



Getting to know patients with type 2 diabetes and poor glycaemic control:
One size does not fit all

People with type 2 diabetes and poor glycaemic control ($HbA_{1c} > 64$ mmol/mol) are at increased risk of developing diabetes-related complications and cardiovascular disease. Engaging with these patients and helping them overcome their individual barriers to achieving a healthier life are a priority for primary care. Where possible, the family/whānau of the patient should be encouraged to be involved in lifestyle changes. Diabetes management plans should be agreed upon using a shared decision-making approach. Treatment targets, including glycaemic control, need to be individualised taking into account patient characteristics, such as age, treatment preference or the presence of co-morbidities. Primary care, nurse-led diabetic clinics are an effective way of engaging with and monitoring patients with type 2 diabetes.

Focusing on people with type 2 diabetes most at risk

Poor glycaemic control is relatively common among people with diabetes. A New Zealand review of almost 30 000 patients attending annual diabetes checks found that 29% had HbA_{1c} levels above 64 mmol/mol.¹ There were marked differences between ethnicities; 50% of Pacific peoples, 43% of Māori and 36% of Asian-Indian people had levels above 64 mmol/mol.¹

The reasons why people with type 2 diabetes have poor glycaemic control, i.e. $HbA_{1c} > 64$ mmol/mol, are numerous and complex. Health professionals need to effectively engage with patients to understand what these reasons are. A shared decision-making approach to management allows patients and health professionals to form an agreement on diabetes care that may also correct previous clinical assumptions, e.g. concerning treatment adherence, health literacy or motivation. To do this well, primary care teams need to have a good understanding of the patient's background, beliefs and priorities. For some patients this may even mean accepting that a glycaemic target higher than 64 mmol/mol is appropriate, e.g. for an older patient living alone. This should not be regarded as a failure by the patient or the health professional. However, poor glycaemic control is always a signal for intensification of management and HbA_{1c} is only one measure of cardiovascular risk. For many patients diabetes management will also involve intensive management of other risk factors such as obesity, hypertension, hyperlipidaemia and smoking.

This collaborative approach to diabetes care incorporates many aspects of motivational interviewing and can be combined with this technique. The process of engaging people with type 2 diabetes and assisting them to manage their own health is perhaps the most significant and challenging aspect of their care.

Individual, patient-centred management of diabetes

There is increasing evidence that an individual and patient-centred approach to the management of type 2 diabetes is effective.^{2,3} In an ethnically diverse United Kingdom population of over 28 000 patients with type 2 diabetes it was found that after being invited to explore reasons for their poor glycaemic control and developing an individualised management plan, 55% of patients with an $HbA_{1c} \geq 86$ mmol/mol improved their HbA_{1c} by at least 10 mmol/mol at six month review.⁴

An individual approach to diabetes care is now favoured because guidelines for chronic conditions are generally based on clinical trials of highly selected participants, with many of the "real-world" patients in general practice populations being excluded due to the presence of co-morbidities or other factors. In addition, the results of clinical trials investigating targets for glycaemic control, e.g. UKPDS, ACCORD, ADVANCE and VADT, collectively demonstrate that a hard target-based approach to the management of type 2 diabetes can be harmful to some patients, e.g. older patients with high cardiovascular risk.³

Diabetes is more prevalent in Māori, Pacific and Asian-Indian people and people living in low socioeconomic areas. In New Zealand, during 2011/12, the rate of type 2 diabetes for people living in the most deprived areas was 8.6%, compared with 2.7% for people living in the least deprived areas.⁵ Approximately 10% of Pacific adults in New Zealand have been diagnosed with diabetes, diabetes rates among Māori (7%) are over twice that of non-Māori and Asian males have a higher rate of diagnosed diabetes (8.4%) compared to other adults.⁵ Patients will respond differently to advice from health professionals depending on their age, economic situation, ethnicity and level of health literacy. Management is likely to be more effective when these differences are clearly in mind. Cultural competency, which is essentially

respectful and effective communication, is just as important as clinical and ethical competency in a healthcare interaction. Healthcare professionals must be both understanding and understandable, and this is essential in managing patients with diabetes to achieve successful health outcomes and address disparities.

