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ANALYSIS & COMMENTARY

Where Health Disparities Begin: The Role Of Social And Economic Determinants—And Why Current Policies May Make Matters Worse

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ABSTRACT **Health disparities by racial or ethnic group or by income or education are only partly explained by disparities in medical care. Inadequate education and living conditions—ranging from low income to the unhealthy characteristics of neighborhoods and communities—can harm health through complex pathways. Meaningful progress in narrowing health disparities is unlikely without addressing these root causes. Policies on education, child care, jobs, community and economic revitalization, housing, transportation, and land use bear on these root causes and have implications for health and medical spending. A shortsighted political focus on reducing spending in these areas could actually increase medical costs by magnifying disease burden and widening health disparities.**

In 2003 the landmark Institute of Medicine report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* drew needed attention to disparities in the health care of racial and ethnic minorities.[1] The response from the health care and policy communities included new initiatives to standardize treatments for racial and ethnic minorities, heighten providers' cultural competency, and increase minority representation among health care professionals.

Although some disparities in health care have narrowed, disparities in the health of minority and disadvantaged populations have persisted. Since the 1960s, the mortality rate for blacks has been 50 percent higher than that for whites, and the infant mortality rate for blacks has been twice as high as that for whites.[2,3] Health disparities exist even in health care systems that offer patients similar access to care, such as the Department of Veterans Affairs,[4] which suggests that disparities originate outside the formal health care setting.

Social Determinants Of Health

Understanding health disparities requires a fresh look at the determinants of health itself, the most obvious being intrinsic biological attributes such as age, sex, and genes. Some other risk factors that affect health are referred to as "downstream" determinants because they are often shaped by "upstream" societal conditions. Downstream determinants include medical care; environmental factors, such as air pollution; and health behaviors, such as smoking, seeking or forgoing medical care, and not adhering to treatment guidelines.[5]

Exposure to these determinants is influenced by "upstream" social determinants of health—personal resources such as education and income and the social environments in which people live, work, study, and engage in recreational activities. These contextual conditions influence people's exposure to environmental risks and their personal health behaviors, vulnerability to illness, access to care, and ability to manage conditions at home—for example, the ability of

patients with diabetes to adopt necessary lifestyle changes to control their blood sugar.[6–12] Social determinants are often the root causes of illnesses and are key to understanding health disparities.

INCOME Income—with education, one of the most familiar social determinants—has a striking association with health (Exhibit 1).[11] Paula Braveman and Susan Egerter have shown that US adults living in poverty are more than five times as likely to report being in fair or poor health as adults with incomes at least four times the federal poverty level.[8] The income-health relationship is not restricted to the poor: Studies of Americans at all income levels reveal inferior health outcomes when compared to Americans at higher income levels.[10]

That income is important to health might not be surprising to some, but the magnitude of the relationship is not always appreciated. For example, Nancy Krieger and colleagues estimated that 14 percent of premature deaths among whites and 30 percent of premature deaths among blacks between 1960 and 2002 would not have occurred if everyone had experienced the mortality rates of whites in the highest income quintile.[13] Steven Woolf and coauthors calculated that 25 percent of all deaths in Virginia between 1996 and 2002 would have been averted if the mortality rates of the five most affluent counties and cities had applied statewide.[14] Peter Muennig and colleagues estimated that living on incomes of less than 200 percent of the federal poverty level claimed more than 400 million quality-adjusted life-years between 1997 and 2002, meaning that poverty had a larger effect than tobacco use and obesity.[15]

