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# Understanding and Addressing the Common Roots of Racial Health Disparities: The Case of Cardiovascular Disease and HIV/AIDS in African Americans

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# UNDERSTANDING AND ADDRESSING THE COMMON ROOTS OF RACIAL HEALTH DISPARITIES: THE CASE OF CARDIOVASCULAR DISEASE & HIV/AIDS IN AFRICAN AMERICANS

*Martha E. Lang, Ph.D. & Chloe E. Bird, Ph.D.†*

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## INTRODUCTION

In the United States, race-based health disparities are well documented and persistent, as are their profound impact on morbidity, mortality, and well-being for African Americans. Measuring and, to a lesser extent, addressing these disparities has been a central focus of social science, medical, and public health research. Researchers have explored a variety of factors related to health including, but not limited to, socioeconomic status (SES) and employment. Other barriers to care include access, geographic differentials, and provider discrimination. While each of these approaches has explained some component of race-based health disparities, studies are often limited by a narrow focus that is insufficient in the context of additional statuses such as gender and sexual orientation. Consequently, intersectionality theorists and researchers<sup>1</sup> employ a framework that captures the ways in which these statuses combine and interact in order to assess how they contribute to the structure of opportunity and health outcomes across society. Health disparity literature is somewhat weaker in the area of providing concrete, actionable steps that may be taken to remedy these disparities.

Constrained choice—a theory that explains gender-based health disparities and offers actionable steps for rectifying these disparities<sup>2</sup>—addresses how the complex interplay between social structures, social institutions, and social policies shape individual agency in pursuing health and health outcomes.<sup>3</sup> The differential opportunity to pursue health affects biological risk through stress exposures and acquired dysregulation of key biological systems (the loss of the ability to maintain each system within normal, healthy ranges), which is itself compounded by differential access to health care. Intersectionality provides a lens through which to address the complexities of the illness experience for different sectors of the African American community.<sup>4</sup>

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1. Intersectionality is a paradigm that emphasizes how multiple social statuses interact to shape individual experience and agency within a social system.
  2. See CHLOE E. BIRD & PATRICIA P. RIEKER, *GENDER AND HEALTH: THE EFFECTS OF CONSTRAINED CHOICES AND SOCIAL POLICIES* 224 (2008).
  3. See *id.* at 64.
  4. Lynn Weber & M. Elizabeth Fore, *Race, Ethnicity, and Health: An Intersectional Approach* in *HANDBOOK OF THE SOCIOLOGY OF RACIAL AND ETHNIC RELATIONS* 191, 205 (Hernán Vera & Joe R. Feagin eds., 2007).

In this article, we use a constrained choice approach that is informed by intersectionality to systematically explore how the interplay of individual agency with social policy and social institutions creates and maintains race-based health disparities. We illustrate how the statuses of race, gender, and sexual orientation further shape these disparities through an examination of cardiovascular disease (CVD) and human immunodeficiency virus and acquired immune deficiency syndrome (HIV/AIDS). We begin with a brief review of the literature on health disparities, constrained choice, and intersectionality. Our approach explores the roles of the social and built residential neighborhood environment and acquired physiologic dysregulation (measured by allostatic load) as areas of commonality across the two diseases. We then provide a review of the biological etiology of CVD and HIV/AIDS and a review of disparities in morbidity and mortality including the role of neighborhood and allostatic load for each condition. Finally, we offer actionable steps to address these social disparities and alleviate the health disparities that they create.

Racial disparities play out profoundly in CVD and HIV/AIDS. CVD is the leading cause of death in the United States and although mortality has dropped for other populations in recent years, CVD death rates for African Americans have remained the same as they have been since 1950. As a result, African Americans are 1.6 times more likely to die of CVD than non-Hispanic whites.<sup>5</sup> While overall incidence of HIV/AIDS in the United States remains low, prevalence rates have reached epidemic proportions in certain populations and geographic locations.<sup>6</sup> For example, although African Americans make up only 12 percent of the U.S. population, they make up 44 percent of all new HIV infections each year, thus making HIV/AIDS a leading cause of death for African American men and women.<sup>7</sup> While CVD and HIV/AIDS have very different biological etiology, disease course, and prognosis, the patterns of disparities for both conditions leads to excess morbidity, disability, and mortality. Moreover, an examination of each reveals that they share underlying social-structural

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5. David R. Williams, *Race, Socioeconomic Status, and Health: The Added Effects of Racism and Discrimination* 896 ANNALS N.Y. ACAD. SCI. 173, 174 (1999).
  6. See Paul Denning & Elizabeth DiNenno, *Communities in Crisis: Is There a Generalized HIV Epidemic in Impoverished Urban Areas of the United States?*, XVIII INT'L AIDS CONFERENCE (2010).
  7. *The HIV/AIDS Epidemic in the United States*, HENRY J. KAISER FAMILY FOUND., graph entitled *New HIV Infections & U.S. Population, by Race/Ethnicity, 2010*, <http://kff.org/hiv/aids/fact-sheet/the-hiv-aids-epidemic-in-the-united-states/> (last modified Apr. 7, 2014).

determinants. We argue that the neighborhood context and the allostatic load create an interwoven set of challenges to agency that contribute to health disparities.

Our discussion of racial disparities is limited here to an examination of African Americans compared to non-Hispanic whites. A broader examination is hindered by the paucity and inconsistency of data on CVD and HIV/AIDS in other racial and ethnic groups. Moreover, the complexity of an intersectionality approach necessitates a focus on two racial groups in order to adequately address other statuses. Toward that end, we consider four other statuses in this analysis: gender, SES, sexual orientation, and geographic location. Finally, we focus on disparities in morbidity and mortality while briefly touching on related topics including disabilities, disparities in health care access, and quality of care.

## I. HEALTH DISPARITIES, CONSTRAINED CHOICE, AND INTERSECTIONALITY

In this section we address some of the major patterns of health disparities across different populations within the African American community. We also draw on a variety of perspectives and theories to explain these disparities. We end this section with a discussion of constrained choice and intersectionality and how these paradigms inform an understanding of health disparities.

### A. Morbidity & Mortality Disparities

Race is a highly problematic social construct given that there is greater genetic variation among individuals within a racial group than among individuals across racial groups.<sup>8</sup> Racial categories differ across societies while also shifting considerably over time. Yet, the social, economic, and legal consequences of racial discrimination remain real.<sup>9</sup> These realities guide this discussion of race-based health disparities. As noted by Williams and Jackson, “race is a marker for differential exposure to multiple disease-producing social factors. Thus, racial disparities in health should be understood not only in terms of

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8. Esteban González\_Burchard et al., *The Importance of Race and Ethnic Background in Biomedical Research and Clinical Practice*, 348 NEJM 1170-1175 (2003).

9. See Ian F. Haney Lopez, *Social Construction of Race: Some Observations on Illusion, Fabrication, and Choice*, 29 HARVARD C.R. 3, 3 (1994); see, e.g., Faye V. Harrison, *The Persistent Power of “Race” in the Cultural and Political Economy of Racism*, 24 ANN. REV. ANTHROP. 47, 47 (1995).

individual characteristics but also in light of patterned racial inequalities and exposure to societal risks and resources.”<sup>10</sup>

The disparities in life expectancy for African Americans and non-Hispanic whites are well documented and persistent.<sup>11</sup> In 2010, African American males at birth had a life expectancy of 71.8 years compared to 76.5 years for non-Hispanic white males. Mortality advantage is also pronounced among non-Hispanic white women. Non-Hispanic white women have a life expectancy of 81.3 years compared to 78.0 years for African American women.<sup>12</sup> Similarly, infant mortality rates are considerably higher for African American women with 11.46 deaths per 1000 live births compared to only 5.18 for non-Hispanic white women in 2010.<sup>13</sup> Beyond life expectancy, African Americans have higher rates of morbidity, mortality, injury, and disability than non-Hispanic whites.<sup>14</sup>

Fundamental cause theory posits that SES is the primary factor that shapes individual health and related health disparities.<sup>15</sup> While lower SES is a consistent predictor of mortality disparities,<sup>16</sup> a

