



# Weight-Loss Intervention by Telephone: Lessons Learned

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The dramatic rise in the prevalence of obesity and type 2 diabetes is clearly a strain on health care systems globally (1). Recently published guidelines on obesity management indicate that a sustained weight loss of 3–5% is likely to result in clinically meaningful reductions in triglycerides, blood glucose, and A1C (2). However, the 2013 Obesity Guidelines noted achieving more weight loss (~10%) will also reduce blood pressure, improve LDL cholesterol and HDL cholesterol, and reduce the need for medications required to control cardiometabolic risk (2). The Look AHEAD (Actions for Health in Diabetes) trial provides evidence, specific to diabetes, that an intensive lifestyle intervention can achieve a 5–10% weight loss and can improve sleep apnea quality-of-life indices, achieve cardiometabolic biomarker improvements, and reduce need for medications (3–6). These benefits are emphasized in the 2013 Obesity Guidelines (2). Challenges to providing an intensive intervention in primary care practice setting, as required to achieve the suggested outcomes, include the lack of staffing and resources required to adhere to the schedule for the intensive follow-up. In this regard, telephone contact, along with other technologies that have the potential to provide frequent contact with a lower staff and patient burden, is worth exploring. The specific question, however, is whether the required weight loss of 3–5%

(necessary to result in clinically meaningful benefits) can be achieved by telephone intervention. In this issue, a randomized study by Eakin et al. (7), Living Well With Diabetes (LWWD), is reported and attempts to address that question.

The LWWD study was a pragmatic randomized controlled trial that evaluated the effectiveness of a telephone-delivered behavioral weight loss and physical activity intervention in primary care clinics. Patients with type 2 diabetes and a BMI of  $\geq 25$  kg/m<sup>2</sup> were randomized to telephone counseling ( $n = 151$ ) or usual care ( $n = 151$ ) (7,8). Relative to the usual-care group, telephone counseling participants achieved slightly greater improvements in weight loss (1.4 vs. 0.3% of baseline body weight), 42% greater increase in moderate-to-vigorous intensity physical activity, and 2.7-fold greater improvement in diet quality (7). Despite a greater reduction in waist circumference, the A1C and other cardiometabolic markers were not significantly different between the treatment arms at either 18 or 24 months. Although the outcomes did not show a significant change/deterioration over the maintenance period, only the intervention effect for increased moderate-to-vigorous intensity physical activity remained statistically significant at 24 months. Eakin et al. (7) concluded that their LWWD telephone intervention achieved modest improvements in

weight loss and behavior change over usual care, but did not achieve changes in cardiometabolic markers. These findings raise questions about the clinical utility, scalability, and sustainability of telephone interventions.

The strengths of the LWWD telephone intervention study included the low intervention burden for health systems and patients, the rigorous collection of outcomes and process measure, and the positive benefits with regard to achieving a modest weight loss and lifestyle improvements. Weaknesses of the study include not achieving the recommended level of weight loss to improve long-term metabolic improvement and problems with providing the full treatment dose (planned number of consultations) in the telephone intervention. However, when examining weight-loss studies, the RE-AIM (Reach, Effectiveness, Adoption, Implementation and Maintenance) evaluation framework can provide insights for translating research findings into clinical practice (9).

As shown in Table 1, the study “reached” a high proportion of eligible patients in an efficient manner, as the primary care practices “adopted” recruitment procedures that used the electronic medical records (EMR) and provider review. While the telephone intervention achieved a 1.4% weight loss (at 18 months), the investigators had a weight-loss goal of 5–10%, which

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See accompanying article, p. 2177.

**Table 1—Study findings: applying RE-AIM evaluation framework****Reach**

The recruitment was integrated into the practice using EMR to identify 1,407 potentially eligible patients. Physicians screened out ( $n = 409$ ) patients with potential contraindications and the practice sent letters inviting patients ( $n = 908$ ) to join the study. About a third ( $n = 302$ ) joined the study. The patients in the study reflected the underlying population with diabetes. However, the vast majority were Caucasian, reflecting the demographic of the local community but not the global population with diabetes.

**Effectiveness**

Telephone counseling participants achieved slightly greater improvements in weight loss (1.4 vs. 0.3% of baseline body weight), 42% greater increase in moderate-to-vigorous intensity physical activity, and 2.7-fold greater improvement in diet quality at the end of the 18-month intervention. The intervention did not significantly improve A1C or other cardiometabolic biomarkers. However, metabolic control was close to the target at baseline, e.g., mean A1C level of 7.1% (54 mmol/mol). The supplementary tables and figures provide a more in-depth examination related to the proportion of participants achieving interventions goals.

**Adoption**

The selected primary care ( $n = 9$ ) practices “adopted” recruitment procedures that used the EMR to identify patients who would be eligible on the basis of their BMI and A1C levels. Primary care providers reviewed their respective lists of EMR-identified patients for contraindications to participating in the study intervention.

**Implementation**

Intervention delivery was monitored via patient feedback regarding content of randomly selected telephone counseling session calls. Call attempts, completions, and duration were tracked in the trial database. However, only about half of the patients completed at least 21 or more of the planned 27 telephone counseling sessions.

