illness, and the extent of inequities is greater at younger than at older ages.
- (2) The level of geographic aggregation of data influences the conclusions about the nature and extent of inequities, and differences in health across populations in different geographic areas within countries is greatest among the more socially disadvantaged.
- (3) Health services can contribute to reductions in inequity in health (*Mackenbach, 2003*), particu-

*E-mail address:* bstarfie@jhsph.edu.

<sup>1</sup>Although there are several other definitions, the most recent agree on the characteristic of “systematic” differences rather than sporadic or inter-individual ones (*Braveman, 2006*).

larly when primary care services are explicitly considered (Starfield, Shi, & Macinko, 2005). In most industrialized countries, equity in use of primary care services has been achieved, but the same is not the case for specialty services (van Doorslaer, Koolman, & Jones, 2004; van Doorslaer, Masseria, & Koolman, 2006). Failure to recognize the existence of health problems associated with inequity, in both clinical as well as population-based analyses, may be more important in maintaining equity than failing to intervene when the problem is recognized (Kim, Kerr, Bernstein, & Krein, 2006; Tugwell, de Savigny, Hawker, & Robinson, 2006).

- (4) Efforts to improve average health, i.e., population-wide rates of morbidity and mortality, are generally associated with increasing inequities, because new and effective interventions often reach the more advantaged first (Victoria, Vaughan, Barros, Silva, & Tomasi, 2000). Also, influences with high relative risk of poor health are not necessarily appropriate targets for equity-focused interventions, as their frequency may be low and hence not contribute much to reductions in inequity overall (Oliver, Healey, & LeGrand, 2002).

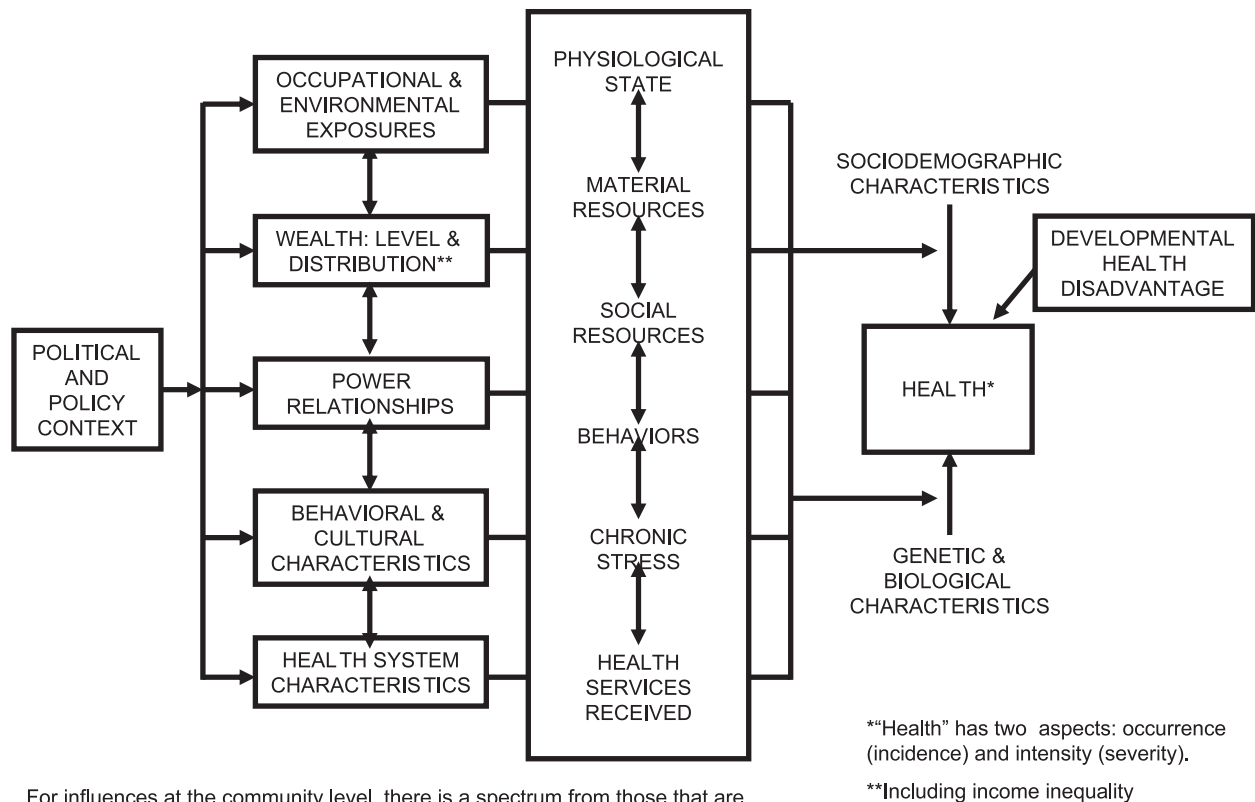
More recent findings also indicate that pathways often differ from one subpopulation to another, as does the nature of interactions. For example, neighborhood poverty rates and housing inadequacy are associated with increased frequency of very preterm births among African Americans whereas proportion of female-headed households is influential for Hispanics, and a low fraction of people employed in professional occupations is influential for whites (Reagan & Salsberry, 2005). Ethnic fragmentation, skilled delivery attendance, immunization coverage, and public spending on health are more associated with under-5 mortality among the poor than among the rich (Houweling, Caspar, Looman, & Mackenbach, 2005). The relationship between income inequalities and cardiovascular risk factors differs for different socio-economic strata (Diez-Roux, Link, & Northridge, 2000). Similarly, the same occupational policy has different effects on health of different racial and ethnic groups in the US—a result of different frequencies of exposure to various interacting influences (Lipscomb, Loomis, McDonald, Argue, & Wing, 2006).

