STUDY SUMMARY

The DiRECT-Aus trial

Intensive lifestyle intervention for remission of early type 2 diabetes in primary care in Australia

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The DiRECT-Aus trial confirms that remission of recently diagnosed type 2 diabetes can be achieved with a low energy total diet replacement in an Australian primary care setting.

Type 2 diabetes (T2D) is estimated to affect one in 20 Australians, incurring annual health care costs of AUD 1.9 billion.[1] Increasing evidence has emerged that T2D remission is possible with weight loss.[2-5]

STUDY AIM

To determine if a 12-month intervention incorporating a low-energy total diet replacement (TDR) could induce remission of T2D in adults with recently diagnosed T2D in an Australian primary care setting.

RESEARCH DESIGN & METHODS

Primary outcome

- T2D remission at 12 months.
  - Defined as HbA1c <6.5% (<48 mmol/mol) and cessation of glucose-lowering medications for at least 2 months ±7 days.

Secondary outcome

- Weight change at 12 months.
- T2D remission and weight change at months 3, 6 and 9.

Funding and assistance: The study was supported by Diabetes Australia, and 5 New South Wales public health networks. Nestlé Health Science donated the formula meal replacements. The funders of the study had no role in study design, data collection, data analysis, data interpretation or writing of the report.

PROCEDURES & PARTICIPANTS

An open-label single-arm intervention trial was conducted across 25 primary care practices in New South Wales, Australia.

Inclusion criteria

- Aged 20-65 years
- With type 2 diabetes up to 6 years duration
- HbA1c ≥6.5% (48 mmol/mol)
- Body mass index (BMI) >27.0 kg/m^2
- Not treated with insulin.

13-week total diet replacement (TDR)* using OPTIFAST VLCD formula meal replacements† (MR)

BMI ≤40 kg/m^2	BMI >40 kg/m^2
3 MR/day (<3400 kJ / 800 kcal/day)	**4 MR/day** (<4000 kJ / 950 kcal/day)

- Dietitian visits: fortnightly
- Encouraged to consume: ≥2L low energy fluids, 2 cups of low starch vegetables, 1 teaspoon of oil daily.

8-week structured food reintroduction

- Dietitian visits: 2-4 weekly
- Formula meal replacements were tapered and healthy, low-fat meals (<30% energy from fat) reintroduced.

31-week supported weight maintenance‡

- Dietitian visits: monthly.

All participants were advised to increase daily physical activity with a target of 15,000 steps/day.
*All glucose-lowering medications were discontinued on commencing TDR and reintroduced if indicated by glycemia.
†OPTIFAST VLCD is a very low energy food for consumption in a very low energy TDR.
‡ If weight regain occurred or diabetes returned (HbA1c ≥6.5% [48 mmol/mol]), 'rescue plans' were offered.

RESULTS: T2D REMISSION

- 155 participants were included in the intention to treat (ITT) population**
- **At 12 months, T2D remission was achieved by 56% of participants**
- At the completion of the TDR phase (3 months), 66% of participants had achieved T2D remission.

Diabetes remission achieved at 3, 6, 9 and 12 months**

- **Diabetes remission rates were higher with greater weight loss.**
  - Those that achieved >15% weight loss had the highest rate of T2D remission (87%).

Diabetes remission by percent weight loss achieved at 12 months**

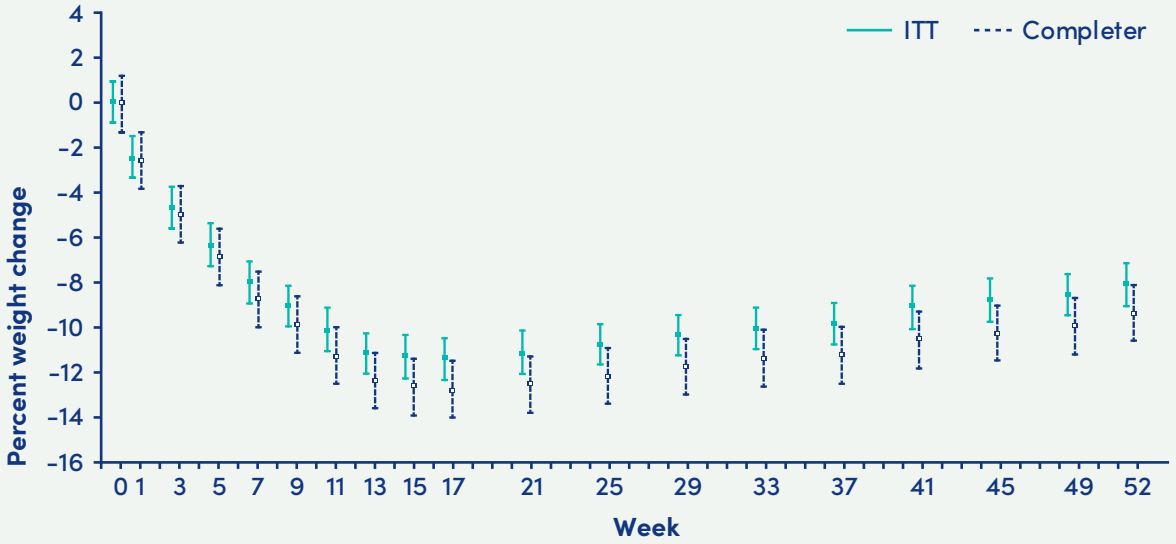
ITT (n)	58	42	24	31
Completer (n)	27	29	14	23

**ITT (intention-to-treat) population (n=155) commenced TDR. Completer (n=93) population completed TDR and attended >50% of remaining study visits.

RESULTS: WEIGHT LOSS

- Mean weight loss at the end of the TDR was 11.2% of body weight
- Mean weight loss at 12 months was 8.1% of body weight
- Rescue plans were offered to 44% of participants and adopted by 39%.

Mean percent weight change over 52 weeks#



#Using last observation carried forward and adjusted for number of visits attended.

ADVERSE EVENTS

- 2 x adverse events: both hypotension, with one also having hypoglycaemia which required reduction in hypertensive medication and discontinuation of TDR.

CONCLUSION

This study confirms that an intensive lifestyle intervention delivered in an Australian primary care setting to individuals with recently diagnosed T2D results in remission of T2D for one in two participants.

T2D remission and weight loss were similar to both the DiRECT and DIADEM-I trials, which involved intensive weight management intervention in primary care in different countries.[4,5] These findings suggest that a low-energy TDR for weight loss is a robust intervention for T2D remission across different ethnicities and cultures.

References: 1. Australian Institute of Health and Welfare. www.aihw.gov.au/reports/diabetes/diabetes (Accessed 24 February 2023). **2.** Riddle MC, et al. Diabetes Care 2021; 44:2438–2444. **3.** Vetter ML, et al. Diabetes Spectr 2012;25:200–210. **4.** Lean ME, et al. Lancet 2018;391:541–551. **5.** Taheri S, et al. Lancet Diabetes Endocrinol 2020;8:477–489.

OPTIFAST VLCD is for the dietary management of overweight and obesity and must be used under the supervision of a healthcare professional.

Nestlé HealthScience