

NDSS
National Diabetes Services Scheme
An Australian Government Initiative

Diabetes management in aged care

A practical handbook

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diabetes australia

The NDSS is administered by Diabetes Australia

This handbook has been written for all care staff, from carers to registered nurses. Its aim is to help care staff understand the basics of diabetes management without overwhelming them with complex information about advanced clinical care.

Diabetes Australia believes that the information contained in this training resource was accurate and reliable at the time of publication. The websites quoted in the resource were accessible at the time of publication. Diabetes Australia takes no responsibility for the accuracy or future availability of these sites.

Diabetes Australia takes no responsibility for any adverse consequences that arise as a result of using the content of the resources for clinical purposes. Trainees and other health professionals need to consider the individual circumstances and needs of people with diabetes when they are applying the skills outlined in this resource in their clinical practice information.

Introduction

Around one quarter of all people living in residential aged care facilities (RACFs) have diabetes. These people may have lived with the condition for many years and may be living with co-morbidities and diabetes-related complications. As a result, care is often complex.

Diabetes management in aged care: a practical handbook (DMAC) aims to increase knowledge and understanding of diabetes in older people for staff who support those living with diabetes in RACFs.

The DMAC has been available for a number of years, with the last revision in 2020.This latest version includes important updates, along with a range of linked resources, which will assist management and staff to support residents with diabetes.

The standard of care provided to residents in aged care settings was highlighted in the 2021 Royal Commission into Aged Care Quality and Safety.

Residents in aged care are more likely to be frail with reduced life expectancy. A significant proportion of these residents may have cognitive impairment or dementia, with reduced capacity to communicate how they are feeling. The ability of staff to recognise and respond in a timely manner for those residents with diabetes has an enormous impact on residents' quality of life.

Ensuring quality of life and resident safety, coupled with regular reviews, are key factors in diabetes management in an aged care setting and have implications for all care needs. In particular, information regarding management in the residential setting around blood glucose monitoring and healthy eating have been updated to reflect this focus. Regular resident review is crucial to ensuring care delivered enables residents to have the best quality of life.

The following package of resources supporting the DMAC handbook have been developed as a direct result of working with aged care facilities and responding to their needs.

- **Diabetes management in aged care: Fast facts for care workers** contains a summary of key information found in the DMAC handbook.
- **Diabetes quality review tool: management of residents who have diabetes** is a tool designed to assist managers in aged care assess the quality of the management and care of residents with diabetes against evidence-based practice. The tool covers admission and screening, diabetes care plan, hypoglycaemia, hyperglycaemia/sick day management, complications screening and prevention, facility and staff considerations (training/equipment).
- **Six Minute Intensive Training (SMIT) resources** on a range of topics: hypoglycaemia, hyperglycaemia, insulin, sick day management, glucose-lowering medicines, monitoring and healthy eating. These are designed to provide key information which can be delivered to staff in six minutes and reinforced in a busy environment. They can be used in a variety of settings including at handover, team meetings or as a quick refresher.
- **Sick day management quick guide**. Every resident with diabetes should have an individualised sick day management plan. This quick guide gives an overview of key steps to take when a resident is sick.
- **McKellar guidelines for managing older people with diabetes in residential and other care settings (2014)** provides detailed information regarding diabetes management in the aged care sector.

All the resources can be found at ndss.com.au/health-professionals/working-with-older-people-with-diabetes.

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This handbook contains "Fast facts" that have been developed for assistants in nursing and care workers. It also has "More details" sections for nurses or care staff wanting to learn more about a topic.

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1. What is diabetes?

Fast facts

When someone has diabetes, their body cannot maintain healthy levels of glucose in the blood. Glucose is a form of sugar which is the main source of energy for our bodies.

For your body to work properly, it needs to change glucose from food to energy. This change happens in the cells of the body. A hormone called insulin is needed for this to happen.

Insulin helps glucose move from the blood into the cells.

In people living with diabetes, the pancreas does not produce enough – or any – insulin, or the insulin that is produced does not work properly, which means the glucose stays in the blood and makes their blood glucose levels high.

There are three main types of diabetes:

- type 1 diabetes
- type 2 diabetes
- gestational (pregnancy) diabetes.

When someone has diabetes, their body cannot maintain healthy levels of glucose in the blood.

Diabetes myths

There are many myths about diabetes which are not true and can leave people feeling confused. Here are the facts behind some common myths.

'People with diabetes cannot eat sugar'
– not true
Given diabetes is a condition where blood glucose levels are too high, many people think they need to avoid sugars and foods containing sugar. However, if eaten as part of a healthy meal plan – and combined with regular exercise – sugar can be eaten by people with diabetes in small amounts. This is the recommendation for all Australians, not just those with diabetes.

'Diabetes is not serious'
– not true
There is no such thing as 'mild' diabetes. All types of diabetes are serious and can lead to complications if not well managed. Diabetes can affect quality of life and can reduce life expectancy.

'All types of diabetes are the same'
– not true
The main types of diabetes are type 1, type 2 and gestational diabetes. There are also other forms of diabetes, but they are less common.

Each type of diabetes has different causes and is managed in different ways. However, once someone has diabetes, they will need to manage it every day. All types of diabetes are complex and serious.

'Diabetes can be prevented in all cases'
– not true
Not all types of diabetes can be prevented. Type 1 is an autoimmune condition; there is no cure and no consistent preventative strategy. No one knows exactly what causes type 1 diabetes, or how to prevent it. But research is ongoing to try and find a cure.

There is no single cause of type 2 diabetes, but there are risk factors. The risk of developing diabetes is affected by some things which cannot change, such as family history, age and ethnic background. However, it is estimated up to 58% of type 2 diabetes can be prevented or delayed by modifying lifestyle factors such as exercise and diet.

'You have to be overweight or obese to develop diabetes'
– not true

Being overweight or obese is one risk factor for type 2 diabetes, but it is not a direct cause. Some people who are overweight will not develop type 2 diabetes while others who are a healthy weight will develop type 2 diabetes.

Type 1 diabetes is not caused by being overweight.

'You only get type 1 diabetes when you're young'
– not true

Type 1 diabetes can occur at any age. It often occurs in children and young adults, but older people can also develop type 1 diabetes.

'You only get type 2 diabetes when you're old'
– not true

Type 2 diabetes usually develops in adults over the age of 45 years, but it is becoming more common in younger age groups, including children, adolescents and young adults.

'People with diabetes should eat a diabetic diet'
– not true

There is no such thing as a 'diabetic diet'. People with diabetes do not need a special diet, or things like artificially sweetened, low-joule, diet or sugar-free jams, chocolates or treats. They should aim to eat a healthy diet, the same as everybody else.

'Only people with type 1 diabetes need insulin'
– not true

It is true people with type 1 diabetes need to take insulin every day of their lives. But some people with type 2 diabetes also need to take insulin every day.

How type 2 diabetes is managed may change the longer someone has had it. People may need to use more or different types of medicines. Half of people with type 2 diabetes will need insulin six to ten years after being diagnosed.

Type 2 diabetes does not become type 1 diabetes when a person starts taking insulin.

'People who have diabetes-related complications have not looked after themselves properly'
– not true

Diabetes can affect the normal function of the heart, brain, kidneys, eyes and feet, and it can also cause digestive problems or problems with sexual function. Having regular checks can help reduce the risk of diabetes-related complications.

While high blood glucose levels can increase the risk of diabetes-related complications, there are other factors which also also increase the risk of complications, some of which are still unknown.

People should not be blamed if they have complications.

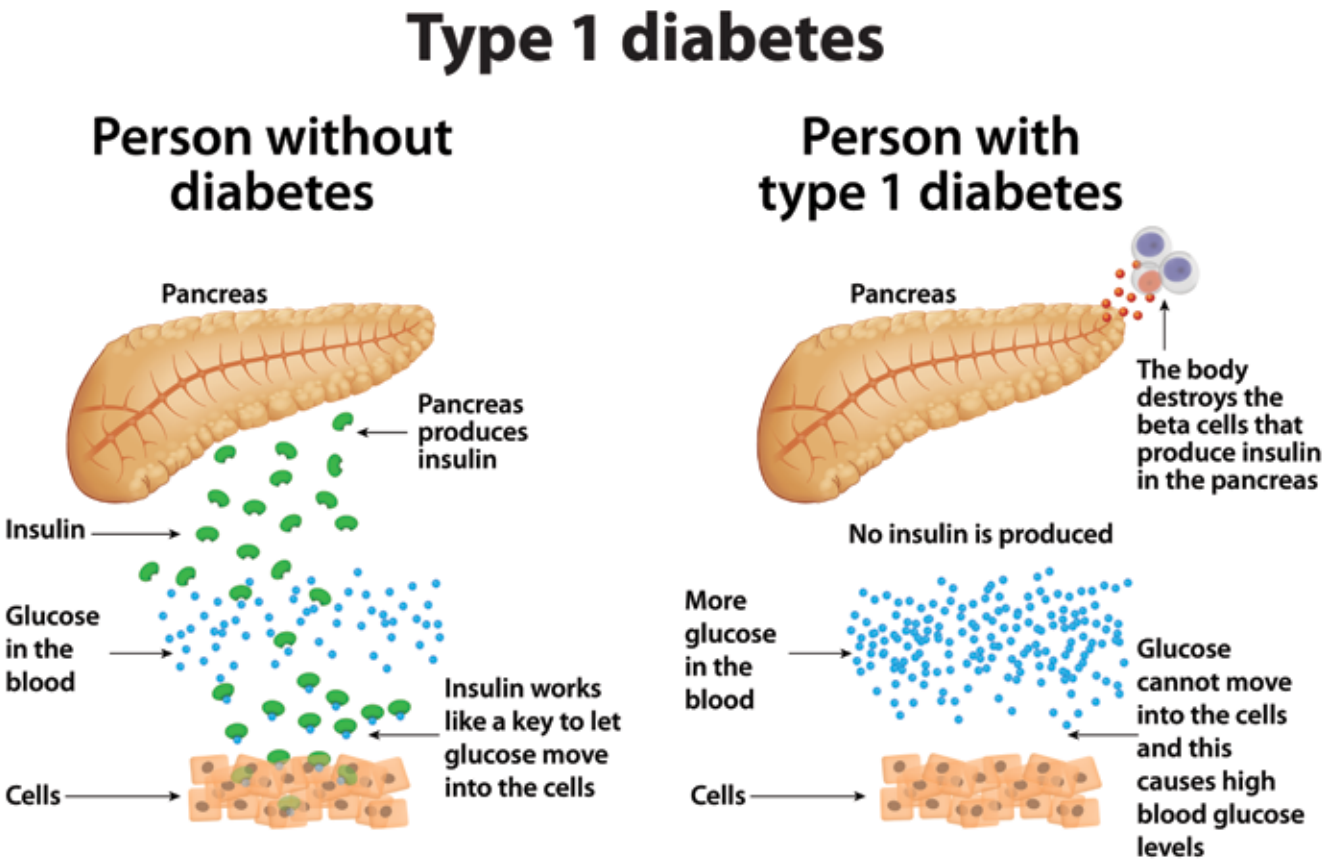


2. Type 1 diabetes

Fast facts

Type 1 diabetes:

- is an autoimmune condition where the body destroys the cells which produce insulin in the pancreas – the beta cells
- is a less common form of diabetes – only 10–15% of people with diabetes have this type of diabetes
- often occurs in people under 30 years of age, but it can occur at any age, including in older people
- requires the person to take lifelong insulin using an insulin pen device or by using an insulin pump.



In type 1 diabetes, the pancreas stops making insulin.

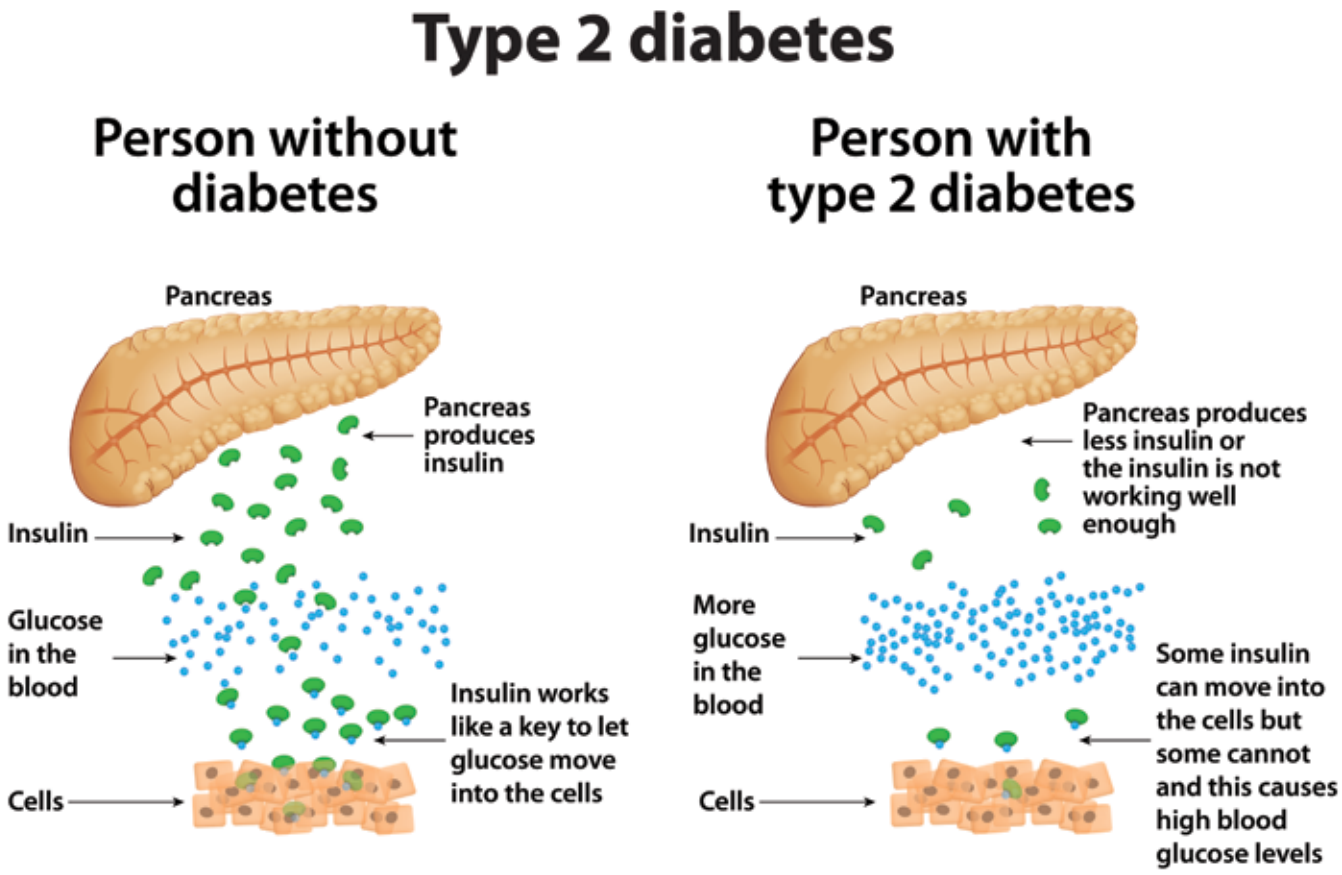


3. Type 2 diabetes

Fast facts

Type 2 diabetes:

- is a complex condition where the pancreas is not producing enough insulin, or the insulin is not working as well as it should
- is the most common form of diabetes – it affects 85–90% of all people with diabetes
- usually occurs in adults but may occur in younger people
- occurs in 25% of people over the age of 65
- means most people who are diagnosed will eventually need glucose-lowering medicines to manage their diabetes, and a quarter will need insulin.



In type 2 diabetes, the pancreas makes some insulin but it is not working as well as it used to.

More details

Type 2 diabetes usually occurs in adults, but it may occur in the early teens or even children. There is a strong hereditary link in type 2 diabetes, which means people with a family history of type 2 diabetes are more at risk of developing it.

Unlike type 1 diabetes, lifestyle factors also increase the risk of type 2 diabetes. Risk factors include poor quality diet, inactivity and obesity. Another major risk factor is ageing. As the body ages, organs and cells do not work as well as they used to. This includes making insulin.

As a result, the pancreas needs to make more insulin than usual to maintain normal blood glucose levels. If the body does not use insulin effectively, or does not produce enough insulin, blood glucose levels will rise.

