Socioeconomic Disparities In Health: Pathways And Policies

Inequality in education, income, and occupation exacerbates the gaps between the health "haves" and "have-nots."

by Nancy E. Adler and Katherine Newman

ABSTRACT: Socioeconomic status (SES) underlies three major determinants of health: health care, environmental exposure, and health behavior. In addition, chronic stress associated with lower SES may also increase morbidity and mortality. Reducing SES disparities in health will require policy initiatives addressing the components of socioeconomic status (income, education, and occupation) as well as the pathways by which these affect health. Lessons for U.S. policy approaches are taken from the Acheson Commission in England, which was charged with reducing health disparities in that country.

SOCIOECONOMIC STATUS, whether assessed by income, education, or occupation, is linked to a wide range of health problems, including low birthweight, cardiovascular disease, hypertension, arthritis, diabetes, and cancer.[1] Lower socioeconomic status is associated with higher mortality, and the greatest disparities occur in middle adulthood (ages 45–65).[2]

J. Michael McGinnis and William Foege have provided an incisive analysis of the "actual causes" of death in which they estimated the number of U.S. deaths caused by factors such as tobacco, diet and lack of activity, and toxic agents.[3] They noted the mismatch between the importance of these factors and allocation of health care resources, with most resources going to treat diseases and relatively few to modifying the predisposing factors. To modify these risk factors, one needs to look even further upstream to consider their "actual determinants." Socioeconomic status is a key underlying factor. In this paper we examine multiple pathways through which it can influence health, and we consider the implications of

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these pathways for policy.

While socioeconomic status is clearly linked to morbidity and mortality, the mechanisms responsible for the association are not well understood. Identifying these mechanisms provides more options for policy remedies. Given the pervasive effects of socioeconomic status, no single policy, or even one domain of policy, can eliminate health disparities. The Acheson Commission in the United Kingdom, which was charged with providing policy suggestions for reducing health disparities in that country, made thirty-nine recommendations, organized around key populations (such as children, older people, and ethnic minorities) and domains (such as income and tax benefits, education, and employment).[4] If a U.S. equivalent of the Acheson Commission were convened, what policies should it consider on the basis of the empirical data? Below we consider policies addressing several areas for which the empirical evidence is strongest regarding the links between socioeconomic status and health.

Components Of Socioeconomic Status

The most fundamental causes of health disparities are socioeconomic disparities.[5] Socioeconomic status has traditionally been defined by education, income, and occupation. Each component provides different resources, displays different relationships to various health outcomes, and would be addressed by different policies.

■ **Education.** Education is perhaps the most basic SES component since it shapes future occupational opportunities and earning potential. It also provides knowledge and life skills that allow better-educated persons to gain more ready access to information and resources to promote health.[6] Marilyn Winkleby and colleagues examined how education, income, and occupation relate to risk factors for cardiovascular disease; when these were taken together, only education remained as a significant predictor.[7]

While most studies have examined years of completed education, early educational experiences also may be important. Although health effects have not been established, programs such as Head Start and the Perry Preschool Project provide suggestive evidence that there are critical periods when intervention may confer long-term benefits.[8]

To the extent that education is key to health inequality, policies encouraging more years of schooling and supporting early childhood education may have health benefits. When policymakers debate the merits of increasing access to education, they rarely consider improvements in the health of the population. Other virtues—increasing human capital, boosting productivity, augmenting lifetime earn-

ings, and improving the socialization of the next generation—follow from improvements in educational attainment. But in this area, as in others, collateral benefits such as decreasing health care costs also might emerge from increased investment in education.

■ **Income.** In addition to providing means for purchasing health care, higher incomes can provide better nutrition, housing, schooling, and recreation. Independent of actual income levels, the distribution of income within countries and states has been linked to rates of mortality.[9] Although controversial, one explanation is that underinvestment in public goods and welfare and the experience of inequality are both greater in more stratified societies and that these, in turn, affect health.[10] If this is correct, then highly stratified societies take an additional toll on health beyond that associated with absolute deprivation. Although the association between income and health is stronger at lower incomes, income effects persist above the poverty level.[11] Health effects at the upper part of the distribution may more strongly reflect relative status, while at the lower part they may be more linked to absolute deprivation.

