Standard 5

People with diabetes should agree with their health care professionals to start, review and stop medication as appropriate to manage their cardiovascular risk, blood glucose and other health issues. They should have access to glucose monitoring devices appropriate to their needs.

Key practice points

- Medication decisions should be made jointly between health care professionals and the individual following discussion about the condition, goals and the role of medication.
- Glucose monitoring devices should be appropriate for the individual and should be made available along with education on their use and interpretation of findings.

Read this standard in conjunction with the equity and diversity section in the Introduction to the Toolkit.

What the quality statement means for each audience

Service providers ensure that people with diabetes are able to agree with their health care professional to start, review and stop medications to lower blood glucose, blood pressure and blood lipids in accordance with New Zealand guidelines. Also ensure that people with diabetes have access to appropriate blood glucose monitoring devices.

Health care professionals ensure the person with diabetes understands and agrees with them to start, review and stop medication to lower blood glucose, blood pressure and blood lipids in accordance with New Zealand guidelines. Also ensure that people with diabetes have access to appropriate blood glucose monitoring devices.

Planners and funders ensure they commission services that enable the person with diabetes to agree with their health care professional to start, review and stop blood glucose, blood pressure and blood lipid lowering medications in accordance with New Zealand guidelines. Also ensure that services facilitate access for people with diabetes to appropriate blood glucose monitoring devices.

People with diabetes agree with their health care professional to start, review and stop medications to lower blood glucose, blood pressure, and blood lipids and access appropriate blood glucose monitoring devices.

There are two components to this Standard:

- **medication management** – this component describes agreement between patient and professional regarding the need for and adherence to medication for diabetes and related conditions
- **blood glucose monitoring** – this component covers blood glucose monitoring.

Introduction

Medication management

The notion of agreement sounds simple but has a number of facets. These include: the acknowledgement and engagement of the patient as an active participant in treatment decision-making; individuals' views on taking medication and the factors that influence adherence; and their satisfaction with their treatment – all of which may impact on medication use. Agreeing to start, review and stop medication is related to patient education (see Standard 1) in that people need to understand their condition/s, the way in which medication helps, and the importance of taking it appropriately and regularly.

The Best Practice Advocacy Centre's (2012a) article about people with type 2 and poor glycaemic control notes that an individual's belief about the need for anti-diabetic medication can be influenced by factors such as fear, fatalism about the disease and family or whānau's negative experiences with treatment. It continues to say that '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, eg, 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' (p 41).

A 2008 policy brief to the World Health Organization (Coulter et al) discusses the importance of patient involvement in treatment decision-making. They state in the summary: 'One of the most common sources of patient dissatisfaction is not feeling properly informed about (and involved in) their treatment. Shared decision-making, where patients are involved as active partners with the clinician in treatment decisions, can be recommended as an effective way to tackle this problem. Clinicians and patients work together as active partners to clarify acceptable medical options and choose appropriate treatments. While not all patients want to play an active role in choosing a treatment – because of age-related and cultural differences – most want clinicians to inform them and take their preferences into account. Well-designed training courses can improve the communication skills of doctors, nurses and pharmacists. As patients become more involved, their knowledge improves, their anxiety lessens and they feel more satisfied. Patient coaching and question prompts help to empower patients to take a more active role in consultations. These prompts improve knowledge and recall and help patients feel more involved and in control of their care. Evidence-based patient decision aids facilitate the process of making informed decisions about disease management and treatment. Decision aids can improve a patient's knowledge and their level of involvement in treatment decisions. They also give patients a more accurate perception of risk and encourage appropriate use of elective procedures'.

Parchman et al (2010) studied participatory decision-making in primary care and found positive associations with medication adherence, which in turn was associated with improved HbA1c and cholesterol.

Another factor that may influence agreement between parties is the satisfaction people feel with the treatment they are receiving. Anderson et al (2009) developed the Diabetes Medication Satisfaction Tool as assessment of treatment satisfaction was seen to be important for the building of a therapeutic relationship between patient and provider and for tailoring of regimen. The 16-item tool 'performed well in assessing treatment experiences: ease and convenience, lifestyle burdens, wellbeing, and medical control' and can be found at: www.ncbi.nlm.nih.gov/pmc/articles/PMC2606829/pdf/51.pdf.

