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Step by Step Guide to "Type 2 Diabetes Remission" via Total Meal Replacement: A Brand-new Option in the Diabetes Canada Clinical Practice Guidelines

Harpreet S. Bajaj MD, MPH

Endocrinologist and Medical Director of Endocrine & Metabolic Research, LMC

"Remission" and "relapse" – terminology that we commonly associate with cancer – is now endorsed for type 2 diabetes, with the addition of a brand-new chapter in the Diabetes Canada clinical practice guidelines (CPG).[1,2] Remission of type 2 diabetes (T2D) i.e. achieving an A1C within the non-diabetic range after stopping diabetes medications for 3 months or more, may be an option for some individuals. These include patients with early T2D (<6 years since their diagnosis), who are not using insulin therapy, who don't have a history of cardiovascular or kidney complications (as current guidelines still recommend GLP-1 receptor agonists (GLP-1 RA) and/or SGLT2 inhibitor for cardiorenal protection), and who are inclined to lose about 15% of their body weight via bariatric surgery or meal-replacement, low-calorie diet.

So, how do you go about discussing this new option of the low-calorie diet with your

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patients? Or how do you respond to a patient in your clinic who wishes to know more about this option because they want to stop their diabetes medication(s)?

So, how do you go about discussing this new option of the low-calorie diet with your patients?

Patient Selection

First, let's be realistic, practical and non-judgemental (i.e. without raising weight blame or stigma) about the expectation of 15% body weight loss during the initial total meal replacement (phase 1) period to have the greatest potential for remission. We as healthcare professionals should recognize that despite their inclination, remission may be possible only for some people with type 2 diabetes; but this may not be a feasible or reasonable option for many. To put this into perspective, let's explore further the Diabetes Canada CPG recommendation on low-calorie (800 to 850 kcal/day) diets with meal replacement products for the initial 3 to 5 months (phase 1), which is based on research trials conducted in the United Kingdom (UK)[3] and Qatar.[4] In the UK trial, just about 1 in 2 people who started such a meal replacement diet was able to achieve remission at 1 year, a proportion that reduced further to about 1 in 3 people at 2 years. Another point to get across carefully when discussing this option with your clinic patients is the onerous, but not impossible, task to completely abstain from solid/traditional food initially by replacing all meals with low-calorie, purchased, shakes and soups. Another practical limitation for many individuals maybe the expense itself – the portion controlled, low-calorie meal replacement shakes and soup options available in Canada cost (Table 1) that may not be easily replaced with home made cheaper options, until further research.

Table 1. Suitable meal replacement shakes and soups available in Canada

Brands	Nutritional information, per serving	Average retail consumer price
Optifast 900 (Note - requires prescription to purchase)	225 kcal, 22.5 g pro, 18.8 g CHO, 7 g fat + V&M	$81 for 2 boxes of 14x54g sachets
Boost High Protein	240 kcal, 15 g pro, 34 g CHO, 5 g fat + V&M	$15.50 for 6 packs of 237ml bottles
Boost Diabetic	190 kcal, 16 g pro, 17 g CHO, 7 g fat + V&M	$15.50 for 6 packs of 237ml bottles
Ensure High Protein	225 kcal, 12 g pro, 31 g CHO, 6 g fat + V&M	$16.30 for 6 packs of 235ml bottles
Glucerna	225 kcal, 11.3 g pro, 26.7 g CHO, 8.2 g fat + V&M	$16.30 for 6 packs of 237ml bottles
Orgain Organic Nutrition Shake	250 kcal, 16 g pro, 32 g CHO, 7 g fat + V&M	$35-$50 for 4 packs of 330ml cartons
ProtiDiet Soup	70-90 kcal, 15 g pro, 3–5 g CHO, 0 g fat	$20 for 1 box of 7 pouches of 25g dry soup mix
BariWise Soup	100 kcal, 15 g pro, 8 g CHO, 1.5 g fat	$40 for 1 box of 7 pouches of 26g dry soup mix

V & M = Vitamins and Minerals, CHO = carbohydrates

Meal Replacement Options

Another question you may wonder about – how does this low-calorie diet differ from the low-fat diet or the low-carbohydrate diet? Table 2 outlines the major differences in these three diets as it relates to their weight loss and remission data as well as their nutrient contents. For starters, out of these three diets all of which may aid weight loss, the low-calorie total meal replacement is the only one with high-grade evidence for type 2 diabetes remission. That is the reason that no recommendations on remission are offered for either the low-fat or the low-carbohydrate diets in the newly added CPG chapter on "Remission of type 2 diabetes".