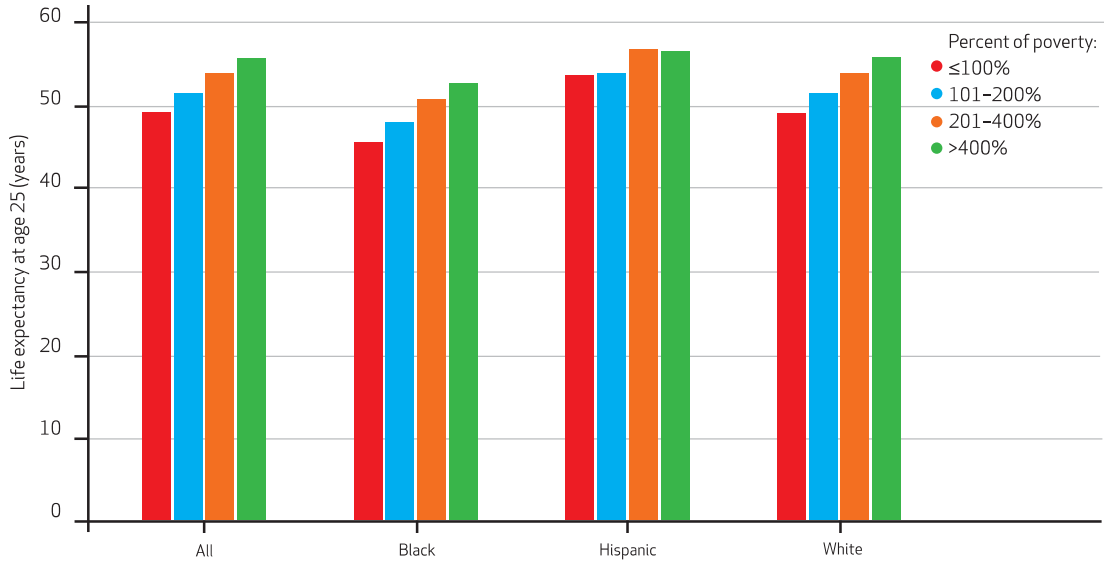
Such estimates rely on certain assumptions and do not prove causality. However, the consistency of the evidence supports the conclusion that income, or the conditions associated with income, are important determinants of health.

EDUCATION Like income, education has a large influence on health (Exhibit 2). An extensive literature documents large health disparities among adults with different levels of education. Adults without a high school diploma or equivalent are three times as likely as those with a college education to die before age sixty-five.[16] The average twenty-five-year-old with less than twelve years' education lives almost seven fewer years than someone with at least sixteen years' education.[10] Children's health is also strongly linked to their parents' education.[10]

According to Irma Elo and Samuel Preston, every additional year in educational attainment reduces the odds of dying by 1–3 percent.[17] Ahmedin Jemal and colleagues reported that approximately 50 percent of all male deaths and 40 percent of all female deaths at ages 25–64 would not occur if everyone experienced the mortality rates of college graduates.[18] Woolf

EXHIBIT 1

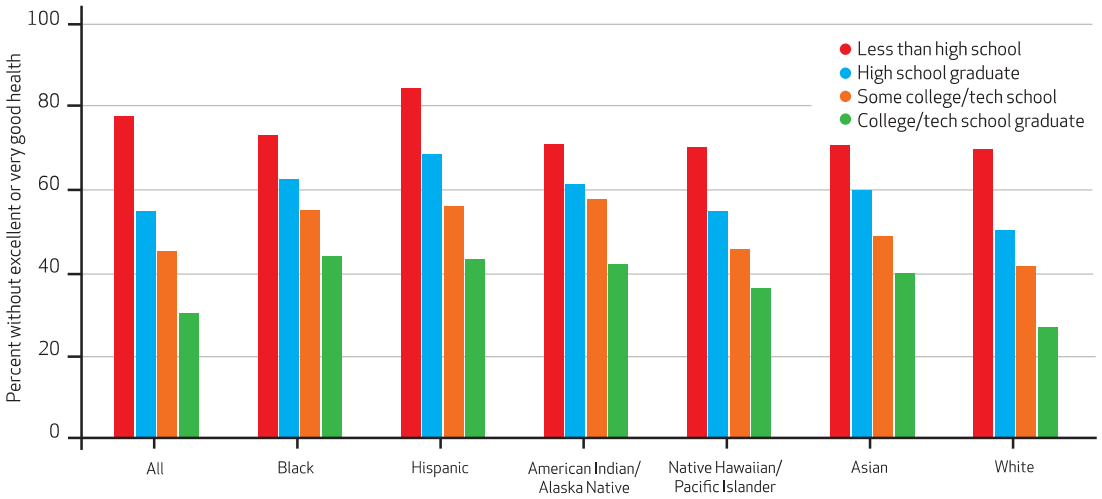
Disparities In US Life Expectancy At Age 25, By Income And Race Or Ethnicity