National Institute for Health and Care Excellence (NICE) (2009) defines adherence as 'the extent to which the patient's action matches the agreed recommendations' which presumes that the prescriber and patient are in agreement on the prescriber's suggestions. Poor medication adherence is common. According to the Agency for Healthcare Research and Quality's (2012), evidence report on medication adherence, studies have consistently shown that between 20% and 30% of prescriptions are never filled and that around half of chronic condition medications are not taken as prescribed. However, non-adherence should not be considered solely a patient problem but as a breakdown in the delivery system either because the patient did not fully accept the prescription when it was provided or did not receive the support required to follow through. The NICE Guidelines (2009) state the following in their introduction: 'Addressing non-adherence is not about getting patients to take more medicines per se. Rather, it starts with an exploration of patients' perspectives of medicines and the reasons why they may not want or are unable to use them. Health care professionals have a duty to help patients make informed decisions about treatment and use appropriately prescribed medicines to best effect. There are many causes of non adherence but they fall into two overlapping categories: intentional and unintentional. Unintentional non adherence occurs when the patient wants to follow the agreed treatment but is prevented from doing so by barriers that are beyond their control. Examples include poor recall or difficulties in understanding the instructions, problems with using the treatment, inability to pay for the treatment, or simply forgetting to take it. Intentional non adherence occurs when the patient decides not to follow the treatment recommendations. This is best understood in terms of the beliefs and preferences that influence the person's perceptions of the treatment and their motivation to start and continue with it. It follows that to understand adherence to treatment we need to consider the perceptual factors (for example, beliefs and preferences) that influence motivation to start and continue with treatment, as well as the practical factors that influence patients' ability to adhere to the agreed treatment'.

The World Health Organization published a report on adherence (2003) which can be found at: www.who.int/chp/knowledge/publications/adherence_report/en/. A summary can be found at: www.who.int/chp/knowledge/publications/adherence_introduction.pdf.

Key messages are as follows:

- **Poor adherence to treatment of chronic diseases is a worldwide problem of striking magnitude** – Adherence to long term therapy for chronic illnesses in developed countries averages 50%. In developing countries, the rates are even lower. It is undeniable that many patients experience difficulty in following treatment recommendations.

- **The impact of poor adherence grows as the burden of chronic disease grows worldwide** – Non-communicable diseases and mental disorders, human immunodeficiency virus/acquired immunodeficiency syndrome and tuberculosis, together represented 54% of the burden of all diseases worldwide in 2001 and will exceed 65% worldwide in 2020. The poor are disproportionately affected.

- **The consequences of poor adherence to long term therapies are poor health outcomes and increased health care cost**s – Poor adherence to long term therapies severely compromises the effectiveness of treatment making this a critical issue in population health both from the perspective of quality of life and of health economics. Interventions aimed at improving adherence would provide a significant positive return on investment through primary prevention (of risk factors) and secondary prevention of adverse health outcomes.

- **Improving adherence also enhances patients' safety** – Because most of the care needed for chronic conditions is based on patient self-management (usually requiring complex multitherapies), use of medical technology for monitoring, and changes in the patient's lifestyle, patients face several potentially life-threatening risks if not appropriately supported by the health system.

- **Adherence is an important modifier of health system effectiveness** – Health outcomes cannot be accurately assessed if they are measured predominantly by resource utilization indicators and efficacy of interventions. The population health outcomes predicted by treatment efficacy data cannot be achieved unless adherence rates are used to inform planning and project evaluation.

- **Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments** – Studies consistently find significant cost-savings and increases in the effectiveness of health interventions that are attributable to low-cost interventions for improving adherence. Without a system that addresses the determinants of adherence, advances in biomedical technology will fail to realise their potential to reduce the burden of chronic illness. Access to medications is necessary but insufficient in itself for the successful treatment of disease.