Redistributive policies. U.S. economic policies are a mix of those that address poverty or diminish economic disparities and those that result in increased disparity. At different points in its history, the United States has created policy tools that explicitly reduced economic inequality. The prime example is the introduction of the progressive income tax in 1913. Social Security and the welfare policies developed in the 1930s also influenced the contours of inequality, although other forces acting simultaneously (for instance, the expansion of the white-collar labor force) created countertendencies. Policies that might be said to have moved the country in the opposite direction—toward wealth inequalities—include the mortgage deduction allowance built into the tax code, decreases in capital gains taxes, and local financing of education budgets (which produce more advantaged districts where wealthier families reside). Tax-and-transfer policies may exert less influence than labor-market trends that have increasingly rewarded highly skilled and educated workers, but they are important to consider nonetheless as we look to understand the overall relationship between stratification and health inequality.[12]

Although health effects of relative SES occur across the whole range of the SES hierarchy, the burden is particularly great for those in poverty. Given this fact, policies intended to increase the income (and income security) of the poor should have the greatest positive impact on health outcomes. The Earned Income Tax Credit (EITC) is a contemporary example of a federal policy that has raised the income of working-poor families, while welfare reform in general

has pushed in the opposite direction, cutting the stipend levels for recipients.[13] These interventions have affected the distribution of resources and therefore the contours of inequality, which at least in theory should leave their traces in health outcomes.

A randomized trial in Canada of income supplements for single parents on assistance who began working full time shows how complex the effects can be. These supplements did help to increase employment and income in the experimental group. To date no health data have been reported on the adults, but children in the experimental group who were three to eight years old at baseline were subsequently reported to have fewer health problems and better cognitive functioning. However, there were no effects for younger children and some negative effects on school achievement and problem behavior for older children.[14]

Research challenges. We found little research in the United States examining how redistributive policies or other income distribution changes affect health outcomes. Those interested in the relationship between inequality and health should be able to show that when the former changes, the latter does too. One challenge in doing so is specifying the time lags between change in economic conditions and when health effects can be seen. The rapid drop in life expectancy in Eastern Europe around the time of the fall of communism suggests that fundamental changes in social life may take a toll quite quickly; the subtler changes associated with growing inequality may take longer to observe.[15] A second challenge is to isolate the impact of redistributive policies and separate their effects from other social and economic trends occurring at the same time.

Economic historians interested in health may help us to understand the relationship of inequality and health. For now, we merely note that there is some suggestive evidence. For example, the introduction of Social Security dramatically reduced the proportion of elderly who lived in poverty. One legacy of this policy may be the fact that SES differences in health now narrow after age sixty-five. More research is needed to determine whether interventions in income distribution of this kind produce the sorts of outcomes that the theoretical literature on inequality and health would predict.

Welfare benefits. Addressing the link between income inequality and health, the Acheson Commission focused attention on tax-and-transfer benefits. In particular, they suggested increases in transfer payments, upgrading of state pensions, and measures to increase the take-up rates of existing benefits. The U.S. political climate is far more hostile to welfare benefits than are those in the social welfare states of Western Europe. Reductions in U.S. welfare stipends have been particularly severe since 1996, and the household incomes of

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nonworking poor families have declined as a result.

Labor-market policies. Policies that affect the health of the labor market are perhaps the most important medicine we can apply, although its ingestion may raise inequality levels at the same time that we benefit from the "great American job machine." In recent years the U.S. economy has outstripped virtually all other industrial states in generating jobs, albeit at the extremes of well-paid jobs available only to the highly skilled and poorly compensated jobs for the low skilled. Labor-market inequality may be widening the gaps between the health "haves" and "have-nots." Yet tight labor markets have been beneficial for the working poor in particular.[16] Late 1990s' Federal Reserve policies that lowered interest rates and encouraged economic expansion cut unemployment and led to wage increases (even at the bottom of the distribution). The additional impact of the EITC has raised the income of working-poor households.