SOURCE Analysis by the Robert Wood Johnson Commission to Build a Healthier America's research staff of data from the National Longitudinal Mortality Study, 1988–98. **NOTE** Life expectancy is the number of years an average twenty-five-year-old could expect to live, based on family income relative to the federal poverty level.

EXHIBIT 2

Disparities In Health Status Of US Adults Ages 25–74, By Educational Attainment And Race Or Ethnicity



SOURCE Analysis by the Robert Wood Johnson Commission to Build a Healthier America's research staff of data from the Behavioral Risk Factor Surveillance System, 2005–07. **NOTES** Respondents could describe their health as poor, fair, good, very good, or excellent. "High school diploma" includes general educational development certificate.

and coauthors estimated that giving all US adults the mortality rate of adults with some college education would save seven lives for every life saved by biomedical advances.[19]

Stark racial or ethnic differences in education and income could largely explain the poorer health of blacks and some other minorities. The high school dropout rate is 18.3 percent among Hispanics, 9.9 percent among blacks, and 4.8 percent among non-Hispanic whites. The proportion of Hispanic adults with less than seven years of elementary school education is twenty times that of non-Hispanic whites. Black and Hispanic households earned two-thirds the income of non-Hispanic whites and were three times as likely to live in poverty.[20] As of 2009 white households had twenty times the net worth of black households.[21]

A WEB OF CONDITIONS Education and income are elements of a web of social and economic conditions that affect health (and influence each other) in complex ways over a lifetime. These conditions include employment, wealth, neighborhood characteristics, and social policies as well as culture and beliefs about health—for example, the belief that diseases are ordained by fate and therefore not preventable. People with low education and income are more likely than their better-educated, higher-income counterparts to lack a job, health insurance, and disposable income for medical expenses.

Education and income are also associated with behaviors that affect health. Smoking is three times as prevalent among adults without a high school diploma than among college graduates.[2] Similar patterns exist for other unhealthy behaviors, such as physical inactivity.

The Role Of Neighborhoods And Communities

Unhealthy behavior is partly a matter of personal choice, but extensive evidence documents the strong influence of the environment in which people live and work.[5,6,11,12] One may desire to eat a healthy diet but find nutritious foods too costly or live too far from a supermarket that sells fresh produce.[5] Parents might want to limit the time their children spend in front of a television or computer in favor of sending them outdoors for exercise, but their neighborhoods may be unsafe or lack playgrounds or sidewalks.

The built environment—for example, the design of roads and pedestrian routes—can thwart efforts to walk or bicycle to the store or work. Poor and minority neighborhoods are often "food deserts" with limited access to healthy foods but numerous fast-food outlets.[5] Schools in low-income neighborhoods often serve inexpensive processed foods and rely on revenue from vending machine contracts that promote soft drinks and high-calorie snacks.[5]

But behavior is not the whole story.[11,12] Distressed homes and neighborhoods can induce disease and contribute to disparities via pathways unrelated to behavior.[8] For example, housing can expose occupants to lead and allergens. Bus depots, factories, highways, and hazardous

waste sites are often situated near low-income and minority neighborhoods.[22] Distressed communities have a notorious shortage of health care providers, especially in primary care.