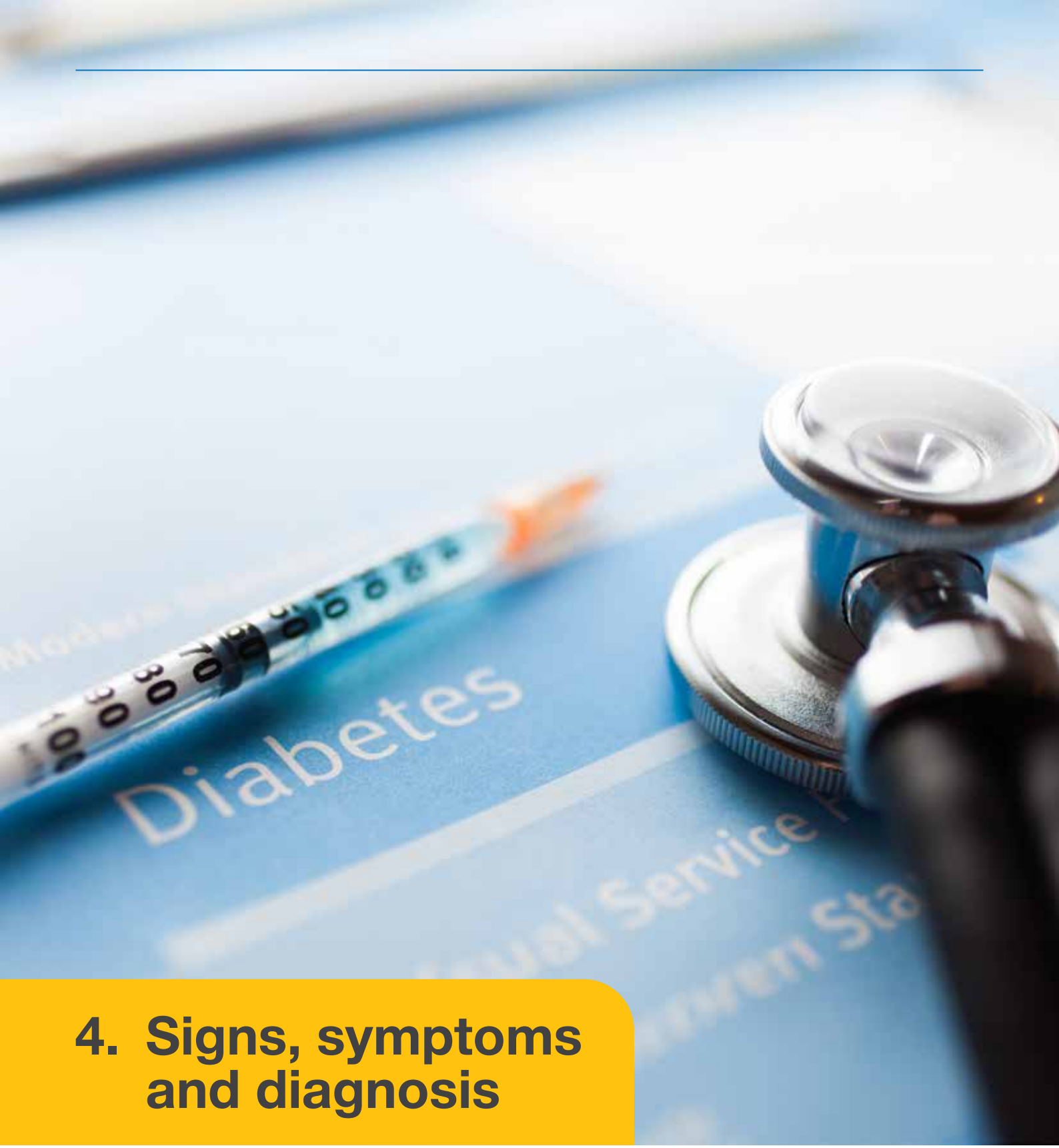
In type 2 diabetes, many cells (especially muscle cells) are resistant to insulin. This means there is not enough glucose being transported from the bloodstream and into muscle and liver cells to keep blood glucose levels (BGLs) within the normal range.

Type 2 diabetes also affects blood lipid (fat) levels. Diabetes tends to lower 'good' cholesterol and raise 'bad' cholesterol levels and triglycerides. This increases the risk of heart disease and stroke.

As type 2 diabetes progresses, the pancreas produces less insulin, and blood glucose levels become more difficult to manage. Most people with type 2 diabetes will need glucose-lowering medicines to manage their diabetes at some point. One quarter of all people with type 2 diabetes use insulin.

If someone with type 2 diabetes needs insulin, this does not mean they have type 1 diabetes. It means they have progressed to needing insulin to manage their type 2 diabetes (they are insulin-requiring, not insulin-dependent).

Most people with type 2 diabetes will need glucose-lowering medicines to manage their diabetes at some point, and a quarter of all people with type 2 diabetes are on insulin.



4. Signs, symptoms and diagnosis

Fast facts

Both type 1 and type 2 diabetes can occur at any age.

The signs and symptoms of diabetes in older people may not be as obvious as in younger people. Older people with cognitive decline are also less able to report signs and symptoms. As a result, diabetes can be mistaken for other causes – including 'getting old' – which can delay the diagnosis.

Signs and symptoms in residents which indicate diabetes are shown below.



Feeling very thirsty



Blurry vision



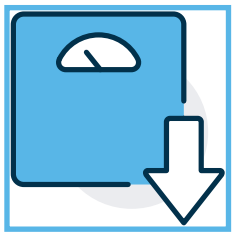
Extreme tiredness



Slow wound-healing



Cognitive changes or confusion



Unexplained weight loss



Frequent urination, incontinence or UTIs



Changes in mood and irritability

More details

Residents who have diabetes symptoms should be screened for diabetes by measuring plasma glucose, as recommended for the general population.

Symptoms are often not specific to diabetes and are often thought to be due to 'old age'. This means that diabetes is often only diagnosed when an older person has a routine health check or is hospitalised for an illness (which can often be a complication of their diabetes). In some cases, their diabetes is not found until they have an acute diabetes-related complication.

It is important to understand what diabetes looks like and the different clinical features of diabetes. As residents can experience unusual symptoms it is essential to undertake regular risk assessments and screening for type 2 diabetes in high-risk individuals.

Symptoms of diabetes can often be mistaken for 'old age'.

Screening is required to identify diabetes where asymptomatic diabetes would impact a resident's individual care goals.

Residents who show symptoms or signs of diabetes must be referred promptly to their doctor for medical assessment and appropriate management.

Recommended screening frequency rates are as follows:

- every three years in older people with a low risk of diabetes; consider more frequently for residents in aged care
- every year for those at high risk (that is, people with impaired glucose tolerance or impaired fasting glucose, or with new signs or symptoms of hyperglycaemia)

On admission to residential aged care consider the following:

- older people who require admission to residential aged care are at higher risk of undetected diabetes due to their frailty
- residents may not be sensitive to hyperglycaemia or be unable to report symptoms to staff.

Diabetes can be screened for and diagnosed using one of four tests:

- glycated haemoglobin (HbA1c) ≥ 6.5% (48mmol/mol)
- fasting plasma glucose ≥7.0 mmol/L
- random plasma glucose ≥11.1 mmol/L in the presence of diabetes symptoms
- oral glucose tolerance test (OGTT) - fasting plasma glucose ≥7.0mmol/L or 2hr level ≥11.1.

A fasting blood glucose test, random blood glucose test, HbA1c or an OGTT or a combination of these, as determined by the doctor, may be required to diagnose diabetes.

If a fasting blood glucose test or an OGTT is required, the person will need to fast. This means:

- no food or drink for at least eight hours
- the person can have water.

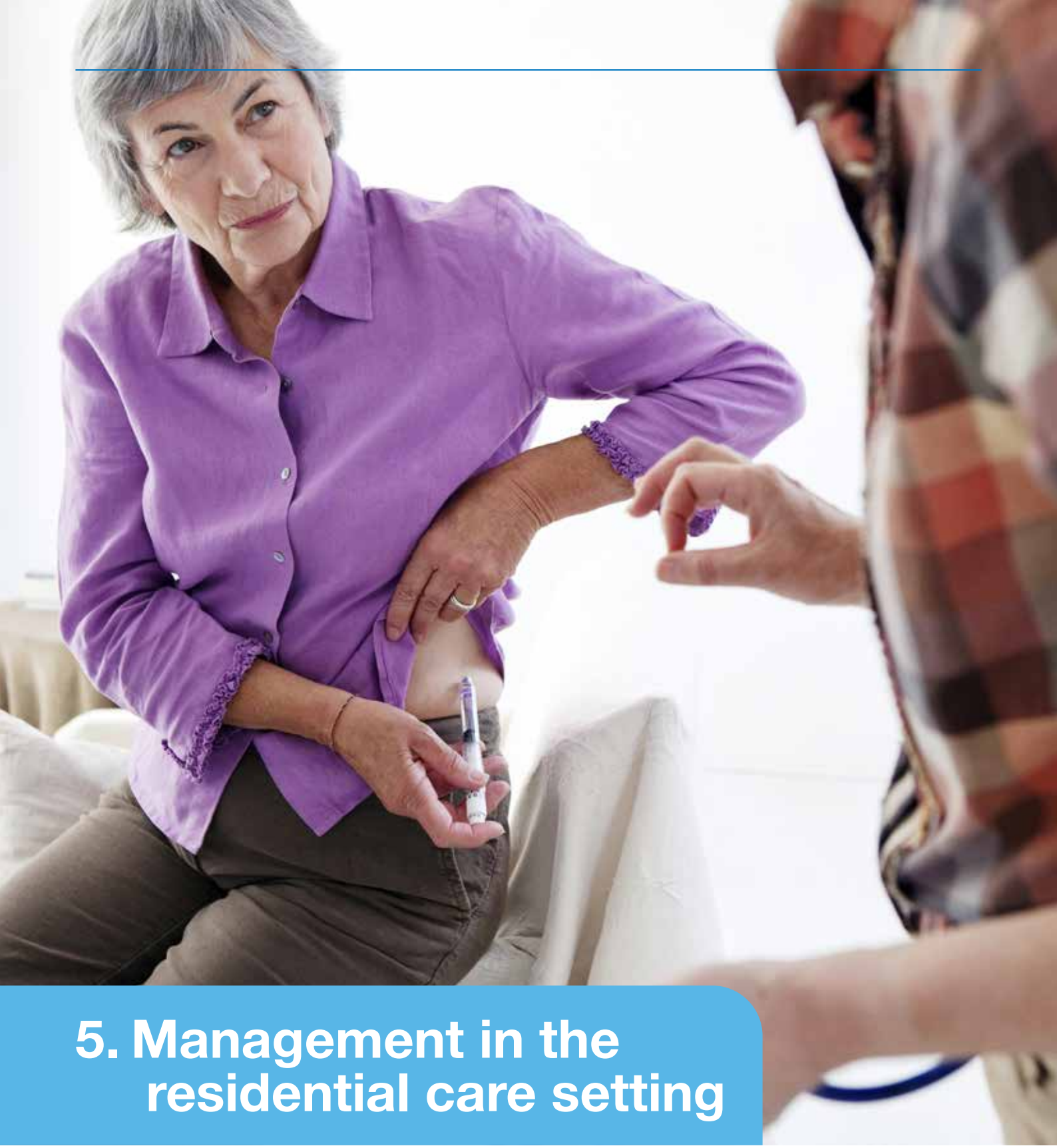
An OGTT involves the person drinking a special fluid that has a high amount of glucose in it. The person also has a blood test prior to and two hours after having this drink.

Any fasting test means the resident to be 'nil by mouth' (this means no food or drink except water) for at least eight hours. The OGTT takes at least two hours to perform (after eight hours of fasting). There is no need to fast for an HbA1c.

The treating doctor will consider the best diagnostic test for the resident. An OGTT may not be practical and too onerous for residents in aged care. An HbA1c assay will not pick up a recent diagnosis, as it is a measure of average blood glucose over a 3-month period. Also, an HbA1c may not be accurate if the resident has:

- chronic renal failure
- chronic liver disease
- iron deficiency or vitamin B12 anaemia
- any disorder of decreased erythropoiesis (ability to make blood cells)
- rheumatoid arthritis
- been on long-term aspirin
- had blood loss or transfusion.

A plasma glucose test, HbA1c or an oral glucose tolerance test (OGTT) or a combination of these, as determined by the doctor, may be required to diagnose diabetes.



5. Management in the residential care setting

Fast facts

> For older people living in residential aged care, helping them maintain the best quality of life should be the main aim of diabetes management.

Monitoring blood glucose levels is one way to do this, but it is just part of an overall management plan. Diabetes care requires a balance between healthy eating, physical activity and medicines, such as tablets and/or insulin. Stress, illness and other co-morbidities can also affect a resident's diabetes.

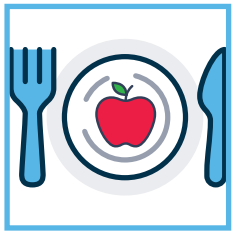
Things that can affect a person's diabetes:



Medicine



Insulin



Food



Exercise



Stress



Illness



Other co-morbidities

More details

Management aims for older people with diabetes living in aged care are different to those who do not live in aged care. This is because many residents in aged care are frail with reduced life expectancy. Many have cognitive impairment or dementia and cannot communicate how they are feeling.

The management aims are to:

- maintain the resident's quality of life
- focus on avoiding low or high blood glucose levels which cause dangerous or uncomfortable symptoms
- help residents to participate and manage components of their care.

Tailor diabetes management targets for each resident as these will vary from person to person. They need to be personalised according to their mental and physical state, medical conditions and life expectancy.

Diabetes management approaches depend on a range of factors including:

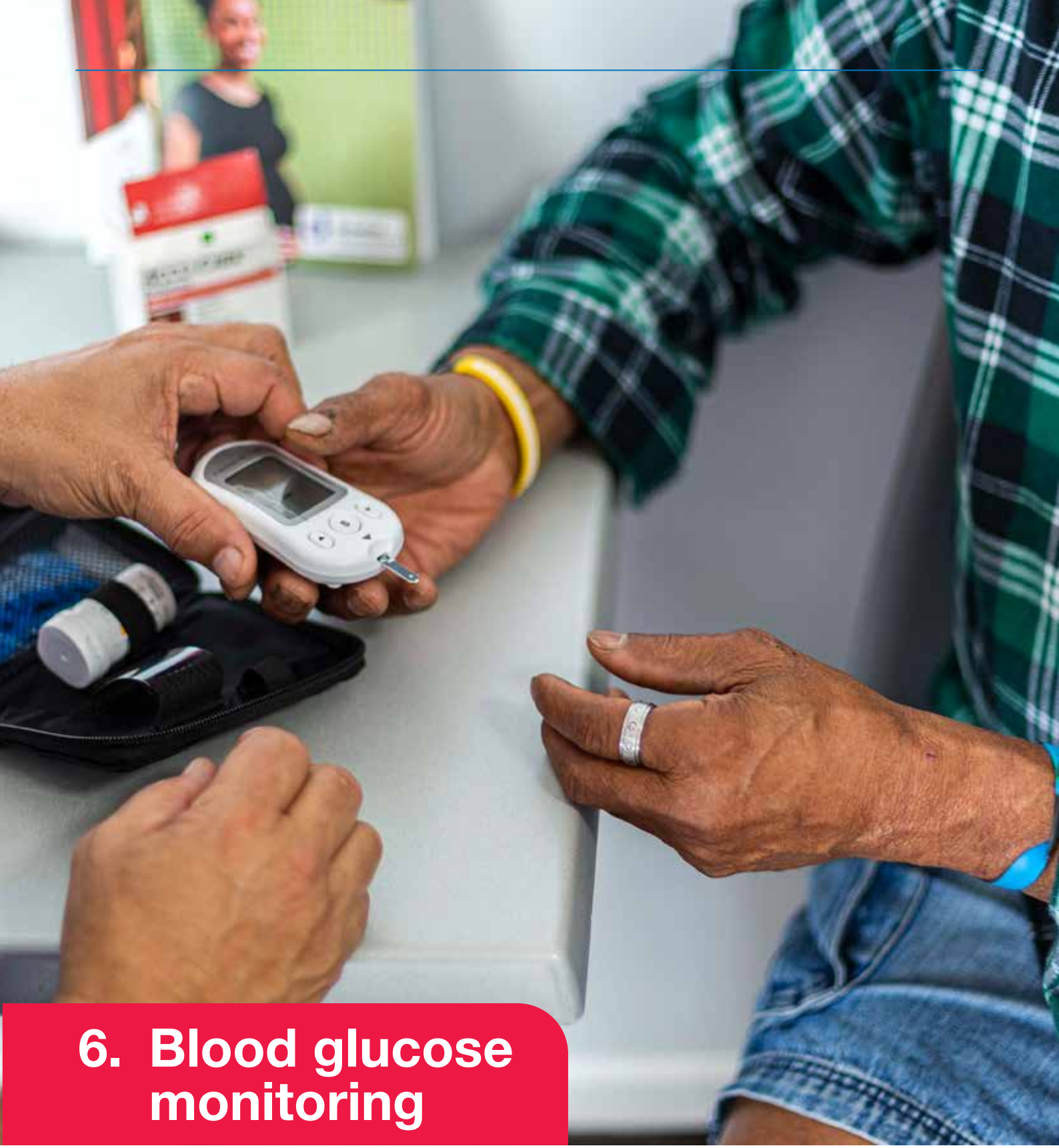
- the person's level of activity and health
- whether they have co-morbidities (other medical conditions)
- whether they have diabetes complications
- their unique circumstances (e.g. frailty, dependency in performing activities of daily living, life expectancy).

Diabetes management needs to be tailored to the resident's needs through discussion between the doctor, the resident and/or their family. This information needs to be reviewed regularly and changes documented in order to ensure resident safety and quality of life.

Actions

The resident's diabetes management needs to be clearly defined including:

- individualised management targets for each resident
- continuing the resident's normal or pre-care setting routine whenever possible
- if the resident is self-managing their diabetes, such as blood glucose monitoring and injecting insulin, they need to be regularly reviewed by the medical team to make sure that it is still appropriate and safe
- access to diabetes education for the resident and their family
- access to regular diabetes education and training for all staff
- providing nutritious and tasty meals which suit the resident's food preferences, culture, and eating and swallowing ability.



6. Blood glucose monitoring

Fast facts

One aim of diabetes treatment is to keep blood glucose levels (BGLs) within a specified range. This helps to avoid low BGLs (hypoglycaemia) and high BGLs (hyperglycaemia).

Target BGLs should be set for each individual and reviewed regularly by their health care team. This is especially important in an aged care setting because an individual's recommended target BGL range can change over time, as they age or as other health needs change.

The frequency and timing of blood glucose monitoring should be tailored to each person. Some may not require any monitoring, some twice a day and others more often. The frequency and timing may change over time or during certain periods such as during an illness.

The most common way to check BGLs is by using a blood glucose meter. To use the meter, place a monitoring strip in the meter and add a small drop of blood from a finger-prick onto the monitoring strip. The meter then reads the strip, and a number comes up on the screen. This number is the BGL.