The point here is that many policy domains affect the distribution of income, some redistributive and some oriented toward economic expansion in which a rising tide lifts more boats than many once thought possible. Following Acheson, we suggest that reform proposals of all kinds be examined with more than economic efficiency or security in mind. Impact on the nation's health profile must be considered to be at the bottom line as well.

■ **Occupation.** Occupational status is a more complex variable, and its measurement varies depending on one's theoretical perspective about the significance of various aspects of work life. One aspect is simply whether or not one is employed, since the employed have better health than the unemployed have.[17] Although some of this association is a function of the "healthy worker" effect, there is evidence that being unemployed and the length of unemployment affect health status. However, some types of benefits for the unemployed can buffer the adverse effects on health. Entitlement benefits appear to reduce some negative health effects, while means-tested benefits do not.[18] Threat of unemployment and job insecurity can affect health as well. Ralph Catalano and Seth Serxner found elevated rates of low birthweight in geographic locales threatened with high rates of unemployment.[19] Anticipation of plant closings or other job threats have been linked to increases in blood pressure, although these increases may not become chronic.[20]

Among the employed, occupations differ in their prestige, qualifi-

cations, rewards, and job characteristics, and each of these indicators of occupational status is linked to mortality risk.[21] Lower-status jobs expose workers to both physical and psychosocial risks. They carry a higher risk of occupational injury and exposure to toxic substances. In addition, job strain and lack of control over work are greater the lower one's occupational status. In the Whitehall study of British civil servants, differences of coronary heart disease incidence by occupational grade were largely accounted for by differences in job control.[22]

Government regulation of occupational conditions is also a domain fraught with political conflict. As a rule, we intervene to protect basic physical health and safety but tend not to go further by, for example, mandating work reorganizations that promote autonomy, control, and other psychosocial factors that could affect health. Recognizing the link between job control and health, the Acheson Commission did push in that direction, recommending that wherever possible, private and public employers alter management practices to increase employees' levels of control over the daily conduct of work (pacing, decision making, variety). In the U.S. context, researchers need to show that such changes in work conditions will either increase—or at least not decrease—profits; improved profits could result from increased productivity, reduced absenteeism, or reductions in medical costs.

Indirect Pathways

Marcia Angell has observed that income, education, and occupation are powerful yet mysterious determinants of health; they are not likely to have a direct effect but serve as proxies for other determinants.[23] Hence, what appears to be a direct impact of SES inequality may instead be operating through differential exposure to conditions that have more immediate effects on health.

Pathways by which socioeconomic status influences health should be those that affect health more generally, including those identified by McGinnis and Foege.[24] They used data from a broader analysis of the relative impact of four inputs to health: biological determinants, health care, environmental exposure, and behavior and lifestyle. These factors were identified earlier in the Lalonde report as the key causes of morbidity and mortality in Canada.[25] Socioeconomic status underlies three determinants, which together are associated with an estimated 80 percent of premature mortality. The largest contribution is from behavior and lifestyle, accounting for about half of premature mortality, with environmental exposure accounting for another 20 percent, and health care, 10 percent.[26] Below we consider how SES may shape each of these pathways.

■ **SES and environmental exposures.** Exposure to damaging agents in the environment, including lead, asbestos, carbon dioxide, and industrial waste, varies with socioeconomic status. Those lower on the SES hierarchy are more likely to live and work in worse physical environments. Poorer neighborhoods are disproportionately located near highways, industrial areas, and toxic waste sites, since land there is cheaper and resistance to polluting industries, less visible. Housing quality is also poorer for low-SES families. As a result, compared with high-income families, both children and adults from poor families show a sixfold increase in rates of high blood lead levels, while middle-income adults and children show a twofold increase.[27]

Low-SES persons also experience greater residential crowding and noise. Crowding within the home appears to be more problematic for health than is area density.[28] Noise exposure has been linked to poorer long-term memory and reading deficits and to higher levels of overnight urinary catecholomines (epinephrine and norepinephrine) among children and to hypertension among adults.[29]

Childhood asthma incidence is rising, especially in urban neighborhoods among low-SES children, and the severity is greater among these children.[30] Although the jury is out on why, candidate explanations include crowding, a decline in housekeeping as a result of increased adult work hours, and deteriorating housing stock.[31]

