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Paths to Success: Optimal and Equitable Health Outcomes for All

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Abstract

U.S. health disparities are real, pervasive, and persistent, despite dramatic improvements in civil rights and economic opportunity for racial and ethnic minority and lower socioeconomic groups in the United States. Change is possible, however. Disparities vary widely from one community to another, suggesting that they are not inevitable. Some communities even show paradoxically good outcomes and relative health equity despite significant social inequities. A few communities have even improved from high disparities to more equitable and optimal health outcomes. These positive-deviance communities show that disparities can be overcome and that health equity is achievable. Research must shift from defining the problem (including causes and risk factors) to testing effective interventions, informed by the natural experiments of what has worked in communities that are already moving toward health equity. At the local level, we need multi-dimensional interventions designed in partnership with communities and continuously improved by rapid-cycle surveillance feedback loops of community-level disparities metrics. Similarly coordinated strategies are needed at state and national levels to take success to scale. We propose ten specific steps to follow on a health equity path toward optimal and equitable health outcomes for all Americans.

Keywords

Health equity; disparities; public health; primary care; success; health outcomes; race

U.S. racial-ethnic and socioeconomic health disparities are real, pervasive, and persistent, but they are not inevitable. Some communities demonstrate relative equality in health outcomes, even when poverty and social inequities persist. Geographic variation in disparities may serve as a natural experiment which shows critical elements and common pathways to success for communities which have moved toward greater health equity. Instead of getting stuck on what are the causes health of health disparities, we propose a very different question to guide our work—*What has already been successful in decreasing health disparities in real-world communities, and how could we replicate and expand these patterns of success to a nationwide scale?*

The Problem

In the year 2000, Black-White disparities accounted for over 83,570 excess deaths each year. Black-White mortality rate-ratios have not changed significantly over the past half-century, despite dramatic improvements in civil rights and economic opportunity.¹ The Black:White neonatal mortality rate increased from a 20th century low of 1.4 in 1946 to 1.7 in 1958, where it plateaued until increasing to 2.5 between 1971 and 1992. It has averaged 2.4 since then.^{2,3} To put this in human terms, eliminating the Black-White infant mortality gap nationwide could save a hundred African American babies every week.

On other measures, disparities are more widely distributed. For example, Hispanic and Latino populations experience diabetes complications such as leg amputations and retinopathy at rates at least twice that of non-Hispanic Whites. American Indians and Native Alaskans have the highest death rates due to sudden infant death syndrome (SIDS), and the second highest rates of diabetes-related deaths.^{3,4} Disparities in the Asian population are often overlooked because of a lumping of various Asian communities into one artificial racial grouping. Asian Indians have higher odds of physical inactivity and diabetes than Whites, while Filipino individuals are more likely to have hypertension.⁵ Cervical cancer and hepatitis C rates also vary widely from one Asian group to another.

Inequities also occur along socioeconomic lines.⁶ Lower socioeconomic status (both at the individual person and community levels) is associated with higher all-cause mortality and cause-specific mortality rates.^{7,8} The prevalence of multiple risk factors for heart disease and stroke is highest among people with the lowest household incomes (52.5%), and almost twice as high as the prevalence of those with the highest household income (28.8%).⁹ Individuals who are uninsured are substantially more likely to be hospitalized for a preventable condition,^{10,11} or to be diagnosed with a later-stage cancer.^{12,13} Regardless of income level, lack of health insurance is associated with decreased use of recommended health care services for cancer prevention, cardiovascular risk reduction, and diabetes management.¹⁴ There are also substantial *disparities within disparities*. For example, the strongest modifiable predictors of health care utilization for African-American persons in 1999 were whether or not individuals had health insurance and/or a usual source of care. These factors accounted for up to six-fold differences in utilization of doctor's office visits and prescription medication.¹⁵

While socioeconomic inequalities contribute to racial/ethnic inequalities, they are not the sole cause. For example, there are persistent disparities in treatments offered and delivered to patients based on race and gender.¹⁶ Standardized clinical scenarios in a simulated video experiment demonstrated bias in cardiac interventions based solely on race and gender of the

patient.¹⁷ Our studies in the Medicaid population have demonstrated racial and ethnic differences in rates of treatment for influenza, HIV-AIDS, depression, and the pain of labor and delivery, despite similar poverty levels and identical health insurance coverage.^{18–21} Even for college-educated African American women, birth-outcomes are significantly worse than among similar White women.²² Therefore, it is important to identify, monitor, and address both socioeconomic and racial/ethnic disparities simultaneously to achieve total health equity for the entire population.