Understanding patients with poor glycaemic control

Introducing the idea of an optimal target for glycaemic control, i.e. 50 – 55 mmol/mol, as “the speed limit” can help patients to understand that HbA_{1c} levels above this level are increasingly unsafe. However, this target may not be achievable, or even appropriate, for many patients. Glycaemic targets should therefore be mutually agreed on between the patient and clinician, i.e. shared decision-making. This recognises that not all patients have the same values or priorities. For example, a small study of older people with type 2 diabetes found that almost half ranked maintaining independence as their most important outcome, while just over one-quarter ranked staying alive highest.⁶ Revisiting the patient’s preferences each time their clinical condition changes is also a routine part of diabetes treatment as patient’s priorities may change over time.⁶

If patients are unable to achieve agreed glycaemic targets, health professionals need to make additional efforts to engage with them. Regular attendance at diabetes reviews is associated with improved glycaemic control. In the United Kingdom, patients who missed more than 30% of diabetes reviews were reported to have an average HbA_{1c} 15 – 16 mmol/mol higher than patients who missed less than 30% of reviews.⁴

Education is an important aspect of diabetes management.

For some patients, e.g. where health literacy is an issue or English is not a first language, it may be necessary to regularly return to basics and explain how they came to be diagnosed with type 2 diabetes, and to revisit general concepts in diabetes education. Patients and their family/whānau are asked to understand and act on lifestyle changes and other interventions on a daily basis, but these can compete with many other aspects of a patient’s life that also require time and energy. Education is an ongoing process that includes refining and reinforcing the patient’s knowledge of their condition. This process is particularly important in communities where understanding and being understood when talking with health professionals is highly valued, e.g. among many Māori and Pacific patients.

Getting the most out of your practice management system

The Practice Management System (PMS) is useful for identifying patients within practice populations who have type 2 diabetes. Some PMS products have a reporting function built-in that allows for the automatic identification of patients with an HbA_{1c} > 64 mmol/mol, e.g. *bestpractice Intelligence*. Once identified patients can be offered a diabetes review via the normal patient recall process.

 For further information, see: “Five tips for getting the most out of your Practice Management System”, BPJ 56 (Nov, 2013).



What does the patient believe about diabetes?

Beliefs that patients hold about diabetes can be broadly divided into five categories:⁷

1. Disease identity, i.e. what type 2 diabetes means to them
2. The cause of type 2 diabetes, e.g. the belief that it is just inherited from parents
3. Timeline, i.e. what is the course of type 2 diabetes and how long will it last
4. The consequences of type 2 diabetes, e.g. the belief that introducing insulin means you are going to die soon
5. Cure/control, i.e. how well the patient will be able to recover from, and control, their diabetes

The strength of a patient's belief in their ability to influence their own health is a predictor for both adherence to physical activity and life satisfaction.⁸ A survey of 82 Tongan and New Zealand European people with type 2 diabetes in the Auckland region found that both groups had similar degrees of understanding about type 2 diabetes.⁷ However, compared with the New Zealand European group, Tongan people were more likely to: view type 2 diabetes as a cyclical or acute illness, attribute the disease to external factors (e.g. pollution or God's will), be emotionally distressed by type 2 diabetes and have less confidence in their ability to manage their condition and think anti-diabetic medicines were not necessary.⁷

A patient's belief about the necessity of taking anti-diabetes medicines can be influenced by factors such as: fear, a fatalistic acceptance of the disease due to a family history, or by a family or whānau's negative experience with treatment, e.g. gastrointestinal effects experienced after metformin was started at a high dose. It is therefore important to discuss any previous experiences a patient has had with diabetes and its treatment.

What matters to the patient – not what is the matter with the patient

Engaging with patients involves understanding their values and priorities. For example:⁶

- How important is quality of life to them?
- How motivated is the patient to prevent diabetes-related complications?
- What is the patient's attitude towards insulin and self-injection?
- Is the patient concerned about hypoglycaemia?



This approach emphasises the importance of quality of life and maintenance of function, rather than focusing purely on glycaemic control. This discussion should be repeated each time the patient's clinical situation changes.

Families/whānau may influence treatment decisions

The degree to which patient decisions are influenced by family members is clinically relevant to diabetes management. Among some families a "collective culture" may exist, where decisions about medical interventions for individuals are decided upon by the whole family. If the patient has the expectation that their family will be involved with treatment decisions then it is appropriate to ask key family members to also attend consultations. Some parents may also place less importance on their own health if they are focused on nurturing and supporting their children. Many of these children and grandchildren are at increased risk of developing diabetes and this can be presented as an opportunity to be a better role model of health behaviours for future generations.