### Possible pathways of influences on equity in health

These research findings suggest possible pathways of effect. Variability according to measure of health provides the basis for postulating that pathways differ depending on the health goal. Inequities in case fatality suggest relatively greater salience of health services whereas inequities in incidence lend relatively greater weight to social factors (including life course influences). Inequities in prevalence, in death rates, and in life expectancy reflect both the occurrence as well as the progression of ill health and are more difficult to interpret in the light of pathways. Differences by level of geographic aggregation argue for the importance of various societal influences and specific policies in different political jurisdictions (Muntaner and Navarro, 2004). As the impact of health services depends on the type of health services, attention to the type and orientation of the health services system rather than simply the presence of health services is warranted. The possibility of unintended effects on equity requires health impact assessments that explicitly include equity in health as well as overall improvements in health. Moreover, pathways depend on relative frequency of “risks” in subpopulations as well as on differences in mechanisms of influence.

Elucidation of pathways is necessary to devise appropriate interventions (Exworthy, Bindman, Davies, & Washington, 2006). Fig. 1 represents a pathway that is consistent with much of the social determinants literature, which generally considers the *individual* as the unit of analysis. The literature on “social determinants” is rich in studies of the influence on health of individual and community-level factors (income, education, social networks, behaviors, stress, medical care received). The most widely cited “models” of “determinants” (for example, Evans & Stoddart, 2003) depict very few societal influences and few interactions among influences. Even newer conceptualizations (Etches, Frank, Ruggiero, & Manuel, 2006) that focus specifically on societal influences do not explicitly recognize pathways and interactions.

Because equity concerns the distribution of health in populations and subpopulations, conceptual models that explicitly include societal phenomena are more likely to be useful. Fig. 2 depicts such a *population*-based model that depicts interactions and includes distribution of health as well as average health (Starfield, 2004).