Reason for Hope

Despite the persistence of disparities at a national level, more fine-grained analyses demonstrate that trends in disparities are not static. For example, Black-White mortality rate-ratios improved significantly for women from 1960–2000, but this was offset by a worsening of inequalities in health outcomes among men.¹ The conscious exclusion of non-disabled men from Medicaid and social welfare programs, plus high rates of unemployment and incarceration, have had a devastating impact on the health status of African American men.²³ In contrast, the combination of programs targeting women (especially those with dependent children) ranging from Medicaid to WIC to AFDC/TANF, combined with gains in employment and income levels for African American women relative to White women, all may have contributed to significantly decreased health disparities for women. Specifically from 1960 to 2000, Black-White mortality rate ratios decreased from 3.2 to 2.2 for women age 25 to 34 and from 2.5 to 1.6 for women ages 55–64. Disparities are not inevitable. Policies, programs, and other factors do matter, and can influence health equity both positively and negatively.

Another notable but less well understood success in the elimination of disparities is reflected in alcohol-related mortality trends. From 1979 to 2007, these declined from age-adjusted Black:White mortality rate-ratios of 2.8 to 0.8 for adult women and 2.7 to 0.9 for adult men. Does this reflect more accurate recording of a potentially stigmatizing cause-of-death for Whites, or is it a true success story in the elimination of disparities? If so, how was equality achieved?

There is also wide variation in the level of disparities from one local community to another, demonstrating that success is possible, and perhaps providing models for what such successful communities might look like. Some communities even show paradoxically good outcomes and relative health equity despite significant social inequities. In other words, there are community-level strategies that can mitigate the most harsh health effects of poverty and social inequality. In our Georgia Health Disparities report, we analyzed disparities in seven domains at the county level in each of Georgia's 159 counties. Some counties showed no racial disparities in health outcomes at all. Although socioeconomic inequalities were predictive of health outcome disparities in two-thirds of Georgia's counties, there were 28 counties in which broad measures of minority health outcomes were paradoxically good (minimal health disparities despite major social inequalities). Conversely, 23 counties had minority health outcomes that were worse than socioeconomic indicators would have predicted.²⁴ Levine,^{25–27} Fry-Johnson,²⁸ and Pisu²⁹ have explored such variations in overall mortality and mortality from breast cancer, HIV-AIDS, and infant mortality. Four patterns of Black-White outcomes as measured by mortality rate ratios (MRRs) have been observed, including places with high Black and White mortality rates and low Black:White ratios (i.e., equally bad outcomes), low Black and White mortality rates with Black:White equality (optimal and equitable outcomes), high Black and low White mortality rates with high MRRs (high-disparity with bad outcomes disproportionately affecting Blacks), and low Black and high White mortality with MRRs under 1.0 (reverse disparity). Disparities in mortality are clearly not the same in every community.

Interestingly, the successes reflected in low Black mortality rates have not been restricted to wealthier counties or those without socio-economic inequities, suggesting that some communities may have mitigated negative social determinants and may demonstrate key elements of more healthy, successful, or resilient, communities. These hypotheses are testable in mixed-methods research, which would combine quantitative analytic epidemiology with qualitative investigations of social, cultural, and contextual factors. Where communities have achieved success, we must ask, *Why?*

Paths to Success for Overall U.S. Health

What might be the components of achieving such success? We have previously published analyses demonstrating the essential components that have led to success in most of the major breakthroughs in U.S. health status, as measured by substantial reductions (more than 50%) in mortality rates within leading causes of death over the past 50 years.³⁰ We were able to identify innovations that enabled these successes, and then to identify mechanisms of diffusing those innovations to achieve survival success. We now must find similar paths to success for achieving health equity.

The *triangulating on success* model (research innovation spread through dual-channel diffusion of public health plus medical care) has both advantages and disadvantages. On the one hand, it explains America's success for seven of nine leading causes of death that have seen a 50% mortality reduction in the past 50 years (Table 1). The model also reminds us that all three stakeholder groups—researchers, public health professionals, and medical practitioners—share a success story and have a common stake in improving health outcomes for the American people, but must increasingly work together in common purpose, in partnership rather than in parallel.