- **Health systems must evolve to meet new challenges** – In developed countries, the epidemiological shift in disease burden from acute to chronic diseases over the past 50 years has rendered acute care models of health service delivery inadequate to address the health needs of the population. In developing countries, this shift is occurring at a much faster rate.

- **Patients need to be supported, not blamed** – Despite evidence to the contrary, there continues to be a tendency to focus on patient-related factors as the causes of problems with adherence, to the relative neglect of provider and health system-related determinants. These latter factors, which make up the health care environment in which patients receive care, have a major effect on adherence.

- **Adherence is simultaneously influenced by several factors** – The ability of patients to follow treatment plans in an optimal manner is frequently compromised by more than one barrier, usually related to different aspects of the problem. These include: the social and economic factors, the health care team/system, the characteristics of the disease, disease therapies and patient-related factors. Solving the problems related to each of these factors is necessary if patients' adherence to therapies is to be improved.

- **Patient-tailored interventions are required** – There is no single intervention strategy, or package of strategies that has been shown to be effective across all patients, conditions and settings. Consequently, interventions that target adherence must be tailored to the particular illness-related demands experienced by the patient. To accomplish this, health systems and providers need to develop means of accurately assessing not only adherence, but also those factors that influence it.

- **Adherence is a dynamic process that needs to be followed up** – Improving adherence requires a continuous and dynamic process. Recent research in the behavioural sciences has revealed that the patient population can be segmented according to level-of-readiness to follow health recommendations. The lack of a match between patient readiness and the practitioner's attempts at intervention means that treatments are frequently prescribed to patients who are not ready to follow them. Health care providers should be able to assess their patient's readiness to adhere, provide advice on how to do it, and follow up the patient's progress at every contact.

- **Health professionals need to be trained in adherence** – Health providers can have a significant impact by assessing risk of non-adherence and delivering interventions to optimise adherence. To make this practice a reality, practitioners must have access to specific training in adherence management, and the systems in which they work must design and support delivery systems that respect this objective. For empowering health professionals an 'adherence counselling toolkit' adaptable to different socioeconomic settings is urgently needed. Such training needs to simultaneously address three topics: knowledge (information on adherence), thinking (the clinical decision-making process) and action (behavioural tools for health professionals).

- **Family, community and patients' organisations: a key factor for success in improving adherence** – For the effective provision of care for chronic conditions, it is necessary that the patient, the family and the community who support him or her all play an active role. Social support, (ie, informal or formal support received by patients from other members of their community), has been consistently reported as an important factor affecting health outcomes and behaviours. There is substantial evidence that peer support among patients can improve adherence to therapy while reducing the amount of time devoted by the health professionals to the care of chronic conditions.

- **A multidisciplinary approach towards adherence is needed** – A stronger commitment to a multidisciplinary approach is needed to make progress in this area. This will require coordinated action from health professionals, researchers, health planners and policy-makers.

Blood glucose monitoring

Orr-Walker (2011) suggests that blood glucose monitoring (BGM) is different from monitoring of blood pressure or lipids as it is more dynamic and an understanding of its variation can assist with achieving good glycaemic control. It is particularly useful for identifying hyper- and hypoglycaemic episodes and can help determine causes and inform management. While self-monitoring blood glucose (SMBG) is essential for people with type 1 diabetes, for type 2 it depends on treatment and the purpose of measurement.

The New Zealand Primary Care Handbook 2012 provides the following information on the benefits of self-monitoring. Benefits of self-monitoring blood glucose (SMBG) by people with type 2 include:

- assisting patients and health practitioners in adjustment of insulin or other medication
- encouraging self-empowerment
- promoting better self-management behaviours

However, self-monitoring may fail to improve diabetes control and negative psychological outcomes have been reported in some studies. See Table 30 of the NZ Primary Care Handbook for guidance on when SMBG is recommended.

Similarly, a **Best Practice Advocacy Centre (BPAC)** (2007) article provides guidance on who should be self-monitoring their blood glucose and notes that 'any component of a treatment plan that is both invasive and expensive needs to result in an improved clinical outcome. Gathering information about blood glucose levels is only useful when it can be used to improve clinical outcomes'(p 14). The article suggests that when done effectively SMBG can increase awareness and adherence, can empower and reassure. However, a continual reminder of less than optimum control can lead to uncertainty, frustration, guilt and anxiety. If the results are not being appropriately used by doctors, nurses (and patients themselves) this can lead to discouragement and a lack of motivation.