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10. David R. Williams & Pamela Braboy Jackson, *Social Sources of Racial Disparities in Health*, 24 HEALTH AFF. 325, 325 (2005).
  11. See Robert S. Levine et al., *Black-White Inequalities in Mortality and Life Expectancy, 1933 – 1999: Implications for Healthy People 2010*, 116 PUB. HEALTH REP. 474, 474-75 (2001).
  12. See U.S. DEP’T OF HEALTH & HUM. SERVS., CTRS. FOR DISEASE CONTROL & PREVENTION, HEALTH, UNITED STATES, 2013: WITH SPECIAL FEATURE ON PRESCRIPTION DRUGS, 82-83 (May 2014) available at <http://www.cdc.gov/nchs/data/hus/hus13.pdf#018>.
  13. Marian F. MacDorman & T.J. Mathews, Ctrs. for Disease Control & Prevention, *QuickStats: Infant Mortality Rates by Race and Hispanic Ethnicity of Mother – United States, 2000, 2005, and 2010* 63(01) MORTALITY & MORBIDITY WEEKLY REP. 25 (Jan. 10, 2014).
  14. See, e.g., Office of Minority Health, Ctrs. for Disease Control & Prevention, *Health Disparities Experienced by Black or African Americans – United States*, 54(01) MORTALITY & MORBIDITY WEEKLY REP. 1 (Jan. 13, 2005); Kevin Fiscella et al., *Inequality in Quality: Addressing Socioeconomic, Racial, and Ethnic Disparities in Health Care*, 283 JAMA 2579 (2000).
  15. E.g., Bruce G. Link & Jo Phelan, *Social Conditions as Fundamental Causes of Disease*, 36 J. HEALTH SOC. BEHAV. 80, 80 (1995); Ichiro Kawachi et al., *Social Capital, Income Inequality, and Mortality*, 87 AM. J. PUB. HEALTH 1491, 1491 (1997) (testing the hypothesis that poverty leads to divestment from social engagement which leads to higher mortality).
  16. See Jo Phelan et al., “Fundamental Causes” of Social Inequalities in Mortality: A Test of the Theory, 45 J. HEALTH & SOC. BEHAV. 265, 265 (2004); Paula M. Lantz et al., *Socioeconomic Factors, Health Behaviors,*

comparison of health outcomes for African Americans and non-Hispanic whites of the same SES reveals that African Americans have notably worse health outcomes.<sup>17</sup> Murray and colleagues demonstrated that race, residential location, population density, race-specific income, and homicide rates were all associated with lower life expectancy for African Americans compared to non-Hispanic whites. In other words, multiple social disadvantages and exposures compound socioeconomic disparities in health.<sup>18</sup>

Within the African American population, we consider the subgroup of sexual minorities. While there are many different sexual minority groups, the three groups included in our analysis are defined in public health and medical literature as men who have sex with men (MSM), women who have sex with women (WSW), and male to female transgender persons (MTF). Research on health and health disparities faced by African American sexual minorities is still in its infancy. Among sexual minorities, much of the research on health disparities has focused on the negative impact of HIV/AIDS on life expectancy for MSM.<sup>19</sup> Indeed, many researchers have persuasively argued that this focus has led researchers and the general public to at times view MSM in general, and black MSM in particular, as not only stigmatized but even inherently diseased.<sup>20</sup> In addition, sexual minorities as a whole face specific, increased health risks associated with how they are viewed in society, often confounded by socioeconomic and other disparities associated with race. For example, while all transgender people regularly encounter extremely high rates of sexual assault,<sup>21</sup> physical violence,<sup>22</sup> and murder,<sup>23</sup> MTF transgender people of color are disproportionately affected.<sup>24</sup>

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*and Mortality: Results from a Nationally Representative Prospective Study of US Adults*, 279 JAMA 1703, 1703 (1998).

17. Williams, *supra* note 5, at 176.
18. *Id.* at 183-85.
19. See Kenneth H. Mayer et al., *Sexual and Gender Minority Health: What We Know and What Needs to Be Done*, 98 AM. J. PUB. HEALTH 989, 989 (2008).
20. *E.g.*, ERIC ROFES, REVIVING THE TRIBE: REGENERATING GAY MEN'S SEXUALITY AND CULTURE IN THE ONGOING EPIDEMIC (2013); Gregorio A. Millett et al., *Greater Risk for HIV Infection of Black Men Who Have Sex with Men: A Critical Literature Review*, 96 AM J. PUB. HEALTH 1007, 1015 (2006).
21. Rebecca L. Stotzer, *Violence Against Transgender People: A Review of United States Data*, 14 AGGRESSION & VIOLENT BEHAV. 170, 172-73 (2009).
22. *Id.* at 173-74.

Societal problems such as segregation, poverty, racism, homophobia, and transphobia can cause emotional and physical stress to the body and these stressors have been demonstrated to have a direct negative impact on health. Rather than maintaining specific biomarkers such as blood sugar or blood pressure at a constant level, a healthy body needs to allow higher levels in certain circumstances and then return to an appropriate level. For example, blood sugar increases after eating in order to carry energy to cells throughout the body; blood pressure needs to increase in order for one to climb a flight of stairs or dash to catch a bus without passing out. Similar increases occur in neural, neuroendocrine, and neuroimmune responses when confronted with stressful situations. The neuroendocrine system needs to be able to respond to occasional stressful events as needed and then return to normal levels. However, when one of these systems encounters multiple, unique or chronic stressors and does not adapt to stress, it can begin to perform inadequately or lose the capacity to appropriately modulate.<sup>25</sup> The loss of ability to return to healthy levels is known as physiologic dysregulation. Allostatic load refers to cumulative dysregulation across multiple physiologic systems including metabolic (including blood sugar), cardiovascular (including blood pressure), immune (including inflammatory response), and neuroendocrine (including cortisol). The comparatively high allostatic load found in African Americans is in part acquired through stress exposures due to racism, classism, and other stressors, which have been widely reported in the research literature and are considered to be important sources of health disparities.<sup>26</sup>

### B. *Constrained Choice*

Constrained choice theory provides a framework to systematically examine the interplay between institutions, social structures, and individual health. As originally conceived, this theory provided a multilevel framework for understanding why women live longer than men while possessing higher rates of chronic illness and disability. It was later expanded to explicitly address gender- and race-based

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23. *Id.* at 175.

24. *Id.* at 172-74.

25. See Bruce S. McEwen, *Stress, Adaptation, and Disease: Allostasis and Allostatic Load*, 840 ANNALS N.Y. ACAD. SCI. 33, 33 (1998).

26. *E.g.*, Vickie M. Mays et al., *Race, Race-Based Discrimination, and Health Outcomes Among African Americans*, 58 ANN. REV. PSYCHOL. 201, 209 (2007); Arline T. Geronimus et al., “*Weathering*” and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States, 96 AM J. PUB. HEALTH 826, 830 (2006).



disparities.<sup>27</sup> Constrained choice theory describes how decisions made and actions taken at different levels of society interact with an individual's biology. Such decisions shape an individual's health status as well as their opportunities to pursue health. The full model addresses those constraints that shape the opportunity of individuals and groups to pursue healthy lives, and that are created at the levels of social policy, community, workplace, and family. We focus primarily on social policy and community constraints because research indicates that they have the most immediate bearing on the structural bases of race-based health outcome disparity.

Social policy at the national and state level can create health disparities through policies that are not sensitive to the needs of vulnerable populations. Prior to the implementation of the Affordable Care Act,<sup>28</sup> the United States was the only industrialized nation without guaranteed health care coverage. Disparate health care access inevitably has led to worse health outcomes for uninsured people. The uninsured are disproportionately poor, rurally-based, people of color, or some combination thereof.<sup>29</sup>

However, policies need not be explicitly health or health care related to significantly affect health. For example, cuts to the Supplemental Nutrition Assistance Program (SNAP) create greater food insufficiency and may require that families resort to buying more sugary, starchy, and high fat foods in order to stretch their food budgets. A less obvious health-related example is the "war on drugs" which has led to stricter federal sentencing guidelines and a dramatic uptick in incarceration over the past thirty years.<sup>30</sup> As a result, the United States now has a higher proportion of its citizenry incarcerated than any other country.<sup>31</sup> Moreover, men of color, particularly African American men, are disproportionately affected by

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27. See Chloe E. Bird et al., *Changing Gendered Patterns of Morbidity and Mortality*, in 2 THE PALGRAVE HANDBOOK OF GENDER AND HEALTHCARE 130, 131 (Ellen Kuhlmann & Ellen Annandale eds., 2012).
28. Patient Protection and Affordable Care Act, PUB. L. NO. 111-148, 124 Stat. 119 (2010).
29. See generally, Paul Fronstin, *Sources of Health Insurance and Characteristics of the Uninsured: Analysis of the March 2012 Current Population Survey*, 376 EBRI ISSUE BRIEF (2012), available at [http://www.ebri.org/pdf/briefspdf/EBRI\\_IB\\_09-2012\\_No376\\_Sources.pdf](http://www.ebri.org/pdf/briefspdf/EBRI_IB_09-2012_No376_Sources.pdf).
30. *E.g.*, 21 U.S.C. §§ 841(a), 841(b)(1)(A), 841(b)(1)(B) (2012); 18 U.S.C. § 2D1.1 (2012).
31. See Becky Pettit & Bruce Western, *Mass Imprisonment and the Life Course: Race and Class Inequality in US Incarceration*, 69 AM. SOC. REV. 151, 151 (2004).

higher incarceration rates,<sup>32</sup> the health consequences of which are measurable and profound.<sup>33</sup>

At the state level, Medicaid programs vary widely in quality and eligibility requirements. Often states with the largest number of poor citizens have the most insufficient services and strictest eligibility requirements. Ironically, many of the same states that rejected Medicaid expansion are also among those with the highest excess CVD and HIV/AIDS morbidity and mortality.<sup>34</sup>

Federal, state, and local governmental policy, together with built environment, shape opportunities in ways that constrain an individual's options and the relative costs that he or she faces in making health promoting choices. The degree of constraint that an individual experiences in pursuing health and shaping their own health outcomes is in part a function of the individual's social and economic statuses including, but not limited to gender. In other words, advantaged statuses and personal resources can overcome an environment that is not health promoting; indeed, public policies that support healthy options can also help to level the playing field for residents of a particular municipality or state. In contrast, governmental policies, built environments, the workplace, and even workplace policies can intentionally or unintentionally constrain an individual's ability to pursue health.