Some residents may be able to check their own BGLs and independence should be encouraged; others may need assistance from staff. Staff performing blood glucose monitoring should be trained in how to do this and respond to readings recorded. If BGLs fall outside the recommended range, reporting this to a supervisor or registered nurse is important.

It is important to record the BGL in the appropriate chart, along with any actions resulting from the readings.

To provide a long-term pattern of blood glucose management, an individual will have a blood test that indicates the average BGL over the past two to three months. The treating doctor arranges a test called a glycated haemoglobin (HbA1c or A1c).

Some people who have type 2 diabetes may not need regular blood glucose checks, and the HbA1c test may be used to monitor their diabetes. This includes people who manage their type 2 diabetes through a healthy eating plan and physical activity alone, or take oral medicines which do not increase the risk of a low BGL (such as metformin).

More details

Blood glucose monitoring is an important part of diabetes management. It refers to monitoring and interpreting results, reviewing patterns of blood glucose levels, and taking action to manage them.

Blood glucose monitoring should meet each resident's health care needs and diabetes management goals.

While many residents may be able to monitor their own BGLs and manage their diabetes effectively, others may need support or help from staff. But before staff can provide this help, they will need training to perform structured, relevant blood glucose monitoring, with reviews on a regular basis.

BGL essentials

When performing blood glucose monitoring, it is important that staff:

- understand and interpret the BGLs and emerging patterns
- identify actions to take in relation to specific levels
- recognise when to report and/or seek medical review
- understand that target blood glucose levels will be different for each resident.

Each agency or RACF should have well-defined policies and procedures, such as:

- a training program for staff performing blood glucose measurements
- quality improvement procedures
- regular maintenance of equipment (including appropriate and safe storage of blood glucose meters and test strips)
- external quality assurance of meters (some blood glucose meter companies offer this service).

Blood glucose monitoring should be tailored to each resident's health care needs and diabetes management.

Management aims

Achieving near-normal BGLs, and preventing long-term complications, may not be the priority management aims in residents who are not healthy and active. The priority in this instance is to minimise uncomfortable symptoms, the risk of hypoglycaemia (low BGLs), falls and maintain quality of life.

Older people with diabetes have increased risk of experiencing hypoglycaemia compared with those who are young and fit. This may be partly due to co-existing medical problems such as malnutrition, kidney failure or dementia. Older people may have more difficulty recognising or being able to report when their blood glucose is falling. The main risk of hypoglycaemia is in those who take blood glucose-lowering medicines. Some medicines carry a higher risk of hypoglycaemia than others – for example, insulin and sulphonylureas. People who manage their diabetes with only diet and lifestyle and no medicines do not experience hypoglycaemia.

For further information about types of medicines, refer to "10. Glucose-lowering medicines" on page 42.

Target blood glucose levels

In order to prioritise minimising the risk of hypoglycaemia (low BGL) while avoiding symptoms of hyperglycaemia (high BGL), specific targets have been set for older people in aged care.

The *McKellar Guidelines for Managing Older People in Residential and Other Care Settings* is a set of guidelines for nursing and medical staff in Australia that were developed in 2014.

The McKellar guidelines indicate that individuals will vary, but the recommended blood glucose target range for most older people in residential aged care is 6–15 mmol/L. This range is different to other diabetes guidelines. But these guidelines aim to improve the quality of life of residents while reducing the risk of falls and other serious consequences of hypoglycaemia. This means that:

- hypoglycaemia is generally regarded as a BGL less than 6 mmol/L, especially in frail older people
- hyperglycaemia is a BGL greater than 15 mmol/L, especially if it is consistently above 15 mmol/L.

The following targets have been proposed before and after meals for older people – but individuals should have targets tailored to their needs and circumstances.

Before meals	2 hours after meals
6–8 mmol/L	**Up to 15 mmol/L**

Causes of variations in BGLs

BGLs can fluctuate for a number of reasons:

- meal availability and quality which can affect how much of the meal is eaten (especially of carbohydrate foods)
- a missed dose or overdose of blood glucose-lowering medicine
- changes to blood glucose-lowering medicines
- anything that results in a decrease or increase in food intake including change in appetite, food quality or dining experience
- an increase or decrease in physical activity
- emotional stress
- illness, infection and/or pain
- medicines (such as prednisolone) used to treat other health conditions
- alcohol intake, particularly on an empty stomach
- illicit drug use.

False readings may also occur if:

- a the BGL measurement technique is incorrect
- there is a problem with the blood glucose meter or strips
- hands are not washed prior to taking BGL (do not use alcohol swabs).



The frequency and timing of blood glucose monitoring should be tailored to each individual.

Guidelines on blood glucose monitoring

The frequency and timing of blood glucose monitoring should be tailored to each resident. It should also depend on recommendations made by the health professional in consultation with the resident and their family or carers. How often BGLs are monitored will depend on the resident's current health, diabetes, other health conditions, blood glucose targets, current medicines, quality of life and life expectancy.

Blood glucose monitoring should be increased when the resident is experiencing:

- ill health or stress
- changes in routine (for example, when first admitted to aged care)
- changes in eating habits
- changes to their medicines, particularly insulin and sulphonylureas or the commencement of medicines known to increase BGLs (for example, glucocorticoids such as prednisolone and dexamethasone, some antipsychotics)
- changes in levels of physical activity
- symptoms of hypoglycaemia
- symptoms of hyperglycaemia
- night sweats, morning headaches, nightmares, or unexplained higher than normal fasting blood glucose, which can be indications of nocturnal hypoglycaemia (low BGL at night).

Blood glucose measurement: type 2 diabetes

There are two common ways in which BGLs are measured. The first is BGL monitoring which shows the BGL at that exact time. The second is checking HbA1c (glycated haemoglobin), which shows a longer term (i.e. average over three months) measure of BGLs. The results of a BGL check are reported in different units to the results of a HbA1c. Therefore, the targets for these are also different.

Which method is used and how often it is done will vary from person to person. These decisions will be influenced by factors such as the type of diabetes they have, the way their diabetes is managed and the purpose of monitoring.

BGL monitoring is very individualised. Someone managing their diabetes with lifestyle modification alone or low intensity medicines such as metformin alone, may not check BGLs at all, or only do it rarely if they feel unwell.

In contrast, people using more intensive treatments, especially those that are more likely to cause hypos (for example, sulphonylurea, insulin) or require dose adjustment on a day-to-day basis according to BGLs (e.g. short-acting insulins) may check BGLs several times a day.

Most people with diabetes will have their Hb1Ac checked once or twice a year. While HbA1c is a very useful measure, some medical conditions or procedures affecting the blood (e.g. anaemia or transfusion) may influence the HbA1c result and this needs to be considered by medical staff.

Initially, and when there is a change in management, or BGLs have not been stable, BGLs should be measured three to six times per day, that is:

- before meals
- two hours after meals (breakfast, lunch and dinner)
- occasionally overnight (between 2.00am and 3.00am).

When BGLs are stable and in the desired range:

- talk to the resident's doctor, diabetes educator or nurse practitioner about whether blood glucose monitoring is needed
- personalise blood glucose monitoring so it benefits the resident.

If blood glucose monitoring is appropriate, it would be usual to:

- test BGLs once or twice a day, either before meals or two hours after meals (this will depend on the resident's usual blood glucose management and whether there is a need for specific monitoring)
- consider changing the time of testing so that, over a week or so, all pre-meal and two-hour post mealtimes have been checked at least once, and a pattern may be revealed
- occasionally test between 2.00am and 3.00am (if nocturnal hypoglycaemia is suspected).

Blood glucose measurement: type 1 diabetes

Initially, or when stabilising BGLs, take readings at least three to six times a day, that is, at least:

- before breakfast (fasting)
- before lunch
- before dinner
- at bedtime
- occasionally measure overnight between 2.00am and 3.00am to check for nocturnal hypoglycaemia
- occasionally measure two hours after starting a meal to assess after-meal BGLs and whether the dose of insulin needs to be changed.

Residents with type 1 diabetes may need to continue to monitor their BGLs three to six times a day, as their insulin is often adjusted according to their readings.

It is not useful or effective to measure just once or twice a day at the same time (e.g. before breakfast and before dinner) because this does not provide important information about variations during the day.



How to measure blood glucose levels

Blood glucose meters are designed to be easy and simple to use. However, each type of meter varies slightly in technique, so you need to be familiar with different meters used by residents. You should be trained in the use of different types of meters, and your competency should be checked regularly.

Steps to follow when using a blood glucose meter:

- follow the manual instructions
- wear disposable gloves
- check measurement strips have not expired
- re-code the meter with each new box of strips if needed. (Note: very few modern meters need to be re-coded)
- select a single-use, disposable lancet (finger pricker) set to the best depth for each person
- ensure the resident's hands are clean and dry before pricking their finger. Cleaning can be done with water and soap – DO NOT use alcohol wipes
- use the side of their fingertip, towards the top but away from the nail bed, as the preferred site for obtaining a drop of blood as shown below
- place a drop of blood on a strip, as directed in the manual, and wait for the result to appear
- if an error message appears, check the manual to find the fault – then correct the fault and repeat the procedure
- when the correct BGL appears, record the number and the time of measurement
- dispose of the sharps in a sharp's container.

People with type 1 diabetes may need to continue to monitor their BGLs three to six times a day, as their insulin is often adjusted according to their readings.

NOTE: Some blood glucose meters allow for monitoring from a different site, such as the forearm or the thigh. While this is not recommended, it may be indicated for some residents due to health problems that might make finger pricking difficult e.g. oedema following mastectomy. The use of an alternative site should be discussed with the resident's health care team.



Tips: BGL charts

- All blood glucose measurements should be recorded in the appropriate chart, along with any actions resulting from the readings.
- The chart should be able to show any patterns that become clear from the readings.
- There should be space on the chart to record actions taken due to the blood glucose reading and depending on the resident's target range.
- The chart needs to be relevant, easy to read and developed in consultation with all staff who may be using it, including the doctor and diabetes educator.

Some blood glucose meters provide a data download function, allowing a graph or printout to be obtained directly from the person's blood glucose meter as well as being recorded in their blood glucose diary or chart. There should also be a record of any actions taken as a result of the readings.

Actions

- Residents and staff of RACFs must be educated in all aspects of blood glucose monitoring, and the different care levels needed for each resident.
- All RACFs must have protocols for sharps disposal management and bodily fluid precautions.
- Regular blood glucose meter quality control checks must be performed and recorded to ensure the meter's accuracy.
- All residents with diabetes should register with the National Diabetes Services Scheme (NDSS). If eligible they can purchase subsidised blood glucose monitoring strips. See page 102 for more information.
- Contact NDSS to find out where to access meter testing control solutions and other blood glucose monitor supplies.

New technology for glucose self-monitoring

Finger prick checks only reveal blood glucose at a single point in time. New technology allows glucose levels to be monitored continuously throughout the day or night. This is called continuous glucose monitoring (CGM) or flash glucose monitoring (flash-GM).

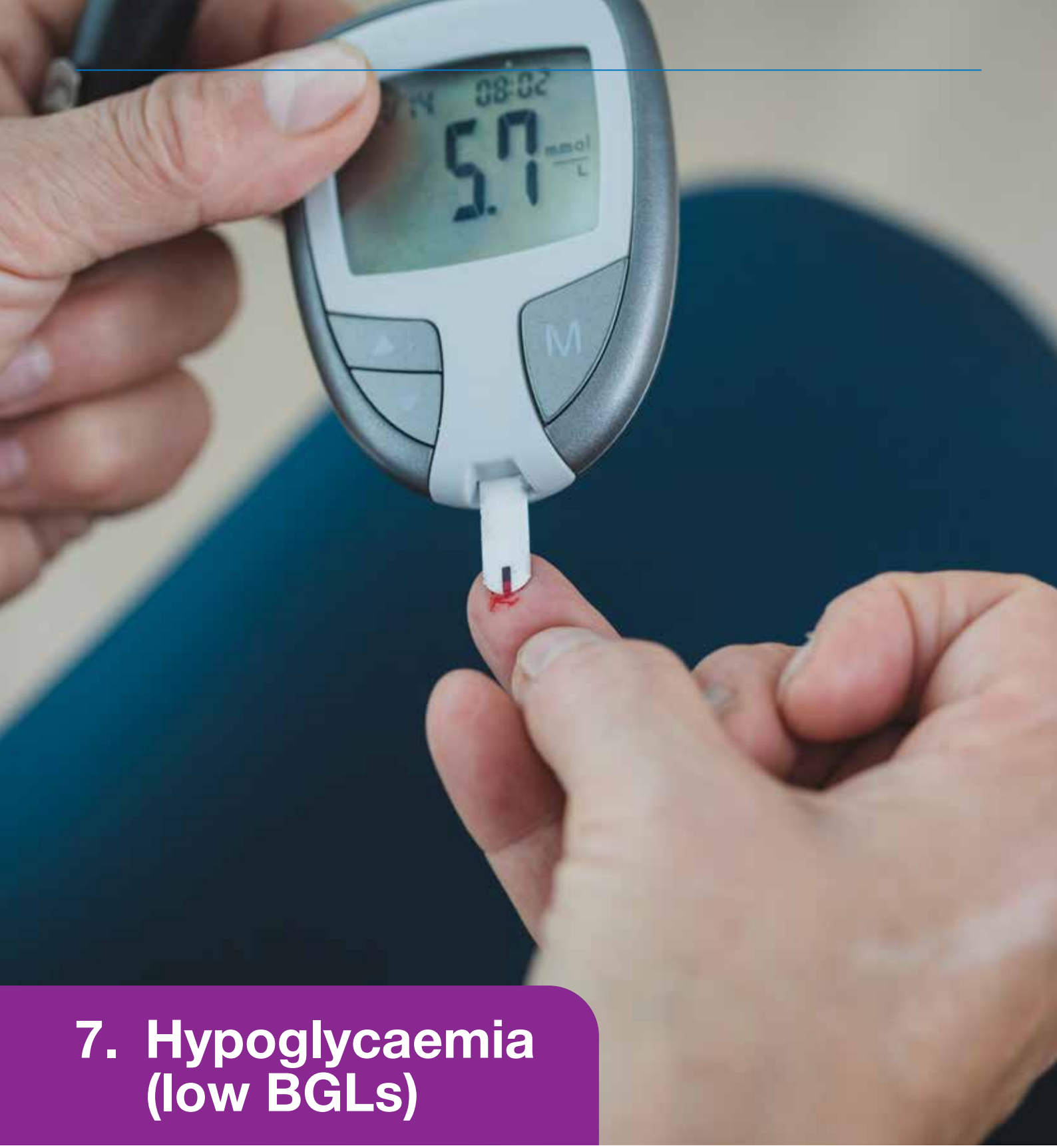
Continuous glucose monitoring

A CGM is a small wearable device that measures glucose levels throughout the day and night. A sensor is inserted and worn on the abdomen or arm. The readings can be sent via Bluetooth from the sensor via a transmitter to a device (like a phone, tablet or receiver) or to an insulin pump. The device can alert when glucose levels are too low or too high. CGM devices also display trend arrows to show a glucose level is rising, falling or steady.

A Flash GM device is like a CGM device, except that you can also scan the sensor with a reader or smart phone to get a reading.

Continuous glucose monitoring and flash glucose monitoring devices measure glucose differently from blood glucose meters.

- There can be differences between devices and blood glucose meters. Always confirm a low or high sensor glucose reading with a blood glucose finger prick check.
- These devices are not routinely recommended for people who do not require insulin or who are not at risk of hypoglycaemia.
- All people with type 1 diabetes are eligible for access to subsidised CGM and flash-GM products through the NDSS, as well as some people with other rare conditions that are similar to type 1 diabetes. People who have valid concessional status are eligible for a full subsidy (no co-payment required).



7. Hypoglycaemia (low BGLs)

Fast facts

Hypoglycaemia (often known as a 'hypo') means a low BGL. Hypoglycaemia is dangerous, and can be fatal in older people.

It can occur in people who inject insulin or take certain diabetes medicines, and it can happen quickly. It does not occur in people who manage diabetes through a healthy eating plan without using medicines. Causes can include:

- too much insulin or diabetes medicine
- reduction in other medicines such as prednisolone or dexamethasone without adjusting the glucose-lowering treatment at the same time
- a delayed or missed meal
- eating only part of a meal and skipping the carbohydrates such as the potatoes, rice, bread or fruit
- planned or unplanned exercise
- drinking alcohol.

Actions

- A hypo needs to be treated immediately even if there are no obvious symptoms. If it is not treated quickly, the resident's BGL will continue to fall and they may experience:
  - confusion
  - loss of consciousness/seizures
  - in extreme cases, coma and death.
- DO NOT leave the resident alone.
- If you are not trained in how to treat a hypo, call for a supervisor immediately.
- For more information about hypos, read the next section.

Signs and symptoms of hypo that people may experience include:



- sudden dizziness or weakness, particularly in the legs ('jelly legs'), which may present as stroke-like symptoms



- hunger
- tingling around the mouth and face



- sweating (usually a cold sweat)



- tachycardia (an abnormally fast heart rate) or palpitations



- feelings of anxiety or unspecified fear



- poor concentration



- drowsiness.

More details

Hypoglycaemia can have catastrophic results in older people which can:

- bring on major cardiovascular events (such as a heart attack and stroke-like symptoms, or even sudden death)
- increase the risk of falls (and fractures)
- lead to hypothermia (if episodes are prolonged in cold weather)
- reduce quality of life
- compromise comfort
- affect cognitive function (including short-term memory).

Hypoglycaemia most often occurs in people on insulin therapy or certain glucose-lowering medicines that can cause hypos (such as sulphonylureas). Generally, people whose diabetes is only controlled by diet and medicines such as metformin or DPP-4 inhibitors have a very low risk of having a hypo.