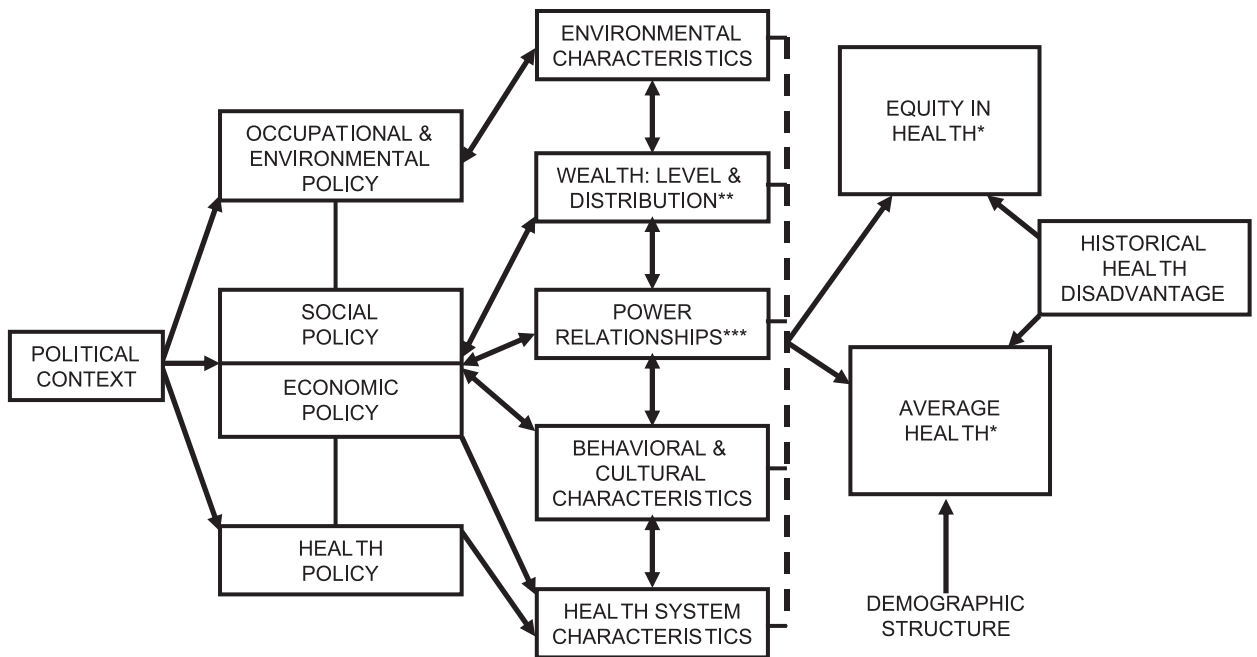
Examples of the types of societal factors that have been studied with regard to their influence on health are enumerated in Table 1.

In addition to the studies listed in Table 1, two edited books (Navarro, 2004; Navarro & Muntaner, 2004) address subjects such as globalization and its consequences for economic and social well being (e.g., Weisbrot, Baker, Kraev, & Chen, 2004) as well as many political, economic, and cultural influences. Navarro and colleagues' summary chapter (Navarro et al, 2004) observes that countries and regions in which economic and social resources are better distributed have better health indicators, and suggests that better redistribution of resources (including labor market resources such as employment; welfare state resources such as health care coverage and public health expenditures, education, family supportive services, and social transfer resources; cultural resources such as civil associations; and political resources such as the distribution of power are key societal factors). Similarly, Muntaner and Navarro emphasize the need to integrate politics with economics and culture, the

importance of political participation, and "scientifically informed social change (targeting) economics, politics, culture, environment, behavior, and biology" (Muntaner & Navarro, 2004, 555p.).

Societal phenomena that appear less consistently related or unrelated to health include the consumer price index, unemployment rates, openness of the economy, and rates of economic growth (Macinko, Shi, & Starfield, 2004; Navarro & Shi, 2001; Tapia Granados, 2005). Other possible societal indicators, although poorly represented in the health equity literature, are environmental modifications, percentage of children in public education, percentage of workers in hazardous industries, adoption of human rights conventions and their incorporation and enforcement within the legal structure, regressive/progressive structure of taxes, minimum wage guarantees and their level relative to overall wage structures, corruption in government, and representativeness of legislatures relative to sociodemographic population distributions.

In contrast to the relative dearth of literature on most societal characteristics, income inequality has



Dashed lines indicate the existence of pathways through individual-level characteristics that most proximally influence health.

For influences at the community level, there is a spectrum from those that are aggregations from individual-level data to those that are ecological in nature.