Policies also have a spatial component which Bird and Rieker note can affect health in at least three ways.<sup>35</sup> First, building and zoning codes and related policies can encourage physical activity through the creation of safe neighborhoods, bike paths, walking trails, and green spaces. Alternatively, policies can unintentionally discourage physical activity such as through zoning restrictions, by tolerating the presence of dilapidated and abandoned housing stock, and a lack of community police presence. For example, such policies can create an environment where even jogging is a suspicious activity and thus discouraged. A differential investment in spaces extends to uses which are allowed and the number, range, and hours of services

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32. *Id.* at 151-53.

33. *E.g.* Jason Schnittker & Andrea John, *Enduring Stigma: The Long-Term Effects of Incarceration on Health*, 48 J. HEALTH SOC. BEHAV. 115, 122-23 (2007); Hedwig Lee et al., *A Heavy Burden: The Cardiovascular Health Consequences of Having a Family Member Incarcerated*, 104 AM. J. PUB. HEALTH 421, 421 (2014).

34. States that rejected Medicaid expansion include those in the "AIDS belt" and the "stroke belt" of the mid and Deep South of the United States.

35. Bird & Rieker, *supra* note 27, at 135.

that are provided. Similarly, neighborhoods with high crime rates contribute to stress and discourage community involvement and social interaction. These can contribute to chronic stress and a high cumulative allostatic load for residents.

### C. Intersectionality

Because our analysis addresses the social structural roots of health disparities, our primary focus in this article is on structural intersectionality.<sup>36</sup> Intersectionality is based on the understanding that the cumulative effects of multiple statuses are unique while also greater than the sum of their parts. For example, the social, economic, and health impact of being both African American and gay combine in ways that are not easily extrapolated from simply assessing differences between African Americans and whites, or between men and women who are gay or lesbian and those who are heterosexual. As Crenshaw, the originator of the term “intersectionality” notes, “because the intersectional experience is greater than the sum of racism and sexism, any analysis that does not take intersectionality into account cannot sufficiently address the particular manner in which black women are subordinated.”<sup>37</sup> While intersectional analysis can be used at the individual level to demonstrate how social statuses and systems create a complex range of opportunities for identity expression, Weber notes that it can be used at the structural level to explore the role that social institutions can play in creating and reinforcing social inequalities.<sup>38</sup> Previous work on intersectional approaches to general health disparities,<sup>39</sup> CVD,<sup>40</sup> and HIV/AIDS<sup>41</sup> will inform our analyses as well.

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36. For further discussion of structural and institutional intersectionality please see generally Sylvia Walby et al., *Intersectionality: Multiple Inequalities in Social Theory*, 46 SOC. 224, 224-40 (2012); Hae Yeon Choo & Myra Marx Ferree, *Practicing Intersectionality in Sociological Research: A Critical Analysis of Inclusions, Interactions, and Institutions in the Study of Inequalities*, 28 SOC. THEORY 131, 131-33 (2010).
37. Kimberle Crenshaw, *Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics*, 1989 U. CHI. LEGAL F. 139, 140 (1989).
38. Lynn Weber, *Reconstructing the Landscape of Health Disparities Research: Promoting Dialogue and Collaboration between Feminist Intersectional and Biomedical Paradigms*, in GENDER, RACE, CLASS, AND HEALTH 31 (Amy J. Schulz & Leith Mullings eds., 2006).
39. See, e.g., Leith Mullings, & Amy J. Schulz, *Intersectionality and Health: An Introduction*, in GENDER, RACE, CLASS, AND HEALTH 4 (Amy J. Schulz & Leith Mullings eds., 2006). Lisa Bowleg, *The Problem with the Phrase Women and Minorities: Intersectionality – An Important*

## II. GUIDING PROPOSITIONS OF AN INTERSECTIONAL CONSTRAINED CHOICE APPROACH TO HEALTH DISPARITIES

Intersectionality explores the nuanced relationships among race, SES, gender, and sexual orientation and how these relationships shape health outcomes. Constrained choice theory provides a framework to systematically examine the interactions between institutions, social structures, and individual health in order to assess how the apparent choices and lives of individuals of different groups are socially patterned by differential opportunities and the availability and costs of specific choices. In our exploration of CVD and HIV/AIDS, we explain how (1) institutions have a profound impact on individual health, (2) policies and structures that are not explicitly health related also have an impact on health, and (3) that the relationship between the individual and the underlying social structures yields similar health trajectories for these two very different diseases. While many different factors shape health and health disparities, we examine how social statuses interact with residential neighborhood exposures in shaping different average health trajectories for African Americans compared to non-Hispanic whites in the United States.

### A. *Neighborhood Effects*

Where we live affects our health for many reasons.<sup>42</sup> Neighborhoods are often deeply segregated along racial, ethnic, and

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*Theoretical Framework for Public Health*, 102 AM. J. PUB. HEALTH 1267-73 (2012); Olena Hankivsky, *Women's Health, Men's Health, and Gender and Health: Implications of Intersectionality*, 74 SOC. SCI. & MED. 1712-20 (2012).

40. *E.g.* Lynn Weber & Deborah Parra-Medina, *Intersectionality and Women's Health: Charting a Path to Eliminating Health Disparities*, 7 ADVANCES IN GENDER RESEARCH 181, 207 (2003); Janet K. Shim, *Constructing 'Race' Across the Science-Lay Divide: Racial Formation in the Epidemiology and Experience of Cardiovascular Disease*, 35 SOC. STUD. SCI. 405-36 (2005).
41. *E.g.*, Celeste Watkins-Hayes, *Intersectionality and the Sociology of HIV/AIDS: Past, Present, and Future Research Directions*, 40 ANN. REV. SOC. 431-457 (2014); Shari L. Dworkin, *Who Is Epidemiologically Fathomable in the HIV/AIDS Epidemic? Gender, Sexuality, and Intersectionality in Public Health*, 7 CULT. HEALTH SEX. 615-623 (2005); MICHELE TRACY BERGER, *WORKABLE SISTERHOOD: THE POLITICAL JOURNEY OF STIGMATIZED WOMEN WITH HIV/AIDS* 1-36 (2010).
42. *See* Steven Cummins et al., *Understanding and Representing 'Place' in Health Research: A Relational Approach*, 65 SOC. SCI. MED. 1825, 1826 (2007); Jason D. Boardman, *Stress and Physical Health: The Role of Neighborhoods as Mediating and Moderating Mechanisms*, 58 SOC. SCI. MED. 2473, 2473 (2004).

socioeconomic lines.<sup>43</sup> Moreover, the characteristics, resources, and risks of an environment are largely a function of economic investment and the nature of the built environment, including but not limited to, neighborhoods, parks, and skyscrapers.<sup>44</sup> The area where one lives can affect health through the availability of institutions and resources such as healthy food,<sup>45</sup> places to exercise or play,<sup>46</sup> and health care. Stresses in the physical and social environment such as pollution, noise, overcrowded housing stock, and high crime rates will also have a negative effect.<sup>47</sup> Because a wide range of policies support and regulate these institutions, resources, and risks, what is considered *social* as opposed to *built* environment differs widely across studies.

Neighborhood segregation also contributes to substantial differences in access to employment, health care, and even food. For example, disadvantaged minority neighborhoods often lack convenient and affordable fresh fruits, vegetables, whole grains, and lean protein, the absence of which can contribute to high rates of obesity and malnutrition.<sup>48</sup> Murray and colleagues note the importance of place in explaining health disparities.<sup>49</sup> Using county level data, they demonstrated that while African Americans have a lower life expectancy than other groups overall, African Americans who live in

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43. See Douglas S. Massey & Nancy A. Denton, *The Dimensions of Residential Segregation*, 67 SOC. FORCES 281, 281 (1988).
44. See YI-FU TUAN, *SPACE AND PLACE: THE PERSPECTIVE OF EXPERIENCE* 4 (1977).
45. See generally Renee E. Walker et al., *Disparities and Access to Healthy Food in the United States: A Review of Food Deserts Literature*, 16 HEALTH & PLACE 876, 876-80 (2010).
46. See Penny Gordon-Larsen et al., *Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity*, 117 PEDIATRICS 417, 421 (2006).
47. See Ingrid Gould Ellen et al., *Neighborhood Effects on Health: Exploring the Links and Assessing the Evidence*, 23 J. URB. AFF. 391, 392-93 (2001); Ana V. Diez Roux, *Investigating Neighborhood and Area Effects on Health*, 91 AM. J. PUB. HEALTH 1783, 1783 (2001).
48. See Liping Pan et al., *Food Insecurity is Associated with Obesity Among U.S. Adults in 12 States*, 112 J. ACAD. NUTRITION & DIETETICS 1403, 1403 (2012); Donald Rose & Victor Oliveira, *Nutrient Intakes of Individuals from Food-Insufficient Households in the United States*, 87 AM. J. PUB. HEALTH 1956, 1956 (1997); MICHELE VER PLOEG, ET AL., U.S. DEPT. AGRIC. ECON. RESEARCH SERV., *ACCESS TO AFFORDABLE AND NUTRITIOUS FOOD: MEASURING AND UNDERSTANDING FOOD DESERTS AND THEIR CONSEQUENCES*, REPORT TO CONGRESS, 39-40 (2009).
49. Christopher Murray et al., *Eight Americas: Investigating Mortality Disparities Across Races, Counties, and Race – Counties in the United States*, 3 PUB. LIBRARY SCI. MED. 1513, 1517 (2006).