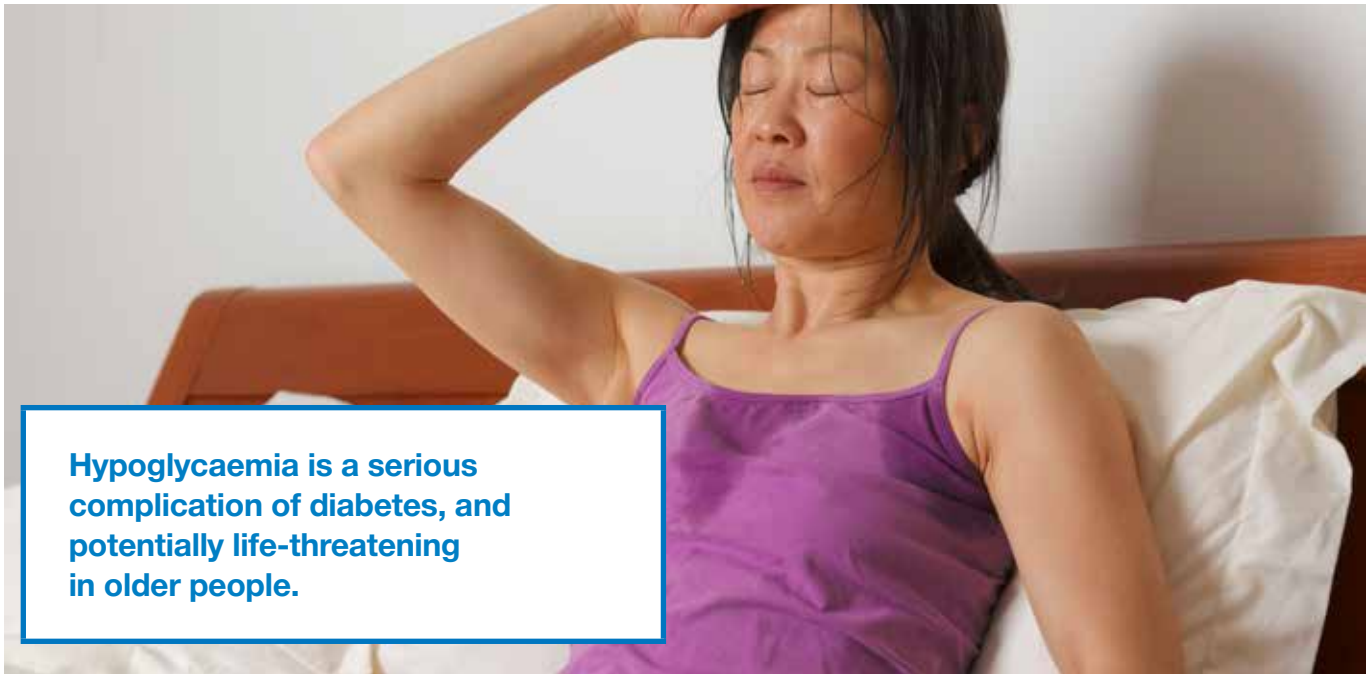
For more information, see **"10. Glucose-lowering medicines" on page 42**.

Hypoglycaemia is defined as a BGL that is:

- below the person's target range
- low enough to cause symptoms.

The target BGL range should be aimed at preventing hypos, which are often defined as less than 6.0 mmol/L – especially in frail older people on insulin or a sulphonylurea. The target BGL range for most residents is 6–15 mmol/L. But it should be based on the hypo risk of each resident, according to their health professional (doctor, medical specialist, endocrinologist and/or diabetes educator).

Note: The resident who is having the hypo may not recognise the signs and symptoms – and they may not be obvious to other people, either.



Hypoglycaemia is a serious complication of diabetes, and potentially life-threatening in older people.

Causes of hypoglycaemia

Hypos can be caused by a broad range of things, including:

- not having enough carbohydrate in the meal, or less than normal
- delaying or missing a meal
- increasing or doing unplanned physical activity
- doing more strenuous activity than normal
- taking too high a dose of their medicine, or a longer-acting sulphonylurea, or taking it at the wrong time (generally, long-acting sulphonylureas should be avoided in older people)
- taking too much insulin, or taking it at the wrong time, for example, not timing insulin with meals
- consuming too much alcohol, especially on an empty stomach.

Signs and symptoms of hypoglycaemia

Hypos can come on quickly and early symptoms are not always recognised by older people. It is important that staff discuss with residents and their family/ carer what hypo symptoms they may have experienced in the past, as they may have symptoms not listed.

- sudden dizziness or weakness, particularly in the legs ('jelly legs'), which may present as stroke-like symptoms
- hunger
- tingling around the mouth and face
- sweating (usually a cold sweat)
- tachycardia (an abnormally fast heart rate) or palpitations
- feelings of anxiety or unspecified fear
- poor concentration
- drowsiness.

Early hypo signs and symptoms may not be obvious in older people, so they may not be picked up by staff or even the resident themselves. Some signs to look for include:

- a change of colour in their face – either pale (which is more usual) or flushed
- difficulty speaking
- vagueness
- a change in behaviour (for example, aggression or being weepy, happy, dreamy or relaxed when they are not usually)
- napping before meals
- loss of balance, or falls
- hallucinations or confusion.

If a hypo is not treated quickly, the BGL will continue to fall and the resident's condition may progress to:

- confusion
- loss of consciousness/seizures
- in extreme cases, coma and death.

Reducing the risk of hypoglycaemia

A key approach to reduce the risk of a resident having a hypo is to have a documented hypo management plan which includes:

- individual signs and symptoms (ask the resident and family)
- preferred and appropriate hypo treatments (e.g. to suit individual tolerances and taste)
- considerations around swallowing risks (e.g. thickened fluids) and enteral/PEG feeding should a resident be unable to swallow safely due to hypo.
- a standing order and guidance for administration of subcutaneous glucagon.

To reduce the risk of hypo, residents should eat regular, nutritious meals and snacks, as well as extra carbohydrate when they do any additional activity. Ensure the correct doses of medicines, including insulin, are given at the correct time. When a resident loses their appetite or is eating poorly, their doctor needs to review their diabetes medicine dose(s). In particular, medicines that carry a higher risk of hypoglycaemia such as a sulphonylurea or insulin. It may also be appropriate to consider a referral to a dietitian.

The body's response to diabetes medicines changes with age and this may require a person's treatment to be reviewed in terms of drug choice and dose regularly.

Management of hypoglycaemia

Hypos come on quickly and can be dangerous, so they must be treated immediately.

When you notice changes in a resident's cognitive function and mental state such as confusion, you need to treat this as a unique event. DO NOT assume it is just a part of 'getting old'.

If able, take a blood glucose measurement to work out whether the confusion they are experiencing relates to hypoglycaemia. If you think the resident is showing signs of hypoglycaemia, and it is not possible to measure their BGL immediately, treat as a hypo and then check their BGL when you can.

If the resident's cognitive function stays the same even when their BGLs return to normal, you should arrange for further medical assessment and review.

People differ in their response to hypos

Each person reacts differently to hypoglycaemia and they often respond differently to medicine.

Thus, it is essential to document in their care plan the specific individual signs and symptoms of hypoglycaemia and their individualised management plan.

If the person has a hypo immediately before an insulin injection or tablet dose:

- treat the hypo following the guide below, making sure the person's BGL is stable
- administer their insulin or tablets as prescribed (do not withhold prescribed medicine)
- call the person's doctor for review.

Hypoglycaemia treatment

An individual hypo management plan should be devised for each resident according to any special dietary requirements they may have. This plan should include the resident's BGL target and the hypo level that must be treated with or without symptoms.

If the resident is conscious and able to swallow, follow steps (A1) to (A6) (or your organisation's policy and procedure for hypo management).

(A1)	**Give the person just ONE of the following items.**	
	Quantity	**Food/drink**
	Half a can (180 ml)	Regular **(not diet)** soft drink, OR
	150 ml	Fruit juice, OR
	3	Glucose tablets, OR
	6 or 7	Jelly beans, OR
	3 teaspoons	Sugar or glucose dissolved in warm water, tea or coffee, OR
	3 teaspoons	Jam or honey, OR
	150ml or 100g	Appropriate texture-modified food or thickened fluid (juice may need to be thickened, other options may be sweetened yoghurt or pureed fruit)
(A2)	After you have given them one of these items, **wait for 10 – 15 minutes** and then measure the resident's BGL again.	
(A3)	If the resident's BGL has not increased, **repeat** the original approach.	
(A4)	**If the BGL has increased, follow up with the resident's next normal meal OR, if the normal meal is more than 15–20 minutes away, with ONE of the following items.**	
	Quantity	**Food/drink**
	1 serve	longer-acting carbohydrate (eg one slice of bread), OR
	1 serve	fruit (eg 1 apple, 1 banana, 3 apricots, 1 pear), OR
	1 small tub	yoghurt, OR
	100ml or 100g	Appropriate texture-modified carbohydrate food or thickened fluid (thickened milk or puree fruit or potato)
(A5)	**Stay with the resident until their BGL is above 6mmol/L (or within their individualised target range). DO NOT leave them until they:** are symptom-free and comfortable have another carer or can care for themselves.	
(A6)	**If BGL remains between 4-6mmol/L after two treatments, contact their doctor.** **If BGL remains less than 4.0mmol/L after two treatments call an ambulance.**	

⓪ **Hypos** come on quickly and can be dangerous, so they must be addressed immediately.

If the resident is unconscious or unable to swallow, follow steps (B1) to (B7).

(B1)	**Always follow and comply with your RACF's emergency policy/protocol.**
(B2)	**DO NOT give anything by mouth.**
(B3)	**DO NOT leave the** resident **alone.**
(B4)	Depending on your RACF policies/procedures, and if trained, administer a Glucogen® injection or immediately arrange for someone else to do it.
(B5)	If the resident is unconscious, place them in the recovery position, maintain their airway, and seek medical help immediately.
(B6)	**Call 000 and state 'diabetic emergency',** then provide the resident's name and address and any medicine they have already been given.
(B7)	**Inform the resident's doctor,** and document this contact (see 'Actions').

Glucagon (Glucagen®) hypo kit

Anyone who is prescribed insulin or a sulphonylurea should have ready access to a glucagon kit in case they have a hypo and they cannot swallow, or they are unconscious. The kit should be prescribed and documented by their doctor.

Glucagon is a hormone made in the pancreas. It has the opposite effect to insulin, rapidly increasing BGLs. Glucagon comes pre-measured in a syringe. The full amount should be given to adults.

The syringe is inserted under the skin (subcutaneously), into the muscle (intramuscularly) or into a vein (intravenously).

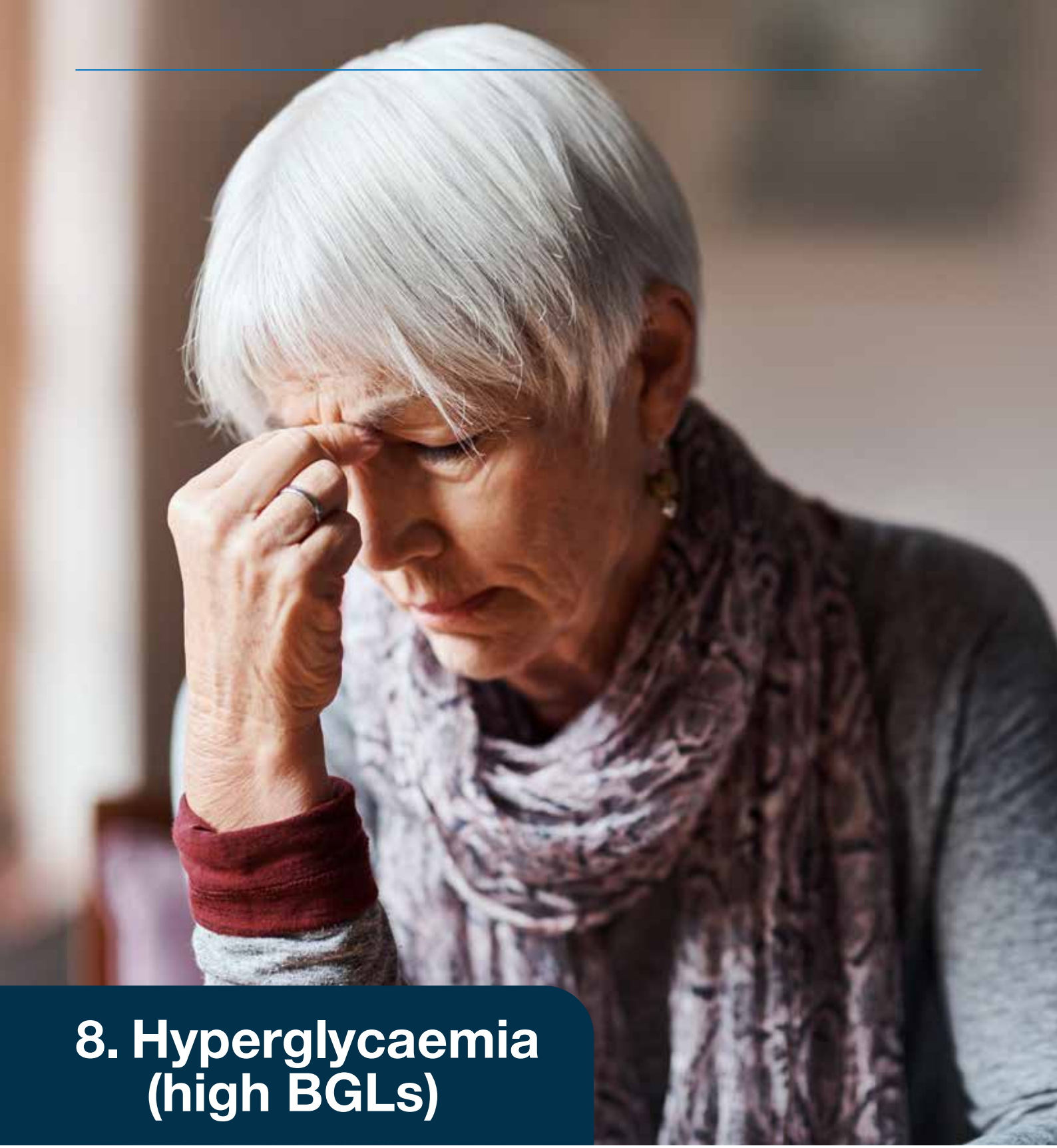
The treatment can be administered by any person who has had the relevant training.

Note: Your RACF's emergency policies or protocols will clarify whether it is your responsibility to administer glucagon and whether an ambulance should be called. Each facility's policy will reflect the legal and other requirements because each state and territory has different legislation governing the issue.

Actions

Once the resident has been stabilised, or taken to hospital, document the:

- time of the hypo
- BGL measurements that were taken (including how frequently they were taken and what results were recorded)
- management approach (including any emergency protocols that were followed)
- treatment given
- people involved or consulted during the episode
- assessment taken to determine what caused the hypo
- actions taken to prevent a recurrence
- outcome of the management approach
- follow-up required (e.g. notifying the resident's doctor or requesting a review)
- resident's care plan update, as required.



8. Hyperglycaemia (high BGLs)

Fast facts

Hyperglycaemia is when BGLs are too high. It can happen in anyone who has diabetes. It often happens slowly but it can also happen suddenly, depending on the cause.

Causes of hyperglycaemia may include:

- too little insulin or diabetes medicine
- food intake not being covered by enough insulin or medicine
- eating or drinking too many carbohydrates
- a decrease in activity
- illness, infection, injury or pain
- emotional stress
- medicine used to treat other illnesses, such as steroids
- their insulin pump not working properly (this can bring on hyperglycaemia suddenly).

Below are some of the signs and symptoms of hyperglycaemia the person may feel:

- thirst (although this is often absent in older people)



- drier than normal skin and lips



- a urinary tract infection
- increased/excessive amounts of urine



- poor healing
- oral or genital thrush.



Older people sometimes feel no symptoms but other people might notice the following:

- sunken eyes



- abnormal fatigue (the person may spend the day sleeping in a chair)



- abnormal vagueness or disinterest
- a fruity smell on the breath (in people with type 1 diabetes)



- difficulty in rousing them.



Actions

- A high BGL every now and then is not a problem. However, action should be taken if the reason for the resident's high BGL is unknown. This includes if they have had high BGLs for several days, or if they have symptoms of hyperglycaemia.
- If you notice a resident with any symptoms of hyperglycaemia, or if you are not trained in hyperglycaemia management but you think something is 'not quite right', let your supervisor know.
- If you are trained in hyperglycaemia management, follow your RACF's guidelines.
- For more information about hyperglycaemia, read the next section.

More details

Hyperglycaemia for residents in aged care is defined in the McKellar guidelines as a BGL above 15 mmol/L. The target level may be reviewed and decreased or increased by the person's health professional over time. This will depend on the person's age, function, health, diabetes management and progression, and quality of life.

Hyperglycaemia can develop quickly, depending on the cause. But it usually develops over several days or even weeks. Short-term hyperglycaemia may cause significant distress, such as irritability or confusion. Ongoing hyperglycaemia is linked with microvascular and macrovascular complications.

In older people, it can be difficult to identify signs of hyperglycaemia due to functional, cognitive and age-related changes. Many symptoms of hyperglycaemia are similar to those of delirium (a sudden change or awareness and thinking), so it is important to exclude hyperglycaemia as the cause. This means it is essential to undertake blood glucose monitoring in residents who show signs of changing cognitive function or confusion.

Other symptoms include fatigue, which can be dismissed as part of the ageing process, and polyuria (excessive urination) which may present as urge incontinence or urinary incontinence. Residents can also lose the ability to recognise when they are thirsty, which can be problematic. Mild or persistent hyperglycaemia (not high enough for the resident to show symptoms or become ill) can still cause harm over the long term.