On the other hand, many of these seven success-story categories of disease are the very conditions which have seen widening disparities, because life-saving innovations do not appear to diffuse equally through all segments of the population.³¹ Specifically, Phelan et al. have shown that disparities in mortality are greatest for those conditions we know most about treating and/or preventing.³² In general, advantaged segments of the population may adopt lifesaving innovations more quickly and more completely than disadvantaged communities. While social determinants provide a root cause explanation of health disparities, the cure is not always the inverse of the cause. The path out is not always the same as the path in. Identification of paradoxically successful (positive deviance communities) and replication of their protective resiliency factors, along with equitable diffusion of effective innovations, may be another path to success.

Paths to Success for Eliminating U.S. Health Disparities

Is there a path to success for communities currently afflicted with exceedingly disparate health outcomes? The Madison, Wisconsin (Dane County) experience exemplifies a community that achieved success in moving the needle from high disparity infant mortality rates to dramatically better Black health (IMR) outcomes, ultimately resulting in the complete elimination of the Black-White gap. According to the CDC's Morbidity and Mortality Weekly Report, Wisconsin had the highest Black infant mortality rate in the nation (17.6 deaths per 1,000 live births), approximately three times the state rate for Whites in 2002–2004. However, in contrast to other states and other metro areas of Wisconsin, the Black infant mortality rate in Dane County dropped 67% (Fig. 1), from 19.4 per 1,000 live births in the years 1990–2001 to 6.4 per 1,000 in 2002–2007.³³

These results must be viewed with cautious optimism at this time, as they represent a reduction of only about three infant deaths per year. Even so, the decrease in mortality is

tied to two related trends affecting many more infants, e.g., a decrease in the occurrence of births of very low birthweight (VLBW) Black babies (less than or equal to 1500g) from 391 per 1000 live births to 154 per 1000 (61% decrease), and a decrease in the number of extremely preterm births (less than or equal to 28 weeks estimated gestational age) among Black or African American women from 2.8% to 1.1%.

Some elements of the interventions that contribute to this success are known, but the full picture is not clear. *The New York Times* contrasted the experience of one young mother in Madison (Dane County) with her previous pregnancies while living in Racine, which still has one of the highest Black infant mortality rates in the country. This mother specifically mentions both home visits by county public health nurses and increased social support from her local church. Additional factors include a legal advocacy group assisting with housing and Medicaid issues, and a community health center with a robust cadre of nurse-midwives providing relational pre-natal care. Referrals to medical, dental, and mental health services are coordinated. Transportation and social work support are also provided, including assistance with education and employment. The county public health director says, “I think it’s a community effect. Pregnant women need to feel safe, cared for and valued.”³⁴[p.A-20] The Dane County example highlights the need to coordinate public health, health care delivery, and social supports (both concrete services and relational support) to achieve optimal and equitable health outcomes. Somehow in Dane County the multi-dimensional interventions have reached critical mass and completely reversed the Black-White disparities, rather than incrementally or partially reducing them. In biologic ecosystems this would be called hysteresis, a tipping point of sorts when multidimensional changes combine to achieve a rapid reversal of alternative “steady-states.” Much research is needed to see if this reversal of disparities will be stable over time, and whether hysteresis is demonstrable in other communities—if so, it would define at least one path to achieving health equity.

How do we learn from such success stories? Surveillance to identify paradoxically successful communities (health equity despite persistent social inequalities) must be followed by qualitative follow-up to ask the why and how questions. What worked?

Nobel laureate Amartya Sen has shown in the Kerala India model that disparities are neither inevitable nor deterministically associated with poverty.^{35,36} One strategy for seeking wisdom from such positive outlier communities and applying it to less successful or resilient communities can be found in the Positive Deviance model, which has demonstrated impact on issues as diverse as education, nutrition, health, and child endangerment in more than fifty countries across six continents.³⁷ There is likely no single magic bullet for eliminating most health disparities. Different communities may require different interventions, but these interventions are typically multi-dimensional and focus on multiple levels from person to system to community. Research is also needed to see if results in one community are replicable in other high-disparity communities, and if so, whether the model will be scalable to a broad range of communities across the nation.