segregated urban areas had the lowest life expectancy followed by those who live in the rural south. In his examination of segregation and stratification, Massey noted that many American cities are nearly as hypersegregated as apartheid-era South African metropolitan areas<sup>50</sup> and have made only slight gains towards desegregation in the past twenty years.<sup>51</sup> He concludes that this rigid stratification contributes to a high allostatic load and resulting health disparities.<sup>52</sup>

### B. *The Role of Allostatic Load*

The health effects of neighborhood are entwined with allostatic load. The growing body of research into allostatic load demonstrates the cumulative burdens of stress and “weathering” in creating class- and race-based health outcome disparities.<sup>53</sup>

Other factors besides neighborhood shape allostatic load. For example, researchers have posited that for African Americans, the somatic effects of racism and the resulting lifetime allostatic load are responsible for negative health outcomes.<sup>54</sup> In their analysis of National Health and Nutrition Examination Survey data, Geronimus and colleagues discovered that African Americans had significantly higher allostatic loads than whites in every age category even when controlling for social class. Furthermore, African American women bore the highest allostatic load of all groups studied.<sup>55</sup> Research on MSM has demonstrated that they experience high allostatic loads due to experiences of homophobia and internalized homophobia.<sup>56</sup> Black MSM also must negotiate their identity as gay men among heterosexual African Americans and as outsiders within a lesbian,

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50. Douglas S. Massey, *Segregation and Stratification: A Biosocial Perspective*, 1 DU BOIS REV. 11, 11 (2004).
51. *Id.* at 12.
52. *Id.* at 19-20.
53. Janice K. Kiecolt-Glaser et al., *Emotions, Morbidity, and Mortality: New Perspectives from Psychoneuroimmunology*, 53 ANN. REV. PSYCHOL. 83, 93-94 (2002).
54. Rodney Clark et al., *Racism as a Stressor for African Americans: A Biopsychosocial Model*, 54 AM. PSYCHOL. 805, 809-13 (1999).
55. Geronimus, *supra* note 26, at 829; see also Yin Paradies, *A Systematic Review of Empirical Research on Self-Reported Racism and Health*, 35 INT’L. J. EPIDEMIOLOGY 893, 893 (2006).
56. Ilan H. Meyer, *Minority Stress and Mental Health in Gay Men*, 36 J. HEALTH & SOC. BEHAV. 38, 45-50 (1995).

gay, bi-sexual, and transsexual (LGBT) community that has remained hegemonically white.<sup>57</sup>

*C. Exploring the Cases of CVD & HIV/AIDS*

In this section we provide background information on the biology of CVD and HIV/AIDS and the epidemiology of each disease in African American populations. We then examine the role of neighborhood effects and how these can lead to burdens of allostatic load that in turn shape health risks and health outcomes.

1. Biological Background on CVD

CVD includes diseases of the heart and circulatory system.<sup>58</sup> An underlying cause of these conditions is atherosclerosis, a process in which plaque made up of cholesterol, calcium, and fat builds up in the arteries and limits or blocks blood flow. Atherosclerosis is exacerbated by untreated or poorly treated high blood pressure, diabetes, and hyperlipidemia, each of which is a form of physiologic dysregulation.<sup>59</sup> Each of these conditions can be made worse by smoking, poor diet, inadequate exercise, extended periods of inactivity, and obesity. A combination of medications and behavioral change can control hyperlipidemia,<sup>60</sup> diabetes, and hypertension,<sup>61</sup> but doing so requires regular access to primary care.<sup>62</sup> Achieving control does not eliminate all of the risk associated with any of these conditions, but changes in

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57. Larry D. Icard, *Black Gay Men and Conflicting Social Identities: Sexual Orientation Versus Racial Identity*. 4 J. SOC. WORK & HUMAN SEXUALITY 83, 83 (1986).
58. George A. Mensah & David W. Brown, *An Overview of Cardiovascular Disease Burden in the United States*, 26 HEALTH AFF. 38, 38 (2007).
59. *What is Atherosclerosis?*, NAT'L INST. OF HEALTH, <http://www.nhlbi.nih.gov/health/health-topics/topics/atherosclerosis> (last modified Aug. 4, 2014).
60. See Malcolm R. Law et al., *Quantifying Effect of Statins on Low Density Lipoprotein Cholesterol, Ischemic Heart Disease, and Stroke: Systematic Review and Meta-Analysis*, 326 BMJ 1423, 1424 (2003).
61. See Bruce M. Psaty et al., *Health Outcomes Associated with Antihypertensive Therapies Used As First-Line Agents: A Systematic Review and Meta-Analysis*, 277 JAMA 739, 739 (1997).
62. See generally Dan R. Berlowitz et al., *Inadequate Management of Blood Pressure in a Hypertensive Population*, 339 NEJM 1957-63 (1998) (discussing the efficacy of various hypertension treatments); Vincenza Snow et al., *Pharmacologic and Surgical Management of Obesity in Primary Care: a Clinical Practice Guideline from the American College of Physicians*, 142 ANNALS INTERN. MED. 525-31 (2005) (providing a review of the evidence on pharmacologic and surgical treatments of obesity).

diet, physical activity, and salt intake have all been shown to slow the progression of CVD.<sup>63</sup>

## 2. CVD Epidemiology in African Americans

Even excluding stroke, heart disease is the leading cause of death for both men and women in the United States. Although the overall prevalence of CVD has dropped in recent decades, the gains have been greatest for the non-Hispanic white male population.<sup>64</sup> Women of all races are more likely to suffer quality of life burdens from CVD due in part to their older age at onset and longer life expectancy.<sup>65</sup>

Despite overall improvements, CVD rates have declined much more slowly among African Americans than non-Hispanic whites.<sup>66</sup> Cooper and colleagues noted that for African American women in the Deep South, rates increased while behavioral risk factors, including smoking, physical inactivity, and diet remained static.<sup>67</sup> Similarly, Gillum notes African American women have some of the highest rates of CVD morbidity and mortality among women in the industrialized world, which they find to be “characterized by higher incidence, earlier onset, longer duration, higher prevalence, and higher rates of hypertension-related mortality and morbidity.”<sup>68</sup> Much of this disparity is due to the high prevalence of hypertension; indeed, over 43 percent of African Americans are hypertensive.<sup>69</sup>

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63. *E.g.*, Nancy T. Artinian et al., *Interventions to Promote Physical Activity and Dietary Lifestyle Changes for Cardiovascular Risk Factor Reduction in Adults: A Scientific Statement from the American Heart Association*, 122 *CIRCULATION* 406-441 (2010); Katherine Esposito et al., *Effect of Weight Loss and Lifestyle Changes on Vascular Inflammatory Markers in Obese Women: a Randomized Trial*, 289 *JAMA* 1799-1804 (2003).
64. *See generally* Donald Lloyd-Jones et al., *Heart Disease and Stroke Statistics – 2010 Update: A Report from the American Heart Association*, 121 *CIRCULATION* e47-e49 (2010).
65. *See generally* L. Veronica Lee & JoAnne Micala Foody, *Cardiovascular Disease in Women*, 10 *CURRENT ATHEROSCLEROSIS REP.* 295-302 (2008).
66. Sharon B. Wvatt et al., *Racism and Cardiovascular Disease in African Americans*, 325 *AM. J. MED. SCI.* 315-331 (2003).
67. Richard Cooper et al., *Trends and Disparities in Coronary Heart Disease, Stroke, and Other Cardiovascular Diseases in the United States – Findings of the National Conference on Cardiovascular Disease Prevention*, 102 *CIRCULATION* 3137, 3137 (2000).
68. Richard F. Gillum, *Epidemiology of Hypertension in African-American Women*, 131 *AM. HEART J.* 385, 394 (1996).
69. Lloyd-Jones et al., *supra* note 64, at e116.



