MINISTRY OF HEALTH
MANATŪ HAUORA

Prediabetes advice

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1. Identification of people with Type 2 diabetes or prediabetes.
Screening for hyperglycaemia is undertaken as part of cardiovascular risk assessment according to national guidelines (see Table 1, page 4 in *New Zealand Guidelines Group. New Zealand Primary Care Handbook 2012. 3rd ed*).

In addition, the New Zealand Society for the Study of Diabetes (NZSSD) has endorsed the need for opportunistic screening amongst younger adults (those over 25 years) who are known to be at especially high risk of developing diabetes.

The following groups are included:

- Those with known ischaemic heart, cerebrovascular or peripheral vascular disease
- Those on long-term steroid or anti-psychotic treatment
- Obese individuals (BMI ≥ 30 kg/m^2 or ≥ 27 kg/m^2 for Indo-Asian people)
- People with a family history of early age onset of Type 2 diabetes in more than one first degree relative
- Women with a past personal history of gestational diabetes mellitus
- In addition, obese children and young adults (BMI ≥ 30 kg/m^2 or ≥27 kg/m^2 in Indo-Asian) should be screened if there is a family history of early onset Type 2 diabetes, or if they are of Māori, Pacific or Indo-Asian ethnicity.
- Women with Polycystic Ovarian Syndrome (PCOS)

Haemoglobin A1c (HbA1c) is the recommended screening test for Type 2 diabetes and prediabetes. While acknowledging that increasing levels of HbA1c are associated with a continuous gradient of risk of progressing to diabetes, those with HbA1c levels in the range 41–49 mmol/mol are considered to have prediabetes[1], otherwise known as 'intermediate hyperglycaemia'.

Impressive evidence from many randomised controlled trials (RCT) indicates that the risk of progression from prediabetes to diabetes can be substantially reduced through lifestyle modification or, to a lesser extent, with drug treatment. Additionally,

[1] Prediabetes may also be diagnosed in people with impaired fasting glucose levels 6.0–6.9 mmol/l (at least 2 measurements required) or glucose levels 7.8–11.0mmol/l, 2 hours after a glucose load (impaired glucose tolerance). Glucose tolerance tests are not recommended for screening. See www.nzssd.org.nz/HbA1c

the fact that cardiovascular risk rises with increasing levels of HbA1c further justifies intervention in people with prediabetes.

Rates of prediabetes in New Zealand vary according to age, sex and ethnicity but the overall prevalence amongst New Zealand residents aged 15 years and over is about 25 percent.

2. Lifestyle management of people with prediabetes

RCTs have confirmed the potential of lifestyle modification to approximately halve the risk of progression from prediabetes to Type 2 diabetes over a prolonged period. The following principles can help in providing advice to individuals:

Principles of initiating change

- Changing eating and activity patterns and life-long habits is not easy
- Assess willingness to change
- Encourage people to make one change at a time
- Start with small achievable goals, especially those which might be expected to give the greatest benefit
- Ensure that people know what foods contain 'sugar' and hidden fat
- Encourage and congratulate even the smallest success
- Ensure that there is an agreed plan with the individual that includes follow up

Reducing weight

- Weight reduction is the most important target for most people with prediabetes.
- Following healthy eating guidelines and increasing exercise will achieve weight loss in most people
- Assuming the patient is overweight or obese, aim for a weight loss of 0.5–1kg per week and a long-term loss of at least 5 per cent of initial weight - but acknowledge any degree of loss as a success
- Staying the same weight may be a meaningful achievement for some individuals

Follow the healthy eating guidelines

- Eat three meals a day including 5+ serves of fruit and vegetables
- Reduce sugary foods and drinks by:
  a) substituting cakes, biscuits and snack foods with fruit
  b) drinking water instead of fizzy or sugary drinks
- Reduce fat by:
  a) using low-fat dairy products (e.g., skimmed or calci-trim milk, low fat yoghurts)
  b) limiting fried foods and takeaways to once a week or less
  c) avoiding food with hidden fat (e.g., pies, pastries, chippies)
- Have smaller portion sizes – use a smaller plate

Increase exercise

- Consider a 'Green Prescription'
- Aim for 30 minutes of moderate intensity exercise such as brisk walking on most days - when possible increase exercise time to 60 minutes per day

- Help the individual find an activity that fits in with their lifestyle and is sustainable. Undertaking exercise with others is often more enjoyable
- Any increase in activity, however small, is a positive step. 'Snacks' of exercise, for example 3 x 10 minutes daily may have some value
- Reduce inactivity – avoid sitting for extended periods e.g., TV watching (even standing uses more energy)

Follow-up

Follow up needs to reflect the goals and plan agreed with the person, particularly with lifestyle interventions.

Initial HbA1c should be repeated after three months of 'lifestyle therapy' and thereafter at 6–12 monthly intervals, as should measures of weight, dietary and exercise changes.

Treatment with metformin should be considered after 6–12 months for those whose HbA1c levels continue to rise despite attempts to make lifestyle changes, or when levels are close to the cut-off level for diabetes and are not falling (i.e 46–49 mmol/mol).

Self-monitored blood glucose (SMBG) measurement and retinal screening are not indicated for people with prediabetes.

Drug treatment

Metformin is the only drug currently recommended for the routine management of prediabetes. It is an adjunct, not an alternative, and is less effective alone than lifestyle change. It is important to consider this in the context of CVR.

It is usually best to start with a low dose (500mg daily or twice daily with food) and increase gradually as tolerated, if required, to 1500–2000g/day in divided doses. Metformin should always be taken with food and, if patients are intolerant, can be initiated at a dose of 250mg/day.

Support to achieve lifestyle and weight loss goals should continue.

3. Cardiovascular risk management

Cardiovascular risk assessment and active management should still be carried out as per the NZ guidelines - CV risk is the greatest threat to the patient's short and medium-term health, irrespective of progression or not to Type 2 diabetes.

These interim recommendations were written by Professor Jim Mann and Dr Kirsten Coppell with input from Dr Paul Drury, Dr Helen Rodenburg and Ann Gregory on behalf of the National Diabetes Services Improvement Group (NDSIG).

Where this advice is being used in systematic prediabetes programmes in practices, PHOs and DHBs it is strongly recommended that contact is made with the Ministry of Health to ensure data collection and outcome measures/evaluations are compatible with other such projects.