

## Management of Diabetes Mellitus in Older Adults: Are National Guidelines Appropriate?

The manuscript by Smith et al. in this issue of the *Journal* is a provocative study that raises several important issues regarding management of diabetes mellitus in older adults.<sup>1</sup> It joins a growing body of literature that documents the inadequacy of risk-factor control and management interventions in older people with diabetes mellitus.<sup>2-4</sup> Although it is quite impressive that many older adults with diabetes mellitus do not have the control of cardiovascular risk factors recommended by national guidelines, middle-aged patients with diabetes mellitus fare no better. In fact, some research has suggested that older patients with diabetes mellitus may have somewhat better risk-factor control than those in middle-age.<sup>3</sup>

These risk-factor control data from the Cardiovascular Health Study (CHS) are among the best we can obtain from currently available observational data. The study was a high-quality population-based survey conducted and analyzed by an experienced team of investigators.<sup>5</sup> However, the Smith et al. research was performed by comparing management information from 1996/97 with national guidelines for 2000 and is therefore sensitive to timing. Although most management interventions evaluated in this manuscript, and the evidence behind them, were available in the early and mid-1990s,<sup>6-9</sup> the goals reflected in 2000 guidelines are more aggressive and remain controversial.<sup>10,11</sup> Target levels for hyperglycemia are very sensitive to timing concerns because hyperglycemia treatment results of the United Kingdom Prospective Diabetes Study were not published until 1998.<sup>12</sup> In 1996, only the Diabetes Control and Complications Trial was available,<sup>13</sup> and neither trial is generalizable to older people with diabetes mellitus.

However, despite timing issues, this paper raises important questions about why cardiovascular risk-factor control in older people with diabetes mellitus does not meet suggested targets. It should be noted that in the CHS sample, these risks are managed; hypertensive management and aspirin use in older diabetics are similar to those of older nondiabetics. On average, those with diabetes mellitus and hypertension were on more medications, and the total cholesterol level of people with diabetes mellitus was lower than in those without diabetes mellitus. The major problem with risk-factor management (excluding glycemic control) was that more-rigorous targets were not met for people with diabetes mellitus.

The most dramatic assertion in this manuscript is that not one person in the study met all American Diabetes Association risk-factor management recommendations. Clearly, there is a major mismatch between expert recom-

mendations for risk-factor control and the control physicians and patients are achieving in the everyday clinical world. This raises the obvious question—Why? Several explanations are usually advanced: clinicians manage diabetes mellitus poorly; patients cannot manage a complex regimen, or cannot manage weight and exercise; the health-care delivery system is not designed to optimize chronic disease management; diabetes mellitus is such a difficult disease to treat that it can't be done. All these problems exist and probably contribute to lack of optimal control.

Another potential explanation is that diabetes mellitus management guidelines suffer from a "credibility gap." A major reason for this gap may be confusion about the evidence supporting management recommendations. Although management of blood pressure<sup>6</sup> and aspirin use<sup>9</sup> have been proven to improve outcomes in older adults, the actual target goals for blood pressure and cholesterol lowering are less clear. As evidence for rigorous hypertension management and low-density lipoprotein cholesterol lowering continues to accumulate and become more convincing, most findings can probably be extrapolated to most older patients with diabetes mellitus.<sup>14,15</sup> In addition, a substantial number of older people have been, and are now, included in studies. Unfortunately, little is known about people aged 75 and older or people with comorbidities and disability who are generally excluded from randomized clinical trials (RCTs).

It is precisely this dearth of information about the many older people with diabetes mellitus who also have comorbid diseases and functional impairments that contributes to skepticism about recommendations for the management of diabetes mellitus. Management guidelines developed for younger people fail to account explicitly for the heterogeneity of older people with diabetes mellitus, heterogeneity obvious to any physician whose practice includes older adults. There is functional heterogeneity because some older patients are highly functional, some are disabled and frail, and many are between these two extremes. There is heterogeneity in the duration of time older patients have had diabetes mellitus; very few older people truly have new-onset diabetes mellitus, and most have had diabetes mellitus for many years. There is heterogeneity in the number of comorbid diseases and conditions, related and unrelated to diabetes mellitus.

