Primary Prevention of Type 2 Diabetes: Are We There Yet?

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Certain facts about type 2 diabetes seem obvious: 1) the condition is common, serious, and costly; 2) its prevalence is increasing throughout the world; and 3) convincing scientific and economic evidence supports primary prevention for those at high risk of subsequently developing type 2 diabetes. As reviewed by Angelo et al in this issue of Advanced Studies in Medicine, a consistent picture is emerging indicating that relatively modest weight and activity improvements in people with “prediabetes” result in impressive reductions in the incidence of type 2 diabetes, regardless of age, race, ethnicity, or weight. Similar although somewhat less impressive results occur with a variety of medications. Thus, it may appear that in terms of prevention of type 2 diabetes, the answers are in, and that the “epidemic” of type 2 diabetes has met its match.

Yet, real and important challenges remain. Just because the science of prevention of type 2 diabetes says “yes” does not mean that practitioners, patients, health systems, policies, and society also say “yes”—at least not yet! The issue of translation of science remains and, in the diabetes world perhaps more than ever, is a critical one.

What are some of these challenges as they pertain to primary prevention of type 2 diabetes? First, so date, all the clinical trials discussed by Angelo et al included people with impaired glucose tolerance (IGT)—regardless of whether they also were overweight, obese, or had a positive family history of diabetes, etc. So, from a strict point of view, the primary prevention science supports intervening only in those individuals who have IGT and, in fact, only if they are at least 18 years of age. Recently, the concept of prediabetes has emerged with inclusion of both IGT and/or impaired fasting glucose (IFG). Further, the definition of IFG has changed from values of 110-125 mg/dL to 100-125 mg/dL. This simple and seemingly small reduction in the lower range of IFG from 110 to 100 mg/dL has increased the number of persons considered to have prediabetes to approximately 40 million. Thus, we must ask the question of who should be the targets of primary prevention programs for type 2 diabetes—those with IGT only (for whom the science is strongest); those with prediabetes (whether due to IFG and/or IGT); or perhaps all people who already are, or are at risk for becoming, overweight, obese, and physically inactive—regardless of glycemic status—and for whom prediabetes will likely emerge? Should we direct primary prevention programs at youth, and, if so, based on what science? How far upstream should we go to prevent type 2 diabetes, and who should make these decisions? These questions are not new, having been articulated in a classic article by Geoffry Rose, entitled “Sick Individuals and Sick Populations.”

A second challenge is how to convert into the “real world” the intensive effort to accomplish behavioral goals set by the Finnish Diabetes Prevention Study and the Diabetes Prevention Program. Is it possible to move beyond the one-on-one intensive behavioral interventions in these important efficacy studies to a more practicable and affordable group effort, without losing impact? Further, how can we involve the community (where people spend most of their time) as an essential dimension to primary prevention programs? For many individuals, the primary care clinician’s office will be a site of initial contact, referral, and follow-up to offer encouragement and guidance. However, it is unlikely that the doctor’s office will be the site for the actual implementation of long-term preventive interventions.

A third challenge, reflected again in the thoughts of Dr Rose, is how to accept the “reality of limits,” that is, the need to form explicit distinctions between focusing on improving care among those with extant diabetes vs primary prevention in those who are at risk. In regards to improved care (both secondary and tertiary prevention), clinical, health service, economic, and public health research indicate the value of this approach as well as the fact that improvements are indeed occurring. Still, the glass is not yet full, and more needs to be done. How do we strike a balance between helping those with extant diabetes and preventing the disease from occurring? And who is responsible for striking this balance?

A fourth challenge in translating good science into regular clinical and public health practice is to ensure that policies are in place to facilitate essential components of primary prevention science (eg, the need for prediabetes screening and then initiation of behavioral programs). While policies and reimbursement plans certainly are not the only factors impacting health professionals, health systems, and private and public decisions, they do matter. Science must be more meaningfully integrated into practice...
for most people at risk for subsequent diabetes—a through policies, guidelines, and other care criteria. No one wants to repeat the 264-year period between the science of scurvy prevention to the actual adoption of British policy.

A fifth challenge to the wide and active implementation of primary prevention programs for type 2 diabetes is to recognize and address “social determinants of health.” If it would be nice if all the important factors that could sustain or improve health occurred within existing healthcare systems. After all, this is the world in which we were trained, and in which most of us work. But this is not the reality we live in. Outside of the office setting, many powerful and easily overlooked factors significantly attenuate our ability to do “what is right.” We cannot ignore the impact of these social factors. Perhaps at the top of our list of responsibilities as healthcare providers and scientists we must be good “citizen leaders” if we really want to make a difference in the lives of our patients.

Experiences with successful antismoking programs indicate that positive results do occur when—beyond the science—multiple program components are combined, coordinated, and sustained. It also is clear that several discrete steps beyond traditional science are involved in making good science part of everyday health for all. Thus, beyond the impressive science of primary prevention of type 2 diabetes as summarized by Angelo et al, multiple coordinated programs to address nutrition, physical activity, and other preventive strategies will be needed. We are seeing the beginnings of such coordinated efforts. A very impressive and impactful media program directed at the youth population, “VERB, It’s What You Do,” demonstrates one dimension of this effort. The pending Medicare Modernization Act hopefully will enact a reimbursement policy for prediabetes identification and behavioral treatment. However, any multidimensional strategy will require considerable resources—a concern in the United States, given the other federal priorities of the next few years. But, even if there were adequate resources, other pieces of a prevention package for type 2 diabetes will still be needed for a successful strategy beyond the convincing and exciting science. And, until we successfully address these other necessary steps, we are not there yet in terms of reducing the incidence of type 2 diabetes.

References