



## Editorial

# Effective Management of Cardiovascular Risk Factors— Are We Doing Enough?

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*See article by Alabousi et al., pages 393–404 of this issue.*

Among the many factors that have contributed to reductions in morbidity and mortality in cardiovascular disease (CVD) in the past 3 decades is the widespread adoption of effective management of CVD risk factors.<sup>1</sup> Advances in risk factor management have progressed in several incremental steps. First is the demonstration that common risk factors such as hypertension,<sup>2</sup> dyslipidemia,<sup>3</sup> and dysglycemia<sup>4</sup>—usually asymptomatic in their early stages until complications develop—and cigarette smoking,<sup>5</sup> together account for most of the modifiable CVD risk.<sup>6</sup> Second is the development of effective and well tolerated medications for treatment of common risk factors such as hypertension, dyslipidemia, and diabetes. These drugs can be used in large numbers of individuals,<sup>1–4</sup> including those who have already suffered a CVD event and require effective treatment to prevent another (secondary prevention), and those who have not yet had an event but are at high risk of having one (primary prevention). In addition, multiple strategies are available for encouraging cessation of cigarette smoking.<sup>7</sup>

Risk factor management strategies are usually multipronged, involving pharmaceutical and nonpharmaceutical lifestyle interventions. However, there are challenges in ensuring acceptance and adherence to interventions. Affected individuals might not be convinced of the benefits of prevention when they are asymptomatic or believe that alternative, and often unproven, therapies will help them. The latter belief might be because of the scepticism some people have about modern medications, and the belief in alternative ones. Even when individuals might be convinced of the need for prevention, many might opt only for “modification of lifestyle behaviours” which often results in, at best, modest changes in risk levels.

Concerted action by professional societies and associations have produced several useful action items,<sup>8–15</sup> including:

guidelines for health care and public health providers; educational materials for the general public; lobbying of politicians to influence public behaviour; pressure on the food industry to provide healthier food and more explicit food labelling; bans on trans fats; and concerted action on the tobacco industry to help reduce smoking rates. Many clinicians might have the impression that risk factors in their patients have been adequately treated; however, population-based studies have shown that large gaps in risk factor control persist and major questions remain unaddressed. For instance, how well are we doing in identifying individuals with risk factors, especially those who have not had contact with the medical system? How well are we doing in treating risk factors, which often cluster in a given individual, to recommended targets and for a prolonged period of time? The data that are available suggest that much more needs to be done. In Canada and the United States, surveys have been conducted on risk factor management, although none have gathered a broad and truly representative spectrum of national data.

The article by Alabousi, et al.<sup>16</sup> in this issue of the *Canadian Journal of Cardiology*, represents a major effort in identifying and collating the many published articles on risk factor management of the 4 most common and important modifiable risk factors for CVD (hypertension, dyslipidemia, diabetes, and cigarette smoking) in Canada and the United States during the previous 2 decades. This is particularly important because these risk factors, alone and in combination, account for most CVDs. Equally challenging is the need to collect, compile, and publish data on the screening, awareness, treatment, and control of these factors to organize prevention efforts. The results of the work by Alabousi, et al.<sup>16</sup> show that, although results in each of the steps of risk factor management remain far from ideal, substantial progress has been made in both countries. As a result, in recent years, preventive measures in effectively identifying and managing CVD risk factors have contributed to substantial advances in the reduction of CVD in developed countries. Yet, how well we will be able to further improve the management of CVD risk factors—which will likely determine the future health of our population—has not been adequately addressed.

The data presented in this study were obtained mostly from national surveys on the general population in Canada

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and the United States. To keep the data current, the authors only included studies that were published since 2010. However, because the studies were independently conducted and at different time points, there was no standardized methodology that would allow a meta-analysis of the data for a quantitative comparison between the 2 countries. In addition, there were no uniform definitions of the outcomes of interest: screening (number assessed and found to have the risk factor of interest), awareness (the degree to which an individual knows that he/she has the risk factor), and adequate treatment and control (achieving recommended target levels). Whether or not the cohorts included are indeed representative of the wider population is a potential limitation, although the large national surveys in both countries did use sampling techniques. Nevertheless, the trends in the studies are generally similar and show convincing improvements from earlier to later periods. It is also clear from these findings that the emphasis on improving treatment adherence to guidelines by care providers and affected individuals, and on identifying and reducing risk factor levels quickly and in as many affected individuals as possible, has been effective. However, several challenges remain.<sup>17,18</sup>

There are differences in perception on how these challenges can be met. The authors have concluded that standardized reporting, disseminating practice guidelines, and setting explicit goal-directed targets for performance can facilitate improvement. Although adoption of these techniques might indeed result in greater awareness of the issues, concerted efforts are also needed to reach out to individuals who do not know they have CVD risk factors, and others who are unwilling to accept and follow risk factor management strategies on a long-term basis. Encouraging such individuals to accept and consistently adhere to these approaches can be a major challenge.