Despite this clinical and health-status diversity, guidelines and goals for diabetes mellitus management are often presented as "one size fits all," focusing on identification of risks for vascular complications and prevention of vas-

cular complications. However, geriatricians and other clinicians struggle with the millions of older people with diabetes mellitus who already have complications. We also need to focus on important outcomes for these people and how management of diabetes mellitus relates to such outcomes. Certainly, affecting mortality and the progression and severity of vascular disease are important potential management goals. In addition, evidence is beginning to accumulate regarding other health outcomes of diabetes mellitus common in older people, such as cognitive impairment;<sup>16</sup> depression;<sup>17</sup> geriatric syndromes such as falls, incontinence and frailty; and disability.<sup>18</sup> These outcomes affect health status, independence, and quality of life and may be only partly mediated by vascular complications.

It is difficult to convince physicians to adopt management recommendations even for well-defined and -studied groups of patients, where strong evidence from randomized clinical trials exists (e.g., beta-blockers after acute myocardial infarction).<sup>19</sup> However, when management recommendations do not acknowledge the clinical realities that geriatricians face in caring for their older patients with diabetes mellitus, this can make a bad situation worse. For some older patients, especially those with impairments and disability, there is a small but definite risk of adverse effects of treatments, such as adverse drug effects, orthostatic hypotension and falls, adverse effects of aspirin or statins, and hypoglycemia. Geriatricians have spent years educating physicians and other providers regarding polypharmacy, drug-drug interactions, and “start low, go slow.” Does geriatrics now want to change its tune and demand aggressive and multifaceted management of a complex disease such as diabetes mellitus, which would increase the risks of polypharmacy and iatrogenic complications?

Information from studies such as the CHS can begin to help us solve this management dilemma. The heterogeneity of older people with diabetes mellitus also means that there are many older patients who are highly functional, highly motivated, and have relatively recent onset of diabetes mellitus and for whom rigorous control of vascular risk factors, even perhaps of hyperglycemia, is highly appropriate. Alternatively, there are some older patients who are disabled or frail, with multiple complications and comorbidities and inadequate social support, for whom rigorous control of risk factors is not indicated. Clinicians may already be managing their patients according to health status. Perhaps the healthy and functional people in the CHS sample are being treated in a manner much closer to national guidelines, whereas those with poorer health status are appropriately being treated less rigorously. CHS data can support evaluation of diabetes mellitus management given preexisting health status, and future research is likely to do so. In addition, the CHS can contribute significantly to our knowledge regarding other outcomes of diabetes mellitus, including affective and cognitive impairment, geriatric syndromes, and disability.

Given the current prevalence of diabetes mellitus in older adults, the epidemic of obesity and type 2 diabetes mellitus in middle-aged and younger adults (many of whom will age with their diabetes mellitus inadequately managed), and the resources needed to manage diabetes mellitus and its consequences, more-definitive information

regarding diabetes mellitus management in older people is important. Relating management goals to health status and functioning, and to a wider array of outcomes, will more meaningfully inform physician decisions regarding appropriate diabetes mellitus treatment in older people. High-quality observational data, more older participants in RCTs concerning diabetes mellitus management, and RCTs focusing on key aspects of diabetes mellitus management in older people, are all necessary. When RCTs or reanalyzed data from RCTs are available, older people are often found to do equally well or even better with interventions previously studied in middle-aged populations.<sup>6,9,15</sup> However, physicians and patients should not always have to extrapolate from results of trials in younger patients because issues in older people, especially people aged 75 and older or those with impaired function, may be very different. Nevertheless, based on currently available evidence, clinicians who care for older people with diabetes mellitus must recognize and manage patients who are functional and able according to the best available information, while carefully individualizing management for patients who are disabled and frail.

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