Concerns about the health impact of environmental pollution has resulted in increasing regulation. The first class-action suit using civil rights statutes challenged a sanitary landfill proposed near a middle-class African American suburb in 1979. Protests and lawsuits since then have raised the visibility of environmental racism.[32] The broader concept of environmental justice is part of government policy dating from 1994, when Executive Order 12898 ordered federal agencies to develop relevant policies. The Environmental Protection Agency (EPA) now defines *environmental justice* as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulation, and policies."[33] Despite these actions, however, poor minorities are still at far greater risk for environmental exposure than are whites in general, or middle-class adults and children of any race and ethnicity.

There are many types of environmental exposures, and each has a different policy solution. Advocates have recommended, for example, that environmental impact reports consider SES disparities in exposure. In another realm, in Massachusetts it is illegal to sell a house with high lead levels to a family with a child under age six; enforcement is built into the property transfer system. States vary in how much they regulate lead exposure and in the resources they put

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toward enforcement of the statutes, which results in substantial differences in exposure. In a state with lax enforcement, children living at an address where a previous instance of lead poisoning had been reported were more than four times more likely to have high blood levels than in a nearby state where statutes were strictly enforced.[34] This suggests that we need to focus not only on laws but on their enforcement.

■ **SES and social environment.** SES-related health effects of social environments may be even more important than those of physical environments. Isolation and lack of engagement in social networks are strong predictors of health. The socially isolated have relative risks of mortality ranging between 1.9 to almost 5 times greater than those with better social connections.[35] Patterns of social interaction also affect disease risk. For sexually transmitted diseases, transmission is more rapid in high-risk networks, which are often clustered in poorer areas, thus putting lower-SES persons at greater risk for exposure.

Social networks and social cohesion are affected by the broader environment. Unfortunately, urban planning came late to the recognition that zoning policy has a social impact. In many cities urban renewal dismantled long-standing social structures and organization, paving the way for a range of social and health problems.[36] Similarly, the social environments of high-rise housing projects impede community social organization and parental supervision.[37]

Communities differ in the extent to which their institutions foster positive social ties.[38] Those with greater social cohesion and social capital have lower rates of homicide as well as lower overall population mortality.[39] The literature on social capital has not yet explained why neighborhoods with similar demographics differ on social cohesion and trust, or established whether social capital is stable.[40] But the associational evidence between social trust and health outcomes is striking and suggests that these are complementary frontiers worthy of exploration for addressing health issues along with raising income or educational attainment.

Both architectural features of communities (plazas, stoops, recreation centers) and institutions (clubs, parent-teacher groups, churches, crime control) may promote social integration that in turn improves health. Policymakers accustomed to thinking about these investments in community infrastructure as costs may also want to consider them as benefits if they lower morbidity and mortality.

■ **SES and health care.** Access to, use of, and quality of health care vary by socioeconomic status. Among adults, 40 percent of those who have not graduated from high school are uninsured, compared with only 10 percent of college graduates; more than 60 percent of the uninsured are in low-income families.[41] Persons who lack insurance receive less medical care, including screening and treatment, than those who are covered and may receive poorer-quality care.[42] Although the very poor may be eligible for Medicaid and persons over age sixty-five for Medicare, many "eligibles" fail to enroll.[43] Even in countries that provide universal coverage, persons with less income and education do not use health services in the same way that their wealthier, better-educated peers do. A Canadian study found that lower-SES Canadians used primary care more frequently but, when adjusted for health care need, were less likely to get specialty care.[44] In the United States, states with greater income inequality and higher mortality also have fewer primary care doctors per capita.[45] This suggests that access to primary care may be one pathway by which income inequality affects mortality.

