

### 3. Preventing diabetes through a lifestyle modification program that works

*Nathalie Davis-Lameloise, James A Dunbar, Prasuna Reddy and Edward D Janus; on behalf of the Greater Green Triangle University Department of Rural Health team*

*Authors' affiliations: Greater Green Triangle University Department of Rural Health, Flinders University and Deakin University*

The increasing occurrence of type 2 diabetes mellitus (T2DM) is a problem of global significance.

The risk of developing T2DM has been equally attributable to environmental and genetic factors,<sup>3</sup> but the recent increase in incidence is mainly due to lifestyle factors.

In 2004–05, around 3.5% of the Australian population had been diagnosed with diabetes.<sup>4</sup> However, about half of those people who have diabetes are considered to be unaware of their condition. Additionally, approximately 10% of the Australian population has pre-diabetes, with one-in-three of these people expected to go on to develop the condition.<sup>5</sup>

The Greater Green Triangle Diabetes Prevention Project (GGT DPP) was a national demonstrator program that was conducted in Hamilton, Horsham and Mount Gambier by the GGT UDRH in 2004–06.

The project was based on the Finnish Diabetes Prevention Study<sup>6</sup> and the Good Ageing in Lahti Region Lifestyle Implementation Trial.<sup>7</sup> It involved a series of group education sessions delivered to people at high risk of developing diabetes. As the positive effect of diabetes prevention programs is already well established, the aim of this study was to evaluate the feasibility of delivering a structured group-based lifestyle modification program in Australian primary care settings with modest resources. A follow-up investigation looked at whether gains achieved by the intervention were sustained longer term and whether telephone support would provide better outcomes.

3. Hussain A, Claussen B, Ramachandran A, Williams R (2007). Prevention of type 2 diabetes: a review. *Diabetes Research Clinical Practice* 76:317–326.
4. Australian Institute of Health and Welfare (2008). *Diabetes: Australian Facts 2008*. Diabetes Series no. 8. Cat. no. CVD 40. AIHW, Canberra.
5. Dunstan DW, Zimmet PZ, Welborn TA, De Courten MP, Cameron AJ, Sicree RA, et al (2002). The rising prevalence of diabetes and impaired glucose tolerance: the Australian Diabetes, Obesity and Lifestyle Study. *Diabetes Care* 25(5):829–834.
6. Eriksson J, Lindstrom J, Valle T, Aunola S, Hamalainen H, Ilanne-Parikka P, et al (1999). Prevention of Type II diabetes in subjects with impaired glucose tolerance: the Diabetes Prevention Study (DPS) in Finland. Study design and 1-year interim report on the feasibility of the lifestyle intervention programme. *Diabetologia* 42(7):793–801.
7. Absetz P, Valve R, Oldenburg B, Heinonen H, Nissinen A, Fogelholm M, et al (2007). Type 2 diabetes prevention in the "real world": one-year results of the GOAL Implementation Trial. *Diabetes Care* 30(10):2465–2470.

## **Relevance to rural and remote health**

T2DM is a chronic and costly disease associated with premature mortality and high rates of health service usage. Complications that result from diabetes include cardiovascular disease, damage to the eyes, kidney failure and nerve damage.

The shortage of health professionals and poor access to diabetes specialists in rural and remote areas amplifies the issues around prevention and treatment of T2DM and its complications.

The prevalence of diabetes in rural Greater Green Triangle has been among the highest in Victoria and South Australia.

## **The research**

Participants were recruited from general practices in three regional centres in Victoria and South Australia by screening patients for high risk of developing T2DM.

Assessments of physical, biochemical and psychological health as they relate to diabetes were performed before the program and at 3 and 12 months, respectively.

A goal setting and planning approach was used to increase behaviour change in physical activity and dietary habits. Regular self-assessment was used to empower participants to make personal short and long-term goals and create structured plans to achieve these.

At the 12-month health assessment, there was an average reduction in weight of 2.52 kg and waist circumference of 4.17 cm. Most importantly, the estimated risk reduction for T2DM and cardiovascular disease was 40% and 16% respectively. Other health assessments conducted as part of the study also showed favourable results.

The GGT DPP was followed up with an investigation regarding whether gains achieved would be sustained at 30 months and whether telephone support would produce better long-term outcomes.

Participants were allocated randomly to a group receiving regular telephone support calls from specially trained nurses, or to a self-care group who received no calls. At the completion of this part of the study, there was no significant difference between the groups. Encouragingly the general health improvements were maintained across the entire study group.

## Lessons learned

This study showed that this diabetes-prevention program using lifestyle intervention is possible in primary health care settings in regional Australia.

This group-based prevention program in primary health care settings for individuals at high-risk of T2DM resulted in improved health outcomes, which were sustained after 30 months.

Telephone support on completion of a 12-month lifestyle change intervention was not found to provide additional benefits at 30 months.

## Wider relevance

In 2007, the Council of Australian Governments (COAG) developed a national standard for lifestyle diabetes-prevention programs based on the GGT DPP. All Australians aged 40–49 years old who are at risk of T2DM are eligible for accredited, subsidised lifestyle modification programs.

Additionally, the Victorian Government used this project as a basis for the statewide diabetes prevention program: *Life! Taking action on diabetes*. The program began in 2007. It has funding to operate for four years and is targeting 25 000 Victorians who are aged 50 or over. GGT UDRH staff have a strong presence in this project, assisting with evaluation, development and training of group facilitators.

In the face of the accelerating epidemic of type 2 diabetes mellitus, evidence-based prevention programs are the best defence. The Greater Green Triangle University Department of Rural Health conducted a rigorous trial of a structured group lifestyle modification program targeting residents of three regional towns who were at high risk of developing diabetes. Participants lost weight and reduced their risk of illness. These benefits were maintained after the program with no further interventions. This rural-based research has informed new national standards for diabetes-prevention programs and a large-scale program aiming to enrol 25 000 Victorians.

Contact person: Nathalie Davis-Lameloise ([Nathalie.Davis@greaterhealth.org](mailto:Nathalie.Davis@greaterhealth.org))