\*\*\*Health\* has two aspects: occurrence (incidence) and intensity (persistence – reflected in prevalence – and severity).

\*\*Including income inequality

\*\*\*Including social cohesion

Fig. 2. Influences on health equity.

received considerable attention as a characteristic in the path to inequity in health. Wilkinson and Pickett (2006) found that 70% of 168 studies involving international comparisons or analyses in states, regions, and communities within countries showed a negative relationship between income inequality and various aspects of health. Several features of this literature provide more general lessons for research on pathways to equity in health.

### Implications for future research

(1) Almost all studies focus on average (area-wide) health, e.g., overall rates of infant mortality, and, therefore, do not provide information on equity in (distributions of) health. Systematic differences in overall health levels across countries reflect inter-country differences, but neither they nor within-country studies examine the impact of societal factors on distribution of health within countries. The development of mapping technology could enhance the avail-

ability of data on distributions (Mullner, Chung, Croke, & Mensah, 2004).

- (2) Specification of possible pathways is hampered by lack of epidemiologic data on incidence, prevalence, and case-fatality of most illnesses. Except in the case of cancer, where registries (sometimes linked with claims data) make it possible to distinguish these facets of illness, sorting out the relative influence of various types of societal characteristics on occurrence versus progression of illness (as shown in the figures) has been difficult (Declich & Carter, 1994; Maty, Everson-Rose, Haan, Raghunathan, & Kaplan, 2005).
- (3) How variables in pathways are specified is critically important. Many studies of income inequality have failed to distinguish between earned income and disposable (after taxes and social transfers) income. Countries differ considerably on their ranking of income inequality according to which measure of income is used. Japan is a notable example, as it changes from

Table 1  
Examples of the types of influences on health that have been studied

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Nature of political regimes<sup>a</sup>

Political parties, percentage of people covered by public medical care, corporate and state profits, wage inequality, gross fixed capital formation<sup>b</sup>

Social pact between labor, management, and government<sup>c</sup>

Public expenditures on health<sup>b,d,e</sup>

Method of healthcare financing, supply of physicians, proportion of population in unions<sup>f</sup>

Quality of women's lives<sup>g</sup>

Racial segregation<sup>h</sup>

Authoritarian legacy, years of social democratic versus Christian democratic government, union density, industrial labor disputes, left seats in parliament, strength of the welfare state, females in government, social security expenditures, percent reduction in income inequality due to taxes and transfers<sup>i</sup>

Agricultural policies<sup>j</sup>

Female voter registration and voting turnout, female earnings and representation in the labor force and in management or public sector jobs, male/female wage gap<sup>k</sup>

Orientation of health system<sup>l,m</sup>

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<sup>a</sup>Franco, Alvarez-Dardet, and Ruiz (2004).

<sup>b</sup>Navarro and Shi (2001).

<sup>c</sup>Navarro (2002).

<sup>d</sup>Or (2001).

<sup>e</sup>Houweling et al. (2005).

<sup>f</sup>Macinko et al. (2004).

<sup>g</sup>Raphael and Bryant (2004).

<sup>h</sup>Cooper (2001).

<sup>i</sup>Muntaner et al. (2002).

<sup>j</sup>Lock and McKee (2005).

<sup>k</sup>Kawachi, Kennedy, Gupta, and Prothrow-Stith (1999).

<sup>l</sup>Starfield et al. (2005).

<sup>m</sup>Mackenbach (2003).

one of the most equitable in terms of earned income to one that is much less equitable in terms of disposable income (Starfield & Shi, 2002). It is possible that countries with marked earned income inequalities can mitigate its adverse effects on health by a program of social transfers (Chapman, 2006).