While very little research has been done on sexual minorities and CVD and even less has been done on African American sexual minorities and CVD, we do know that they have higher risks for CVD. For example, WSW as a group are more likely to be overweight and obese than WSM.<sup>70</sup> Furthermore, African American and Hispanic WSW were significantly more likely to be overweight or obese than non-Hispanic white WSW.<sup>71</sup> In an article on smoking and sexual minorities, Lee and colleagues found that WSW are 1.5 to 2.0 times more likely to smoke than WSM and that MSM are between 2.0 and 2.5 times more likely to smoke than MSW.<sup>72</sup> However, data on the smoking habits of transgender and sexual minorities of color have not been systematically collected.<sup>73</sup>

CVD mortality rates increase substantially with age.<sup>74</sup> Within each age group, CVD mortality rates are higher for men than women and are higher for African Americans than non-Hispanic whites. Men demonstrate earlier onset of CVD morbidity and greater excess CVD mortality in middle age and early old age. However, while cardiovascular events and mortality in women increase with menopause, gender differences in CVD mortality narrow at older ages (over seventy-four). The differences between African American and white CVD mortality are much more profound; African Americans are two to three times more likely to die from CVD than whites in any age group. Among older African Americans, excess mortality decreases but does not disappear.<sup>75</sup>

### 3. Biological Background on HIV/AIDS

Human immunodeficiency virus (HIV) is a retrovirus that attacks the immune system by destroying immune cells known as helper T-cells. Helper T-cells, also known as CD4 cells, are specific leukocytes that protect the body by coordinating its immune response to

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70. See Ulrike Boehmer et al., *Overweight and Obesity in Sexual-Minority Women: Evidence from Population-Based Data*, 97 AM. J. PUB. HEALTH 1134, 1134 (2007).

71. See *id.* at 1137.

72. Joseph G. L. Lee et al., *Tobacco Use Among Sexual Minorities, USA, 1987-2007 (May): A Systematic Review*, 18 TOBACCO CONTROL 275, 278-79 (2009).

73. *Id.* at 279-280.

74. Andrew M. Davis et al., *Cardiovascular Health Disparities a Systematic Review of Health Care Interventions*, 64 MED. CARE RESEARCH & REV. 29S, 33S (2007).

75. George A. Mensah et al., *State of Disparities in Cardiovascular Health in the United States*, 111 CIRCULATION 1233, 1238 (2005).

invading pathogens. In other words, HIV attacks immune responses. As HIV replicates, the number of helper T-cells continues to decline. Without these cells, individuals are vulnerable to a variety of infections and cancers that they could normally fight off. These infections are termed “opportunistic infections” because they occur in immunocompromised individuals and do far greater damage than would otherwise be possible.<sup>76</sup> In addition, there is growing evidence that when HIV enters the bloodstream (a condition known as viremia), it can cause organ damage that makes HIV-positive individuals vulnerable to heart attack, stroke, dementia, and other systemic conditions that can be disabling or deadly.<sup>77</sup>

Since the mid-1990s, combination antiretroviral therapy (cART) has been used to treat HIV infection. However these medications are extremely expensive and require at least 90 percent adherence to keep the virus at undetectable levels in blood.<sup>78</sup> A person who is HIV-positive has not developed AIDS. AIDS is only diagnosed when an HIV patient’s helper T-cell count drops to two hundred cells or less per cubic millimeter of blood or the HIV patient experiences one or more specific opportunistic infections or cancers. People who have developed AIDS usually do so due to lack of access to medical care or screening. Progression from HIV to AIDS is largely preventable. Thus, developing AIDS results in more complex health care needs and higher rates of disability among those least likely to have access to the necessary care and services.

#### 4. HIV/AIDS Epidemiology in African Americans

Approximately 1.14 million Americans currently live with HIV resulting in a relatively low nationwide adult prevalence rate of 0.6 out of 100,000 persons.<sup>79</sup> While men represent a larger percentage of people living with HIV/AIDS, women consistently represent 21 percent of all new cases. Of these women, 64 percent are African

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76. *What is HIV/AIDS?*, AIDS.GOV, <http://aids.gov/hiv-aids-basics/hiv-aids-101/what-is-hiv-aids> (last updated Apr. 29, 2014).

77. See Steven G. Deeks et al., *Systemic Effects of Inflammation on Health During Chronic HIV Infection*, 39 IMMUNITY 633, 633 (2013); Steven G. Deeks, *HIV Infection, Inflammation, Immunosenescence, and Aging*, 62 ANN. REV. MED. 141, 141 (2011).

78. Carmen Ortego et al., *Adherence to Highly Active Antiretroviral Therapy (HAART): A Meta-Analysis*, 15 AIDS BEHAV. 1381, 1381 (2011).

79. M.L. Campsmith et al., *HIV Prevalence Estimates – United States, 2006*, 57(39) MORTALITY & MORBIDITY WEEKLY REP. 1073, 1075 (2008).

American and many reside in the southern United States in medically underserved areas.<sup>80</sup>

Although African Americans make up 13 percent of the population, they constitute 44 percent of all new HIV diagnoses and 49.8 percent of all people living with AIDS.<sup>81</sup> In many impoverished urban areas, seroprevalence rates of over 2 percent<sup>82</sup> are not uncommon, making HIV in those areas a generalized epidemic as defined by the World Health Organization.<sup>83</sup>

Although AIDS was initially perceived as a gay white man's disease, African American men and women were disproportionately affected from its outset. African American men made up 25 percent of all male cases between 1979 and 1983,<sup>84</sup> and in the period from 1979 to 1981 and the year 1982, African American women represented 40 percent and 70 percent of all female cases, respectively. As of 2011, African American women made up 65 percent of all women living with HIV/AIDS.<sup>85</sup> However, between 2008 and 2012, the rate of new HIV infections dropped 21 percent among African American women.<sup>86</sup> Since the late 1980s, non-Hispanic whites have made up a decreasing proportion of HIV/AIDS cases.

While white MSM still represent the majority of new HIV infections among all MSM, black MSM are disproportionately affected. Black MSM represent 39 percent of all new infections among

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80. See Sally L. Hodder et al., *Challenges of a Hidden Epidemic: HIV Prevention Among Women in the United States*, 55 J. AIDS S69, S70 (2010).
81. T. Durant et al., *Update to Racial/Ethnic Disparities in Diagnosis of HIV/AIDS – 33 States, 2001–2005*, 56(09) MORTALITY & MORBIDITY WEEKLY REP. 189, 189 (2007).
82. Paul Denning & Elizabeth DiNenno, *Communities in Crisis: Is There a Generalized HIV Epidemic in Impoverished Urban Areas of the United States?*, XVIII INT'L AIDS CONFERENCE (2010).
83. See *Strategic Information: Surveillance*, WORLD HEALTH ORG., <http://www.who.int/hiv/strategic/surveillance/en> (last visited Nov. 9, 2014).
84. *AIDS Public Information Dataset*, CTRS. FOR DISEASE CONTROL & PREVENTION, <http://wonder.cdc.gov/aidsPublic.html> (last modified May 30, 2014).
85. *Id.*
86. *New HIV Infections in the United State*, CTRS. FOR DISEASE CONTROL & PREVENTION (Dec. 2012) <http://www.cdc.gov/nchhstp/newsroom/docs/2012/hiv-infections-2007-2010.pdf>.

MSM in 2010.<sup>87</sup> In a meta-analysis of the existing literature, Millett and colleagues found that higher HIV infection rates in black MSM “were not attributable to a higher frequency of risky sexual behavior, non-gay identity, or sexual nondisclosure, or to reported use of alcohol or illicit substances.”<sup>88</sup> In fact, they reported fewer sexual partners and fewer acts of sex without a condom than white MSM.<sup>89</sup> However, Millett and colleagues found that high HIV rates among black MSM were partially attributable to high rates of other sexually transmitted infections and undetected or late diagnosis of HIV.<sup>90</sup> Thus, differences in transmission rates may have as much to do with the prevalence of infection in a population as with the rates of specific behaviors through which transmission occurs. For example, unprotected sex may be less common in high-risk populations, but the likelihood of transmission may be much higher.

Levy and colleagues discovered that barriers to black MSM testing included stigma, discrimination, and insufficient services in their neighborhoods and in correctional settings.<sup>91</sup> MTF transgender people who have sex with men have been disproportionately represented in the epidemic<sup>92</sup> and African American transgender MTFs even more so.<sup>93</sup>

With the implementation of antiretroviral treatment, also known as ART or cART, HIV/AIDS shifted from a terminal medical condition to a treatable chronic disease for those with access to

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87. *HIV Among African American Gay and Bisexual Men*, CTRS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/hiv/risk/raciaethnic/bmsm/facts> (last updated Dec. 8, 2014).
88. Millett et al., *supra* note 20, at 1007.
89. *Id.* at 1008; Gregorio A. Millett, et al., *Explaining Disparities in HIV Infection Among Black and White Men Who Have Sex with Men: A Meta-Analysis of HIV Risk Behaviors*, 21 AIDS 2083, 2083-84 (2007).
90. Millett, *supra* note 20, at 1007.
91. Matthew E. Levy et al., *Understanding Structural Barriers to Accessing HIV Testing and Prevention Services Among Black Men Who Have Sex with Men (BMSM) in the United States*, 18 AIDS & BEHAV. 972, 972 (2014).
92. Jeffrey H. Herbst et al., *Estimating HIV Prevalence and Risk Behaviors of Transgender Persons in the United States: A Systematic Review*, 12 AIDS BEHAV. 1, 1 (2008).
93. Jenna Rapues et al., *Correlates of HIV Infection Among Transfemales, San Francisco, 2010: Results From a Respondent Driven Sampling Study*, 103 AM J. PUB. HEALTH 1485, 1490 (2013); Larry Nuttbrock et al., *Lifetime Risk Factors for HIV/STI Infections Among Male to Female Transgender Persons*, 52 J. AIDS 417, 421 (2009).