Social conditions are also important. Health may be compromised by the chronic stress of living amid multiple adverse conditions, such as poverty, unemployment, urban blight, and crime. Communities of color—especially minority youth—are targets of advertising that promotes the consumption of alcohol, tobacco, and high-calorie foods.[5]

Impoverished neighborhoods may have residents who are less able to help their neighbors. These neighborhoods may also have reduced social cohesion—which can influence health behavior; the sense of security and social well-being experienced by members of the community; and the ability of individuals within a community to join forces to advocate for needed services.[11] For example, minority neighborhoods with poor social cohesion may be unable to mount effective political opposition to decisions that will affect local schools or air quality.

Entrenched patterns reflecting long-standing disadvantage in low-income and minority neighborhoods often perpetuate cycles of socioeconomic failure. Employment opportunities and good schools may be scarce. Low-income residents often cannot afford to move elsewhere. Traveling across town to find a job—or a better one—or to reach a supermarket or doctor may be difficult if public transportation is unavailable or costly.

Biological Pathways To Health Disparities

Sandro Galea and colleagues recently estimated that of the 2.8 million deaths in the United States in 2000, 245,000 were attributable to low education, 176,000 to racial segregation, 162,000 to low social support, 133,000 to individual-level poverty, and 119,000 to income inequality.[23]

How do these conditions claim lives? Research has identified several plausible pathways. For example, people living with inadequate resources often experience stress levels that can cause the brain to stimulate endocrine organs to produce hormones, such as cortisol and epinephrine, at levels that may alter immune function or cause inflammation. Repeated or sustained exposure to these substances may produce "wear and tear" on organs and precipitate chronic diseases such as diabetes and heart disease.[11,24]

Other research suggests that the most profound health effects of living conditions may be delayed consequences that unfold over the span of a lifetime.[25] Experiences in the womb and early childhood, including stress, can have lasting effects that do not manifest themselves until late adulthood—or even in the next generation. An adult mother's childhood experiences can leave a biological imprint that affects the neurological and mental development of her offspring.

Even the effects of genes can be modified by the environment. New research in the field of epigenetics—the study of inherited changes in gene expression—suggests that the social and physical environment can activate the expression of genes and thus can determine whether a disease develops. This epigenetic makeup can be passed on to children and influence the occurrence of disease in more than one generation.[11] Although more remains to be investigated and understood, the fact that many social determinants have an impact on health makes scientific sense.

Declining Incomes And Increasing Inequality

Given that income contributes greatly to health disparities, the decline in the average income of Americans since 1999 and other signs of economic hardship are troubling. Between 2000 and 2009 food insecurity (defined as limited or uncertain access to adequate food), severe housing cost burdens (spending more than 50 percent of income on housing), and homelessness increased in the United States.[20] By 2010 the US poverty rate had reached 15.1 percent, its highest percentage since 1993.[26]

The gap between the rich and poor has been widening since 1968, especially recently.[26] Between 2005 and 2009 the share of wealth held by the top 10 percent of the population increased from 49 percent to 56 percent. Over the same period, the average net worth of white households fell by 16 percent, from $134,992 to $113,149; the average net worth of black and Hispanic households fell by 53 percent (from $12,124 to $5,677) and 66 percent (from $18,359 to $6,325), respectively.[21]

The fact that the average American's income and wealth are shrinking has important health implications. Since 1980, when the United States ranked fourteenth in life expectancy among industrialized countries, the US ranking has been declining. By 2008 the United States ranked twenty-fifth in life expectancy, behind such countries as Portugal and Slovenia.[27] The United States has also not kept pace with other industrialized countries in terms of infant mortality and other health indicators.[27]

Various explanations have been proposed, ranging from unhealthier behavior on the part

of Americans to deficiencies in the US health care system. However, a persistent question is whether US health status is slipping because of unfavorable societal conditions. Other industrialized countries outperform the United States in education, have lower child poverty rates, and maintain a stronger safety net to help disadvantaged families maintain their health.