– how does this low-calorie diet differ from the low-fat diet or the low-carbohydrate diet?

Table 2. **Overall key differences in low-calorie diet compared to low-fat diet and low-carbohydrate diet**

	Low fat diet	Low carb diet	Low calorie diet
Proven weight reduction?	Yes	Yes	Yes
Proportion of carbs	Moderate to high	Low to very low	Moderate
Are macronutrients balanced?	Variable	No	Yes
Reduced calories?	Variable	Variable	Yes
Total meal replacement during initial phase?	No	Variable	Yes
Unequivocally proven to reduce cardiovascular events?	No	No	No
High-grade trial evidence for inducing type 2 diabetes remission?	No	No	Yes

Special Populations

Some patients may still benefit from ongoing antihyperglycemic therapy. For instance, most may not achieve 15% or more weight loss but will still attain more weight loss if GLP-1 RA are continued. Further, weight regain and increased A1C is possible if GLP-1 RA are discontinued. This wouldn't necessarily be in keeping with diabetes remission, but continuing medication would still be beneficial long-term. It might even allow for the stopping of other antihyperglycemic agents including insulin, reducing medication burden. Further, the long-term cardiorenal benefits demonstrated for both SGLT2i and GLP-1RA are especially important for patients affected with these conditions as per clinical practice guideline recommendations. Medication should be continued in this case independent of A1C. It is especially important to individualize medication strategies, comorbidities and patient preferences for all patients affected with T2D.

Practical Considerations

Finally, now that you've bought in to this new paradigm shifting option of remission and are now interested and willing to discuss the pros and cons of such a strategy with your patients, along with deprescribing diabetes medicines in your clinic, how do you practically go about doing this? It is important to recognize that in the UK and Qatar research trial protocols,[3,4] all diabetes medicines were discontinued at the time of initiation of the low-calorie meal replacement phase. As a practical application of this, however, we may wish to individualize this depending on clinical characteristics and delay deprescribing all diabetes medicines at once, but do so in a piecemeal fashion e.g. discontinue sulphonylurea medications first to minimize the risk of hypoglycemia and then withhold additional medications subsequently depending on the individual's adherence with the meal replacement as well as their progress on weight loss and glucose parameters. At the same time, close follow-up with initiation of diabetes medicines may be necessary if hyperglycemia persists despite meal replacement or in cases of relapse of A1C in the type 2 diabetes range (i.e. ≥6.5%) after remission had been achieved. Another important factor that may determine the success of a comprehensive clinical approach to remission is the collaborative involvement of an interdisciplinary work, which include a primary care physician, dietitian, pharmacist, physical activity trainer, and endocrinologist, in addition to nurturing family, along with social supports surrounding the person living with diabetes.

how do you practically go about doing this?

References:

1. Mackay D, Chan C, Dasgupta K, et al. Remission of type 2 diabetes. Can J Diabetes 2022;46:753–61.
2. Jin S, Bajaj HS, Brazeau A-S, et al. Remission of type 2 diabetes: User's guide. Can J Diabetes 2022;46:762–74.
3. Lean ME, Leslie WS, Barnes AC, et al. Primary care-led weight management for remission of type 2 diabetes (DiRECT): An open-label, cluster-randomised trial. Lancet 2018;391:541–5.
4. Taheri S, Zaghloul H, Chagoury O, Elhadad S, et al. Effect of intensive lifestyle intervention on bodyweight and glycaemia in early type 2 diabetes (DIADEM-I): an open-label, parallel-group, randomised controlled trial. Lancet Diabetes Endocrinol 2020;8(6):477e89.

LMC Diabetes Remission Program

We are excited to announce the launch of LMC's Diabetes Remission Program across our clinics!

Do your patients ask you if they can stop their diabetes medications?
Consider referring your patients specifically for remission if they meet the following criteria:

1. <6 years since diagnosis of type 2 diabetes
2. Not affected by cardiovascular or renal disease
3. Not currently treated with insulin
4. Willing to consider total meal replacement options in the hopes of stopping diabetes medications
5. Not currently considering bariatric surgery

Our multidisciplinary care team of endocrinologists, physician assistants, certified diabetes educators and pharmacists are ready to help your patients achieve remission from diabetes.

WHERE TO REFER?

LMC Diabetes Remission Program

Phone: 416.645.2928
Fax: 1.877.562.2778
Email: referrals@lmc.ca
Online: www.LMC.ca/referrals

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