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The First Four Years of the CDC's National Diabetes Prevention Program Suggest Success but Retention Is Key

The first 4 years of implementation of the Centers for Disease Control and Prevention's (CDC) National Diabetes Prevention Program (National DPP) suggests that weight loss and increases in physical activity are possible with lifestyle interventions in adults at risk of type 2 diabetes if adherence is maintained in the midterm. Given the previous data from a randomized controlled trial relating to the efficacy of the National DPP, it seems likely that if the current trajectory is maintained or even improved, substantial reductions in type 2 diabetes risk might be expected. The report by Ely et al. (p. 1331) describes the experience of just under 15,000 adults who were enrolled in year-long type 2 diabetes prevention programs between February 2012 and January 2016. The two-phase intervention reportedly consisted of 6 months of weekly hour-long sessions followed by 6 months of monthly hour-long sessions that were designed to reinforce learnings from the first phase. The primary goal was to support lifestyle changes designed to increase physical activity, healthy eating, and a weight-loss goal of 5%. According to the authors, more than one-third of the participants achieved the weight-loss goal but many more were close, and just under half that reported physical activity achieved a goal of 150 min per week. For those that remained in the program, every additional session attended, as well as each additional 30 min period of exercise, resulted in an average body weight reduction of 0.31%. Overall, participants who attended the program as intended had a better chance of meeting the weight-loss goal. Author Elizabeth K. Ely told *Diabetes Care*: "Retention has been a key focus of the National DPP and will continue to be. There will be further publications focused on retention strategies and the lessons learned from a large, 4-year evaluation of National DPP grantees in the coming months."

Ely et al. A national effort to prevent type 2 diabetes: participant-level evaluation of CDC's National Diabetes Prevention Program. *Diabetes Care* 2017;40:1331-1341

Secure Messaging Between Patients and Health Care Providers Improves Diabetes Outcomes

Secure online messaging on top of routine visits between patients with diabetes and their care providers may result in improved clinical outcomes and, in particular, improved chances of hitting HbA_{1c} targets, according to Chung et al. (p. 1342). The outcomes, which are the result of a retrospective analysis of the electronic health records of ~20,000 patients with diabetes from northern California, appear notable since there were reportedly few differences between patient-initiated and provider-initiated messaging outcomes, effectively ruling out patient motivation as a driver for the effect. According to the authors, additional messages reportedly improved clinical outcomes with odds ratios increasing the more messaging was used. Indeed, no messaging was associated with a reduced likelihood of hitting the HbA_{1c} target. Messaging also appeared to improve what the authors call "timely completion of recommended procedures" (i.e. HbA_{1c} monitoring, eye care, and monitoring for other complications). Overall, most of the patients (72%) that the researchers studied used messaging; those who made more frequent visits also messaged the most. The researchers also suggest that messaging is likely complementary to, rather than a substitute for or replacing, in-person visits. Some variations were also apparent across subpopulations. For example, for younger patients who were more likely to be employed, messaging had a stronger association with improved HbA_{1c} control than visit frequency, but the opposite was true for patients >65 years of age. Additionally patients with some language barriers appeared to receive more benefit from additional messaging. Study author Sukyung Chung reported: "Patient-provider communication is the cornerstone of effective management of diabetes, and secure messaging is a convenient route for patients to get connected with providers when needed. We see that messaging did not replace in-person visits, which implies no direct cost saving, but it is reassuring that patients and providers continue to get connected through in-person encounters. Regarding its overall benefit, improved outcomes in all important dimensions of diabetes care quality, with no real cost for patients, speaks for itself."

