



The Alarming and Rising Costs of Diabetes and Prediabetes: A Call for Action!

Diabetes Care 2014;37:3137–3138 | DOI: 10.2337/dc14-2329

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To the person with diabetes or to the provider caring for this individual, the personal costs associated with the disease are many and apparent on a daily basis: the monitoring of diet and glucose, the daily adjustments in medications, and the fear of, or the presence of, both acute and debilitating chronic complications. Thus, increasing awareness of the epidemic of diabetes has been accompanied in recent years by an even greater public awareness of the enormous increase in health care costs in the U.S. (which, like diabetes prevalence, may be slowing but continues to increase). The lost productivity, mortality, and morbidity as a result of the disease continue to be always in the conversation. In this regard, it has become axiomatic that there is an epidemic of diabetes across the world in general, and in the U.S. in particular. Indeed, the prevalence of diabetes has risen steadily for decades. Even a recent report that diabetes incidence may have plateaued (1) does not mean that the diabetes epidemic is abating—the same report estimates that prevalence will continue to rise because of changing demographics and increasing longevity in the U.S. population.

As the public, policy makers, and payers struggle with how to contain the rising costs of health care, they inevitably look for the underlying factors

driving those costs. Many of the costs are related to inefficient systems of care and changing demographics, particularly the costs associated with an aging population, but what is the intrinsic cost of potentially preventable disease in the rise in health care costs? What role is played by diabetes and related conditions?

A report released in *Diabetes Care* in 2013 by the American Diabetes Association (ADA) (2) confirmed that diagnosed diabetes is a major factor in total economic costs in the U.S., totaling \$245 billion in 2012 and accounting for 1 in every 10 health care dollars spent. In this issue of *Diabetes Care* in a new article by Dall et al. (3), the study costs are expanded to provide a larger picture of the total cost of dysglycemia in the U.S. by looking at the additional costs of prediabetes, undiagnosed diabetes, and gestational diabetes mellitus.

The 2013 ADA report (2) showed that costs of diagnosed diabetes increased by 41% from 2007 to 2012. However, individual costs of diabetes care rose by less than the rate of medical inflation. While total national health expenditures rose by 24% from 2007 to 2012, per capita diabetes-related costs rose by only 19%. Increased prevalence, not increased cost per patient, is the driving force behind the increased economic burden of diabetes. Our continued

improvement in diabetes care with progressive reductions in chronic complications of myocardial infarction, stroke, renal failure, and amputation (4) reduces the per patient costs of the single greatest contributor to diabetes costs: hospitalizations.

The new study by Dall et al. (3) is alarming in that the picture is even worse for trends in the economic burden of prediabetes and undiagnosed diabetes. This report on 2012 costs is an update to an earlier report from the same group on the costs in 2007 (5); together these studies show that in 5 years the cost of prediabetes increased 74% and the cost of undiagnosed diabetes increased by 82%, to \$44 billion and \$33 billion, respectively. The concern remains that these are conditions for which, as a medical community, we may not have a heightened awareness or have sufficient plans to address. Interestingly, the costs for the various categories of glucose intolerance are outlined on a state-by-state basis and clearly the data should provide pause and concern for policy makers in each state.

The increasing cost burden of prediabetes is especially troubling, as it points to not just a current economic burden but to the potentially greater future burden of new cases of diagnosed diabetes unless diabetes prevention efforts are

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implemented and successful. A recent commentary by Yudkin and Montori (6) calls into question the value of even attempting to define or identify prediabetes, suggesting that doing so constitutes “unnecessary medicalization” and that prediabetes is nothing more than “a risk factor for developing a risk factor.”

This cost analysis from Dall et al. shows that prediabetes is in fact a substantial economic burden in its own right. And Yudkin and Montori ignore the fact that a host of evidence already exists for the clinical and economic benefit of intervening at the prediabetes state. The Diabetes Prevention Program (DPP) follow-up studies have shown that lifestyle intervention can be cost-effective in preventing diabetes, and metformin therapy can even be cost-saving (7). Yudkin and Montori express concern that identifying people with prediabetes will increase medicalization of patients, yet the DPP also showed that pharmacological interventions were reduced by 27–28% for hypertension and 25% for hyperlipidemia in the intervention group compared with placebo group (8). Lifestyle intervention in those with prediabetes can lead to less medicalization, not more. Thus, the real challenge is how to effectively implement and maintain successful lifestyle changes at the community level over time.

We believe that identifying prediabetes is worthwhile from both a clinical and a public health standpoint. The need to identify those with undiagnosed diabetes is even more pressing. The rate of undiagnosed diabetes in the U.S. fell steadily from the mid-1990s to the mid-2000s, but it has remained stubbornly stuck at over 25% since then (9,10).

A substantial body of evidence shows that untreated diabetes leads to a host of costly and life-impairing complications (11–13), and it is critical that we

take steps to further reduce the time between diabetes onset and diagnosis. For several years now, the U.S. Preventive Services Task Force (USPSTF) has called for diabetes screening in asymptomatic diabetes only in adults with blood pressure above 135/80 mmHg, but analysis has shown that such screening fails to detect over 50% of all cases of undiagnosed diabetes (14). Recently, the USPSTF announced a draft revision of its recommendations, expanding the scope of screening and recognizing the evidence base for doing so by assigning an evidence level B, which would mandate coverage for the procedure if the recommendations are formally adopted (15). Given a cost of undiagnosed diabetes of \$33 billion a year in the U.S., as well as the increased risk for costly and debilitating complications, we need to do more to effectively identify people with undiagnosed diabetes earlier in the disease process.

The data reported in the study by Dall et al. (3) are timely, providing information that is vitally important for the policy makers for each state to know and reflect upon and then to consider and enact effective policies to address the situation. How much more information do we need in order to act at a local, state, and federal level? The crisis is worsening—the time to act is now. These data clearly should signal a call for action.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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