Guidelines

Medication management

NICE Guidelines on medication adherence can be accessed at:
www.nice.org.uk/guidance/CG76.

Blood glucose monitoring

The New Zealand Primary Care Handbook 2012 states that self-monitoring is recommended for insulin and for sulphonylureas, where motivated patients may benefit from routine self-monitoring of blood glucose (SMBG) to reduce risk of hypoglycaemia. While it is not generally recommended for Metformin and other oral hypoglycaemic agents, there are special occasions when SMBG might be considered for those:

- at increased risk of hypoglycaemia
- experiencing acute illness
- undergoing significant changes in pharmacotherapy or fasting (eg, during Ramadan)
- with unstable or poor glycaemic control (HbA1c >64 mmol/mol)
- who are pregnant or planning pregnancy.

The **International Diabetes Federation** (IDF 2009) guidelines on self-monitoring of blood glucose by people not using insulin are summarised as follows:

1. SMBG should be used only when people with diabetes (and/or their caregivers) and/or their health care providers have the knowledge, skills and willingness to incorporate SMBG and therapy adjustment into the care plan in order to attain agreed treatment goals.

2. SMBG should be considered at the time of diagnosis to enhance the understanding of diabetes as part of patient education and to facilitate timely treatment initiation and titration optimisation.

3. SMBG should also be considered as part of ongoing diabetes self-management education to assist better understanding of the disease and provide a means to actively and effectively participate in its control and treatment, modifying behavioural and pharmacologic interventions as needed, in consultation with the health care provider.

4. SMBG protocols (intensity, frequency) should be individualised to address each person's specific educational, behavioural, clinical and provider requirements for data on glycaemic patterns and to monitor the impact of therapeutic decision-making.

5. The purpose(s) of SMBG and using SMBG data should be agreed on by the person and the health care provider and documented, as should the actual reviews of data.

6. SMBG use requires an easy procedure for patients to monitor meter performance and accuracy.

Devices

Three devices for blood glucose monitoring are currently subsidised by PHARMAC. Information about funded and unfunded devices can be found at: www.pharmac.health.nz/assets/diabetes-blood-glucose-meters-comparison-2012.pdf.

All of the subsidised devices are produced by CareSens (CareSens II, CareSens N and CareSens N POP) and product information, videos demonstrating their use and owners' manuals (with quick guides translated into 11 languages including Māori, Samoan, Cook Island Māori, Tongan and Tokelauan) can be accessed at: www.caresens.co.nz/.

Access to glucose monitoring devices is clearly related to funding and by subsidising a limited range of meters from a single source PHARMAC has limited the available options. However, they feel that the range offered is sufficient to meet the needs of New Zealanders with diabetes. The decision about which device to use should be made collaboratively between the individual and their diabetes specialist nurse/doctor. The relative merits of each device should be considered as well as the status, needs and lifestyle of the individual.

BPAC (2013) advises that 'there is an online training module (toolkit) available for practice nurses and other health professionals, to provide education on the CareSens blood glucose meters and testing strips. This module provides 0.5 hours towards continuing professional development (CPD) requirements' (p 2). The toolkit is available from www.goodfellowlearning.org.nz/.

BPAC (2012b) provides the following summary of the meters.

CareSens II The CareSens II has a large screen and large numerals useful for vision impaired people with diabetes. It stores 250 records on the meter or records can be downloaded to the PC Care software.	
CareSens N The CareSens N is a simple, no-coding meter, which calculates and displays the 14-day average of total test results, as well as pre- and post- meal test results. This meter is ideal if people need to test frequently or require alarms to remind them to test at meal times. The meter stores 250 records which can be downloaded to the PC Care software.	
CareSens N POP The N POP meter includes more advanced functions such as LCD backlighting, plus strip expiry indicator alarm and no manual coding. The meter stores 500 records which can be downloaded to the PC Care software.	