treatment. In fact, news reports increasingly suggest that people with HIV who remain on cART can expect a normal lifespan.<sup>94</sup> However, a further examination of existing research demonstrates that this is true only for white MSM. Black MSM and women with HIV/AIDS lag much farther behind in survival.<sup>95</sup>

In research conducted after the development of cART, Hall and colleagues discovered that among MSM, HIV-positive African American and Hispanic men are significantly more likely to progress to AIDS within three years of diagnosis than their white male counterparts.<sup>96</sup> Furthermore, a three-year survival period after an AIDS diagnosis was less likely for African American men (80.6 percent surviving) than for their white and Hispanic (84.5 percent and 85.2 percent respectively) surviving counterparts.<sup>97</sup> Other researchers have noted distinct mortality disadvantages for HIV-positive African Americans and other populations of color.<sup>98</sup>

#### 5. The Role of Neighborhood in CVD & HIV/AIDS

The neighborhood where one lives has a direct impact on health and related CVD and HIV/AIDS disparities in several ways. Important factors may include residential, racial, and economic segregation. In the case of CVD, both forms of segregation are often

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94. *E.g.*, David Heltz, *Life Expectancy for North Americans with HIV Reaches Historic High*, HEALTHLINE NEWS (Dec. 18, 2013), <http://www.healthline.com/health-news/hiv-life-expectancy-for-americans-with-hiv-reaches-parity-121813>; Liza Baskin, *HIV Patients' Life Expectancy Can Be Normal*, DAILY RX (Dec. 30, 2013), <http://www.dailyrx.com/hiv-patients-using-antiretroviral-therapy-found-have-normal-life-expectancy>.
95. *E.g.*, Hasina Samji et al., *Closing the Gap: Increases in Life Expectancy Among Treated HIV-Positive Individuals in the United States and Canada*, 8 PLOS ONE 1, 3 (2013); Ard van Sighem, et al., *Life Expectancy of Recently Diagnosed Asymptomatic HIV-Infected Patients Approaches That of Uninfected Individuals*, 24 AIDS 1527, 1530 (2010).
96. Irene H. Hall et al., *Racial/Ethnic and Age Disparities in HIV Prevalence and Disease Progression Among Men Who Have Sex with Men in the United States*, 97 AM J. PUB. HEALTH 1060, 1060 (2007).
97. *Id.* at 1062.
98. *E.g.*, Gopal K. Singh et al., *Widening Socioeconomic, Racial, and Geographic Disparities in HIV/AIDS Mortality in the United States, 1987–2011*, 2013 ADVANCES IN PREVENTIVE MED. 1, 1 (2013); Mary Jo Treпка et al., *Community Poverty and Trends in Racial/Ethnic Survival Disparities Among People Diagnosed With AIDS in Florida, 1993–2004*, 103 AM J. PUB. HEALTH 717, 717 (2013); David B. Hanna et al., *Disparities Among States in HIV-Related Mortality in Persons with HIV Infection, 37 U.S. States, 2001–2007*, 26 AIDS 95, 99 (2012).

positively associated with elevated cardiovascular risk.<sup>99</sup> Nevertheless, Fang and colleagues found that African Americans in New York City who lived in the most segregated areas had lower rates of cardiovascular disease mortality than those living in less segregated areas.<sup>100</sup>

Although HIV/AIDS is commonly perceived to be the result of individual behaviors, the place where one lives may be a stronger predictor. Indeed, Denning and DiNenno found that the HIV prevalence rates in impoverished urban communities were twenty times higher than other regions of the United States and that rates of infection remained high regardless of race.<sup>101</sup> Similarly, homelessness and housing instability place people at risk for contracting HIV/AIDS; indeed, Aidala and colleagues discovered that individuals who were either homeless or without stable housing were two to four times more likely to engage in needle use or to exchange sex for money or food than their stably housed peers.<sup>102</sup> Dickson-Gomez and colleagues found that while low-income and supportive housing programs could be an effective means of structural HIV prevention, they are also currently inadequate.<sup>103</sup> In addition, homelessness and housing instability make it difficult for HIV-positive people to stay compliant with cART.<sup>104</sup> Racial residential segregation was also strongly associated with decreased survival for HIV-positive persons.<sup>105</sup>

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99. See, e.g., Ana V. Diez-Roux et al., *Neighborhood Environments and Coronary Heart Disease: A Multilevel Analysis*, 146 AM. J. EPIDEMIOLOGY 48, 58-61 (1997); see, e.g., Kiarri N. Kershaw et al., *Metropolitan Level Racial Residential Segregation and Black-White Disparities in Hypertension*, 174 AM J. EPIDEMIOLOGY 537, 537 (2011); see, e.g., Kellee White & Luisa N. Borrell, *Racial/Ethnic Residential Segregation: Framing the Context of Health Risk and Health Disparities*, 17 HEALTH PLACE 438, 441 (2011).
100. Jing Fang et al., *Residential Segregation and Mortality in New York City*, 47 SOC. SCI. MED. 469, 469 (1998).
101. Paul Denning & Elizabeth DiNenno, *Communities in Crisis: Is There a Generalized HIV Epidemic in Impoverished Urban Areas of the United States?*, XVIII INT'L AIDS CONFERENCE (2010).
102. Angela Aidala et al., *Housing Status and HIV Risk Behaviors: Implications for Prevention and Policy*, 9 AIDS & BEHAV. 251, 251 (2005).
103. Julia Dickson-Gomez et al., *Access to Housing Subsidies, Housing Status, Drug Use and HIV Risk Among Low-Income U.S. Urban Residents*, 6 SUBSTANCE ABUSE TREATMENT, PREVENTION, & POL'Y 31, 31 (2011).
104. See Sahra Emamzadeh-Fard et al., *Adherence to Antiretroviral Therapy and its Determinants in HIV/AIDS Patients: A Review*, 12 INFECTIOUS DISORDERS-DRUG TARGETS 346, 347-48 (2012); M-J. Milloy et al.,

The relationship between neighborhood and rates of HIV infection are complex. Adimora and colleagues note that variables such as poverty, residential segregation, and disproportionate incarceration of men lead to smaller sexual networks and as a result, higher rates of HIV infection.<sup>106</sup> We argue that in many ways, these dynamics are similar to the patterns observed at the inception of the epidemic among white MSM in the late 1970s and early 1980s; outbreaks of infection first occurred in predominantly gay neighborhoods such as the Castro of San Francisco and West Hollywood in Los Angeles among men in an enclosed sexual network.<sup>107</sup>

The design of neighborhood space is also important for cardiovascular health. Neighborhoods that have sufficient sidewalks, parks, and bike trails are conducive to greater levels of physical activity. For example, Mobley and colleagues found that African American women who lived in areas of mixed use (areas that were conducive to walking, shopping, and other daily activities) had lower body mass index, lower rates of obesity, and thus a 20 percent lower risk of CVD than women who lived in areas that were designed for purely residential use.<sup>108</sup> Disparities in residential neighborhoods exacerbate individual level disparities as greater investments in parks and green space provide more opportunities to exercise safely. Indeed, Mobley and colleagues found that the presence of one or more health clubs as well as lower crime rates were directly associated with lower CVD risk for the women.<sup>109</sup>

The connection between diet and CVD has been exhaustively demonstrated.<sup>110</sup> In addition, people with HIV face elevated risk for

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*Housing Status and the Health of People Living with HIV/AIDS*, 9 CURRENT HIV/AIDS REP. 346, 347-48 (2012).

105. Trepka, *supra* note 98; Hanna et al., *supra* note 98.
106. Adaora A. Adimora & Victor J. Schoenbach, *Social Context, Sexual Networks, and Racial Disparities in Rates of Sexually Transmitted Infections*, 191 J. INFECTIOUS DISEASES S115, S117-19 (2005).
107. See RANDY SHILTS, AND THE BAND PLAYED ON: POLITICS, PEOPLE, AND THE AIDS EPIDEMIC 71 (2007); D.E. KANOUSE ET AL., RESPONSE TO THE AIDS EPIDEMIC: A SURVEY OF HOMOSEXUAL AND BISEXUAL MEN IN LOS ANGELES COUNTY 5 (1991); Michael E. Gorman, *The AIDS Epidemic in San Francisco: Epidemiological and Anthropological Perspectives*, 9 ANTHROPOLOGY & EPIDEMIOLOGY 157, 162 (1986).
108. Lee R. Mobley et al., *Environment, Obesity, and Cardiovascular Disease Risk in Low-Income Women*, 30 AM. J. PREVENTIVE MED. 327, 327 (2006).
109. *Id.*
110. *E.g.*, Naa Oyo & A. Kwate, *Fried Chicken and Fresh Apples: Racial Segregation as a Fundamental Cause of Fast Food Density in Black*

CVD due to potential side effects from cART and inflammatory effects of the virus which can be exacerbated by poor diet.<sup>111</sup> Therefore, the availability of sufficient food including lean protein, fresh fruits, and vegetables is essential to the health of both populations. However, in disproportionately poor urban areas and some rural areas, residents do not have access to healthy food due to a lack of supermarkets and a preponderance of convenience stores and fast food restaurants as the primary food outlets.<sup>112</sup> Fast food restaurants have measurable negative impacts on the health of individuals in segregated neighborhoods.<sup>113</sup>

Food insufficiency is especially of concern to people with HIV/AIDS. Those dealing with food insufficiency have lowered ability to suppress the HIV virus<sup>114</sup> and are more likely to engage in risky sexual relationships in exchange for food or money,<sup>115</sup> thus making access to nutritious food essential to the health of this population.