Discussing reasons for poor control

Raising the issue of poor diabetes control often results in feelings of guilt and/or personal failure for patients.⁹ This can be overcome by explaining that intensification of type 2 diabetes treatment is usually inevitable due to reduced pancreatic beta-cell function over time.⁹

Barriers to different components of the diabetes management plan should be discussed separately. Problems with concordance with dietary advice and physical exercise are consistently reported by patients and clinicians to be the most significant reason for poor glycaemic control.^{4,10} In general, the longer a patient has had diabetes the more likely they are to eat inappropriately and the less likely they are to exercise.⁸

Depression is twice as prevalent in people with type 2 diabetes compared with the general population and should always be considered in patients who are having problems adhering to a lifestyle regimen.⁸ Patients with depression are less likely to adhere to dietary advice and exercise programmes and more likely to have poor glycaemic control and experience diabetes related complications.⁸ Depression is also associated with obesity and other psychosocial problems.¹⁰

Chronic pain is frequently experienced by people with type 2 diabetes; it is reported to be present in up to 60% of older patients with diabetes.⁶ Pain should also be considered as a potential reason for non-adherence to lifestyle changes, e.g. pain may reduce a patient's ability to exercise. The underlying cause of pain may be a co-morbidity, e.g. osteoarthritis or gout, or may be due to diabetes itself, e.g. peripheral neuropathy or peripheral vascular disease.⁶

Concordance with dietary advice

It is important for health professionals to acknowledge that it can be very difficult for patients to accept and implement radical changes in diet, especially if this involves buying and eating foods that are very different from the patient's usual diet. There may also be cultural reasons why some foods are eaten that are not ideal, e.g. frequent consumption of a traditional food with a high glycaemic index, such as white rice.⁸ Factors known to place patients at high-risk for non-concordance with dietary advice include: financial hardship, social pressure to eat, being alone and feeling bored, stress, relationship conflict and social events or holidays.⁸ A sudden change in the patient's HbA_{1c} level may correlate with a change in circumstance that is causing stress or interfering with patterns of behaviour, resulting in inappropriate food choices. Food diaries allow patients to keep track of what foods they are eating and can be used as an educational aid to explain how glycaemic control is linked to food intake.

Other strategies that may assist patients with dietary changes include encouraging them to:

- Be present when food is purchased and prepared to ensure that appropriate choices are made, e.g. choosing foods low in carbohydrates, saturated fat and kilojoules and using healthy cooking methods
- Compare prices at supermarkets and local produce stores so healthy food can be purchased at the least expense
- Use their standing within the family/whānau/community to make healthy food choices more acceptable for everyone

Concordance with exercise advice

Green prescriptions are a health professional's written advice to be physically active. A two-year study involving over 1000 "less-active" women in New Zealand aged between 40 – 74 years, who were given a green prescription and telephone support, found at 12 and 24 month follow-up there were significant improvements in physical activity.¹¹ Emphasising the importance to patients of cardiovascular fitness in addition to weight loss can provide added motivation for patients starting exercise programmes. Improving fitness is a marker of positive change and will help the patient maintain motivation if weight loss is occurring slowly. Exercise programmes need to be appropriate for the individual patient and take into account factors such as age, weight, mobility and co-morbidities, e.g. chronic obstructive pulmonary disease. Asking the patient to suggest a level of activity they feel they can commit to on a daily basis is a good starting point. Consider if there are any barriers to exercise that can be overcome, e.g. osteoarthritis may make walking difficult; aqua jogging may be a suitable alternative.

It is useful to be aware of what local activities and organised exercise programmes are available to recommend to patients. Whānau ora collectives are increasingly promoting sport as a medicine and facilitating participation in events such as "Iron Māori".

Concordance with pharmacological treatment

It is estimated that 75% of patients with a long-term condition requiring medicines are concordant with treatment.⁸ However, patients with type 2 diabetes and poor glycaemic control are over three times more likely to be non-concordant with their treatment, than patients with acceptable glycaemic control.¹⁰ A study of patients with type 2 diabetes found that approximately one in seven patients with poor glycaemic control picked up less than 60% of their prescriptions from a community pharmacy.⁴ All patients with type 2 diabetes may be referred for a Long Term Conditions (LTC) assessment by a Pharmacist. If eligible, this will involve more regular contact between the patient and the Pharmacist as well as allowing the Pharmacist an opportunity to address barriers.