Implementation advice

Medication management

Coulter et al (2008) conclude that encouraging patients to play an active role in their health care should address health literacy, shared decision-making and self-management. Interventions to promote these include:

- written information that supplements clinical consultations
- web sites and other electronic information sources
- personalised computer-based information and virtual support
- training for health professionals in communication skills
- coaching and question prompts for patients
- decision aids for patients
- self-management education programmes.

NICE (2009) suggestions for encouraging medication adherence require:

- a frank and open approach which recognises that non adherence may be the norm (or is at least very common) and takes a no blame approach, encouraging patients to discuss non adherence and any doubts or concerns they have about treatment
- a patient centred approach that encourages informed adherence
- identification of specific perceptual and practical barriers to adherence for each individual, both at the time of prescribing and during regular review, because perceptions, practical problems and adherence may change over time.

The **World Health Organization** (WHO 2003) concludes that the most effective interventions for enhancing adherence aim to improve self-management capabilities. Self-management programmes (see Standard 1) can improve health status and reduce health care utilisation and costs, and are critical for those with long term conditions as they must rely on effort and self-regulation to maintain behaviour. The strategies suggested to be effective include:

- self-monitoring
- goal-setting
- stimulus control
- behavioural rehearsal
- corrective feedback
- behavioural contracting
- commitment enhancement
- creating social support
- reinforcement
- relapse prevention.

Such strategies are most effective when delivered as part of multimodal programmes and tailored to the individual to include the creation of social support, reorganisation of the service delivery environment, increased accessibility of services and delivered within a collaborative treatment relationship.

Blood glucose monitoring

Information on maintaining self-monitoring of blood glucose is also provided with the suggestion that the 'frequency of blood glucose testing can be reduced once the patient is established on insulin and blood glucose levels are stable, but should still be such as to show the blood glucose profile over the course of the day'.

In addition:

- if the patient chooses to test less frequently, ask them to vary testing across different times of the day
- patients may choose to test in other patterns, (eg, four times a day on one or two days of the week)
- maintenance SMBG can be combined with checking HbA1c levels (3–6 monthly) to assess glycaemic control and the need for medication changes.

Adherence is also an issue for self-monitoring of blood glucose levels. The WHO adherence report (2003) refers to research showing that recommended monitoring of glucose levels was occurring for only 26% of children and adolescents with type 1 and 40% of adults with type 1 diabetes. Finnish and US studies found that 6–7% of adults never tested their glucose levels. Another study of adolescents found that up to 80% made significant mistakes in estimating glucose concentrations in urine, with purposeful under and over reporting also being identified.

In studies of people in the US with type 2 diabetes, it was found that 67% of participants were not following recommendations for testing, and in an Indian study only 23% were performing blood glucose monitoring at home.

 Assessment tools

Medication management

Coulter et al (2008) provide suggestions for how efforts to increase patient engagement could be assessed at a national, regional and practice level.

- **At a national level:**
  - explicit standards or targets can require care providers to demonstrate their competence in patient education and to provide evidence of patient involvement in decision-making
  - these standards might also require evidence of support for self-management and of provision of health information and decision aids in a variety of formats
  - incentive-based or competitive systems, including choice mechanisms or specific contractual requirements, can be used to motivate change among care providers
  - also, coordinated patient survey programmes have been shown to be a useful way of monitoring performance across the system, by requiring care providers to undertake systematic surveys of patients' experiences and to publish the results.

- **At a regional level:** Good practice standards developed by professional bodies can require clinicians to:
  - involve patients in treatment and management decisions
  - provide them with education and support for self-management
  - adopt strategies guided by evidence, to build health literacy
  - standards could also require clinicians to help patients navigate the system and to guide them to appropriate sources of health information and decision aids
  - patient feedback obtained by means of standardised questionnaires can be used to monitor the performance of clinicians and reward good practice
  - national bodies responsible for professional education, including the development of educational methods, curricula and assessment, should ensure that care providers comply with patient-centred standards.

