

COVID-19 and Health Equity—A New Kind of “Herd Immunity”

David R. Williams, PhD, MPH; Lisa A. Cooper, MD, MPH

Three articles recently published in *JAMA* provide insight into the large racial/ethnic differences associated with coronavirus disease 2019 (COVID-19) and highlight the need for, and potential opportunity to, redouble efforts in the US to develop strategies that would enable society to slow and ultimately eliminate the spread



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of inequities in health.¹⁻³ COVID-19 is a magnifying glass that has highlighted the larger pandemic of racial/ethnic disparities in health. For more than 100 years research has documented that African American and Native American individuals have shorter life spans and more illness than white persons. Hispanic immigrants initially tend to have a relatively healthy profile but with increasing length of stay in the US, their health tends to decline. A black infant born in the US is more than twice as likely to die before his or her first birthday compared with a white infant. In adulthood, black individuals have higher death rates than white persons for most of the leading causes of death.

Health Care Access and Quality Matter

Owen and colleagues¹ provide a poignant example of systemic inequities in health care. Compared with white individuals, African American individuals have higher rates of uninsurance and underinsurance. Segregation of health care also contributes to racial disparities in health care with access to primary care and especially specialty care physicians more limited in communities of color. COVID-19 testing centers are more likely to be in well-off suburbs of predominantly white residents than in low-income neighborhoods that are predominantly black. The advice to obtain testing through a primary care clinician limits access to testing for people who lack one.

One way that racism adversely affects minorities is through the negative beliefs and stereotypes about race that are embedded in US culture. Studies from 2015 and 2017 reported that the majority of health care clinicians had implicit biases against African American individuals and that bias in the clinical encounter was associated with poorer patient-clinician communication and quality of care.^{4,5} A recent report based on billing data for COVID-19 testing from several states revealed that African American patients with symptoms such as cough and fever were less likely than white individuals with the same symptoms to be given a test.⁶ Health care workers are heroes because they care for patients affected by this pandemic, but they are also human, working under stressful conditions that increase the risk of biased behavior. Improving access to care for all and ensuring high-quality care, with greater focus on underresourced settings and vulnerable groups, is an important “treatment” for racial disparities in health.

Beyond Medical Care

However, medical care alone will not provide the needed “herd immunity” to racial/ethnic inequities in health. Owen and colleagues¹ indicate that the main contributor is the long-term pathogenic effects of exposure to adverse living and working conditions. The analyses by Wadhwa and colleagues² provide further insight. The authors show that risks linked to COVID-19 varied markedly by borough of residence in New York City. The Bronx had the lowest levels of income and education and the highest proportion of black and Hispanic persons. Although the Bronx had the highest rate of COVID-19 tests performed, it also had the highest rate of COVID-19 hospitalizations and deaths. In contrast, Manhattan, the predominantly white, most affluent borough of New York City, had the lowest rates of hospitalizations and death related to COVID-19, although it had the highest population density. Similarly, the Viewpoint by Yancy³ notes that the disproportionate death rates for black persons in Chicago were concentrated in 4 neighborhoods.

These data highlight that social inequities are patterned by place, and opportunities to be healthy vary markedly at the neighborhood level. A clue to understanding the drivers of these differences is the 2010 Census finding that the New York City area was the second most segregated metropolitan area in the US, behind Milwaukee and ahead of Chicago, Detroit, and Cleveland.⁷ An estimated 78% of African American residents in New York City would have to relocate to have an even distribution of black and white populations. The problem of segregation is not residing among persons of the same race, but the clustering of social disadvantage and systematic disinvestment in marginalized communities.

Residential segregation by race/ethnicity is an underappreciated driver of inequality in the US. Although segregation has been illegal since the 1960s, it is perpetuated through an interlocking set of individual actions, institutional practices, and governmental policies. Reported recent declines in segregation have not altered the residential concentration and isolation of most African American populations in urban spaces. In addition, although most immigrant groups have experienced residential segregation in the US, no immigrant group has lived under the high levels of segregation that have existed for black people for more than a century.