In this section we have demonstrated how the neighborhood where one lives can affect health and chances to pursue health in numerous ways. When neighborhoods do not support health, they create the burden of allostatic load that can place individuals at

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*Neighborhoods*, 14 HEALTH & PLACE 32, 33 (2008); Robert Rosenheck, *Fast Food Consumption and Increased Caloric Intake: A Systematic Review of a Trajectory Towards Weight Gain and Obesity Risk*, 9 OBESITY REV. 535, 535 (2008).

111. See Colleen Hadigan et al., *Metabolic Abnormalities and Cardiovascular Disease Risk Factors in Adults with Human Immunodeficiency Virus Infection and Lipodystrophy*, 32 CLINICAL INFECTIOUS DISEASES 130, 135 (2001); F. M. Islam et al., *Relative Risk of Cardiovascular Disease Among People Living with HIV: A Systematic Review and Meta-Analysis*, 13 HIV MED. 453, 453 (2012).
112. Walker et al., *supra* note 45, at 879; Nicole I. Larson et al., *Neighborhood Environments: Disparities in Access to Healthy Foods in the U.S.*, 36 AM J. PREVENTIVE MED. 74, 74 (2009); Lavonna Blair Lewis et al., *African Americans' Access to Healthy Food Options in South Los Angeles Restaurants*, 95 AM J. PUB. HEALTH 668, 672 (2005).
113. *E.g.*, Naa, *supra* note 110, at 33; Rosenheck, *supra* note 110, at 535.
114. Sheri D. Weiser et al., *Food Insecurity is Associated with Incomplete HIV RNA Suppression Among Homeless and Marginally Housed HIV-Infected Individuals in San Francisco*, 24 J. INTERNAL MED. 14, 14 (2009); see Aranka Anema et al., *Food Insecurity and HIV/AIDS: Current Knowledge, Gaps, and Research Priorities*, 4 CURRENT HIV/AIDS REP. 224, 224 (2009).
115. See generally, Maria R. Khan et al., *Timing and Duration of Incarceration and High-Risk Sexual Partnerships Among African-Americans in North Carolina*, 18 ANNALS EPIDEMIOLOGY 403 (2008) (discussing the health impacts of high-risk sexual partnerships).



greater risk for disease or, if disease already exists, worsen its effects. We explore these mechanisms in greater detail in the next section.

#### 6. The Role of Allostatic Load in CVD & HIV/AIDS

Allostatic load—the process by which the body responds to stress with dysregulation—plays an important role in CVD and HIV/AIDS morbidity and mortality in two ways: it can increase risk for developing or contracting the diseases and it can accelerate or worsen the illness trajectory. Physiologic systems are interdependent, meaning that the loss of the capacity to maintain normal limits in one system puts demands on other regulatory systems. This in turn increases the risk of dysregulation in those other regulatory systems. For example, diabetes—the loss of the capacity to regulate blood sugar—puts an individual at increased risk of cardiovascular disease.

One example of the effect of allostatic load on health is the relationship between racial discrimination and the onset of hypertension in African Americans.<sup>116</sup> Jones notes that racism occurs on three different levels, all of which can affect health: institutionalized racism (which manifests itself in “material conditions and access to power”),<sup>117</sup> personally mediated racism (actual interpersonal experiences of discrimination), and internalized racism (accepting and absorbing racist stereotypes about oneself and others).<sup>118</sup> Wyatt and colleagues build on Jones’ paradigm by applying it to the existing literature as well as their own work from the Jackson Heart Study.<sup>119</sup> Krieger tested their conclusions and found that while there was no correlation between white women’s experiences of sexism and increased risk of hypertension, African American women who had experienced unfair treatment (personally mediated racism) and had chosen not to object to it were 4.4 times more likely to have hypertension than those who stated that they took action or talked to somebody.<sup>120</sup> Cozier and colleagues reported that for foreign-born African American women, experiences of

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116. See Elizabeth A. Pascoe & Laura Smart Richman, *Perceived Discrimination and Health: A Meta-Analytic Review*, 135 PSYCH. BULL. 531, 531 (2009).

117. Camara Phyllis Jones, Invited Commentary, “Race,” *Racism, and the Practice of Epidemiology*, 154 AM. J. EPIDEMIOLOGY 299, 300 (2001).

118. *Id.*

119. Sharon B. Wyatt et al., *Racism and Cardiovascular Disease in African Americans*, 325 AM. J. MED. SCI. 315-331 (2003).

120. Nancy Krieger, *Racial and Gender Discrimination: Risk Factors for High Blood Pressure?* 30 SOC. SCI. MED. 1273, 1273 (1990).

personally mediated racism were also associated with specific hypertension events.<sup>121</sup>

A high allostatic load may increase the risk of contracting HIV. A disproportionate number of people with HIV/AIDS report histories of childhood sexual abuse and other forms of trauma. Individuals with a high allostatic load due to trauma from childhood sexual abuse appear more likely to engage in behaviors that increase their risk for contracting HIV.<sup>122</sup> While these patterns happen in trauma survivors regardless of race, they are more likely to result in contracting HIV for people whose social network already has high HIV/AIDS prevalence.

A high allostatic load produces negative health outcomes for people living with HIV/AIDS. For example, those living with HIV in the South who report past trauma, recent stressful events, or were diagnosed with PTSD, also “reported more bodily pain and poorer physical, role and cognitive functioning.”<sup>123</sup> Additionally, HIV-positive individuals with a history of trauma, stressful life events, and depression<sup>124</sup> were more likely to have lower helper T-cell counts, higher viral loads, more pronounced health declines, and higher mortality.<sup>125</sup> Finally, HIV stigma has been directly linked to heightened allostatic load<sup>126</sup> and its subsequent health effects are well documented and persistent.<sup>127</sup>

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121. See Yvette Cozier et al., *Racial Discrimination and the Incidence of Hypertension in U.S. Black Women*, 16 ANNALS EPIDEMIOLOGY 681, 685 (2006).
122. See Gail E Wyatt et al., *Does a History of Trauma Contribute to HIV Risk for Women of Color? Implications for Prevention and Policy*, 92 AM. J. PUB. HEALTH, 660, 660-665 (2002); Sally Zierler et al., *Adult Survivors of Childhood Sexual Abuse and Subsequent Risk of HIV Infection*, 81 AM. J. PUB. HEALTH 572, 572 (1991); Mardge Cohen et al., *Domestic Violence and Childhood Sexual Abuse in HIV-Infected Women and Women at Risk for HIV*, 90 AM J. PUB. HEALTH 560, 560 (2000); John K. Williams et al., *A Sexual Risk and Stress Reduction Intervention Designed for HIV-Positive Bisexual African American Men with Childhood Sexual Abuse Histories*. 103 AM. J. PUB. HEALTH 1476, 1476 (2013).
123. Jane Leserman et al., *How Trauma, Recent Stressful Events, and PTSD Affect Functional Health Status and Health Utilization in HIV-Infected Patients in the South*, 67 PSYCHOSOMATIC MED. 500, 500 (2005).
124. Jane Leserman, *Role of Depression, Stress, and Trauma in HIV Disease Progression*, 70 PSYCHOSOMATIC MED. 539, 539 (2008).
125. See Adaora & Schoenbach, *supra* note 106, at S117; Millet et al., *supra* note 89, at 3.
126. See generally Valerie A. Earnshaw, et al., *HIV Stigma Mechanisms and Well-Being Among PLWH: A Test of the HIV Stigma Framework*, 17.5

## III. IMPLICATIONS &amp; ACTIONABLE STEPS

A. *Implications*

Racial disparities between African Americans and non-Hispanic whites play out in ways that create similar patterns of morbidity and mortality disparities for CVD and HIV/AIDS. Racial differences in residential neighborhood environments contribute to these differences by exacerbating stressors and constraining opportunities to pursue healthy behaviors, which in turn increase allostatic load and subsequent morbidity and mortality. Moreover, the disparities are frequently more prominent for those with additional disadvantaged statuses including sexual minorities and individuals of lower socioeconomic status. In other words, multiple disadvantaged statuses present a combination of constraints that substantially limit the opportunity to pursue health and can increase health disparities among those who develop CVD or contract HIV.