**Maintenance**

The small effect size and wide variability (SD of change scores) makes assessment of maintenance challenging. Nonetheless, the modest changes achieved at the end of the 18-month intervention may have been maintained as there was no significant decline between 18 and 24 months. However, only the increase in physical activity was significantly improved from the baseline level.

is the level recommended to substantially improve A1C and other risk markers. The lack of metabolic effect may be due to the patients being close to the recommended targets at baseline as well as the modest change in weight. The intervention team was unable to “implement” the intervention as planned to half of the patients, who received less than 75% of the 27 intended telephone counseling sessions. The lifestyle and weight changes reported at 18 months were “maintained” at 24 months if evaluated from the perspective that the mean values for selected variables did not differ between the 18- and 24-month time points. However, the 95% CI was quite wide and the sample size may be too small to interpret that finding.

What are the “lessons learned” from this trial? Using EMR preliminary screening combined with primary provider review can efficiently identify patients for a diabetes weight-loss intervention. Delivering a weight-loss intervention by telephone is subject to “session attendance”

challenges even though the participant time commitment would be reduced by not having to travel. The mean weight changes do not provide the full picture needed to address translation to practice. The proportion of patients achieving the goal of  $\geq 5\%$  weight loss at 24 months was threefold higher in the telephone intervention than in the usual-care group (15.9 vs. 5.1%). Evaluating the predictors of achieving the  $\geq 5\%$  weight-loss goal was beyond the scope of the study by Eakin et al. (7), and the study did not address cost-effectiveness.

A systematic review of telephone-delivered physical activity and dietary behavior interventions concluded that telephone interventions achieve behavior change, but dissemination research indicates that completing all of the telephone sessions and retention are challenging (10,11). Other studies have concluded that telephone intervention outcomes can be improved by increasing the dose (completing more telephone sessions) (12), using group conference calls (13), combining telephone

with intervention modalities (14), text messaging for support and to facilitate self-monitoring (15–18), and evaluating the intervention process via applying the RE-AIM framework (9). Future research needs to address potential capacity of telephone-based interventions to enhance the effectiveness of weight-loss interventions as well as to expand the availability of weight-loss interventions.

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**References**

- Lam DW, LeRoith D. The worldwide diabetes epidemic. *Curr Opin Endocrinol Diabetes Obes* 2012;19:93–96
- Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation*. 12 November 2013 [Epub ahead of print]
- Kuna ST, Reboussin DM, Borradaile KE, et al.; Sleep AHEAD Research Group of the Look AHEAD Research Group. Long-term effect of weight loss on obstructive sleep apnea severity in obese patients with type 2 diabetes. *Sleep* 2013;36:641–649A
- Wing RR, Bolin P, Brancati FL, et al.; Look AHEAD Research Group. Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. *N Engl J Med* 2013;369:145–154
- Williamson DA, Rejeski J, Lang W, et al. Impact of a weight management program on health-related quality of life in overweight adults with type 2 diabetes. *Arch Intern Med* 2009;169:163–171
- Annucci G, Rivellese AA, Bozzetto L, Riccardi G. The results of Look AHEAD do not row against the implementation of lifestyle changes in patients with type 2 diabetes. *Nutr Metab Cardiovasc Dis* 2014;24:4–9
- Eakin EG, Winkler EA, Dunstan DW, et al. Living Well With Diabetes: 24-month outcomes from a randomized trial of telephone-delivered weight loss and physical activity intervention to improve glycemic control. *Diabetes Care* 2014;37:2177–2185
- Eakin EG, Reeves MM, Winkler E, et al. Six-month outcomes from living well with diabetes: a randomized trial of a telephone-delivered weight loss and physical activity intervention to improve glycemic control. *Ann Behav Med* 2013;46:193–203
- Goode AD, Owen N, Reeves MM, Eakin EG. Translation from research to practice: community dissemination of a telephone-delivered physical activity and dietary behavior change intervention. *Am J Health Promot* 2012;26:253–259
- Goode AD, Reeves MM, Eakin EG. Telephone-delivered interventions for physical activity and dietary behavior change: an updated systematic review. *Am J Prev Med* 2012;42:81–88

11. Goode A, Reeves M, Owen N, Eakin E. Results from the dissemination of an evidence-based telephone-delivered intervention for healthy lifestyle and weight loss: the Optimal Health Program. *Transl Behav Med* 2013;3:340–350
12. Goode AD, Winkler EA, Lawler SP, Reeves MM, Owen N, Eakin EG. A telephone-delivered physical activity and dietary intervention for type 2 diabetes and hypertension: does intervention dose influence outcomes? *Am J Health Promot* 2011;25:257–263
13. Weinstock RS, Trief PM, Cibula D, Morin PC, Delahanty LM. Weight loss success in metabolic syndrome by telephone interventions: results from the SHINE Study. *J Gen Intern Med* 2013;28:1620–1628
14. Barry VW, McClain AC, Shuger S, et al. Using a technology-based intervention to promote weight loss in sedentary overweight or obese adults: a randomized controlled trial study design. *Diabetes Metab Syndr Obes* 2011;4:67–77
15. Steinberg DM, Levine EL, Askew S, Foley P, Bennett GG. Daily text messaging for weight control among racial and ethnic minority women: randomized controlled pilot study. *J Med Internet Res* 2013;15:e244
16. Bouhaidar CM, DeShazo JP, Puri P, Gray P, Robins JL, Salyer J. Text messaging as adjunct to community-based weight management program. *Comput Inform Nurs* 2013;31:469–476
17. Lin PH, Wang Y, Levine E, et al. A text messaging-assisted randomized lifestyle weight loss clinical trial among overweight adults in Beijing. *Obesity (Silver Spring)* 2014;22:E29–E37
18. Napolitano MA, Hayes S, Bennett GG, Ives AK, Foster GD. Using Facebook and text messaging to deliver a weight loss program to college students. *Obesity (Silver Spring)* 2013;21:25–31