Can we take such solutions to scale? Can we reduce disparities at a state or regional level? Childhood immunization rates have improved nationwide, but regional differences in disparity trends suggest that state-level and local implementation matters. For example, the Black-White immunization gap narrowed significantly in the Midwest region among non-poor children between 1998 and 2003, even as the gap widened in the Northeast region. Graphs of the disparity rates in these two regions literally crossed each other during that six-year period, with the Midwest Black-White rate ratio dropping over 75% from 13.9 to 2.5 even as the Northeast region saw a dramatic increase in Black-White disparities (0.5 to 15.5).³⁸ Such large-scale success appears to require multi-level intervention addressing

downstream, midstream and upstream levels of involvement of the individual, community, and policymakers, all at the same time.^{39,40}

Is such success scalable to a national level? Within the medical care arena, quality of care differences cited in the Institute of Medicine's *Unequal Treatment* report¹⁶ persist, but are perhaps mitigated in settings which have consciously sought to improve care for the underserved. There is some evidence to suggest that practices proactively serving high-disparity segments of the population (e.g., community health centers and Veteran's Health Administration sites) actually achieve lower disparities or near-equal care across racial strata of their patients, even though they both serve disproportionately low-income and minority (i.e., high-disparity) populations.^{41,42} Shi's study of the 2003 National Health Care Disparities Report and the 2002 Community Health Center (CHC) User Survey found that patients of federally qualified health centers experienced fewer racial/ethnic and socioeconomic disparities in access and quality of care compared to patients of non-CHCs.⁴³ In a separate study of the Veterans Administration Health System, McGuire et al. found that implementation of community-based primary care clinics decreased access disparities to VA services for homeless veterans with serious mental illness.⁴⁴ Rehman found that the ethnic disparity in BP control between African Americans and Whites was approximately 40% less at VA than at non-VA health care sites.⁴⁵ The American Heart Association's Get-with-the-Guidelines program on treating coronary artery disease provides one example of how to transfer these *lessons learned* into the private sector or into the broader health care system. They report the elimination of treatment disparities in acute myocardial infarction, achieved by adopting critical paths and standardized processes of care, along with explicit surveillance of minority health outcomes and disparities.⁴⁶ Elimination of variation to make excellence automatic may provide a *de facto* elimination of racial health disparities, but explicit surveillance of disparities is needed to assure equitable outcomes.

The Higher Path

So how do we improve health outcomes without exacerbating health disparities? The path is clear—focus on improving overall U.S. health outcomes precisely by expanding achievable health gains to all segments of the population. Elimination of the Black-White mortality gap, for example, would save 83,000 lives per year in the U.S. Elimination of the Black-White infant mortality gap could save roughly 100 infants every week in America and add more than 390,000 years of potential African American life each year. Evidence is mounting that communities can indeed move from disparities to equity, even on measures as resistant to change as the Black-White infant mortality gap.

The bottom line is that achieving health equity is the most direct path to radical improvements in U.S. health status. Woolf et al. demonstrated that the number of lives saved by medical advances averted 176,633 deaths between 1991 and 2000, but that equalizing the mortality rates of Whites and African Americans would have averted 886,202 deaths.⁴⁷ The authors conclude that "achieving equity may do more for health than perfecting the technology of care."⁴⁷[p.S26] Thankfully, we do not need to choose one or the other, but instead may achieve both optimal and equitable health outcomes by distributing lifesaving innovations equally to all Americans.

Recommendations

We start by recognizing that culturally sensitive, racially appropriate care is essential for achieving equal outcomes, and that treating everyone the same way is not sufficient. For example, English-speaking professionals providing the same care to all patients will clearly disadvantage patients who are fluent only in other languages, resulting in disparate outcomes. Lifesaving innovations made equally available in terms of cost, but without

attention to non-cost barriers faced by vulnerable populations, may actually have increased racial-ethnic health disparities in breast cancer and HIV-AIDS outcomes. Possibly, this is because non-minority, well-educated, and well-insured segments of the population have been better able to take advantage of the innovations. A greater investment of professional time and energy may be required to achieve the same outcome in a patient with low health literacy or limited resources to spend on self-management. Building a playground may be enough to encourage physical activity in a crime-free neighborhood, while a neighborhood plagued by drug-related crime may need a playground and increased crime prevention and increased substance use treatment centers before there can be a safe place for children to play. To achieve health equity, different segments of our diverse U.S. population may require linguistically and culturally-specific community interventions or treatment strategies. This will usually require a greater investment of resources in the disadvantaged setting, in order to overcome historic and structural inequities.