- **At a practice level:** The following knowledge and skills are required:
  - an understanding of the patient's perspective
  - the ability to guide patients to sources of information on health and health care
  - the ability to educate patients about protecting their health and preventing the occurrence or recurrence of disease
  - the ability to elicit and take into account a patient's preferences
  - the ability to communicate information on risk and probability
  - the ability to share treatment decisions
  - the ability to provide support for self-care and self-management
  - the ability to work in multidisciplinary teams
  - the ability to use new technology to assist patients in becoming more engaged in their health
  - the ability to manage time effectively to make all this possible.

Process

NICE (2011) provides the following quality process measures:
www.nice.org.uk/guidance/QS6/chapter/Quality-statement-5-Medication.

(a) The proportion of people with diabetes who have received a medication review in the past 12 months.

Numerator	The number of people in the denominator receiving a review of medication in the past 12 months
Denominator	The number of people with diabetes

(b) The proportion of people with diabetes whose blood glucose, blood pressure and blood lipids are managed in accordance with New Zealand guidelines.

Numerator	The number of people in the denominator whose blood glucose, blood pressure and blood lipids are managed in accordance with New Zealand guidelines
Denominator	The number of people with diabetes

(c) The proportion of people with diabetes whose medications are not managed according to New Zealand guidelines who have medical notes documenting clinical reasons for exception.

Numerator	The number of people in the denominator who have medical notes documenting clinical reasons for exception
Denominator	The number of people with diabetes whose medications are not managed according to New Zealand guidelines

Blood glucose monitoring

- **NICE guidelines on type 2 diabetes**
  www.nice.org.uk/guidance/cg87/chapter/guidance#glucose-control-levels suggest that, with respect to glucose monitoring in people with type 2 (criterion 5), unless a patient has been enrolled in a service for less than a year, the following should be assessed at least annually:
  - self-monitoring skills
  - the quality and appropriate frequency of testing
  - the use made of the results obtained
  - the impact on quality of life
  - the continued benefit
  - the equipment used.

- The MIMS (NZ) Ltd **Everybody** health information website provides the following advice for home glucose monitoring which could be used to assess patient knowledge and technique:
  - Record your results in a diabetes diary (your meter may also store your results for reference). This will make it easier for you to see trends over time. You can also use your diary as a motivational tool. Putting a tick in your diary for the days you achieve your exercise or food goals can be very encouraging over time.
  - Prick your fingers on the side of your finger (towards the tip) rather than on the pad (or tip) of your finger. This will be more comfortable for you, especially if you use a keyboard.
  - If you drop your hand down close to the floor after pricking it then wait for a few moments, the blood will rush into your hand. When you then squeeze out the blood you will get a much larger sample. You may find that by doing this you may also be able to reduce the depth gauge on your finger-pricker, which will mean your finger prick will be less deep. This will make your testing more comfortable.
  - Make sure your hands are clean before testing. If you have been handling something sweet before testing, the residue of it on your fingers may get into your test and make it falsely high.
  - You will get a much better sized drop of blood if your hands are warm before testing.

Resources

Medication management

- **Decision aids** have been developed to assist patient and clinician with making a joint decision about treatment options. An example produced by the Mayo Clinic can be found here: http://shareddecisions.mayoclinic.org/decision-aids-for-chronic-disease/diabetes-medication-management/

- Another, addressing the decision about **insulin delivery and blood glucose monitoring** produced by AHRQ can be found here: www.effectivehealthcare.ahrq.gov/ehc/products/242/1240/glu_mon_cons_fin_to_post.pdf.

Blood glucose monitoring

- Information on self-monitoring of blood glucose, based on information provided by Diabetes New Zealand, is provided on the **Everybody health information website** here: www.everybody.co.nz/page-6427f495-fccd-439e-bdfd-21efbee65566.aspx.

- Information designed for consumers regarding CareSens meters is provided by **PHARMAC** here: www.pharmac.health.nz/assets/diabetes-new-blood-glucose-meters.pdf.

- **Diabetes New Zealand** information on self-monitoring, meters and tests strips and their use is provided here: www.diabeteshb.org.nz/sites/default/files/Final%20Information%20for%20SMBG%20Version%208%20(3).pdf.

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