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# Prevention of Type 2 Diabetes Requires BOTH Intensive Lifestyle Interventions and Population-Wide Approaches

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## Abstract

More than 29 million people in the United States have diabetes, up from the previous estimate of 26 million in 2010, according to the latest report from the CDC. Another 86 million adults more than 1 in 3 have prediabetes, meaning that their blood glucose levels are higher than normal but not high enough to classify them as having type 2 diabetes mellitus (T2DM).1 Only about 10% of these people know they have prediabetes.2 The costs for treating and managing diabetes continue to rise. Besides the actual daily demands of the condition, the American Diabetes Association's estimate is $245 billion annually in direct and indirect costs.3

## HOW DID WE GET HERE?

The growing epidemic of T2DM has strong roots in modern culture. People are busy, stressed, and eat on the run. Many people live in neighborhoods that promote poor health, and have high rates of poverty and crime.4 The Social-Ecological Model provides a framework for understanding the multiple levels of influence on health behavior.5 Its concentric circles describe 4 levels; beginning at the core and moving outward, these are labeled: "individual," "family, friends, small groups," "system, group, culture," and "community and policy." Achieving widespread diabetes prevention requires that we effectively address all 4 levels. Individuals must engage in lifestyle practices (eg, selecting healthy foods, participating in physical activity) that result in modest weight loss (5%-7% of body weight). Individual changes alone are not sufficient, however. In order to make and sustain healthy lifestyle practices, individuals must be supported by family, friends, workplaces, healthcare systems, neighborhoods, and policies (local, state, and national) that promote environments where health is supported and not undermined.

Where are we in addressing the 4 levels of the Social-Ecological Model for dia-betes prevention? Most of the evidence currently available for diabetes prevention involves

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The CDC's director of the Division of Diabetes Translation discusses the scientific evidence that supports the need for both lifestyle interventions and population-level efforts to combat type 2 diabetes in the United States.

We cannot afford to continue on this path. It is imperative that we make meaningful strides in preventing diabetes as we continue to improve treatment and look for cures.

The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the CDC.

- See more at: http://www.ajmc.com/journals/evidence-based-diabetes-management/2015/may-2015/prevention-of--type-2-diabetes--requires-both--intensive-lifestyle--interventions-and--population-wide-approaches/P-1#sthash.6SYMjqCO.dpuf

individuals at high risk for T2DM. Several randomized controlled trials (RCT) have demonstrated that a structured lifestyle intervention of sufficient duration (on average, 1 year) that helps participants identify and practice strategies to achieve modest weight loss through reduced calorie intake, increased physical activity, and problem solving can significantly reduce development of T2DM.6-8 Economic analyses of these structured lifestyle interventions have shown that they are cost-effective.9 As a result of these RCTs, along with numerous subsequent studies conducted under “real-world” conditions and economic analyses, CDC has established the National Diabetes Prevention Program (National DPP).10 The National DPP provides a framework to organize lifestyle prevention programs in communities across the United States and implement this proven intervention on a large scale (www.cdc.gov/diabetes/prevention). The 4 components of the National DPP are:

1. Training the workforce (both health professionals and lay people) to implement the program effectively;
2. Establishing a recognition (certification) program by CDC that sets national standards for program delivery and assures quality for participants, healthcare professionals, and payers;
3. Developing a nationwide network of diverse organizations that deliver the lifestyle intervention both in-person and through virtual technology, links communities and healthcare organizations, and is part of the healthcare reimbursement system;
4. Engaging in efforts that encourage program participation by those at high risk and referrals from healthcare professionals.

The foundation of the National DPP is a results driven partnership that cludes community-based organizations (including faith-based), health insurers, employers, healthcare systems, academia, and government agencies. For example, the American Medical Association (AMA) has joined CDC in support of the National DPP. As part of this collaboration, CDC and AMA have sounded the alarm with an initiative called Prevent Diabetes STAT: Screen, Test, Act-Today. This rally cry brings together all stakeholders to raise awareness about prediabetes, and to increase screening and referral to diabetes prevention programs that are part of the National DPP. CDC and AMA encourage all sectors to participate in Prevent Diabetes STAT (www.preventdiabetesstat.org).

Thus far, the National DPP has resulted in more than 650 organizations recognized by CDC who are delivering lifestyle interventions to thousands of people at risk for T2DM. There are a growing number of insurance companies and employers who include this cost-effective program as a covered benefit. The National DPP is our greatest opportunity to substantively address T2DM prevention at the “individual” level as well as the “family, friends, small groups” level in the Social-Ecological Model. The National DPP also contributes to addressing the “system, group, culture” level when it is delivered at work sites and community gathering places and becomes a covered benefit in the healthcare reimbursement system.

In order to support the “individual” and “family, friends, small group” levels, fully address the “system, group, culture” level, and tackle the “community and policy” level, a concurrent “populationwide” approach that involves general health promotion, obesity prevention, and policies to improve the behaviors and environment of the population as a whole is needed. Macro-level environmental approaches to reducing population levels of obesity have generated strong evidence that price subsidies for healthier foods influence food purchases, but not necessarily total caloric consumption or body weight.11 In both cafeteria and vending machine settings, a 50% reduction in prices of fruit, salad, and other low-fat foods led to as much as a 3-fold increase in consumption of these healthy choices. Other proposed targets are strategies to reduce portion sizes and sweetened beverages.11 Based on observational and experimental studies, the availability and accessibility (including positioning and marketing) of healthy and less healthy foods has an impact on nutritional choices.12 Community design and work site policies that promote physical activity have been identified as promising targets to increase levels of physical activity in the population.13

## WHAT MORE NEEDS TO BE DONE?

We have not yet maximized implementation of the National DPP. The program needs to be available to more people in more places. Accomplishing this expansion will require additional payers to provide the program as a covered benefit. In August 2014, the US Preventive Services Task Force recommended offering or referring adults who are overweight or obese and have additional cardiovascular disease (CVD) risk factors (including diabetes and prediabetes) to intensive behavioral counseling interventions to promote a healthful diet and physical activity for CVD pre-vention.14 This approach received a B recommendation, which means that health plans must provide coverage for this intervention. The National DPP lifestyle intervention meets this requirement. We must also increase program participation by those at high risk for T2DM. Accomplishing this requires increased screening and testing to identify those with prediabetes and referring them to programs that are a part of the National DPP. Additionally, there is a need for more research and evaluation of strategies to attract people to these programs and enhance retention.

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