Affordability and accessibility of health care have received a great deal of policy attention. We do not propose to review those efforts here but note simply that they are crucial. At the same time, although access to care is important for treatment of disease, it has relatively little to do with SES differentials in disease incidence. Even in countries with universal health care, SES-driven inequalities in health are pronounced. A recent study from Canada showed higher mortality among men with less income, less education, and lower occupational status for a variety of causes of death, all of which were amenable to medical treatment.[46] In England SES disparities in health actually widened after the establishment of the National Health Service.[47] The provision of universal coverage was insufficient to offset broader economic and social changes. Hence, while major inroads could be made in reducing health inequality by providing universal coverage, this policy strategy will not come close to eliminating health inequalities, because the underlying incidence of disease, toxic exposure, and injury is the dominant force.[48]

■ **SES and behavior/lifestyle.** Behavioral factors account for about half of premature mortality, and almost all vary by socioeconomic status.[49] The greatest behavioral risk for premature mortality is tobacco use. Those with less education and less income are more likely to smoke.[50] Smoking prevalence reflects likelihood of initiating smoking as well as of quitting, and different polices are relevant for those stages of smoking. Winkleby and colleagues found that neither education nor income was associated with smoking onset.[51] However, the more educated were more likely to try to quit, and

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among those who tried to quit, those with higher incomes were more likely to succeed. This suggests that efforts to encourage quitting need to be geared more strongly to those with less education and that the means of quitting need to be made more accessible to the poor. Higher taxes on cigarettes, resulting in higher prices, can reduce consumption.[52] However, this increases the economic burden on low-income smokers, who are more likely to lack resources to get help in quitting. If taxation policies are used, these need to be coupled with more positive approaches to aid in smoking cessation.

Low socioeconomic status is similarly associated with more sedentary lifestyle and lower consumption of fiber and fresh fruits and vegetables.[53] Patterns of alcohol use by socioeconomic status are more complex, as are the health risks related to alcohol. Moderate alcohol consumption is associated with lower mortality, while high levels of consumption increase mortality risk. Moderate drinking does not show an SES gradient, while heavy drinking is more common at lower SES levels.[54]

More research is needed to parse the independent contributions that education, income, and occupation make to these behavioral patterns. Limited education may mean less exposure to information about risk, but the same people may be locked into neighborhoods with poor recreational facilities, fewer stores selling fresh produce, and more advertising for tobacco and alcohol. Without settling these issues in any definitive fashion, the Acheson Commission recommended policy initiatives that encouraged walking, bicycling, nutritional information campaigns, and a heavy emphasis on smoking cessation and prevention. However, if such policies are to be effective in reducing disparities, they need to be tailored to the life circumstances of persons lower on the SES hierarchy.

Health promotion efforts that are not targeted at the poor are likely to increase SES disparities, because they are used more readily by those with more resources to act on the information. Rates of smoking fell far more quickly among the more educated following the U.S. surgeon general's report on smoking, resulting in the current SES gradient in smoking. Even for those with health insurance, smoking-cessation treatment may not be covered.[55] Anti-smoking media campaigns, such as the one in California, have been relatively successful, but these need to be geared to high-risk groups, just as tobacco companies target these groups for advertising.[56] In terms of

exercise, the Acheson Commission's recommendation to increase walking and cycling needs to be translated into more specific policies that would be effective in lower-SES neighborhoods, such as special provision of bike lanes and safe, well-lit places to walk; these are more available in more affluent areas, and a general policy will not address the imbalance.

Among children, school design and resources affect physical activity. Characteristics of school environments such as the area provided for physical activity, available equipment, improvements, and supervision have a substantial impact on children's activity levels.[57] More-affluent schools are more likely to provide these, and their availability would be addressed by local school policy.

■ **Chronic stress.** The effects of stress were not included in the Centers for Disease Control and Prevention (CDC) analyses, and the impact is hard to quantify. However, stress can affect health both directly and indirectly through its effects on health behavior. While people in all walks of life experience stress, lower-SES persons live and work in more stressful environments. Eric Brunner identified a number of factors that contribute to greater stress at lower SES levels, including economic strain, insecure employment, low control at work, and stressful life events.[58] Some of the factors reviewed earlier, including crowding and noise exposure, low control at work, and social isolation, may affect health in part through elevated stress responses.