Policies, Macroeconomics, And Societal Structure

Economic opportunity, the vibrancy of neighborhoods, and access to education and income are conditions set by society, not by physicians, hospitals, health plans, or even the public health community. The leaders who can best address the root causes of disparities may be the decision makers outside of health care who are in a position to strengthen schools, reduce unemployment, stabilize the economy, and restore neighborhood infrastructure. Policy makers in these sectors may have greater opportunity than health care leaders to narrow health disparities. The key change agents may be those working in education reform to help students finish high school and obtain college degrees, and those crafting economic policies to create jobs and teach workers marketable skills.

Even public health efforts to reduce smoking and obesity demonstrate that policy can often achieve more than clinical interventions. Policies to restrict indoor smoking and increase cigarette prices did more to reduce tobacco use in the past twenty years than relying on physicians to counsel smokers to quit.[28]

The most influential change agents in efforts to help Americans eat well and stay active may be the agencies and business interests that determine advertising messages, supermarket locations, school lunch menus, after-school and summer sports programs, food labels, and the built environment. Key actors include city planners, state officials, federal agencies, legislatures at both the state and federal levels, employers, school boards, zoning commissions, developers, supermarket chains, restaurants, and industries ranging from soda bottlers to transit companies. Initiatives by hospitals, medical societies, and insurers to reduce health care disparities remain vital, but the front line in narrowing health disparities lies beyond health care.

The 'Health In All Policies' Movement

Increasingly, governments and businesses are being encouraged to consider the consequences to health, and to health disparities, of proposed policies in transportation, housing, education, taxes, land use, and so forth—a "health in all policies" approach. For example, a city council might replace an abandoned warehouse with a public park or offer tax incentives for supermarkets to locate in a "food desert" neighborhood. Health impact assessments are being commissioned to study the potential health consequences of policies concerning such diverse topics as minimum wage laws and freeway widening.[29] The "health in all policies" approach has been adopted by individual communities, state governments, and federal initiatives, including the interagency health promotion council established under the Affordable Care Act of 2010.[30]

This holistic approach to public policy comes at the recommendation of prestigious commissions sponsored by the World Health Organization,[6] MacArthur Foundation,[7] and Robert Wood Johnson Foundation.[8] Studies in the Bay Area[31] and New York City,[32] for example; the acclaimed 2008 documentary film *Unnatural Causes*;[33] and major initiatives by the W.K. Kellogg Foundation,[34] California Endowment,[35] and Robert Wood Johnson Foundation[36] have all reinforced the message that "place matters." Armed with a new field of research that collects data at the neighborhood level, communities are beginning to document and rectify local social and environmental conditions that foment health disparities.

Linking Social Policy To Health Disparities

Although some academics and policy makers understand the health impact of social determinants, the general public and other policy makers do not always recognize that social policy and health policy are intimately linked. Social policies are clearly of concern for reasons other than their health consequences. The recession has riveted the nation's attention on the need for jobs and economic growth. Politicians view the economic plight of voters as an election issue.

The missing piece is that advocates for jobs, education, and other issues often overlook the health argument in making their case or calculating the return on investment. Public programs to address failing schools, disappearing jobs, and needed community development are under scrutiny as the fiscal crisis forces spending cuts to balance budgets and reduce the national debt. Defending these programs requires more than just making moral arguments for their retention and expansion. It requires proponents to make a solid business case, but the value proposition should include the medical spending avoided by having these programs in place.

The programs that could cushion stresses on children and families are now vulnerable to budget reductions.

Advocates for education or jobs programs often list important benefits, such as a more competitive workforce, job security, and economic growth. However, they could gather more support, especially from policy makers concerned about medical spending, by showing that disease rates—and hence health care costs—are connected to education, employment, and socioeconomic well-being.