Persistent high BGLs also slow the healing of any wounds or infections and should be treated, as white cell function is impaired when the blood glucose is higher than 11.1 mmol/L.

Hyperglycaemia may be related to the progressive nature of type 2 diabetes. It will require an increase or change in routine medicine used to manage the BGLs, and increased blood glucose monitoring may be needed during this adjustment time.

Regular blood glucose monitoring will make it easier to see and manage hyperglycaemia in residents who may not be able to recognise or report symptoms. Blood glucose levels which are mild but often above the resident's target range can be found by blood glucose monitoring. Results should be reported to their treating doctor or diabetes educator.

Hyperglycaemia can develop quickly, depending on the cause, but it usually develops more slowly, often over several days or even weeks.

Signs and symptoms of hyperglycaemia

Older people may be less likely to report symptoms of hyperglycaemia, but they may report some or all of the following:

- thirst (although this is often absent in older people)
- drier than normal skin and lips
- a urinary tract infection
- increased/excessive amounts of urine
- poor healing
- oral or genital thrush.

Even if residents with diabetes do not report the signs and symptoms of hyperglycaemia themselves, you or other people around them may notice changes. Check their BGLs to confirm or exclude hyperglycaemia: a rise in BGL may be the first sign of an acute illness.

Some signs that may be observed include:

- sunken eyes
- increased lack of awareness or interest
- abnormal fatigue (the person may spend the day sleeping in a chair)

- abnormal vagueness or disinterest
- a fruity smell on the breath (in people with type 1 diabetes or type 2 diabetes at risk of DKA including those taking SGLT2 inhibitors), with urinary or blood ketones* present
- difficulty in waking them.

* Ketones are formed when the body does not have enough insulin. Glucose remains in the blood stream and cannot be used for energy. When this happens, the body converts fat into ketone bodies as a poor alternative source of energy. Ketones are acidic, and when enough build up in the body, the person becomes ketoacidotic.

Ketoacidosis

Ketoacidosis is a sign of not enough insulin. It is a serious, life-threatening condition. It develops gradually over hours or days.

Most cases of ketoacidosis occur in people with type 1 diabetes. Rarely, it occurs in people with type 2, for example those who are on SGLT2 inhibitors. It requires hospitalisation, as treatment requires intravenous insulin, potassium and fluids to correct. Early signs/symptoms include:

- deep sighing breathing (known as Kussmaul's respiration)
- flushed cheeks
- abdominal cramping
- nausea and vomiting
- dehydration (marked diuresis)
- rapid or faster heart rate than normal (at rest)
- sweet acetone breath which may smell like nail polish remover.

Late symptoms of ketoacidosis are:

- respiratory distress
- absence of Kussmaul's respiration
- slow or slower heart rate than normal (at rest)
- low blood pressure
- low body temperature (below 35°C)
- altered conscious state, leading to coma.

Actions

Check ketones if a person with type 1 diabetes has a BGL greater than 15 mmol/L. Also check ketones if they seem unwell, dehydrated, confused or vomiting. Some residents with type 2 diabetes may also require ketone checks when they are unwell, especially if they are on certain diabetes medicines. **In this instance, their doctor should be notified immediately.**

Ketones can be checked using a blood ketone monitor (following the manufacturer's instructions).

There is a delay in the development of urinary ketones, which means hyperglycaemia can happen before ketones are present in the urine. Therefore monitoring blood glucose and blood ketones is a more accurate way to manage high glucose level.

Causes of hyperglycaemia

High BGLs can have a number of causes, including:

- poor timing of giving blood glucose-lowering medicines or insulin in relation to meals
- not enough blood glucose-lowering medicines or insulin
- missing a dose of medicine or insulin which lowers blood glucose levels
- too much carbohydrate in a meal
- illness, infection or pain
- emotional stress and adrenaline
- less physical activity than usual
- medicines used to treat other medical conditions, such as prednisolone
- insulin pump not working properly (which can make hyperglycaemia happen suddenly)
- newly diagnosed diabetes that is not yet properly controlled.

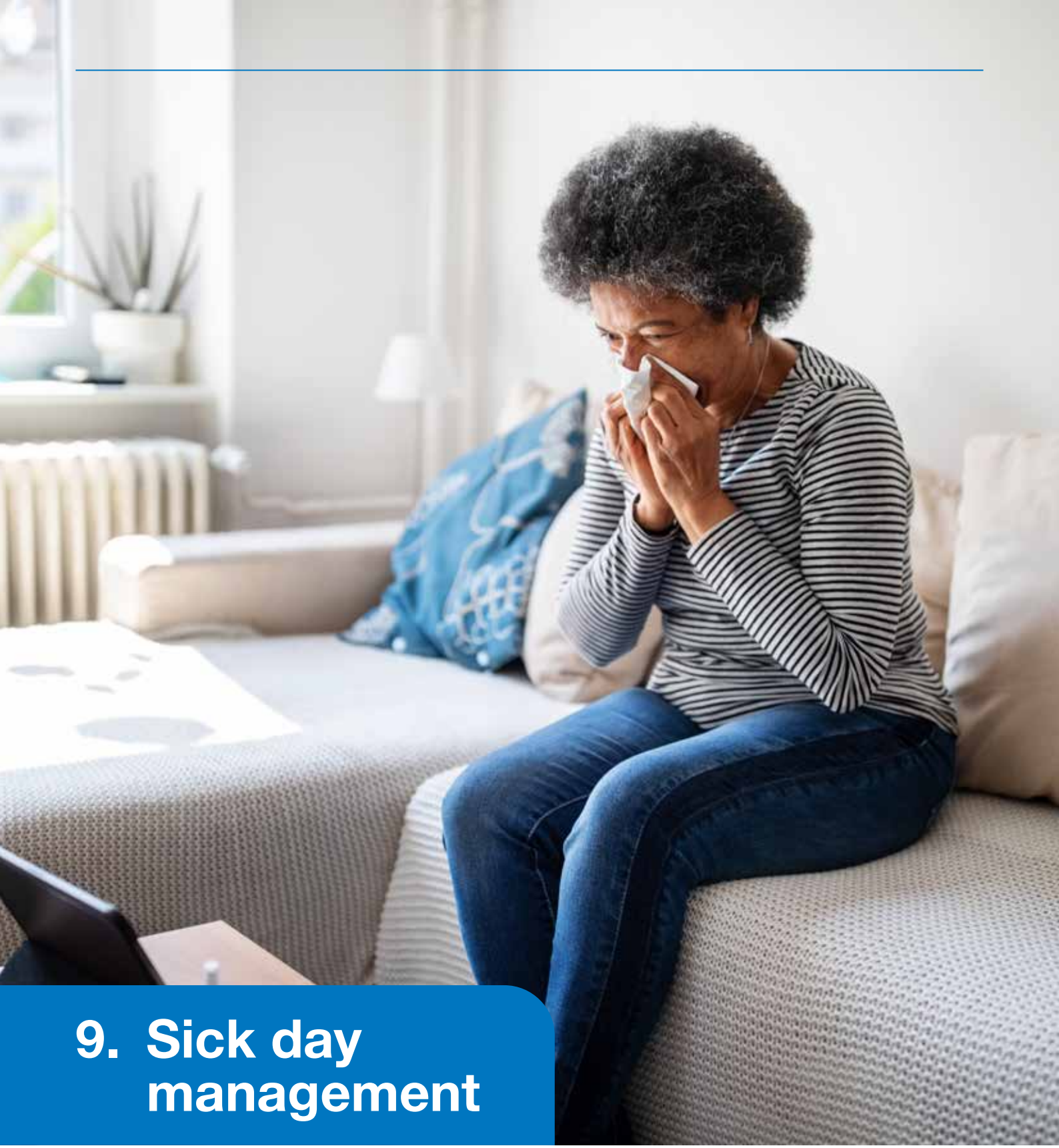
Be aware that a blood glucose meter may also show an incorrect high BGL due to:

- poor measurement technique (for example, resident's hands not washed)
- a faulty blood glucose meter or strip (check the expiry date)
- the meter has not been quality control checked recently.

Remember to ensure that blood glucose meters are quality control checked regularly and are working properly.

Actions

- Implement sick day care if indicated (see the next section).
- Arrange a medicines review if hyperglycaemia persists.
- Consult with the doctor because laboratory and other diagnostic investigations may be needed.
- Consider referral to a dietitian.



9. Sick day management

Fast facts

Being sick can make things more difficult for a resident with diabetes. The illness might cause their blood glucose levels to rise,and it might also make it harder to manage their diabetes.

How diabetes is managed during an illness depends on whether the resident has type 1 or type 2 diabetes. Residents may need more frequent blood glucose monitoring and more insulin (if they usually take insulin).

Actions

- Take action when you notice the symptoms or signs of an illness.
- If you think a resident is sick, tell a supervisor and/or follow the resident's care plan or your organisation's procedure.
- If you are trained, follow the sick day management guidelines in the next section.

Symptoms may include:



fever



sore throat



runny or stuffy nose



muscle or body aches



headache



tiredness



cough



diarrhoea



vomiting

More details

Residents with diabetes should have a 'sick day plan' developed in conjunction with their family and doctor or diabetes educator. In a RACF, it is the nurse's role to action the sick day plan when needed.

Follow steps 1 to 6 straight away when symptoms and signs of illness are seen or reported. This includes signs of a cold or flu, or infections (such as a urinary tract infection or a skin infection).

1. Assess the resident's condition:

» Manage/treat the symptoms of the underlying illness where possible.

» Contact the resident's doctor if further treatment/review is required.

2. Monitor them:

» Measure BGLs every two to four hours and record the results. This should be individualised to the resident and will depend on their diabetes management and medicine/insulin requirements.

» Monitor their temperature, pulse, respirations and blood pressure four-hourly and record these details.

3. Continue to treat:

» Advise or supply extra fluids and ensure the resident drinks them. Caution: be aware of residents on fluid restriction. Seek medical assistance if resident is vomiting.

» Make sure the resident continues to take their diabetes medicines – unless it is changed by the treating doctor.

» Maintain a fluid balance chart.

4. If the resident has type 1 diabetes or type 2 diabetes at risk of DKA including those taking SGLT2 inhibitors:

» Check their blood for the presence of ketones.

» If ketones are present, report this to the resident's doctor.

» Check the resident every four hours until ketones are no longer present.

5 Increase or change the resident's medicines as prescribed by their doctor:

» Residents treated with tablets may need insulin for the duration of the illness.

» Residents with type 1 diabetes will likely need more insulin to manage their BGLs.

6. Document – all treatment and care that has been given in the resident's notes.

Actions

Maintain clear and concise documentation of all:

» observations (including those from staff, the resident and family)

» measurements, including BGLs and any additional charting (such as a fluid balance chart)

» actions taken and care given

» changes or updates to the resident's care plan

» reporting to appropriate health providers for review/treatment, phone calls relating to care/treatment).



10. Glucose-lowering medicines

Fast facts

Glucose-lowering medicines are prescribed for people with type 2 diabetes when their blood glucose can no longer be effectively managed by diet and physical activity alone. In cases where a person has been living with undiagnosed type 2 diabetes for some time, this may occur soon after diagnosis.

Almost 9 in 10 people with type 2 diabetes eventually require glucose-lowering medicines.

Glucose-lowering medicines are different from insulin.

The way a person's body uses medicines can change as they age or have other medical conditions. Medicines can work differently if they have a poor appetite, miss a meal or become less active.

Actions

Follow the 'eight rights' or your organisation's policy and procedures when administering medicine:

- the right patient
- the right medicine
- the right dose
- the right time
- the right route
- the right documentation
- the right reason
- the right response.

» Let your supervisor know if a resident skips a meal, as this may affect their BGLs.

More details

A healthy diet and regular physical activity remain vital in helping to manage blood glucose and lipids, even when the person has progressed to needing glucose-lowering medicines.

There are various types of glucose-lowering medicines to manage type 2 diabetes, and they work in different ways. Most glucose-lowering medicines increase the quantity of insulin within the circulation. They can also increase the body's capacity to use the body's own insulin.

In Australia, there are currently seven classes of glucose-lowering medicines used to manage type 2 diabetes. Recent developments have provided some medicines for type 2 diabetes that are injected but are not insulin.

Individual medicines within each class may have different effects and side effects for each person.

Metformin

**Medications available on the PBS as at August 2024.*

Chemical names*	Brand names*	Lowers blood glucose by	Common side effects
Metformin	» APX-Metformin » Blooms the Chemist Metformin » Diabex » Diaformin » Formet » Glucobete » Metformin GH » Metformin Sandoz	» reducing the amount of glucose released into the blood from the liver » slowing down the amount of glucose absorbed from the small intestine » helping the muscle, liver and other cells become more sensitive and better able to take up insulin.	» some nausea when the drug is first started » a metallic taste in the mouth » diarrhoea.
Metformin extended release (XR)	» APO-Metformin XR » Blooms the Chemist Metformin XR » Diabex XR » Diaformin XR » Metex XR » Pharmacor Metformin XR		

Metformin is the first glucose-lowering medicine a person with type 2 diabetes is prescribed unless it is contraindicated (not advised). Metformin has been used for many years and is considered a safe drug. It has a good effect on blood glucose and generally does not cause hypoglycaemia on its own. Metformin does not cause weight gain and it can be used with other glucose-lowering medicines and insulin.

Metformin is also available in various combinations with other glucose-lowering medicines, for example Xigduo (metformin and dapagliflozin) or Janumet (metformin and sitagliptin).

Precautions

» When kidney function declines, there is the risk that metformin levels may build up in the person's body, unless the dose is reduced. Although metformin is generally a very safe medicine, a build-up increases the chances of a very rare side-effect called lactic acidosis. This can be serious, therefore metformin doses will need to be reduced as kidney function falls. Metformin should be avoided altogether when kidney function is very poor (eGFR< 30mls/min).

» A variety of situations can increase the risk of lactic acidosis, these include heart failure, dehydration, serious infections, shock and certain radiology tests. Metformin should be ceased during periods of inter-current illness in order to reduce the risk of lactic acidosis.

Actions

- **Document:** diarrhoea, vomiting or other conditions that might lead to dehydration.
- » If the resident has been advised to start metformin at a high dose (e.g. 1000 or 2000 mg) advise the doctor they have not been on this medication before. It should be started at 500 mg and increased each 3 to 7 days by 500 mg to 2000 mg daily if needed.
- » Inform the resident's doctor if diarrhoea does not resolve within a few days of starting metformin. Even if the dose is lowered, the resident's doctor should be contacted, and stopping metformin should be considered.

Dipeptidyl peptidase 4 inhibitors

**Medications available on the PBS as at August 2024.*

Chemical names*	Brand names*	Lowers blood glucose by	Common side effects
Alogliptin	» Nesina	» increasing the hormone that stimulates the pancreas to release extra insulin » reducing the amount of glucose (which increases BGLs) that is released into the bloodstream by the liver(which increases BGLs).	» nausea » an increased risk of infections, particularly upper respiratory tract infections and urinary tract infections » headaches » dizziness » an itchy rash » in extreme cases, anaphylaxis or swelling
Linagliptin	» Trajenta		
Saxagliptin	» Onglyza		
Sitagliptin	» Januvia » Sitagliptin Lupin » Sitagliptin Mylan » Sitagliptin Sandoz Pharma » Sitagliptin SUN » Sitaglo » Xelevia		
Vildagliptin	» Galvus		

There are five dipeptidyl peptidase 4 (DDP-4) inhibitors on the market in Australia.

DPP-4 inhibitors stimulate the secretion of insulin, by enhancing the of hormones known as incretins. They are sometimes described as 'incretin enhancers'. DPP-4 inhibitors affect incretins by stimulating insulin secretion in a selective way. This means only when the body needs insulin to lower glucose levels. As a result, there is a low risk of these medicines causing hypoglycaemia, unless they are combined with a sulphonylurea or insulin.

DPP-4 inhibitors are also available in various combinations with other glucose-lowering medicines, for example Glyxambi (linagliptin and empagliflozin) or Qtern 5/10 (saxagliptin and dapagliflozin).

DPP-4 inhibitors can be used with a sulphonylurea or SGLT2 inhibitor but are most often used in combination with metformin. Because of this, most of the DPP-4 inhibitors are available in combination tablets that also contain metformin.

Precautions

» Dose adjustment or stopping DPP-4 inhibitors is recommended for residents with kidney or liver impairment.

Sulphonylureas

**Medications available on the PBS as at August 2024.*

Chemical names*	Brand names*	Lowers blood glucose by	Common side effects
Glibenclamide	» Daonil	» stimulating the pancreas to produce more insulin.	All sulphonylureas are capable of causing hypoglycaemia. Other side effects include: » weight gain » skin rashes » stomach upsets » jaundice (yellowing of the skin or the whites of eyes).
Gliclazide	» APO-Gliclazide » APX-Gliclazide » Glyade » Nidem		
Gliclazide MR	» APO-Gliclazide MRArdix-Gliclazide MR » Diamicron MR » Gliclazide Lupin MR » Glyade MRPharmacor Gliclaizide MR		
Glipizide	» Melizide » Minidiab		
Glimepiride	» Amaryl » ARX-Glimepiride » Glimepiride Apotex » Glimepiride Sandoz		

Note: This class of tablets can cause hypoglycaemia.

The sulphonylurea family includes several medicines, all of which work in the same way and have similar precautions. The most widely used sulphonylurea is gliclazide.

Sulphonylureas reduce BGLs by increasing insulin release from the beta-cells of the pancreas. Sulphonylureas also improve insulin sensitivity in peripheral tissue and decrease glucose production in the liver.

Sulphonylureas can be used in combination with metformin and other medicines for diabetes.