 For further information, see: "New service model for community pharmacy", BPJ 45 (Aug, 2012).

Collecting medicine from the pharmacy does not mean that it is being taken. Dose omission is the most common form of medicine non-concordance, e.g. patients prescribed metformin three times a day may only take one or two doses, and patients prescribed metformin once daily may miss their dose and take a double dose the next day.⁸ Blister packaging

of medicines (or medicine trays), advising patients to take medicines with meals or setting cell phone reminders may help to increase adherence with treatments.

Education can improve self-management of type 2 diabetes

A patient's understanding of diabetes should be constantly revisited. Education can improve treatment adherence and lead to better outcomes.⁹ Checking for understanding is an important part of this process as there may be differences between what a health professional believes has been agreed and what a patient has understood.

Patients and their families/whānau need to understand the link between glycaemic control and symptoms. Fatigue and sleepiness is a common symptom of poor glycaemic control; education helps patients recognise this link. If a patient improves their control an increase in energy levels and a sense of wellbeing becomes a "selling point" for adherence to medicine regimens and lifestyle change.

Education should also focus on the action of anti-diabetes medicines and the need for regular dosing. This may also overcome beliefs such as that type 2 diabetes is a short-term condition or that diabetes-related complications are inevitable. Addressing patient concerns will often provide learning opportunities. For example, if a patient taking insulin experiences hypoglycaemia, explaining why it has happened and risk factors, e.g. missing meals, enables patients to recognise symptoms and manage them proactively.

Group-based diabetes education sessions have the advantage of allowing patients with type 2 diabetes to meet each other and discuss management strategies. A meta-analysis of group-based diabetes self-management programmes concluded that this approach resulted in improvements in clinical, lifestyle and psychosocial outcomes.¹² There may also be patients within the practice who are willing to act as a "champion" and be contacted by other patients recently diagnosed with diabetes for peer support.

Good management improves the "total health" of patients with diabetes

Managing patients with co-morbidities

Managing patients with diabetes involves more than just maintaining glycaemic control. Approximately half of all adults with diabetes have at least one chronic co-morbidity, which can make treatment decisions more complex.⁶

Consider if one condition is clinically dominant as this may help guide treatment decisions. For example, in a patient who has known cardiovascular disease and type 2 diabetes, medicines that reduce blood pressure or hyperlipidaemia are likely to significantly lower cardiovascular risk. However, the same patient may not benefit as much overall from a hard approach to glycaemic control, which increases the risk of hypoglycaemia. In a study of over 11 000 patients aged over 55 years with type 2 diabetes, severe hypoglycaemia was strongly associated with an increased risk of major macrovascular and microvascular events as well as cardiovascular and all-cause mortality.¹³ Similar associations were seen between severe hypoglycaemia and an increased risk of respiratory, gastrointestinal and dermatological conditions.¹³

Hypertension should be treated to a target of < 130/80 mmHg.² Lower blood pressure targets should be approached with caution as a systolic blood pressure of < 120 mmHg is associated with a greater frequency of adverse effects in people with type 2 diabetes.² Treatment of hypertension should include restrictions to dietary salt intake. Reducing daily salt intake by one teaspoon (5 g) per day is estimated to reduce systolic blood pressure by 5 mmHg and diastolic blood pressure by 3 mmHg.²

 For further information, see: "Hypertension in adults: The silent killer", BPJ 54 (Aug, 2013).

Dyslipidaemia should be discussed and, where appropriate, statin treatment initiated. The optimal lipid treatment targets for patients with diabetes are:²

- LDL cholesterol < 2.0 mmol/L; this is the primary lipid indicator for management of cardiovascular risk
- HDL cholesterol ≥ 1.0 mmol/L
- Total cholesterol (TC) < 4.0 mmol/L
- TC : HDL ratio < 4.0
- Triglycerides < 1.7 mmol/L

Microalbuminuria (urine albumin:creatinine ratio [ACR] > 2.5 mg/mmol in males or > 3.5 mg/mmol in females) is the earliest sign of diabetic kidney disease and requires prompt treatment.² Māori, Pacific and South Asian people with type 2 diabetes are particularly at risk of kidney disease and require more frequent monitoring.² Treatment with an angiotensin converting enzyme (ACE) inhibitor or an angiotensin II receptor blocker (ARB) is recommended for patients with type 2 diabetes and microalbuminuria regardless of whether hypertension is present.² Patients with diabetes and an ACR ≥ 30 mg/mmol measured on two occasions are classified as having a five-year cardiovascular risk greater than 20% and require intensive management to reduce risk factors.²

