VIEWPOINT

VOICES IN CARDIOLOGY

The Precision of Cardiovascular Disease Prevention Begins With a Zip Code

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Cardiovascular disease (CVD) remains the leading cause of death of men and women in the United States, with a continued rise in the prevalence and mortality of CVD (1). With the awareness that more than 80% of CVD is preventable, and given that the U.S. trajectory has contrasted with that of other high-income countries, there have been calls to address the social causes that have placed "*the USA last among comparable nations*" (2). CVD prevention measures have almost exclusively focused on identifying risk factors for atherosclerotic CVD (ASCVD). Despite great advancement in our understanding of the causes of ASCVD, there remain significant inequities regarding which groups shoulder the greatest burden of ASCVD and its risk factors, often affected by race and ethnicity, socioeconomic status, neighborhoods, and health care access. These "causes of the causes" are the social determinants of health and reflect the social environmental impact on cardiovascular health.

The World Health Organization defines the social determinants of health as "the circumstances in which people are born, grown, live, work, and age, and the systems put in place to deal with illness" (3). Understanding how these social processes affect ASCVD risk factors, and ultimately ASCVD, can help the preventive cardiology community create novel ways to address primary and secondary CVD prevention.

Rates of ASCVD mortality among minorities, particularly the Black population, have remained disproportionately high (1). Social determinants of health greatly affect the risk of developing ASCVD. In an editorial, Dr. Clyde Yancy stated that "the definition of a health care disparity is not simply a difference in health outcomes by race or ethnicity, but a disproportionate difference attributable to variables other than access to care" (4). Under-represented minorities who live in poor areas and at-risk communities may have reduced access to healthy foods and may live in neighborhoods with higher crime rates and housing density, in addition to having reduced access to medical care (**Figure 1**). These factors put these populations at greater risk of developing obesity, hypertension, hyperlipidemia, type 2 diabetes, and other risk factors for ASCVD (4).

Numerous social determinants of health affect the cardiovascular health of a population. Nonetheless, in ASCVD prevention, 1 universal focus is on identifying ASCVD risk factors and prescribing therapeutic lifestyle changes in all patients (5). When this preventive care is performed by a health care professional, the 2019 guidelines on the primary prevention of CVD emphasized a patient-centered approach, with a class 1 recommendation that social determinants of health be used to inform optimal implementation of treatment recommendations for the prevention of ASCVD (5). This means clinicians should tailor their advice to the patient's socioeconomic status and educational level (**Table 1**). Nonetheless, much of our education directed toward therapeutic lifestyle changes is unstructured. Very little consideration is given to addressing and incorporating social determinants of health into our prevention counseling.

As depicted in **Figure 1**, there is no doubt patients want to partner in the preservation of their cardiovascular health. However, implementing lifestyle changes is challenging in specific environments. There are many barriers and challenges for patients who are at the highest risk for CVD. Although ASCVD

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FIGURE 1 The Importance of Considering Social Determinants of Health When Tailoring Lifestyle Prescriptions

TABLE 1 Example Considerations for Addressing Social Determinants of Health to Help Prevent ASCVD Events

Topic or Domain	Example Considerations
Cardiovascular risk	Adults should be routinely assessed for psychosocial stressors and provided with appropriate counseling
	Health literacy should be assessed every 4–6 yrs to maximize recommendation effectiveness
Diet	In addition to the prescription of diet modifications, body size perception, as well as social and cultural influences, should be assessed
	Potential barriers to adhering to a heart-healthy diet should be assessed, including food access and economic factors; these factors may be particularly relevant to persons from vulnerable populations, such as individuals residing in either inner-city or rural environments, those at socioeconomic disadvantage, and those of advanced age
Exercise and physical activity	In addition to the prescription of exercise, neighborhood environment and access to facilities for physical activity should be assessed
Obesity and Weight Loss	Lifestyle counseling for weight loss should include assessment of and interventional recommendations for psychosocial stressors, sleep hygiene, and other individualized barriers
	Weight maintenance should be promoted in patients with overweight or obesity who are unable to achieve recommended weight loss
Diabetes mellitus	In addition to the prescription of type 2 diabetes mellitus interventions, environmental and psychosocial factors, including depression, stress, self-efficacy, and social support, should be assessed to improve achievement of glycemic control and adherence to treatment
High blood pressure	Short sleep duration (<6 h) and poor-quality sleep are associated with high blood pressure and should be considered
	Because other lifestyle habits can affect blood pressure, access to a healthy, low-sodium diet and viable exercise options should also be considered
Tobacco treatment	Social support is another potential determinant of tobacco use; therefore, in adults who use tobacco, assistance and arrangement for individualized and group social support counseling are recommended

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ASCVD = atherosclerotic cardiovascular disease.

risk factors affect cardiovascular health, many factors that can predict risk are not part of this equation. Affordable and available fruits, vegetables, and healthy food, safe areas to walk and exercise, and access to health care with health insurance coverage are social determinants of health and are often predictive by where a person resides (4).

Evaluating patients for housing stability, food insecurity, transportation limitations, utility assistance needs, and interpersonal safety is imperative when screening for social determinants of health that affect health outcomes (6). Screening of these social measures will assist in ASCVD prevention because it allows us to tailor our recommendations to the patient (Supplemental Table 1). Social determinants of health will not be captured by any ASCVD risk equation and cannot be modified by any medication or any lifestyle modification. These barriers to ASCVD prevention cannot be ignored any further if a real impact on cardiovascular health is to be made. Precision medicine starts with the patient. And often with their zip code.

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APPENDIX For a supplemental table, please see the online version of this paper.