Even though many of the decisions that shape an individual's opportunity to pursue health are outside the control of the individual, the prevailing approach to prevention and health education for these conditions merely addresses the behavior of individuals and frames the issues mainly in terms of individual responsibility. While individual responsibility is a useful paradigm for understanding the goals of prevention and behavior modification to minimize risk, individual responsibility is not equally accessible for everyone nor does it address the fact that some decisions are beyond the control of the individual, thus restricting that person's opportunity to pursue health.<sup>128</sup> A more robust approach is to identify the relevant stakeholders whose decisions shape or constrain a person's opportunity to pursue health. Stakeholders whose decisions are informed by a health-conscious approach can make individuals' health promoting choices more effective and help to address the structural disparities that underlie racial health disparities.

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AIDS & BEHAV. 1785, 1789-91 (2013). (discussing health impacts among people with HIV).

127. E.g. Angelo A. Alonzo & Nancy R. Reynolds, *Stigma, HIV and AIDS: An Exploration and Elaboration of a Stigma Trajectory*, 41 SOC. SCI. MED. 303, 303 (1995); Allison R. Webel, et al., *Age, Stress, and Isolation in Older Adults Living with HIV*, 26(5) AIDS CARE 523-31 (2014); Jeannette R. Ickovics et al., *Mortality, CD4 Cell Count Decline, and Depressive Symptoms Among HIV-Seropositive Women: Longitudinal Analysis from the HIV Epidemiology Research Study*, 285 JAMA 1466, 1466 (2001).

128. See BIRD, *supra* note 2, at 6.

*B. Actionable Steps*

Facilitating health-conscious decision-making requires a framework that includes a wide range of decision makers. Because of the structural inequalities driving health disparities surrounding HIV/AIDS and CVD, many of the policies that impact the incidence, prevalence, and health trajectories of these diseases are not explicitly health related. In order to encourage and promote healthy behaviors and positive health outcomes, health researchers must address the broader concerns of these other relevant decision makers and stakeholders, not just those of patients and clinicians. Toward that end, our suggestions for actionable steps address three specific areas: research, public health, and income disparity.

## 1. Research Steps

In order to understand the full impact of CVD and HIV/AIDS health disparities, it is essential to better document these disparities through research. Specifically, we recommend the following:

**•Routine assessment and documentation of disparities.**

For example, the refusal of some states to accept Medicaid expansion under the Affordable Care Act presents an unprecedented opportunity to understand the nature and impact of disparities by assessing and documenting morbidity and mortality disparities by race, ethnicity, and other key social statuses. This work could provide a better general understanding of disparities for medically underserved populations, and it would also yield valuable insights into those with specific chronic diseases including CVD and HIV/AIDS.<sup>129</sup>

**•Examination of health disparities associated with combinations of social statuses.** Assessing health disparities by one status at a time implies that the impacts are simply cumulative. This assumes that the impact of race, SES, gender, and sexual orientation are distinct and constant. Alternatively, by adopting and expanding on existing intersectional approaches<sup>130</sup> to understanding CVD and HIV/AIDS health

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129. *E.g.* Sommers and colleagues discovered marked drops in mortality and increase in care access in three states that significantly expanded Medicaid at the turn of the twenty-first century. Benjamin D. Sommers et al., *Mortality and Access to Care Among Adults After State Medicaid Expansions*, 367 *NEJM* 1025, 1025 (2012).

130. *See generally*, Shim, *supra* note 40, at 405-06; Celeste Watkins-Hayes, *Intersectionality and the Sociology of HIV/AIDS: Past, Present, and Future Research Directions*, 40 *ANN. REV. SOC.* 431-457 (2014); Shari L. Dworkin, *Who Is Epidemiologically Fathomable in the HIV/AIDS*

disparities, the experiences of specific population subgroups become visible and actionable. Examples include the examination of the similarities and differences in the experiences of African American and white women with CVD compared to men of both races, or the study of sexual minorities of color whose experiences are rarely addressed in the existing race disparities and LGBT disparities literature. For example, research can compare and contrast the experiences of African American women and white women with CVD and compare those experiences to men of both races or even to sexual minorities.

## 2. Public Health Steps

Existing public health structures can be used to address CVD and HIV/AIDS health disparities in each of the following ways:

•**Using health data to plan and direct investments in communities.** For example, researchers have called for zoning and financial incentives to encourage supermarkets to expand into areas that currently do not have them.<sup>131</sup> Similar approaches could be used to encourage investments that facilitate active commuting, but these efforts require researchers to address their findings to the needs and concerns of relevant stakeholders and decision makers rather than focusing solely on the individualized models of health behavior.

•**Provision of culturally competent models of individual prevention that are accessible to all sectors of the African American population.** This approach involves recognizing the barriers to prevention in disadvantaged communities and populations and working with communities to develop action plans that address those gaps.<sup>132</sup> One such barrier

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*Epidemic? Gender, Sexuality, and Intersectionality in Public Health*, 7 CULT. HEALTH SEX. 615-623 (2005).

131. *E.g.* Kameshwari Pothukuchi, *Attracting Supermarkets to Inner-City Neighborhoods: Economic Development Outside the Box*, 19 ECON. DEV. Q. 232, 241 (2005); Mary Story et al., *Creating Healthy Food and Eating Environments: Policy and Environmental Approaches*, 29 ANN. REV. PUB. HEALTH 253, 253 (2008).
132. *E.g.* Cindy Brach and Irene Fraserirector, *Can Cultural Competency Reduce Racial and Ethnic Health Disparities? A Review and Conceptual Model*, 57 MED. CARE RESEARCH REV. 181, 202 (2000); J. Nell Brownstein et al., *Community Health Workers as Interventionists in the Prevention and Control of Heart Disease and Stroke*, 29 AM. J. PREVENTIVE MED. 128, 132 (2005); Karla Scott et al., *Culturally Competent HIV Prevention Strategies for Women of Color in the United*

is low health literacy particularly among socioeconomically disadvantaged individuals and communities. Another barrier is the lack of money needed to maintain an emergency food supply to draw on in the case of major power outages due to storms or earthquakes.

### 3. Steps to Alleviate the Effects of Income Disparity

Finally, easing income disparity is one way to improve health and health trajectories. A wide range of programs have at times been used to mitigate barriers to access to quality education, food, and housing:

•**Utilization of education programs.** Education can be used to narrow socioeconomic disparities in health. For example, universal preschool offers an opportunity to narrow educational disparities and increase household income by allowing mothers to work outside the home during the day. Universal preschool has also been shown to provide a high return on investment over the course of a child's life.<sup>133</sup>

•**Expansion of food programs.** Food programs address food insecurity, and can reduce stress, poor health, and the risk of obesity. For example, the Supplemental Nutrition and Assistance Program (SNAP) alleviates food insecurity by providing recipients with benefits to purchase food. Cuts to the program in the face of growing demand differentially impact disadvantaged populations including African Americans.

•**Expansion of housing programs.** Housing programs play a key role in health for the most disadvantaged groups. Example programs include the model that New York City<sup>134</sup> has used to stably house homeless HIV-positive populations. Affordable housing for all citizens could also be provided through expansion of HUD and other federal programs.

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*States*, 26 HEALTH CARE WOMEN 26 (2013); Gail E. Wyatt, *Enhancing Cultural and Contextual Intervention Strategies to Reduce HIV/AIDS among African Americans*, 99 AM. J. PUB. HEALTH 1941-1945 (2009).

133. Lynn A. Karoly & James H. Bigelow, *The Economics of Investing in Universal Preschool Education in California*, RAND MONOGRAPH, <http://www.rand.org/pubs/monographs/MG349.html> (last accessed Sept. 3, 2014).
134. N.Y.C., N.Y., ORDINANCE 2005/050 (May 19, 2005) available at <http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=443560&GUID=56C7EA40-5F32-4346-B499-631BBE0D8377&Options=&Search=>.

## CONCLUSION

Together, constrained choice and intersectionality reveal some of the reasons for CVD and HIV/AIDS health disparities and show potentially effective and appropriate policy responses to address these disparities. We have demonstrated how the contexts in which one lives including the social and built environment of residential neighborhoods interact with individual statuses including race, gender, SES, and sexual orientation to shape an individual's opportunity to pursue health. In so doing, these cumulative constraints contribute to acquired differences in health risk through allostatic load. Such disparities can create risk for contracting HIV, developing CVD, and exacerbate the burdens of these and other medical conditions. Thus, multiple disadvantaged statuses present unique burdens that make it difficult to pursue health, not only for individuals, but also for major population groups.

We have also touched on a few of the many other social-structural roots that contribute to morbidity and mortality disparities for African Americans that should be explored and addressed to narrow racial health disparities, which include racially disproportionate incarceration, regional differences in health risk, and rural-urban disparities. While we have focused on health determinants, other areas also need to be explored such as health care access disparities, racial bias in treatment decisions, issues of cultural competence, the impact of stigma, and provider discrimination. Understanding the sources of health care inequality can yield additional policy levers as a means to closing long-standing racial gaps in health.