Segregation is a critical determinant of economic status, which is a strong predictor of variations in health. In 2018, for every dollar of household income that white workers earned, black workers earned 59 cents and Hispanic workers, 72 cents.⁸ This figure for black workers is identical to the black-white gap in income in 1978—the peak year of the economic gains for black individuals due to the antipoverty and Civil Rights policies of

the 1960s and 1970s. Data on income understate the gap in economic resources. In 2016, for every dollar of wealth that white households had, black households had 10 cents and Hispanic households had 12 cents.⁹ A report from 1997 suggested that eliminating segregation would erase black-white differences in income, education, and unemployment and reduce racial differences in single motherhood by two-thirds.¹⁰

Economic status matters profoundly for reducing the risk of exposure to SARS-CoV-2. Lower-income and minority workers are overrepresented among essential service workers who must work outside the home when shelter-in-place directives are given. Many must travel to work on buses and subways. Segregation also adversely affects health because the concentration of poverty, poor-quality housing, and neighborhood environments leads to elevated exposure to chronic and acute psychosocial (eg, loss of loved ones, unemployment, violence) and environmental stressors, such as air and water pollution. Exposure to interpersonal discrimination is also linked to chronic disease risk. Greater exposure to and clustering of stressors contributes to the earlier onset of multiple chronic conditions (eg, hypertension, heart disease, diabetes, asthma), greater severity of disease, and poorer survival for African American individuals than white persons.¹¹ For example, exposure to air pollution has been linked to hypertension and asthma, as well as more severe cases of and higher death rates due to COVID-19.¹²

Flattening the Curve of Racial Disparities in Health

However, racial/ethnic gaps in health have narrowed over time. For example, in 1950, white persons lived 8 years longer than African American individuals, and although that gap was halved by 2015, it took 40 years (1990) for the life expectancy of black populations to equal the life expectancy that white persons had in 1950.¹³ This painfully slow progress needs to be accelerated.

In the short-term, as the US struggles with the economic burden of the pandemic, efforts are necessary to address pressing needs for housing, food, and economic assistance by focusing on those who are poorest in wealth. Long-term, systematic, comprehensive, and coordinated investments should be prioritized that create healthy homes and communities and provide ladders of opportunity (ie, education and gainful employment) to ensure that all individuals in the US have access to choices that facilitate good health. Such efforts addressing the social determinants of health are like a vaccine to improve population health and create “herd immunity” against inequities in health.¹⁴

Yancy³ indicates that this is a moment for ethical reckoning and calls for new resolve. To build public support and political will, at least 3 strategies are necessary. First, there is a need to raise awareness of the problem of racial/ethnic in-

equities in health because acknowledgment of a problem is a prerequisite to working to solve it. The majority of US adults are unaware that racial inequities in health exist¹⁵; most US residents overestimate the progress the nation has made toward economic equality and underestimate the degree of persistent racial/ethnic economic inequality.¹⁶

Second, efforts are needed that explicitly bring clarity to the determinants of racial/ethnic inequities. In 2015, in a survey that included 2695 people, 50% of white respondents (including 60% working-class white individuals) reported that discrimination against white people was as large a problem as discrimination against black populations, and 59% of white respondents indicated that the US has made the needed changes to give black persons equal rights.¹⁷

Moreover, although most individuals in the US (64% of white persons and 68% of working-class white persons) believe that hard work is no guarantee of success, 50% of white respondents indicated that racial inequities would be eliminated if only black persons tried harder. Additionally, a report from 2012 indicated that consistently since the 1970s, fewer than 1 in 5 white persons have endorsed the view that the government has an obligation to improve living standards for black individuals.¹⁸ Thus, there is little appetite for government and societal action to address racial/ethnic disparities on the part of large segments of the US population.