- (4) Including a wider range of possible types of societal influences than is commonly the case will help to elucidate pathways of influence. Subramanian and Kawachi (2004), in their review of methodologic limitations in studies of income inequality and health, posed two issues concerning possible pathways of influence: the role of social cohesion and the role of policy. They explicitly recognized that, notwithstanding limitations in the concepts of social cohesion and social capital, there are questions

about the extent to which they are ingrained in "culture" or mutable through changes in social policy. In the policy realm, they pose the possible influence of "primary care indicators, welfare spending, child care, food assistance, vocational training, remedial training, health insurance, early childhood education, disability assistance, tax policy, and unemployment compensation" (Subramanian & Kawachi, 2004, 87p.). Furthermore, their recognition that income inequality and social cohesion may not be mutually exclusive is consistent with the postulated interactions depicted in Fig. 2 and argues for inclusion of a wider range of societal influences in studies of the genesis of inequities. For example, it is possible that income inequality, like some other societal characteristics, is a proxy for more potent influences. Marmot

(2006, 1306p) observed that “It is not position in the hierarchy per se that is the culprit, but what position in the hierarchy means for what one can do in a given society”. Access to power and decision-making is likely to be a more explanatory characteristic (Kenworthy & Pontusson 2005).

- (5) Level of aggregation is important in considering societal influences. Studies that aggregate data to larger areas, i.e., states, regions, and municipalities, possibly have more consistent findings because at least some of the health benefit may be a result of better social policies in general in these areas rather than a specific effect of just one aspect of policy, i.e., taxation policies.
- (6) Although uncommon in the equity literature, inclusion of health system characteristics is important. However, the mere presence of and access to “health services” is inadequate. The benefits from health services occur only if health services are delivered appropriately. Studies within countries confirm the key role of a primary care orientation of health services such that the influence of the other factors in the pathway are reduced in the presence of this particular feature of health systems (Starfield et al., 2005). An analysis across OECD countries (Macinko et al., 2004) similarly found that the primary care orientation of a health services system reduces the magnitude of the relationship between wage inequality and infant mortality.

### Implications for future research and development of interventions

In view of the likely importance of many societal influences and the relative dearth of studies examining their relative influence on distributions of health, a more concerted approach to identifying and measuring a minimum core set including the most salient policy, economic, and environmental characteristics, seems warranted. Cultural characteristics and ingrained behaviors undoubtedly play a role also, at least in particular countries (Cooper, Ordunez, Iraola, Munoz, & Espinosa-Brito, 2006; Stanistreet, Bambra, & Scott-Samuel, 2005) and should be included where relevant.

Re-framing some issues seems to be in order. It might well be that, in a world where an increasingly smaller proportion of people exercise control (or even influence) over social policies, more equitable distribution of income through the population

below this extremely high end might have little impact on inequities in health because of the concentration of influence and power of the extremely wealthy on specific policies and programs at the international level. Great wealth (such as the resources of the Bill and Melinda Gates Foundation) can be used to mold policies that bear directly on inequities in health, and not always in ways that are supportable by the best evidence (Birn, 2005; Cohen, 2006). Exempt from the normal processes of democratic decision-making, they may be signaling decreasing influence over social and health policies by the large majority of people, even in democratic societies—a subject worthy of more concerted study.

Re-framing the issues as gradients in inequity rather than on the poor versus the rich may itself help with elucidating pathways (Graham, 2004) because different societal phenomena may operate differently across the social spectrum.

Examining the impact of societal influences such as those enumerated in Table 1 and Fig. 2 is challenging due to limitations imposed by the existence of many variables and too few countries to provide stable estimates. Countries with federal systems, wherein policies are made at regional or state levels have potentially much to offer (Levins & Lopez, 2002).

Among the various societal influences, those concerning the organization, financing, and delivery of health services stand out as models for exploration of other societal influences. They have consistently shown associations not only with population rates of health in both developed as well as industrialized countries (Cutler & McClellan, 2001; Cutler, Deaton, & Lleras-Muney, 2005; Nolte & McKee, 2003) but also and when focused on a primary care orientation, have been shown to reduce inequities in many aspects of health (Starfield et al., 2005).

Equity research has emerged from its infancy. As it matures, it increasingly will turn to better conceptualizations of pathways, clearer specification of types of influences and greater precision in their measurement, and greater sophistication in characterizing the various types of health outcomes in different populations and population subgroups. Concerns about equity in health are societal concerns and need to be dealt with by a focus on how societal influences and their interactions can improve the health of the relatively disadvantaged to levels attained by the more advantaged.



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