

# Improving Diabetes Outcomes through Nutrition and Lifestyle Change— Translating Research to Practice

Linda M Delahanty, MS, RDN

*Assistant Professor of Medicine, Harvard Medical School; Chief Dietitian and Director of Nutrition and Behavioral Research,  
Diabetes Center, Boston, Massachusetts, US*

## Abstract

The evidence supporting effectiveness of nutrition and lifestyle change in improving diabetes-related outcomes is substantial. The process of translating that evidence into practice in ways that are tailored to each patient's clinical profile, eating habits and lifestyle, and learning style needs team collaboration including referral to lifestyle programs or registered dietitians for medical nutrition therapy. Patients need to receive consistent messaging about nutrition and lifestyle priorities and be engaged in collaborating on doable action steps that build self-efficacy and improve outcomes.

## Keywords

Nutrition, lifestyle change, diabetes outcomes, self-management

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**Correspondence:** Linda M Delahanty, MS, RDN, Diabetes Center, Massachusetts General Hospital, 50 Staniford St Suite 340, Boston, MA 02114, US. E: [ldelahanty@partners.org](mailto:ldelahanty@partners.org)

Managing diabetes from a provider perspective has to do with how well a patient does with what we refer to as the ABCs (A1c, blood pressure, and cholesterol) of diabetes control. To reduce risk for diabetes complications, patients and providers discuss achieving an A1c level of about 7%; a blood pressure of <140/90 mmHg; and a cholesterol profile of low-density lipoprotein (LDL) <100 mg/dl if there is no overt cardiovascular disease (CVD) and an LDL of <70 mg/dl if there is overt CVD, with high-density lipoprotein >40 mg/dl for men and >50 mg/dl for women, and triglycerides <150 mg/dl through a combination of nutrition, lifestyle, and medication.<sup>1,2</sup>

The cumulative potential LDL lowering that can be achieved with dietary modification is estimated to be 20–30% based on achieving the following goals: reducing saturated fat intake to <7% of calories, reducing cholesterol intake to <200 mg/day, losing 10 pounds, and including 5–10 g viscous fiber and 2 g plant sterol/stanol esters per day.<sup>3</sup> The Joint National Committee report on dietary components that can reduce blood pressure estimates a cumulative potential systolic blood pressure lowering of 19–50 mmHg based on an ability to lose 10 kg of body weight, follow a Dietary Approaches to Stop Hypertension (DASH) eating plan, reduce sodium intake to <2,400 mg/day, limit alcohol consumption to <2 drinks per day for men and <1 drink per day for women, and achieve 30 minutes per day of aerobic activity.<sup>4</sup>

To achieve A1c targets for management of prediabetes and type 2 diabetes, the nutrition and lifestyle recommendations of achieving a 7% weight loss and achieving at least 150 minutes of physical activity per week are

largely based on the evidence from Diabetes Prevention Program and the Look AHEAD trial.<sup>1,5–7</sup> The American Diabetes Association's nutrition recommendations also include reducing saturated fat intake to <10% of calories, minimizing trans fat intake, moderation in alcohol consumption, and limiting or avoiding sugar-sweetened beverages to reduce risk for weight gain and worsening of cardiometabolic profile for both type 1 and type 2 diabetes.<sup>2</sup> For type 1 diabetes, the evidence for achieving glycemic targets is more focused on maintaining consistent carbohydrate intake for patients on fixed insulin regimens and on adjusting insulin to carbohydrate intake for those on flexible insulin regimens.<sup>2</sup> Also, in the context of intensive therapy within the Diabetes Control and Complications trial, there is evidence that six specific diet behaviors are each associated with a 0.25–1 point lower A1c: adhering to diet (consistency in diet), adjusting insulin for variations in food intake, promptly treating hyperglycemia in terms of more insulin or less food, avoiding overtreatment of hypoglycemia, avoiding extra snacks, and achieving consistency in night-time snacks.<sup>8</sup>

So, with all of these evidence-based recommendations, what advice is a provider to give when a patient asks, "What should I eat?" It is not unusual that one provider might tell a patient to focus on carbohydrate intake, another to focus on calorie and fat intake, and yet another on sodium intake. The information on the Internet brings the same confusion. We also have evidence that the US population is falling short of meeting healthy-diet behavior goals that are associated with reduced risk for heart disease and stroke, another goal of diabetes management. Even

though diet behaviors have the potential to be modified, there is a huge gap between dietary recommendations and dietary behaviors with <1% of the population meeting the goal of <1,500 mg sodium, 9% meeting the 7% saturated fat goal, 7% consuming three servings of whole grains per week, 12% consuming 4–5 cups of fruits and vegetables per day, 18% having two servings of fish per week, and 52% drinking <450 calories from sugar per week.<sup>9</sup>

From my perspective, after working with diabetes patients for the past 30 years, the first problem is that there are too many dietary behaviors to focus on. It can be overwhelming to try and follow these guidelines, read labels, and try to figure out what to eat, so patients get frustrated and give up—it feels too hard and it is too hard! This is where the process of medical nutrition therapy becomes important. It is the process by which a registered dietitian-nutritionist tailors a nutrition plan for each patient that is based on his/her clinical profile, usual lifestyle and eating habits, and learning capabilities, and translates the evidence-based nutrition priorities into a plan that the patient can follow and feels is doable. The reported A1c reductions with the medical nutrition therapy process are –0.3% to 1% in type 1 diabetes and –0.5% to –2% in type 2 diabetes.<sup>2</sup>

It is important to remember that incorporating nutritional management is only one aspect of diabetes self-care that diabetes self-management programs focus on. They also focus on incorporating physical activity; taking medication safely and effectively; monitoring blood glucose and achieving glycemic targets without undue hypoglycemia; problem-solving related to diabetes self-care; preventing, detecting, and treating acute and chronic complications; developing personal strategies to address psychosocial issues (e.g., depression and anxiety); and developing strategies to promote health and behavior change.<sup>10</sup>

When we look at the subject of nutrition and lifestyle management on top of an already burdensome list of diabetes self-care behaviors, it is understandable why people with diabetes could get overwhelmed, depressed, lose hope, and do nothing when it comes to diet. We need to help patients prioritize their focus on the health behaviors that will give them most of what they truly want: better health outcomes because they worry about getting diabetes complications; less medication because they count the number of medications they take as an index of how sick they are; a better quality of life so that they do not feel that diabetes is controlling them, but instead that they are controlling their diabetes; the ability to enjoy eating in the self-care process; and, most importantly, the know-how to achieve this!

So, what can we do as diabetes care providers to translate our knowledge of the nutrition and lifestyle evidence into a plan that patients find effective and doable? First, aim for consistency in clinical message priorities so that patients are receiving reinforcement of the same nutrition priorities from all team members and document the agreed upon messaging in the electronic medical record. Second, evaluate readiness and motivation for weight loss or other nutrition and lifestyle change and then refer patients to evidence-based lifestyle change programs to work on weight loss and increased activity or for individualized medical nutrition therapy. In the process of providing medical nutrition therapy, a registered dietitian can spend a full hour with each patient, evaluating his/her clinical profile, eating habits and lifestyle, and learning style and work with them to develop an action plan that translates the evidence-based nutrition priorities into a tailored action plan that they find doable. This road map for simplifying self-care action plans for patients can minimize confusion and diabetes distress and improve self-efficacy for managing diet and lifestyle, and diabetes-related health outcomes, which is, after all, what we all want. ■

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