Precautions

- Generally, sulphonylureas are not suitable for residents in aged care due to the hypo risk in the context of renal or liver impairment.
- Sulphonylureas cannot be used in people with a sulphur allergy.
- Sulphonylureas should be taken immediately before a meal, and meals should be regularly timed with equal amounts of carbohydrates to prevent hypoglycaemia.
- Some sulphonylureas (such as glibenclamide or glimepiride) are particularly hazardous in older people who miss meals, and should be avoided. Where kidney function is reduced, the sesulphonylureas or their active metabolites can accumulate. This puts residents at risk of prolonged hypoglycaemia.
- Consider whether poor appetite and food intake may be contraindications for the slow release or long acting variations of sulphonylureas

Actions

- Make sure that food is provided after the resident takes a sulphonylurea and that they eat appropriate regular meals and snacks.
- Be on the lookout for any episodes of hypoglycaemia.
- Know how to manage and treat hypoglycaemia.
- Document all hypoglycaemia episodes.
- Look for patterns that may show a dose reduction is needed, and refer the resident to their doctor.
- Seek medical advice if the resident is fasting for any reason.
- Monitor weight gain, as this can be a result of the treatment of frequent hypoglycaemia.

Glucagon-like peptide-1 receptor agonists (GLP1RAs)

Chemical names	Brand names	Lowers blood glucose by	Common side effects
Dulaglutide	» Trulicity*	» stimulating the pancreas to produce insulin » reducing the amount of glucagon released from the pancreas » slowing down the movement of food through the gut to allow more steady absorption, which helps the person feel full and reduces appetite.	» nausea, vomiting and diarrhoea » heartburn » abdominal pain » headaches and dizziness » pancreatitis » altered renal function » appetite reduction and weight loss » less effective absorption of other medicines due to slowing the passage of food through the gut » injection site reactions.
Semaglutide	» Ozempic*		
Tirzepatide (dual GLP1RA/ glucose-dependent insulinotropic polypeptide (GIP)†	» Mounjaro†		

**Medications available on the PBS as at August 2024. †Not available on the PBS as at August 2024.*

GLP1RAs have similarities to DPP-4 inhibitors because they work on the incretin system, however, they do this in a slightly different way. The body responds to these drugs in a similar way to naturally occurring incretin hormones, secreting insulin only when the body needs it. These medicines also slow the movement of food through the gut. This makes people feel full sooner, so they eat less.

These medicines also increase satiety, so weight loss is a common side effect. In residents who have poor appetites or lower body weight, this may be negative side effect. In others this may be a compelling reason to prescribe GLP1RAs. They typically cause people to lose around 3kg in weight and some people lose more.

As a result of the selective effect on insulin secretion there is a low risk of GLP1RAs causing hypoglycaemia, unless they are combined with a sulphonylurea or insulin.

GLP1RAs are a protein and are inactivated when taken orally, therefore, must be given by injection under the skin of the abdomen.

With twice daily GPLRAs the resident is started on low dose. This is usually then increased to the full dose a few weeks later. Injections given once weekly can be started without the need for titration. This is done to minimise the risk of side effects, especially nausea and vomiting. Even with this precaution, some patients may have nausea and vomiting when they first start treatment.

But these side effects settle down in around three-quarters of people.

GLP1RAs are not a substitute for insulin, and they are not suitable for people with type 1 diabetes.

Precautions

- **GLP1RAs** are not recommended for people with severe gastrointestinal disease, severe kidney disease or a history of pancreatitis.
- Gastrointestinal side effects may cause dehydration which is important to manage in the older person.
- If a resident experience any symptoms of acute pancreatitis, such as ongoing, severe stomach pain, a doctor must be notified immediately.

Actions

- The doctor should be notified if the resident experiences nausea, vomiting or diarrhoea that continues for more than 24 hours.
- Monitor for hypoglycaemia if the resident's treatment is combined with a sulphonylurea or insulin. Dose adjustment may need to be considered by their doctor to prevent hypoglycaemia.

Sodium-glucose transporter inhibitors

**Medications available on the PBS as at August 2024.*

Chemical names	Brand names	Lowers blood glucose by	Common side effects
Dapagliflozin	» Forxiga	» decreasing the amount of glucose that is re-absorbed from the kidneys so that it is passed with the urine rather than staying in the blood.	» increased urinary tract infections and genital thrush » low blood pressure (especially in those taking diuretics).
Empagliflozin	» Jardiance		

Sodium-glucose co-transporter 2 (SGLT2) inhibitors are the newest family of medicines for diabetes. Due to their ability to reduce cardiovascular disease and slow progression of kidney disease, they are increasing in popularity. They are recommended as second line medicines after metformin in a broad range of people.

The SGLT2 inhibitors work by increasing the amount of glucose that is excreted into urine by the kidneys.

SGLT2 inhibitors are usually added to other medicines to improve diabetes management. Whilst they can be combined with other medicines, they are most often given alongside metformin. Because of this, SGLT2 inhibitors are available in combination tablets that also contain metformin. SGLT2 inhibitors come in various combination tablets with other glucose-lowering medicines.

Taken on their own or with metformin, they rarely cause hypoglycaemia. But they may increase the risk of a hypo when combined with a sulphonylurea or insulin.

SGLT2 inhibitors can be taken with or without food. Because of the way they work, SGLT2 inhibitors may cause some weight loss, lower blood pressure and have a mild diuretic effect (increase urination).

SGLT2 inhibitors are also available in various combinations with other glucose-lowering medicines, for example Xigduo (dapagliflozin with metformin); Glyxambi (empagliflozin with linagliptin) and Jardiamet (empagliflozin and metformin).

Precautions

- SGLT2 inhibitors may not be suitable for people with severe kidney problems. Discuss regular kidney function checks (eGFR) with the treating doctor.
- SGLT2 inhibitors can be problematic in people who are taking diuretics or who are dehydrated as they also increase urine output.
- It is very important to maintain good hydration in older people on SGLT2 inhibitors, particularly those who are unwell or have vomiting/diarrhoea.
- SGLT2 inhibitors have been linked to diabetic ketoacidosis (DKA). In many cases this has happened in people with near normal glucose levels. Risk factors for the development of DKA in the context of these medicines includes very restricted carbohydrate intake, dehydration, active infection or in those undergoing a surgical procedure.

Actions

- Contact the resident's doctor if they experience any signs or symptoms of metabolic acidosis (such as nausea, vomiting, anorexia, abdominal pain, excessive thirst, difficulty breathing, confusion, unusual fatigue or sleepiness).
- Residents being treated with SGLT2 inhibitors should be assessed for DKA when they are unwell or present with signs or symptoms of metabolic acidosis in order to prevent delayed diagnosis and patient management.
- Contact the resident's doctor if they are taking SGLT2 inhibitors and they experience recurrent or persistent urinary tract infections and/or genital thrush.

Alpha glucosidase inhibitors

**Medications available on the PBS as at August 2024.*

Chemical names	Brand names	Lowers blood glucose by	Common side effects
Acarbose	» Acarbose Viatris » Glybosay	» slowing down the digestion and absorption of certain carbohydrates in the intestine.	The major side effects are: » bloating, wind and diarrhoea (these are major problems for many users and the main reason most people stop using acarbose) » hepatitis, so liver function tests should be monitored.

Acarbose works to lower blood glucose by blocking the absorption of carbohydrate (carbs) in the gut.

When used alone, acarbose does not cause hypoglycaemia. However, if used with sulphonylureas it can result in hypoglycaemia.

Acarbose is not widely used as it commonly causes gut side-effects, such as bloating, wind and diarrhoea. Acarbose also needs to be taken with each meal, so typically several times a day.

Note: In patients taking acarbose, hypoglycaemia must be treated with pure glucose in the form of glucose tablets, gel or Lucozade™. This is because the action of acarbose prevents any other form of sugar being absorbed rapidly.

Acarbose should be started at a low dose and then increased for maximum effect. It should be taken before meals, swallowed whole with a liquid before the meal, or chewed with the first few mouthfuls of food.

Actions

- Contact the resident's doctor immediately if they are taking acarbose and they experience abdominal or gastrointestinal problems.
- Ensure pure glucose is available for hypoglycaemia treatment if required.

Precautions

Acarbose should not be taken by people with a history of:

- intestinal obstruction
- inflammation or ulceration of the bowel (e.g. ulcerative colitis or Crohn's disease)
- severe kidney disease
- hernia
- previous abdominal surgery.

Thiazolidinediones (glitazones)

**Medications available on the PBS as at August 2024.*

Chemical names	Brand names	Lowers blood glucose by	Common side effects
Pioglitazone	» Actos » Acpio 15, 30 or 45 » Actaze » Apotex-Pioglitazone » Vexazone	» increasing the effect of the person's own insulin by making muscle, fat and liver cells more sensitive to insulin » reducing the amount of glucose released from the liver into the bloodstream.	» Pioglitazone may cause weight gain. This is not thought to be harmful, but it can be very discouraging » They can also cause fluid accumulation and should not be prescribed for people with heart failure or cardiac disease.

Pioglitazone effectively lowers BGLs but is now generally only used when other drugs are not suitable, as there are a number of potentially serious side effects (e.g. fluid retention). They are also not recommended for people with heart failure, which is common in older people.

Pioglitazone takes up to six weeks to have an an effect on BGLs and can be prescribed with metformin and/or sulphonylureas. Pioglitazone does not need to be taken with food.

Precautions

» People taking pioglitazone have an increased rate of broken bones in the hands, upper arms and feet, which can be particularly problematic in older people. Women are at increased risk.

Actions

» Contact the resident's doctor immediately if they are taking pioglitazone and they develop swollen ankles, feet or legs, or experience more difficulty breathing than normal as this may be the result of fluid accumulation.

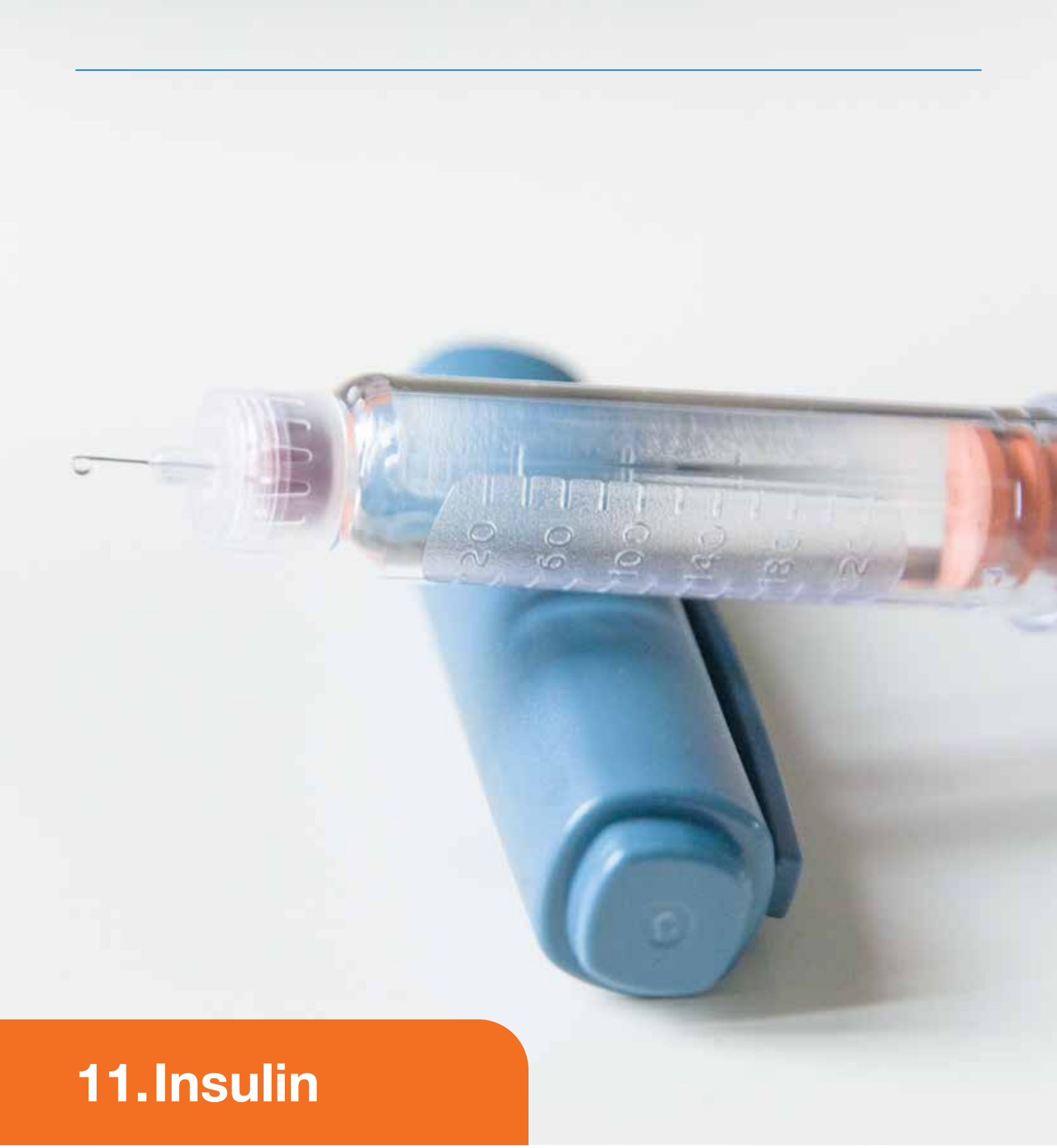
» Be aware that the resident may need:
- nursing measures to ease the problem, such as oxygen or raised feet
- to be weighed daily, and their weight recorded until the problem resolves
- special skin care, particularly if the ankles, feet or legs are swollen.

Combination medicines

Most people with type 2 diabetes take more than one glucose-lowering medicine to maintain target BGLs. Some medicines are offered as a combination which includes both classes in one tablet. This also reduces the overall number of tablets the person is taking. This can reduce error and confusion about which tablets to take and when.

Examples of combination medicines include Janumet, Galvumet and Trajentametet. As all these combination medicines contain metformin, people with contraindications to using metformin should not take any of these combination diabetes medicines. Refer to the previous details in this section in relation to any medicine that may be present in the combination.

Note: many residents may need their medicines to be crushed. However, it is important to remember that not all medicines can be crushed. Always refer to medicine guidelines before crushing.



11. Insulin

Fast facts

Insulin is produced in the beta cells of the pancreas.

In people with type 1 diabetes, their pancreas cannot produce its own insulin, so they need insulin every day

In people with type 2 diabetes, their pancreas is not producing enough insulin, or the insulin is not working well enough

At the beginning, many people with type 2 can manage their diabetes with diet and exercise (though some will require glucose-lowering medicines straight away), but as they get older, and their diabetes progresses, they may need glucose-lowering medicines or insulin

Insulin cannot be taken orally, via tablets or capsules. It must be given using a needle, insulin pen device or pump.

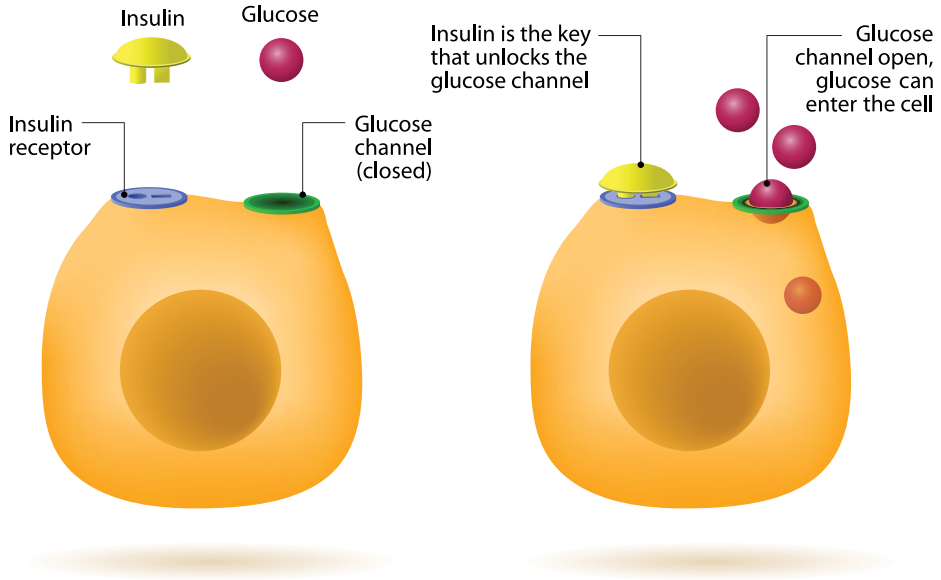
There are different types of insulin, including rapid-acting, short-acting, intermediate-acting, long-acting and pre-mixed insulin.

Depending on the resident and type of insulin and insulin-giving device being used, the insulin may be given once a day or several times a day, depending on their needs.

NOTE: If you are going to give insulin to residents, you must be trained to do so.

Insulin cannot be taken orally, via tablets or capsules: it must be given using a needle, insulin pen device or pump.

How does insulin work?



More details

Insulin is produced in the beta cells of the pancreas. Its main functions in adults are to:

- control the manufacture and release of glucose from the liver
- control the release of glucagon from the alpha cells of the pancreas
- help transport glucose from the bloodstream and deposit it in the target cells of the body.

In this way, insulin helps to keep the BGLs where they should be.

When the body is unable to produce insulin, as in type 1 diabetes, or produce enough effective insulin, as in type 2 diabetes, insulin must be provided from a source outside the body. More than a quarter of people with type 2 diabetes require insulin.

Insulin is metabolised by the kidneys and excreted in urine. As people get older, and as their kidneys age and become less efficient, they metabolise insulin more slowly, which means insulin lasts longer in their bodies. As a result, older people and people with kidney problems may need to reduce their insulin dose.