We propose these steps to follow a health equity path toward improved health for all Americans:

1. Measure disparities explicitly.
2. Expect success. Make health equity an explicit objective not only for public health, but also for Medicare and Medicaid programs, managed care contracts, hospital accreditation, and employer-based coverage.
3. Measure local-area variation in disparities to find models of success in achieving health equity.
4. Ask how and why these communities have succeeded. Shift from studying risk factors and causes of disparities, to studying common elements, patterns, and paths to success.
5. Test multi-dimensional interventions based on common characteristics of successful communities, until health disparities are dramatically reduced. Worry about which element worked once a successful portfolio of interventions has been built.
6. Build health equity coalitions in high-disparity communities. A core coalition of organizations and advocates committed to health equity may require second-tier technical support from health departments, clinics, or hospitals, as well as a third tier of support from community groups such as business and professional organizations, civic groups, fraternities, sororities, and faith-based groups. These larger coalitions should be able to set goals, develop implementation plans, and have regular surveillance data on disparities and equity metrics at the local level.
7. Create rapid-cycle feedback loops with real-time surveillance of health disparities at the local community level. Multidimensional interventions become ineffective and diffuse in purpose unless focused by attention to a single, *a priori* bottom-line outcome measure. This requires adequate public health infrastructure in each community for surveillance and support to track racial, ethnic, and socioeconomic health equity as a core public health measure.
8. Involve all sides of health. Foster the integration of public health, mental and behavioral health, primary care, specialty care, and hospital-based care within a larger health system, through a comprehensive and balanced model of primary, secondary, and tertiary prevention (i.e., the right care in the right setting at the right time to achieve best-practice outcomes for all).

9. Build explicit community development, economic development, and social determinant interventions in high-disparity communities, involving and building on the wisdom and concerns of the involved or targeted community.
10. Integrate all elements described above into cohesive, organized initiatives that routinely assess and act to improve their own effectiveness based on health outcome feedback loops (quarterly neighborhood health equity reports based on health behaviors, health care utilization, health outcomes, and community perceptions of equity).

Conclusion

There is mounting evidence that disparities can be overcome and that health equity is achievable, but it will require investment of resources in explicit, coordinated strategies at local, state, and national levels. Most effective will be multi-dimensional interventions designed in partnership with communities and continuously improved by real-time surveillance and rapid-cycle feedback loops of community-level disparities measures.

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Notes

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Figure 1.

Infant mortality rates per 1,000 live births, by race—Wisconsin and Dane County, 3-year moving averages, 1990–2007.³⁴

Table 1

ADJUSTED MORTALITY RATE PER 100,000 FOR LEADING CAUSE OF DEATH CONDITION S ACHIEVING A 50% REDUCTION IN MORTALITY FROM PEAK MORTALITY LEVEL BETWEEN 1950 AND 2000^a

	Year 1950 Rate	Highest Rate (Peak Year)	Lowest Rate (Trough Year)	Year 2000 Rate	Decline from Peak Year, %
Stroke	180.7	180.7 (1950)	60.9 (2000)	60.9	66.3
Heart disease	586.8	586.8 (1950)	257.6 (2000)	257.6	56.1
Uterine and cervical cancer	26.2	26.2 (1950)	7.2 (2000)	7.2	72.5
Gastric cancer	24.2	24.2 (1950)	4.6 (2000)	4.6	81.0
HIV	—	16.3 (1995)	5.2 (2000)	5.2	67.9
Tuberculosis	25.5	25.5 (1950)	0.2 (2000)	0.2	91.4
Syphilis	6.1	6.1 (1950)	0.0 (2000)	0.0	100
Influenza and pneumonia	48.1	48.1 (1950)	23.7 (2000)	23.7	50.7
Unintentional injuries	78.0	78.0 (1950)	34.9 (2000)	34.9	55.3

^aMortality reductions for seven of these nine conditions required an innovation plus public health plus medical care, especially primary care. Only gastric cancer and unintentional injuries were found to be primarily attributable to public health interventions (sanitation, refrigeration, food safety, and auto and highway safety).