For example, the health connection strengthens the business case for education. Henry Levin and colleagues reported that interventions to improve high school graduation rates among black males yield $166,000 per graduate in net savings to the government as a result of higher tax revenues and lower public health costs and crime rates.[37] Muennig and Woolf estimated that the health benefits of reducing elementary school classroom sizes yield $168,000 in net savings per high school graduate.[38] Robert Schoeni and coauthors estimated that giving all Americans the health status of college-educated adults would generate more than $1 trillion per year in health benefits.[39]

Making the connection between social determinants and medical spending heightens the relevance of social policy to a pressing national priority: the spiraling costs of health care, which have alarmed elected officials, employers, health plans, and the public. Whether any proposed remedy—from malpractice reform to the implementation of accountable care organizations—can bend the cost curve remains uncertain.

The gravitational pull of health care has kept the policy focus on reorganizing care, implementing information technology, and reforming the payment system, with less consideration of issues outside of medicine—even though they might curb the flow of patients into the system and reduce spending more dramatically. Bobby Milstein and coauthors recently calculated that expanding health insurance coverage and improving health care would do less to save lives and control medical spending than policies to improve environmental conditions and promote healthier behavior.[40]

Remedies outside of health care can both reduce the cost of care and ameliorate health disparities. An example is diabetes, a disease of rising prevalence and costs. Diabetes occurs among adults without a high school diploma at twice the rate observed among college graduates.[2] This disparity should speak volumes to policy makers seeking to control spending on this disease—and those tempted to cut education budgets to finance health care.

Why This Matters Now

These issues need attention now, for four reasons. First, this is a time of worsening socioeconomic conditions and rising inequality, fomented by the recession and economic policies. Higher disease burden, greater medical spending, and widened disparities could result.

Second, exposing children to today's adverse social conditions has ramifications for the health of tomorrow's adults. It has already been predicted that this generation could, for the first time in US history, live shorter lives than its predecessors because of the obesity epidemic.[41] Children's exposure to worsening socioeconomic conditions from fetal life through adolescence could alter the trajectory of their health, making them more likely to develop disease later in life.[25] These outcomes could intensify demands on a health care system that is already too costly to sustain.

Third, the very programs that could cushion stresses on children and families are now vulnerable to proposed budget reductions. Programs that help people get an education, find a job that can lift a family out of poverty, or provide healthy food and stable housing are being eliminated to balance budgets. This strategy, however, could backfire if it precipitates disease, drives more patients into the health care system, and increases medical spending.

Fourth, presidential and congressional elections are fast approaching, and many politicians are eager to exhibit their fiscal conservatism by reducing the size of government and eliminating social programs. The zeal to cut spending may discourage thoughtful consideration of how such cuts might expose voters to greater illness or harm the economy.

It may be naïve to hope that elected officials will rise above reelection concerns to address outcomes that will outlast their term in office and promote the greater good. It may be more realistic to hope that the public and policy makers will begin to connect the dots and see health

as a by-product of the environment in which Americans live. They might come to see that decisions about child care, schools, jobs, and economic revitalization are ultimately decisions about health—and the costs of health care.

Social issues lack quick and easy solutions. Politics surrounds questions of how best to educate children and improve the economic well-being of American families. However, scientific knowledge now makes it clear that the current movement to shrink investments in these areas has implications for public health and the costs of medical care. Fiscally prudent politicians (and voters) who learn about the medical price tag associated with austere economic and social policies may question the logic of "cutting spending" in ways that ultimately increase costs.

For the health equity movement, the challenge is to clarify this connection for policy makers and to not focus exclusively on how physicians and hospitals can reduce disparities. Equitable health care is essential, but health disparities will persist—as they have for generations—until attention turns to the root causes outside the clinic. ■

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In this month's *Health Affairs*, Steven Woolf and Paula Braveman discuss the root causes of health disparities: social and economic determinants ranging from low income to the unhealthy characteristics of communities. The authors note that these can harm health through complex pathways, and they warn that a shortsighted political focus on reducing spending in such areas as education, housing, and economic revitalization could exacerbate these root causes and magnify disease burden and health spending.

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