Third, and relatedly, systematic efforts are needed to identify how to tell the story of the challenges of racial/ethnic minorities in ways that resonate with the public to build support for political action. Research indicates that there is a racial gap in empathy, in which individuals in the US have empathic responses to members of their own racial/ethnic group but not to members of a different group.¹⁴ This empathy gap matters profoundly because empathy predicts policy preferences to address the needs of disadvantaged populations.

“Herd Immunity” Redefined

The striking racial/ethnic disparities reported for COVID-19 infection, testing, and disease burden are a clear reminder that failure to protect the most vulnerable members of society not only harms them but also increases the risk of spread of the virus, with devastating health and economic consequences for all. COVID-19 disparities are not the fault of those who are experiencing them, but rather reflect social policies and systems that create health disparities in good times and inflate them in a crisis. The US must develop a new kind of “herd immunity,” whereby resistance to the spread of poor health in the population occurs when a sufficiently high proportion of individuals, across all racial, ethnic, and social class groups, are protected from and thus “immune” to negative social determinants.

ARTICLE INFORMATION

Author Affiliations: Harvard T.H. Chan School of Public Health, Department of Social and Behavioral Sciences, Boston, Massachusetts (Williams); Department of African and African American Studies, Harvard University, Cambridge, Massachusetts (Williams); Johns Hopkins University School of Medicine, Department of Medicine, Baltimore, Maryland (Cooper);

Bloomberg School of Public Health, Department of Health, Behavior and Society, Johns Hopkins University, Baltimore, Maryland (Cooper).

Corresponding Author: David R. Williams, PhD, MPH, Harvard T.H. Chan School of Public Health, Department of Social and Behavioral Sciences, 677 Huntington Ave, Kresge Bldg, Room 709, Boston, MA 02115 (dwilliam@hsph.harvard.edu).

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Clinical Genomics in Critically Ill Infants and Children

F. Lucy Raymond, DPhil

Increasing evidence indicates that many children who require neonatal or pediatric intensive care have an underlying genetic disease.¹ However, until recently, many of these children did not receive sufficiently comprehensive or rapid genetic testing to be relevant to their acute care. With the increasing availability and affordability of whole exome or genome sequencing technology and the ability to interrogate the genome at scale within a short time frame, a number of rapid diagnostic genomic programs for critically ill infants and children have been developed and implemented, and the concomitant emerging evidence suggests that genomic data are increasingly useful for clinical decision-making in the acute care setting.¹⁻⁴

In this issue of *JAMA*, authors from the Australian Genomics Health Alliance Acute Care Flagship⁵ report the challenges of implementing rapid whole exome sequencing across public health care systems over a large geographic area and the association between testing and clinically important outcomes. This effort required the development of robust clinical and laboratory pathways to deliver rapid genomic testing reliably and consistently.

In their multisite descriptive feasibility study that included 12 Australian hospitals and 2 laboratories, the investigators⁵ evaluated 108 critically ill infants and children

(median age, 28 days [range, 0 days to 17 years]; 57% from neonatal intensive care units, 33% from pediatric intensive care units, and 9% from other hospital wards) with suspected monogenic conditions who had ultra-rapid whole exome genetic testing. The authors report that the mean time from receipt of the sample for testing to the issuing of the ultra-rapid exome sequencing report was 3.3 days, and the mean time from hospital admission to the issuing of the exome sequencing report was 17.5 days, with 93 reports (86%) issued prior to death or hospital discharge. A molecular diagnosis was established in 55 patients (51%); and in 42 of these patients (76%), the result of the ultra-rapid exome sequencing report was considered to have influenced clinical management, including initiation of targeted treatment, redirection of treatment toward palliative care, and increased surveillance for specific complications. This latter finding is particularly important for clinicians and families.

The study illustrates that the successful spread and scaling up of innovation in health care systems is complex, and necessitates adaptability to the local context, as well as a participatory culture, distributed leadership, transparent assessment of outcomes, and collective learning and adaptation.⁶

Rapid turnaround testing programs (exome or genome) extensively use trio analysis (ie, sequencing of the affected child and both parents) to identify causative mutations. For severely