

**SPECIAL FOCUS ISSUE: CARDIOVASCULAR HEALTH PROMOTION**

**THE PRESENT AND FUTURE: JACC REVIEW TOPIC OF THE WEEK**

# Cardiovascular Disease and Homelessness



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## ABSTRACT

Cardiovascular disease (CVD) is a major cause of death among homeless adults, at rates that exceed those in nonhomeless individuals. A complex set of factors contributes to this disparity. In addition to a high prevalence of cigarette smoking and suboptimal control of traditional CVD risk factors such as hypertension and diabetes, a heavy burden of nontraditional psychosocial risk factors like chronic stress, depression, heavy alcohol use, and cocaine use may confer additional risk for adverse CVD outcomes beyond that predicted by conventional risk estimation methods. Poor health care access and logistical challenges to cardiac testing may lead to delays in presentation and diagnosis. The management of established CVD may be further challenged by barriers to medication adherence, communication, and timely follow-up. The authors present practical, patient-centered strategies for addressing these challenges, emphasizing the importance of multidisciplinary collaboration and partnership with homeless-tailored clinical programs to improve CVD outcomes in this population. (J Am Coll Cardiol 2018;71:2585-97) © 2018 by the American College of Cardiology Foundation.

Cardiovascular disease (CVD) is a major cause of death among homeless people and a contributor to excess mortality in this population. The constellation of complex comorbidities and adverse social circumstances seen frequently among homeless people makes the management of CVD in this population uniquely challenging and necessitates a flexible, creative, and multidisciplinary approach. This paper presents an integrated framework for understanding the basis of CVD disparities in homeless people and offers practical management suggestions tailored to the needs of this population, with emphasis on coronary artery disease prevention, diagnosis, and treatment.

## OVERVIEW OF HOMELESSNESS

In 2005, the United Nations estimated that 100 million people were homeless worldwide (1). Estimates from

North America (2,3), Europe (4), and Australia (5) have illustrated the heavy footprint of homelessness in the developed world. In the United States, about 550,000 people are homeless on a given night (6), and an estimated 2.3 to 3.5 million people experience homelessness over the course of a year (2).

U.S. definitions of homelessness vary and continue to evolve. The 1987 Stewart B. McKinney Homeless Assistance Act defined a homeless person as someone who lacks a fixed, regular, and adequate nighttime residence and who lives in a shelter or a place not designed for human habitation (7). The 2009 Homelessness Emergency Assistance and Rapid Transition to Housing Act expanded this definition to include people at imminent risk of housing loss within the next 2 weeks and people fleeing from domestic violence with inadequate resources to obtain other permanent housing (8). People who are “doubled-up,” or staying with friends or family without paying



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## ABBREVIATIONS AND ACRONYMS

**CVD** = cardiovascular disease

**HCH** = Health Care for the Homeless

**HRSA** = Health Resources and Services Administration

rent because of not having a place of their own, are not included in these federal definitions of homelessness nor included in annual estimates of U.S. homelessness, but are considered homeless by the Health Resources and Services Administration (HRSA) (9) as well as by many advocacy organizations and academic researchers. The U.S. Department of Housing and Urban Development considers people to be *chronically* homeless if they have a disabling condition and have been either continuously homeless for  $\geq 1$  year or homeless 4 or more times in the past 3 years (10).

Nationally, 68% of homeless people in the United States reside in shelters, and 32% sleep “rough” in unsheltered locations (6). Although 22% of homeless people are children (6), the homeless population as a whole is growing older, with a median age now approaching 50 years (11,12). Men (60%) and African-American individuals (39%) are over-represented in the homeless population (6), as are a variety of marginalized groups such as gender and sexual minorities (13).

The causes of homelessness are wide-ranging and include structural factors such as poverty, unemployment, discrimination, incarceration, and high housing costs, in addition to personal factors such as substance use, mental illness, and traumatic life experiences. Indeed, “the homeless population” is not a single homogeneous entity, but rather a diverse collection of people from all walks of life with varying levels of disability, reflecting the multiple pathways into homelessness. Despite this heterogeneity, all homeless individuals share a common experience of vulnerability that comes with not having a physical place that is safe, reliable, and theirs.

## HOMELESSNESS AND CARDIOVASCULAR MORTALITY

**Table 1** presents a summary of epidemiological studies reporting CVD mortality in homeless and marginally housed populations across diverse settings and countries (14-22). In an 11-year nationwide study of residents of shelters, rooming houses, and hotels in Canada, age-standardized mortality rates due to all cardiovascular causes were 61% to 71% higher than in the general population and 63% to 80% higher for ischemic heart disease specifically (15). This disparity is even starker among the growing segment of homeless adults  $\geq 45$  years of age, for whom heart disease is the second-leading cause of death, with mortality rates 2- to 3-fold higher than in similarly aged adults in the general population (14).

Factors contributing to disparities in CVD mortality in homeless populations include late presentation to care, fragmentation of care, competing psychosocial priorities, and a high burden of traditional and nontraditional CVD risk factors. Collectively, these issues contribute to myriad difficulties in predicting, diagnosing, and managing CVD in this vulnerable population. The **Central Illustration** displays an integrated framework for understanding the multiple contributors to CVD disparities in homeless people and serves as a roadmap for the remainder of this discussion.

## RISK FACTOR BURDEN

Available evidence indicates that homeless populations may be more likely to have an adverse profile of both traditional and nontraditional CVD risk factors. These risks can be considered under the categories of demographic, medical, substance use, psychiatric, and social factors.

**DEMOGRAPHIC FACTORS.** As noted in the previous text, men and black individuals are over-represented in homeless populations (6), and these demographic groups experience higher CVD mortality rates (23). In addition, the aging of the homeless population (11,12) suggests that the burden of CVD in this group will likely increase over time. Furthermore, the chronological age of homeless individuals may underestimate their functional age, as several studies have demonstrated that the physical ailments and functional impairments of homeless adults often reflect a level of disability seen among much older individuals in the general population (24-26).

**MEDICAL FACTORS.** The prevalence of hypertension among homeless people is similar to that among nonhomeless people (27). However, hypertension among homeless individuals often goes undiagnosed or untreated (28), contributing to poorer blood pressure control than that seen in the general population (29). Similarly, although the prevalence of diabetes among homeless individuals is comparable to that in the general population (27,30), multiple barriers to effective glycemic management in the setting of homelessness result in generally worse disease control and greater complications (28,31-36). Although non-U.S. studies have suggested that overweight and obesity may be less common among homeless people (28,37), U.S.-based studies have found a prevalence similar to that in the general population (38-40). In addition, limited access to exercise facilities and constrained dietary options that are frequently lacking in nutritional quality (41-43) present

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