Insulins are produced in a laboratory and are almost identical to (and therefore classed as) human insulin.

A more recent development is in analogue or designer insulins. These insulins have had their amino acid sequence manipulated to produce a desired effect. This means the insulin is more rapid-acting, or longer lasting, with a flatter profile. The peak is the time when the insulin is working most effectively, and the risk of hypoglycaemia is at its greatest.

Note: While all insulin has an established mode of action, including onset, peak and duration (as shown in the tables on the following pages), this is a guide only, and there may be differences between individuals.

If a resident using insulin has regular, unexplained hypoglycaemia episodes, their insulin doses should be reviewed, and renal function assessed by their treating health practitioner.



Types of insulin

In Australia all insulin is synthetic "human" insulin (although there is an arrangement for using beef insulin under specific medical advice). There are different types of insulin available in Australia, and they vary in their profile (action time), as shown below.**Insulins available on the PBS as at August 2024.*

> ⓘ **Note:** There is different legislation governing medicines in each state and territory. For information about the control, use and administration of insulin in your location, you should refer to the relevant drugs and poisons Act. As each RACF's policies and procedures must comply with the legislation, you should adhere to your RACF's policy in relation to administering insulin and all other medicines.

Rapid-acting insulin (analogues)

	Generic or chemical name	Brand name
	Aspart	NovoRapid
	Lispro	Humalog
	Lispro (200U/mL)	Humalog U200
	Glulisine	Apidra
Onset	Works within 5–15 minutes after injection	
Peak	Peak action within 1–3 hours	
Duration	Gone from the body in 4–5 hours	
Appearance	Clear	
When to administer	Should be injected immediately before a meal (i.e. when the food is on the table or when just starting the meal). If the person does not start eating within 15 minutes of injecting this insulin, they may have a hypoglycaemic episode. This insulin is usually given at breakfast, lunch and dinner, and then a long-acting insulin is given at bedtime. This regimen is commonly used by people with type 1 diabetes.	

ⓘ **Note:** Different concentrations of Insulin lispro (Humalog and Humalog U200) are not interchangeable. Check the insulin concentration is correct before administering.

Ultra-rapid-acting insulin (analogue)

	Generic or chemical name	Brand name
	(Fast-acting) Aspart	Fiasp
Onset	Works within 2–5 minutes after injection	
Peak	Peak action within 1–3 hours	
Duration	Gone from the body in 3–5 hours	
Appearance	Clear	
When to administer	Should be injected immediately before a meal (i.e. when the food is on the table or when just starting the meal) but it can be given up to 20 minutes after a meal. If the person does not start eating within 15 minutes of injecting this insulin, they may have a hypoglycaemic episode. This insulin is usually given at breakfast, lunch and dinner, and then a long-acting insulin is given at bedtime. This regimen is commonly used by people with type 1 diabetes.	

Short-acting insulin (human)

	Generic or chemical name	Brand name
	Insulin neutral human	Actrapid
		Humulin R
Onset	Works within 30 minutes after injection	
Peak	Peak action within 1–6 hours	
Duration	Gone from the body in 6–8 hours	
Appearance	Clear	
When to administer	Should be injected half an hour (30 minutes) before a meal.	

⚠ **Note:** Use with caution in residential aged care, especially for residents with kidney disease, due to the long half-life which can cause hypoglycaemia.

Intermediate-acting insulin (human)

	Generic or chemical name	Brand name
	Insulin isophane human	Protaphane
		Humulin NPH
Onset	Works within 1.5 hours after injection	
Peak	Peak action within 4–12 hours	
Duration	Gone from the body in 12–16 (up to 24) hours	
Appearance	Cloudy – needs to be mixed gently before use	
When to administer	Used in combination with rapid or short-acting insulins for people with type 1 diabetes or type 2 if an intensive insulin regimen is needed. Used for people with type 2 diabetes injected once or twice a day, usually in combination with other glucose-lowering medicines. When used as above, it is most commonly injected either in the evening (at bedtime) or before breakfast, or at both of these times.	

⚠ **Note:** Use with caution in residential aged care, especially for residents with kidney disease, due to their variable peak and long half-life.

Long-acting insulin (analogues)

	Generic or chemical name	Brand name
	Insulin detemir	Levemir
	Insulin glargine	Optisulin Solostar
	Insulin glargine (300U/mL)	Toujeo Solostar
Onset	Works within 1–4 hours after injection	
Peak	Peak action – very slight peak	
Duration	Gone from the body in 12–24 hours (36 hours for Toujeo)	
Appearance	Clear	
When to administer	Insulin detemir may be administered once or twice daily, according to the resident's needs. Insulin glargine is most commonly injected either in the evening at bedtime or before breakfast. Needs to be administered at a similar time every day. The risk of experiencing hypoglycaemia is reduced in insulins with a flatter profile.	

⚠ **Note:** Insulin glargine cannot be mixed with any other insulin.

⚠ **Note:** Different concentrations of insulin glargine (Optisulin Solostar and Toujeo Solostar) are not equivalent or directly interchangeable. Check the brand name on the insulin is correct before administering.

Pre-mixed insulin

Pre-mixed insulins are made up using two different types of insulin: one rapid or short-acting combined with an intermediate or ultra-long acting. With the development of safe pre-mixed insulins, there is rarely (if ever) the need to prescribe two insulins that need to be mixed in a syringe immediately before injection.

There are a number of combinations of insulin that come in pre-mixed insulin pens and injection devices. Almost everyone who needs mixed insulin can be accommodated with a suitable insulin and an easy-to-use device for injection.

Pre-mixed intermediate-acting insulin

	Generic or chemical name	Brand name
Pre-mixed rapid-acting insulins	Lispro 25%/lispro protamine 75%	Humalog Mix 25
	Lispro 50%/lispro protamine 50%	Humalog Mix 50
	Aspart 30%/aspart protamine 70%	NovoMix 30
Pre-mixed short-acting insulins	Neutral 30%/isophane70%	Humulin 30/70
Onset	Varies depending on combination	
Peak	Varies depending on combination	
Duration	Gone from the body in 12–16 (up to 24) hours	
Appearance	Cloudy	
When to administer	Should be gently rolled and rocked before every use to ensure it's mixed together. Commonly given twice a day at breakfast and dinner, but occasionally used three times a day. Less frequently, pre-mixed insulins are used once a day in combination with oral hypoglycaemic medicines. Humalog Mix and NovoMix need to be injected immediately before a meal, as the rules for the rapid-acting insulin component are the same as for rapid-acting insulins. Humulin should be injected half an hour before a meal, as the rules for the short-acting insulin component are the same as for short-acting insulins.	

Pre-mixed ultra-long-acting insulin

	Generic or chemical name	Brand name
	Aspart 30%/degludec 70%	Ryzodeg 70/30
Onset	5-15 minutes	
Peak	1-3 hours	
Duration	Gone from the body in 72 hours	
Appearance	Clear	
When to administer	Should be gently rolled and rocked before every use to ensure it is mixed together. Given once a day with largest meal of the day. The meal (breakfast, lunch, or dinner) MUST contain a carbohydrate. Omission of a meal, or unplanned strenuous activity may lead to hypoglycaemia, therefore the resident should be reviewed by the registered nurse or doctor. Or, can be given twice a day (with breakfast and with dinner). Ryzodeg needs to be injected 10–15 minutes before a meal, as the rules for the rapid-acting insulin component are the same as for rapid-acting insulins. As the long-acting component can last for 2-3 days, caution is required for those residents who have to fast for a procedure or lose their appetite. Monitor BGLs closely.	

New advances in insulin

For many years all insulins have been a standard strength, containing 100 units per mL. A small number of insulins are now available with a higher concentration (e.g. 200 or 300 units per mL). This means that people using these insulins are able to inject a small volume. Using these higher strength insulins is most useful for people who need high doses of insulin. Research suggests that reducing the volume of the injection can improve insulin absorption and reduce glucose variability. These concentrated insulins, such as Toujeo, are now widely used in Australia.

Administering insulin

Follow the 'eight rights', or your organisation's policy and procedures, when administering insulin or any medicine:

- the right patient
- the right medicine
- the right dose
- the right time
- the right route
- the right documentation
- the right reason
- the right response.

Sliding scale or supplementary insulin dosing should be used with extreme caution in residential aged care due to the potential increased risk of hypoglycaemia.

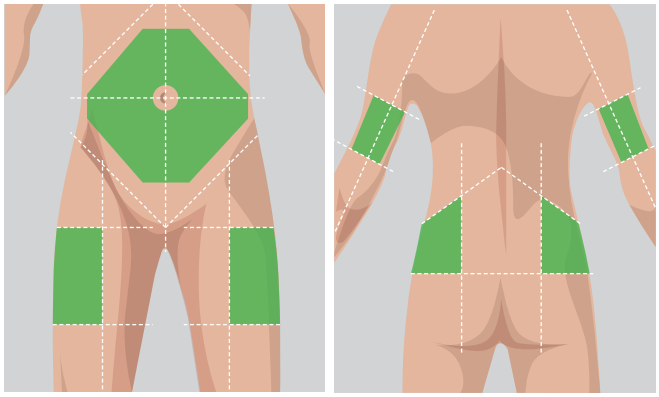
Where to administer insulin

Where possible, RACF residents should be supported to continue to self-manage their diabetes, including self-administering insulin when they can.

Residents should be informed and supported by staff to monitor and check their injection sites.

Tips for injecting insulin:

- A new needle must be used for each injection.
- Insulin is best administered in the abdomen because it provides a more regular rate of absorption, as it is not as affected by muscle action. Insulin can also be injected in the leg, buttock or arm. The leg or buttock can be useful for night-time administration.
- The injection site should be changed with each injection, rotating around the abdomen. The resident should be given clear information about the need to assess injection sites.
- The area immediately around the belly button should be avoided, as should the groin area, stretch marks and any scar tissue.
- Check the skin on and around the chosen site before injecting. Do not inject into any lumps under the skin, or bruises (lipohypertrophy) as this can cause an irregular insulin uptake. This area should be avoided until the lump goes away.



Lumps

» Lumps are most easily detected by gently palpating the resident's abdomen (or other injection sites) while they are standing upright or lying flat. This simple test can be carried out:

  – once a week for residents who are injecting insulin four or more times a day, or
  – between once a fortnight and once a month for residents having insulin injected less than four times per day.

» Where lumps occur due to insulin use, this indicates the same area has been used too frequently for injections. This area should be avoided until lumps have gone.

» Lumps may also be detected by sight. Take the opportunity to look for lumps and palpate whenever practical (for example, during assisted showering), and educate the resident so they can detect the lumps themselves, if appropriate.

Hypoglycaemia and insulin administration

Timing of insulin doses is extremely important in reducing risk of hypoglycaemia and reducing the variability of blood glucose levels for residents.

1. Administering insulin at the same time from day to day ensures the action of the insulin remains relatively consistent.

2. Administering rapid acting or pre-mixed (analogue) insulins too soon before the resident eats puts them at risk of a hypo. For example, injecting NovoMix30 over 15 minutes before they start eating their breakfast.

It is unlikely you would need to withhold insulin after a hypoglycaemic episode.

First, treat the hypo, and then give the prescribed insulin dose immediately before or with the meal. See Chapter 7 for more detail.

Always seek medical advice before withholding insulin. Occasionally a dose reduction may be indicated and will be directed by the treating doctor.

If an area of lipohypertrophy has been detected, the resident's insulin doses may need to be reviewed and decreased once injections are administered into a non-affected site.

Choosing an insulin device

Insulin can be administered by syringe, insulin pen device or an insulin pump. The choice of insulin device should be discussed with the resident's health care team or credentialled diabetes educator.

While insulin syringes are available in Australia, they are best avoided in residential aged care because:

» they do not come with a needle length less than 8mm, where 4-6mm length is recommended

» there is a potential and serious risk of dosing error when drawing up insulin, especially as more concentrated insulins are becoming available (e.g. Toujeo).

Insulin pen devices make injecting simpler and more convenient. Re-usable insulin pen devices are used with 3ml insulin cartridges. Insulin pens are made to fit specific brands of insulin and are not interchangeable. Pen needles can be used with any brand of pen and are available in 4mm, 5mm and 6mm lengths.

Injecting knowledge and skills training should be provided at least annually for all involved, including residents, carers and staff. This training is best provided by a credentialled diabetes educator, but it could be delivered by a doctor, nurse practitioner or endocrinologist.

Insulin pen devices

Most insulins in Australia are available in pre-filled disposable pens/devices. Pre-filled pens manufactured by different companies have slight differences but operate in the same way and are easy to use. They can be obtained from pharmacies on prescription. Pre-filled pens/devices are included in the cost of the dispensed insulin.

Some insulins also come in refills (pen-fills) for non-disposable pen devices. Non-disposable pen devices can be obtained through pharmacies that are NDSS Access Points, as well as from credentialled diabetes educators. These non-disposable pen devices are available free-of-charge.

⓵ **Note:** NovoPen 6 and NovoPen Echo non-disposable pen devices cannot be stored in the fridge, as this affects the electronic dose-recording mechanisms.

Pen needles are available in a range of sizes (i.e. 4mm, 5mm, 6mm, and 8mm lengths). Use of 4mm, 5mm or 6mm needles is recommended.

Pen needles are obtained free-of-charge for people with diabetes who are enrolled in the NDSS with specified details that injectable glucose-lowering medicine is required. Pen needles can be obtained through NDSS Access Point pharmacies. Refer to page 102 for more information.

Pen devices and cartridges are to be used by one person only and should never be shared due to the risk of cross-contamination. This applies even if a new needle is used for each injection.

Syringes and pen needles are for single use only.

Facility considerations

Organisations should protect the person with diabetes, the public and staff from blood-borne illness and disease by ensuring their specific injection control policies reflect best practice and evidence. Employees should have access to training that supports best practice.

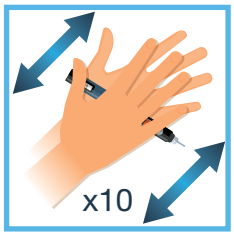
Needle-stick injury can be minimised by nurses' use of safety needles or safe needle disposal systems (e.g. sharps containers with clamps). Residents who self-administer should safely dispose of their own needles. Safety needles are not designed for self-administration.

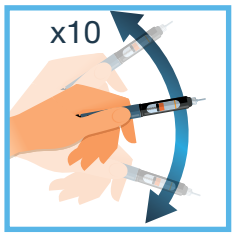


How to use an insulin pen or device

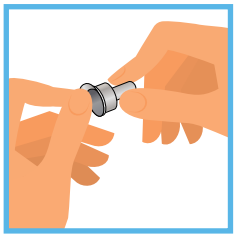
Correct injection technique is important to ensure optimal diabetes management.

1 Mix with gentle roll, mix cloudy insulins only (novomix 30, protaphane). Do not shake.

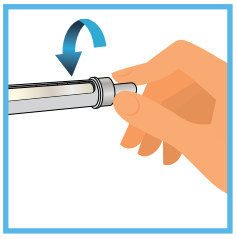




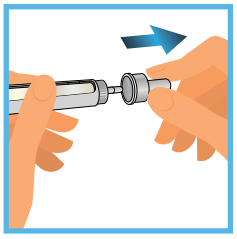
2 Attach a new needle (**Note**: safety needles and safe needle disposal systems are available to minimise risk of needle stick injury).



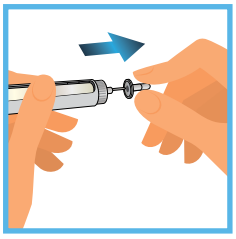
i. remove paper tab



ii. screw onto pen

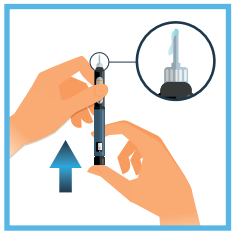


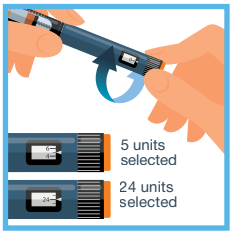
iii. remove outer cap



iv. remove inner cap

3 Prime needle with 2 units (3 units for Toujeo) and perform an ‘air-shot’, holding pen upright dial up dose: second nurse to check.





4 Inject and hold for 10 seconds.



5 Safely remove and dispose of needle if using safety needles, see manufacturers guidelines.



Good injecting technique

Avoid injecting insulin into the muscle, by choosing your site carefully and:

- use a shorter needle length (4mm - 6mm), or
- use a skin fold and/or inserting the needle on an angle.

» Document the site of each injection to avoid lumps and bruising.

» Routinely inspect injection sites for lumps, and document any lumps so they can be avoided.

» Remove and safely dispose of the needle immediately after injection – DO NOT recap the insulin pen needle.

» Insulin and pre-filled insulin devices in current use should be kept at room temperature, up to 30 degrees, and discarded after 28 days. Always put a label on an insulin pen which includes the person's name and the date first opened.

» Ensure insulin and pre-filled insulin devices are kept in an appropriate temperature-controlled fridge, the boxes or pens should not touch the side of the fridge to avoid freezing.

» Do not use insulin if it:

- will not mix
- is frozen or has previously been frozen (see the temperature log for the insulin fridge)
- has been exposed to heat above 30 degrees
- has formed crystals that will not dissolve when mixed
- is discoloured.

» In these cases, the insulin should be returned to the pharmacy.

» Bruising occasionally occurs. This is more common in residents who are taking blood thinners. It is not usually a cause for concern unless it happens often or for no apparent reason. All bruising should be documented. Do not inject into bruised areas.



Insulin pumps

There are several brands of insulin pumps available in Australia. While they are all slightly different, the basic functions of all insulin pumps are similar.

Insulin pumps are designed to deliver a continuous dose of background rapid-acting insulin. This background rate can be increased or decreased for different periods of the day. Additionally, extra doses of the rapid-acting insulin are delivered at mealtimes, or when needed (bolus dose).

