

Four Opportunities to Prevent Diabetes and Coronary Heart Disease

Preface

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Guest Editor

Starting with the North Karelia Project in Finland, continuing with the large community-based heart disease prevention trials in the United States,^{1,2} and organizing CardioVision 2020 in Olmsted County, Minnesota,³ I have been involved with heart disease prevention programs for 40 years. During that time period, the prevalence of type 2 diabetes in the United States increased by one-third, and it is predicted to increase even more.⁴ Because the disease more than doubles the risk of death from heart disease⁵ and now contributes significant population-attributable risk, I am excited to have added my perspective, and perhaps contributed to the control of diabetes, by accepting the role of guest editor of this *Diabetes Spectrum* From Research to Practice section.

Randomized, clinical trials are *prima facie* evidence that type 2 diabetes can be prevented. I clearly remember a day in Helsinki more than 10 years ago, when I was teaching at the World Health Organization noncommunicable disease prevention seminar. Jaakko Tuomilehto, MD, PhD, the principal investigator of the Finnish Diabetes Prevention Trial took me aside and told me that their results would be coming out in the *New England Journal of Medicine*. The publication of this landmark study⁶ was followed about a year later by the report of the larger, American Diabetes Prevention Program.⁷ The findings of the two trials were nearly identical: lifestyles that comprise a diet that is low in saturated fat, include adequate physical activity, and lead to modest weight loss can prevent diabetes in high-risk individuals. Unfortunately, the scientific community has yet to be able to translate

these findings to achieve diabetes control at a population level.

The extent to which clinicians ought to focus on weight and weight loss also remains unclear. Earlier this year, Flegal et al.⁸ published a systematic review and meta-analysis of the association between all-cause mortality and standard BMI categories. Perhaps surprisingly, grade 1 obesity (BMI 30.0–34.9 kg/m²) was not associated with higher mortality, and overweight was associated with significantly lower all-cause mortality than an “ideal” BMI.

Perhaps even more surprising is the phenomenon of the “obesity paradox,” the survival advantage of overweight and obese patients with type 2 diabetes. Therefore, I asked Marion J. Franz, MS, RD, CDE, to help readers understand the obesity paradox and diabetes (p. 145). Citing the American Diabetes Association position that “a goal of medical therapy for individuals with diabetes is to achieve and maintain blood glucose levels in the normal range or as close to normal as is safely possible, a lipid and lipoprotein profile that reduces the risk for vascular disease, and blood pressure levels in the normal range or as close to normal as safely possible,”⁹ her article offers concise, evidence-informed advice that clinicians should prescribe nutrition interventions that optimize metabolic parameters, include lifestyle changes that patients are willing and able to make, and focus on appropriate portion sizes of foods shown to have health benefits.

Given our inability to prevent every case of diabetes, prevention of disease complications with compounds such as aspirin remains important. Aspirin was developed as an analgesic in the 19th century, and its properties

that give it efficacy in the prevention of myocardial infarction (MI) were defined by the Nobel laureate Sir John Vane in the second half of the 20th century. However, aspirin does have a dark side—the risk of hemorrhage and gastrointestinal side effects. This risk can outweigh the potential benefit for many patients. Our second article, by Joshua J. Neumiller, PharmD, CDE, and John R. White, Jr., PA-C, PharmD (p. 153), will help readers identify which patients to counsel for and against taking aspirin for cardiovascular disease prophylaxis, a decision that is not straightforward.

Another landmark study conducted in Finland observed that the risk of death from heart disease among individuals diagnosed with type 2 diabetes was as high as that of individuals who had been diagnosed with a prior MI.¹⁰ Observations such as this one led to further investigation of diabetes as a coronary heart disease (CHD) risk equivalent.¹¹ In the third article of this From Research to Practice section, Bishnu H. Subedi, MD, et al. (p. 156) summarize the primary prevention trials and meta-analyses, offering guidance on the role of statin therapy for patients with diabetes. They conclude that all patients with diabetes and CHD should be prescribed a statin regardless of their baseline LDL cholesterol level and that it is reasonable to prescribe a statin to every man > 50 years of age with diabetes and at least one other risk factor for CHD. The same advice applies to women > 60 years of age who have diabetes and at least one other risk factor for CHD. It is also appropriate to increase the intensity of therapy for patients who are at very high risk or who are known to have CHD.

What individuals consider to be “good” food and behaviors that constitute “goal uses of leisure time” is socially acquired; individuals learn these attitudes from their social networks, and their physical environment has a powerful influence on whether they can practice healthy lifestyle

behaviors. Although the two diabetes prevention trials were highly innovative and are *prima facie* evidence that poor nutrition and physical inactivity are the behavioral precursors of diabetes,^{6,7} I do not believe that they are the models for the delivery of diabetes prevention interventions. Communication scholar and sociologist Everett Rogers observed that innovations are most likely to be adopted if they are compatible with current culture,¹² and the diabetes prevention interventions as delivered in the randomized trials are simply not compatible with the culture of most Americans. Novel intervention programs must be designed and implemented.

One of these programs, PowerUp, is a long-term program in the St. Croix Valley that constitutes the border between Minnesota and Wisconsin. As described by Marna Canterbury, MS, RD, and Sue Hedlund, RN, PHN, MAL, in our final article (p. 165), the goal of PowerUp is to rally the entire community to make better eating and active living easy, fun, and popular, so that youth can reach their full potential. The directors of PowerUp believe that the only way to improve the nutrition and physical activity patterns of children is to improve the nutrition and physical activity patterns of their parents and the rest of the community.

I expect that the four articles published in this research section will provide enjoyable and informative reading. The information contained in them, when applied to practice, can be expected to significantly improve outcomes for patients with or at risk of developing type 2 diabetes and CHD.

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