Chung et al. Can secure patient-provider messaging improve diabetes care? *Diabetes Care* 2017;40:1342-1348

Motivational Text Messaging to Manage Blood Glucose Levels in a Type 2 Diabetes Hispanic Populations

A text messaging–based approach to diabetes self-management can improve glycemic control (HbA_{1c}) in Hispanic adults with poorly controlled type 2 diabetes, according to Fortmann et al. (p. 1349). As a result, they say that the approach, if implemented widely, might be able to deliver clinically meaningful HbA_{1c} reductions across populations that are underserved in the “face-to-face” sense (i.e., the un- or underinsured) and bridge the “digital divide” because text messaging remains a popular communications medium in such communities. The parallel-group study, which was nonblinded but randomized, allocated 126 individuals to receive either usual care alone or usual care plus motivational text messaging up to three times a day over 6 months. The texts reportedly focused on dietary/lifestyle self-management, motivation, or medication advice. In addition, some texts also requested individuals to report back spot readings of blood glucose. Physical assessments, including blood readings and study questionnaires, were also taken at baseline, month 3, and month 6. The outcome, according to the authors, was clear. The text messaging regime resulted in a significant decrease in HbA_{1c} from ~9.5 to ~8.5%, while the usual care group remained at around 9.5%. Meanwhile, secondary outcomes including various measures of cholesterol, triglycerides, blood pressure, BMI, and weight did not differ between the groups. While the primary outcome indicated a drop in HbA_{1c} in the text-message group, the authors do acknowledge that levels did remain high in comparison to recommended HbA_{1c} levels (i.e., 7–7.5%). They state that while that might be the case, the average drop of 1% is still notable, likely to be clinically relevant and rivals levels achievable with some glucose-lowering drugs. As a result, they suggest that it might be worth targeting individuals with particularly high HbA_{1c} levels initially in future studies over longer periods. According to author Athena Philis-Tsimikas: “It is exciting to have evidence demonstrating simple, low-cost, digital interventions that can be effective in our high-risk populations. These types of interventions can be critical as future steps in providing value-based care within our health systems.”

Fortmann et al. Dulce Digital: an mHealth SMS-based intervention improves glycemic control in Hispanics with type 2 diabetes. *Diabetes Care* 2017;40:1349–1355

Mortality Risks Following Bariatric Surgery Are Modified by Diabetes Status

Numerous studies suggest that bariatric surgery can reduce all-cause mortality risk in obese patients and most notably can lead to remission of type 2 diabetes. However, little is known about the specific role of diabetes in patients who undergo the procedure and subsequent all-cause and specific-cause mortality risk, particularly in comparison to patients without diabetes. To address this issue, Lent et al. (p. 1379) report a retrospective, observational study that compared all-cause and specific-cause mortality in patients with and without diabetes who had undergone Roux-en-Y gastric bypass with outcomes in matched non-surgical control subjects. According to the authors, all-cause mortality was reduced in patients who had undergone the procedure when compared to control subjects but only when diabetes was present at the time of surgery. Mortality risk in patients without diabetes who had the bypass surgery was reportedly no different in nonsurgical control subjects without diabetes. In terms of specific-cause mortality risk, death rates associated with cardiovascular disease, respiratory disease, and diabetes were all higher in patients with diabetes who had not undergone surgery in comparison to patients who underwent the procedure and had diabetes. Conversely, patients who had the bypass surgery but did not have diabetes at the time of surgery had reduced mortality risk due to cancer and respiratory disease but increased risk of death due to what the authors call “external causes.” These reportedly included intentional self-harm deaths and accidental poisonings and particularly drug overdoses or the incorrect administration of drugs. While acknowledging that the study has limited power to investigate these particular adverse safety issues associated with the procedure, the researchers highlight that some patients may benefit from higher levels of postoperative care and that this should include careful administration of medications and also possible assessments of mental health. Commenting more widely on the study, author Michelle R. Lent told *Diabetes Care*: “Overall, these findings add to the growing body of literature on the durable benefits of gastric bypass for patients with diabetes. Though patients without diabetes did not experience a survival benefit, these patients can still experience improvements in weight, quality of life, and other positive outcomes should they decide to pursue bariatric surgery.”

Lent et al. All-cause and specific-cause mortality risk after Roux-en-Y gastric bypass in patients with and without diabetes. *Diabetes Care* 2017;40:1379–1385

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