A number of interventions developed to help people manage stress and buffer its physiological effects have been shown to reduce disease burden. In controlled trials, such programs have been shown to reduce hypertension, increase glycemic control among diabetic patients, reduce decreases in height among the elderly, increase levels of dehydroepiandrosterone (DHEA) and growth hormone, and decrease cortisol levels.[59] Nevertheless, these programs have not been widely incorporated into health care, nor are they covered by most insurance plans. As a result, more-affluent persons can better enjoy their benefits, furthering the SES disparities. Within the health policy domain, then, some attention should be given to coverage and incentives to use behavioral treatments and stress-reduction interventions, particularly tailored for those lower on the SES hierarchy.

Policy And Priorities

Eliminating health disparities will require attention to all SES components and the pathways by which they influence health.[60] Some are already the focus of debate and action. The United States has given much attention to health care and the problems of the unin-

sured but has made discouragingly little progress. Echoing the Acheson Commission's focus on early life, an initial step would be universal coverage for children. Most states provide coverage for lower-income children under Medicaid and the State Children's Health Insurance Program (SCHIP), but we lack a national policy that ensures coverage for all children. Attention still would need to be paid to problems of access and treatment for those who are insured.

Even if we provided universal coverage, however, patterns of disease and injury that follow the SES gradient would largely remain. Much of the association is due to SES effects in the occurrence of disease, and policies to reduce SES effects need to emphasize all of the domains discussed earlier.

■ **Challenges in each domain.** Redressing fundamental economic and social inequality is no simple matter. Redistribution of resources, through the tax code and public investment, is always contentious. Interference in the private sector involved in regulating occupational conditions is likewise likely to be resisted by employers. Policies that foster educational opportunity may be less politically divisive, but such efforts still have faced stiff opposition. The Acheson Commission gave priority to policies that would improve the health of women of child-bearing age and children to minimize the impact of inequality early in life. Policies that support early childhood programs have been supported largely on the basis of social outcomes such as school achievement and lower delinquency rates; demonstrating the health benefits of such programs (and their associated cost savings) may add a rationale for their support.

■ **Need for cost-benefit analysis.** Indeed, we would argue (following Alvin Tarlov) that a whole new approach is needed in policy circles that would reconsider the benefit side of cost-benefit analysis.[61] Traditionally, these calibrations emphasize economic efficiency or possibly social justice. What they often leave out—when the subject is not explicitly health—is the health-promoting, and potentially cost-saving, prospects of policies that improve education or equalize resources. A recent analysis of the potential health benefits of a "living wage" ordinance is one such example.[62] Failing to capture health improvements that may follow from reduction of inequality may mean that policies look more expensive to implement than they are if one takes health spending into account.

■ **Behavioral justice.** Although problems remain, disparities have been clearly addressed in relation to environmental exposure with the environmental justice movement, and in relation to health care with debates regarding the uninsured. Focusing on health behavior is potentially problematic, as it can risk "blaming the victim" if this behavior is viewed simply as a lifestyle choice. Behavior such

as cigarette use, high-fat diets, and lack of exercise is shaped and constrained by social and physical environments linked to socioeconomic status.[63] Awareness of these constraints may encourage policies that engender "behavioral justice," promoting universal access to the resources needed to engage in health-promoting behavior.[64] This will require policies and resources that, among other things, counteract the marketing that encourages cigarette, alcohol, and junk-food consumption and sedentary activities.

■ **Strong analyses needed.** To the extent that each solution requires resources, a strong case needs to be made regarding the extent of the problem and the efficacy of the proposed policy remedies. Scientists need to show the causal pathways, demonstrate how much alteration in underlying inequalities is needed to affect health outcomes, and evaluate the economic and social benefits. As Michael Marmot points out, policies or interventions that target "upstream" effects (for example, income distribution) would have the broadest impact but would be the most difficult to evaluate.[65]

THE ACHESON COMMISSION was criticized by some for making too many recommendations without setting priorities.[66] However, there are many approaches to reaching the goals that they set. The analyses we have presented here suggest that multiple approaches are indeed needed to eliminate SES disparities in health. Since the relevant sectors operate somewhat independently, there may be less direct competition for priorities than occurs within domains, and it makes sense to push on as many fronts as possible. What is needed is a broad-gauged approach to the multiple determinants of SES disparities in health if we are to eliminate, or even greatly reduce, these disparities.

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NOTES

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