Smoking cessation advice and support should be given to all patients with type 2 diabetes who smoke. The ABC tool is recommended: “Ask about smoking status, give Brief advice and make an offer of help to stop, and provide evidence-based Cessation support”.¹⁴

 For further information see: “Smoking status and cessation support”, BPJ 40 (Nov, 2011).

Gout is common in people with type 2 diabetes and should be managed effectively to reduce the risk of cardiovascular disease. An Auckland study of over 18 000 people with type 2 diabetes or impaired glucose tolerance found that 16% of people with type 2 diabetes had gout.¹⁵ The prevalence of gout was higher among Māori (29%) and Pacific peoples (24%) with type 2 diabetes.¹⁵

 For further information see: “Gout: an alarm bell for diabetes and cardiovascular disease”, BPJ 37 (Aug, 2011).

Intensifying treatment for diabetes

Patients diagnosed with type 2 diabetes are often started on metformin, particularly if they are overweight. The need for additional oral medicines, e.g. a sulfonylurea, should be

considered in patients with poor control who are not already taking these medicines.

Insulin initiation should not be delayed in patients with poor glycaemic control as this can result in the development of long-term complications. Ideally, the possibility of insulin initiation will have been discussed with the patient from when they were first diagnosed with diabetes. Treatment intensification should involve revisiting this discussion to explore fears or myths the patient may have and to provide evidence-based advice for the patient about insulin initiation. This may include acknowledging feelings of personal failure, perceptions of a loss of control, concerns about adherence to the insulin regimen, fear of needles or concerns about hypoglycaemia.¹⁶ Explain to the patient that insulin is the most effective glucose-lowering medicine and that over half of patients with type 2 diabetes are reported to eventually require insulin to achieve good glycaemic control.¹⁶ New Zealand guidelines recommend that all patients with type 2 diabetes and poor glycaemic control should strongly consider starting insulin.²

 For more information see: “Initiating insulin for people with type 2 diabetes”, BPJ 42 (Feb, 2012).

Regular follow-up

Patients with type 2 diabetes require regular follow-up of all aspects of their care plan as well as regular foot and eye checks.

Foot ulceration in patients with type 2 diabetes can result in amputation. Good glycaemic control and the management of cardiovascular co-morbidities can reduce the peripheral neuropathy and peripheral artery disease that cause foot ulceration. Patients should be encouraged to regularly check their feet, or ask a family member to do so, and should also have their feet checked by a health professional at least once a year and every three months if they have a high risk of developing foot complications.

Risk factors for diabetic foot disease include:²

- Peripheral vascular disease
- Peripheral neuropathy
- Previous amputation or ulceration
- The presence of plantar callus
- Joint deformity
- Visual or mobility problems

Wearing appropriate footwear that does not cause abrasions is important to help prevent diabetic foot disease.

Patients with type 2 diabetes should undergo retinopathy testing every two years or annually if diabetic retinopathy is present.² Diabetic retinopathy causing vision loss is a common complication of diabetes but patients are often asymptomatic until retinopathy is well progressed.

 For further information see: "Diabetes follow-up: what are the PHO Performance Programme indicators and how are they best achieved?", BPJ 39 (Oct, 2011).

Referral to a diabetes management programme

Patients with type 2 diabetes can be referred to a diabetes management programme. Typically, these services involve diabetes nurse specialists, diabetes educators and dieticians

with strong local knowledge and skills in working with patients and their families/whānau.

Patients with poor glycaemic control who are at high risk of developing severe and/or additional diabetes-related complications, can also be referred to secondary care diabetes services.