The article by Alabousi et al.<sup>16</sup> identified a large number of surveys on hypertension, fewer on diabetes and dyslipidemia, and the least on smoking cessation. In practice, each risk factor is often being dealt with separately by separate professional bodies—for example, different national guideline committees—which independently decide the frequency of updating guidelines. Although the intent of such guidelines is similar, several sets of guidelines have been produced for each risk factor and physicians have to follow multiple documents when dealing with individuals with multiple risk factors. This approach can be challenging, and risks greater emphasis being placed on one or two risk factors at the expense of others. We must therefore ensure that, in a given individual, all risk factors are addressed according to guideline recommendations.

In individuals who have suffered a CVD event and who require secondary prevention, most health care providers have a system of identifying and initiating some form of risk factor modification. In contrast, there are many individuals in the general population who are asymptomatic and regular contact between them and the health care system does not often occur enough to the extent that effective screening for important CVD risk factors, risk assessment, and treatment can be implemented in the affected individuals. Therefore, optimal management of CVD risk factors in the general population needs reconsideration. The first approach is recognition and acceptance of the need for identification and management of risk factors in the general population. Second, even when

informed of the presence of a particular risk factor, for example, hypertension or dyslipidemia, it might take considerable efforts to convince a given (usually asymptomatic) individual about the need to do something about them. The challenges in this scenario are that because there are no associated symptoms at the early stage of any potential underlying CVD, the individual has to balance taking drugs and making lifestyle modifications for indefinite durations and at some expense with possible side effects to avoid a possible event later in life. This situation is often worsened by the fact that data on supporting the formulation of guidelines and decisions on management are not as extensive for primary prevention as they are for secondary prevention. Clinicians are often unclear about whom to treat, when to treat, and what to use for treatment. From a clinical perspective, individuals with personal experience of CVD or in close family members might be more receptive to the idea of treatment and lifestyle modification than individuals with no previous personal or family experience. Effective and focused public education by each of the professional organizations such as the national heart associations, diabetes associations, and other public health bodies might enhance public awareness and acceptance of the need for active management. This might make it easier to convince the affected individuals to recognize risk factors and adhere, long-term, to their treatment.

Currently, common clinical practice is for an encounter to occur between an individual who might have the risk factor(s) and the caregiver, usually a physician or an assistant. Current management protocols describe stepwise approaches in determining the presence of a risk factor and then following treatment algorithms that might involve several steps or titrations of treatments in achieving target or optimal control. For 1 individual with 1 risk factor, this can prove to be a challenge. Even more challenging is that many high-risk individuals have multiple risk factors, and a busy primary care medical practitioner might have difficulty identifying and adequately treating all risk factors on an ongoing basis in these complex individuals. Therefore, alternative approaches should be considered. One approach is an adoption of the strategy of managed care that is being practiced in some chronic diseases. In the **Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE)** trial, the “optimal medical therapy” provided to all participants was to ensure that all participants received guideline-recommended therapy and achieved targets for secondary prevention, in addition to maximal lifestyle modifications. This was done through a nonphysician care provider, in this case a study coordinator, who encouraged, coached, and monitored the participants to modify their lifestyles depending on which needed the highest priority.<sup>19</sup> Extrapolating this approach to identifying at-risk individuals, initiating treatments when necessary, and nonphysician providers following these individuals (under the supervision of physicians), is an attractive option. In this way, more at-risk individuals can be seen and followed, resulting in many more individuals receiving optimal care, with better outcomes. This approach has been evaluated and used in areas where access to medical care is limited.<sup>20</sup> Furthermore, for the large number of individuals who have never come in contact with the health care system and have never been screened for risk factors, community outreach by nonphysician providers and public campaigns should be considered. Approaches such

as this are being evaluated in several countries and the results of these studies could provide useful lessons to extend risk factor identification and treatments to the wider public.

Therefore, a concerted and multipronged approach—including the key involvement of nonphysician providers—to the identification and control of CVD risk factors, as primary as well as secondary prevention strategies, is paramount to ameliorate the health of our populations. They deserve no less.

## Disclosures

The authors have no conflicts of interest to disclose.

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