This includes patients with:²

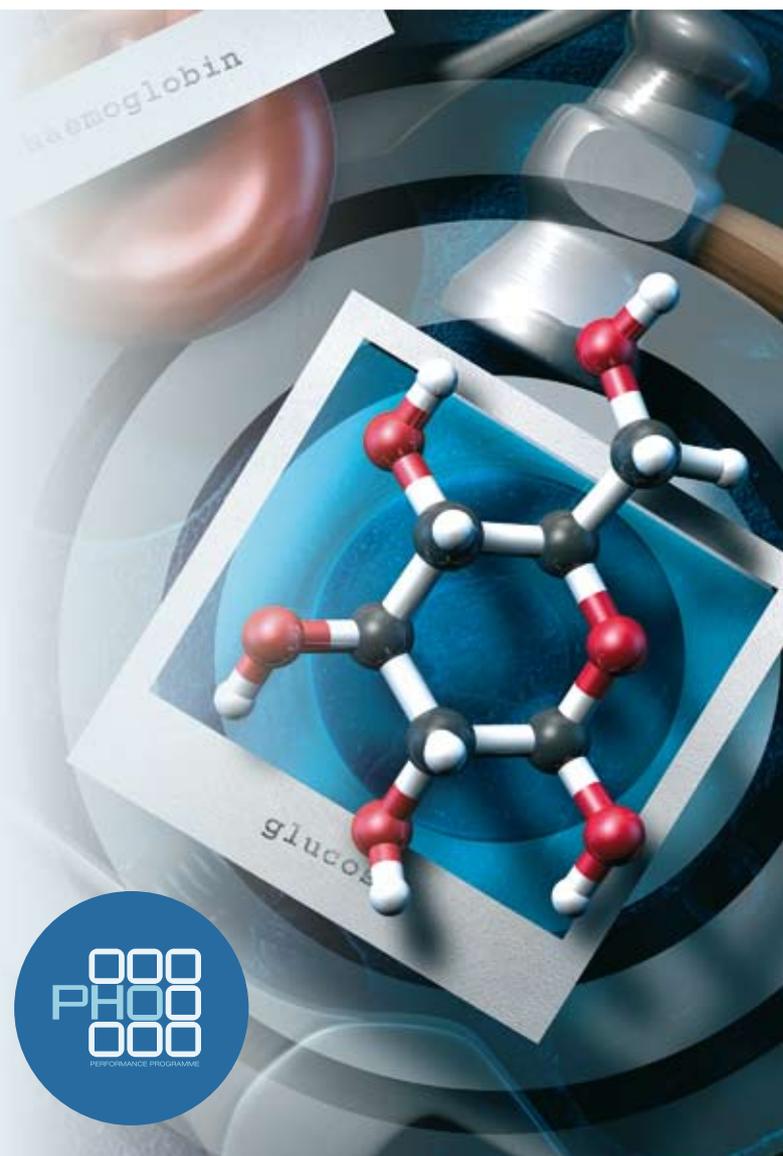
- A previous cardiac event, stroke or transient ischemia attack
- eGFR < 45 ml/min/1.73m² and/or ACR > 30 mg/mmol
- Severe retinopathy or moderate maculopathy in either eye
- A previous amputation or ulceration
- Peripheral arterial disease or previous leg vascular disease

PHO Performance Programme – Diabetes detection and follow-up indicators active in 2014

The PHO Performance Programme (PPP) is due to be replaced by the Integrated Performance and Incentive Framework (IPIF) in 2014. However, the PPP indicators "Diabetes detection" and "Diabetes follow-up after detection" currently remain active and funded.

The diabetes detection indicator determines what proportion of the population estimated to have diabetes have been diagnosed. The goal for this indicator is 90%. This indicator accounts for 7.5% of the funding that the PHO receives; 5% for the high needs population and 2.5% for the total population.¹⁷

The diabetes follow-up after detection indicator determines what proportion of the population expected to have been diagnosed with diabetes have had an annual review. The goal for this indicator is also 90%. This indicator accounts for 9% of the funding that the PHO receives; 6% for the high needs population and 3% for the total population.¹⁷



Nurse-led diabetes clinics

The New Zealand Society for the Study of Diabetes (NZSSD) provides diabetes e-learning resources for nurses in primary care, based on the National Diabetes Nursing Knowledge and Skills Framework. This is useful for general practices who want to initiate their own diabetes management programmes.

Nurse-led clinics typically involve a nurse being responsible for maintaining a register of all patients in the practice with diabetes and ensuring that patient recall, monitoring and review is carried out. Many DHBs have dedicated Diabetes Nurse Specialists available to liaise with primary care teams to best meet individual practice needs as well run individual or group-based diabetes education sessions.

 For further information visit:
www.nzssd.org.nz and www.nzno.org.nz

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