Insulin pumps have a reservoir of rapid-acting insulin. The pump is connected to the body via a thin plastic tube and a cannula inserted subcutaneously (just under the skin), usually in the abdomen. This tube and cannula must be changed every two to three days (up to 7 days for Medtronic Extended infusion set) . If left in place longer, there is an increased risk of problems with insulin delivery, infection and abscess at the insertion site.

Insulin pumps are more commonly used by people with type 1 diabetes (but not by everyone with type 1 diabetes). They are not often used for people with type 2 diabetes. Decisions about using insulin pumps are made by specialist diabetes health professionals together with the person with diabetes.

Pump consumables (parts that need to be changed regularly) are subsidised through the NDSS for those who are eligible (for example, people with type 1 diabetes).

An older person using an insulin pump who is moving to an RACF will need a higher level of care, support and supervision. A medical review should be done by their multidisciplinary health care team (endocrinologist, diabetes educator, nurse etc) when they are admitted. The medical review should assess the person's capacity, ability and willingness to continue to self-manage their diabetes.

This includes their insulin pump, their level of blood glucose management and whether different insulin management is needed This should be done in consultation with the person and their family or support network.

A competent resident in an RACF, maintaining target blood glucose levels, may choose to continue to self-manage using an insulin pump, with support from qualified staff.





12. Complications and screening

Fast facts

Screening for diabetes-related complications helps to reduce the risk of diabetes-related complications. High blood glucose levels over an extended period increases the risk of damage to blood vessels. All people with diabetes should have annual complications screening by their health care team to identify and monitor any issues.

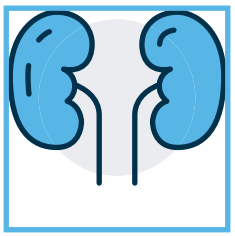
Diabetes complications can include:



heart attack, stroke or heart failure



vision problems



kidney disease and kidney failure



decreased blood supply to the legs



gastrointestinal problems



sexual health problems



dental problems



increased risk of deafness



increased risk of infection



various skin problems



increased risk of depression and dementia

More details

Research has demonstrated that good diabetes management helps to prevent or delay diabetes-related complications and reduce their severity.

Best practice in diabetes management recommends an annual cycle of care screening by a doctor. These screening tests help to reduce the risk of diabetes-related complications. As well as help manage any existing diabetes-related complications.

Annual cycle of care

An annual cycle of care is a series of recommended health checks to help manage and screen for diabetes-related complications. These health checks are detailed below.

Blood glucose management

Blood glucose management is measured by a glycated haemoglobin (HbA1c) blood test. The HbA1c blood test is a measure of average blood glucose levels over the past 10 to 12 weeks. It should be done six-monthly for people with well-managed diabetes and three-monthly for people with less stable diabetes.

For most people, the target HbA1c is less than or equal to 7.0% (53 mmol/mol). However, for residents in aged care facilities this may be too restrictive and may result in frequent hypos, especially if there is an underlying cardiac condition. If the resident is not suffering any discomfort – such as thirst, polyuria, thrush, tiredness or delayed healing of wounds – an HbA1c of 7.0–8.0% or 53–64 mmol/mol is acceptable. For residents who are very frail, have a number of co-morbidities and limited life expectancy, an HbA1c target of 8.5% or 69 mmol/mol is recommended.

Lipids

Lipids (also known as blood fats) include total cholesterol (TC), low density lipoprotein (LDL), high density lipoprotein (HDL) and triglycerides. For people with a normal lipid profile these should be checked at least once a year. People with high blood fats or who are taking medication to lower their blood fats should have their lipids checked every six to twelve months. A healthy lipid profile is one with:

- TC less than 4.0 mmol/L
- LDL less than 2.0 mmol/L for primary prevention and less than 1.8 mmol/ for secondary prevention (i.e. residents who have suffered an atherosclerotic adverse event such as a heart attack or stroke)
- HDL greater than 1.0 mmol/L
- triglycerides less than 1.5 mmol/L.

Renal function

Renal (kidney) function should be checked at least annually for serum creatinine/eGFR and microalbuminuria/proteinuria (types of protein increased in the urine). If the resident already has evidence of microalbuminuria or proteinuria, three to six-monthly checks are recommended.

Liver function

Routine monitoring of liver function tests in residents with type 2 diabetes should occur at the start of drug therapy, and annually for residents with diabetes as part of complications screening. Some oral hypoglycaemic agents, such as metformin, may not be recommended in people with impaired liver function.

Blood pressure

Blood pressure should be measured three monthly for residents with hypertension (high blood pressure).

Treatment goals for a resident with diabetes are less than or equal to 140/90 mmHg and 130/80 mmHg for those with established cardiovascular or kidney disease, although once again, targets should be individualised.

Foot assessments
For residents without known foot problems, foot assessments should still be undertaken by a podiatrist once a year.

Residents with a history of foot problems should be assessed every three to six months. Problems might include Charcot's joint, ulcers or amputation, or active foot problems such as deformities (including bunions or hammer toes). A similar schedule should be adopted for residents with peripheral neuropathy or peripheral vascular disease. The podiatrist will advise on the most appropriate review schedule.

These foot assessments should be in addition to daily foot care see Chapter 17 page 85.

Eye examinations
Eye examinations should be performed by an optometrist or ophthalmologist on diagnosis and every second year if no retinopathy is found. If minimal non-proliferative diabetic retinopathy (NPDR) is found, eye examinations should be annual. If moderate NPDR or proliferative diabetic retinopathy is found, the resident should be referred by their doctor or optometrist to an ophthalmologist as soon as possible.

Depression and anxiety
Depression and anxiety disorders in residents should be assessed by a qualified mental health professional, ideally by an aged care psychiatrist or a clinical psychologist. Following this, appropriate treatment and management can be planned.

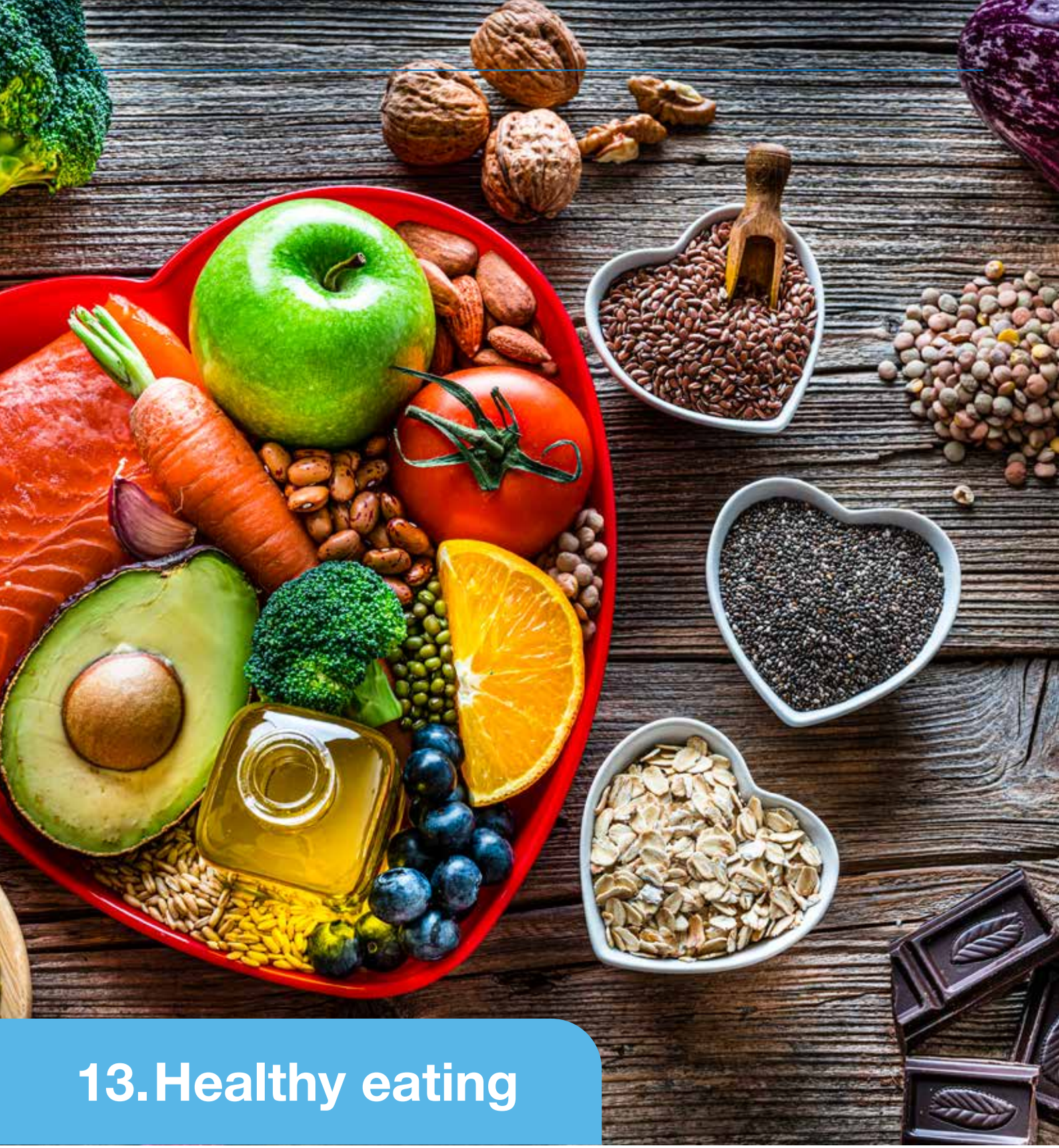
Symptoms of depression or anxiety can be monitored using self-report questionnaires, such as the:
- Geriatric Depression Scale
- Geriatric Anxiety Scale
- Hospital Anxiety and Depression Scale.

Cognitive status
A cognitive function assessment should be performed by a doctor to assess resident's cognitive status as part of planning their diabetes care and education.

It is important to use a test geared to the individual and todo this at a time and place that best reflects their full ability and capacity. Ideally, the resident should not be affected by tiredness, an over-stimulated or unfamiliar environment, an unknown care provider, or the presence (or not) of a family member or support person. Risk factors for altered cognitive function include:
- older age
- vascular disease
- hyperglycaemia
- hypoglycaemia
- how long the resident has had diabetes.

Tests of general cognitive function can include:
- Mini-Mental State Examination
- Abbreviated Mental Test Scope
- General Practitioner Assessment of Cognition
- Rowland Universal Dementia Assessment Scale (useful for people from non-English speaking backgrounds)
- Psychogeriatric Assessment Scale
- Montreal Cognitive Assessment (specially to assess mild cognitive impairment)
- Confusion Assessment Method
- Montreal Assessment Tool.

Other assessments
Other assessments of residents with diabetes that can be undertaken include reviews of:
- nutrition and weight
- diabetes self-care capacity
- the sick day management plan
- oral health
- immunisation status
- hypo risk assessment.



13. Healthy eating

Fast facts

People with diabetes should eat the same healthy foods as other residents: they do not need a special diet, and they can eat desserts and some sugar in moderation.

It is common in aged care for residents to lose their appetite or have problems with swallowing, saliva flow and oral health or dental issues. If a resident express concern about any of these, or they are evident to you, let a supervisor know.

Losing weight when you are older can sometimes do more harm than good. If residents lose muscle, this can affect their functional ability and make them more prone to falls.

Tips to support healthy eating

- Meals, drinks and snacks can be the thing most residents in aged care look forward to each day so always do everything you can to make that time as enjoyable as possible.
- Ensure that the dining environment (whether a dining room or tray set up) is as pleasant as possible and that everything is within easy reach, packets opened, lids removed.
- For residents with limited vision, provide a clear description of the meal and where each item is in front of them.
- If the resident has dentures, make sure they are in place, and that they are clean and fit well. It is important that they are checked regularly.
- Check that the resident has no mouth problems, such as a dry mouth, furred tongue, ulcers or tooth decay. Make sure their mouth is moist before meals.
- If the resident has a small appetite, provide smaller, attractively presented meals.
- If a resident has difficulty swallowing, has a wet or 'gurgly' sounding voice or increased coughing/choking during a meal, refer them to a speech pathologist for assessment.
- If a person has a texture-modified diet due to swallowing difficulties, let the resident know what they are eating or drinking if the modification has altered its appearance. Encourage food and drink intake to avoid the resident missing out on nutrition and hydration.
- Carbohydrates provide energy and are an important source of fibre, vitamins and minerals. Carbohydrates can be found in potatoes, corn, bread, pasta, rice, cereals, lentils, fruit, milk and yoghurt.
- The amount of carbohydrate in the food residents eat has the biggest effect on their blood glucose level:
  - too much carbohydrate can cause blood glucose levels to rise
  - too little carbohydrate can cause blood glucose levels to fall.
- For residents who are on some types of glucose-lowering medicines (insulin or a sulphonylurea), skipping their meals could cause a hypo. If they do not eat their meal, encourage them to have some carbohydrate from a different source (for example milk shake, toast or bread, fruit juice, custard or dessert).

More details

> It is essential that all residents are given adequate nutrition and hydration to support their physical and mental health, and to minimise the risk of pressure injury, falls and ill health. All residents are at increased risk of nutritional deficiencies including Vitamin B12, D and C, magnesium, iron, zinc, calcium and folate.

Poor appetite and reduced thirst is common among aged care residents, and it can significantly reduce the intake of food and fluids. Dehydration can have serious consequences. This includes reduced cognition, wound healing and an increased risk of falls. Weight loss, even in residents who are overweight or obese, contributes to loss of body muscle which can worsen diabetes symptoms. It can also contribute to falls, pressure injury and illness.

An assessment by an accredited practicing dietitian (APD) to determine a resident's individual dietary and nutritional requirements is an important part of diabetes management in aged care. A dietitian needs to be involved where a resident requires texture modified food and/or drinks, or where dietary supplements are required to help with nutritional needs.

Many residents may have medical, cognitive and physical impairments that mean they are less able to have an adequate intake of food and drink. They may need help with eating and drinking. This includes encouraging them to eat or changing the texture of the food.

It is important that staff treat residents with empathy and dignity at all times when encouraging them to eat and drink. Kind encouragement, a smile, care and attention to the dining environment and anything else that achieves a few more mouthfuls is just as important as the food

For residents with type 1 diabetes or those with type 2 diabetes at risk of hypoglycaemia (identified in a hypo risk assessment), every missed mouthful increases their hypo risk.

Therefore, your role in ensuring food and drinks are consumed is vital.

Individual assessment is always important but in most cases the goals of diabetes management in aged care should be to avoid dietary restriction and tight control practices due to the higher risk of malnutrition and dehydration.

Dietary goals for residents with diabetes

Some of the goals of nutrition in aged care are the same as the eating advice provided to all older people. The need to focus on sugar itself is less important than the overall meal plan, especially providing quality food that people in aged care enjoy.

What is vital is that the food and drink in aged care provide adequate protein, energy and micronutrients to all people living there. Residents tend to eat better when they are provided foods they recognise and enjoy, especially foods that bring back good memories and that they can easily chew and swallow. When they need assistance, they eat better with encouragement and respectful help.

Foods considered treats can be of great benefit in supporting an appetite in decline and thus have an important place for many residents, including those with diabetes.

The primary focus of all decisions around food for those with diabetes must be on meeting the overall nutritional needs of the resident, rather than tight control of blood glucose levels. It is better to make changes to medicines rather than impose dietary restrictions to control blood glucose levels.

The standard menu, including snacks and desserts will be suitable for most people with diabetes. There is no need to provide a specific 'diabetes' diet.

Specific nutrients

Protein

Older adults need more protein than younger adults. Those who are ill, have wounds or recovering from illness or a fall can need significantly more again to assist repair and recovery. As a result, protein foods should feature at every meal and sometimes an addition between meals or as a supplementary drink may be required.

Where there has been weight loss or for those with pressure injuries, a dietitian can assist to determine the appropriate protein and nutritional intake to assist.

A protein intake of about 1.2g/kg body weight per day is ideal for older adults in aged care.

Carbohydrates

Carbohydrate requirements depend on gender, body size and composition, activity levels and weight gain or loss. As a result, carbohydrate requirements should be individualised. In general, they should make up between 40–50% of the diet.

What is most important is the total amount of carbohydrate, rather than the type or food source of the carbohydrate.

Carbohydrate foods must be provided at each meal and in between meals for those with type 1 diabetes, or those at risk of hypoglycaemia.

Fat

For all residents, advice on fat intake needs to consider a number of factors. These include quality of life, risk of malnutrition, life expectancy, and cardiovascular disease risk. What is vital is that the enjoyment of food is maintained to avoid a loss in nutritional status.

Weight loss is to be avoided in residents – whether they have diabetes or not— and fat provides useful kilojoules (kJ) and adds appeal to many foods which assists weight management.

Fibre

Bowel issues are common among residents in aged care. Ensuring adequate dietary fibre to maintain regular bowel habits and help regulate blood glucose is important. The amount of fibre needs to be individualised. If fibre needs increasing, it should be done gradually while ensuring adequate fluid intake.

Textured/modified and special diets

The input of a dietitian is important where textural alterations are made to food and drinks and where supplements or enteral (tube) feeding are being considered. A dietitian can ensure that the needs of an individual's diabetes and their nutrition/hydration are balanced.

Some thickening products are made from food starch that is metabolised into glucose and can potentially contribute to hyperglycaemia.



There are a number of diabetes-specific supplements and enteral diets that may be required in the short or long- term. These are preferable to standard formulas because they have a lower impact on blood glucose levels.

Menu planning in aged care

Menu planning is a complex task. It needs to consider the nutritional requirements and diabetes management of the resident. However, it also needs to consider the resident's food preferences, enjoyment, consumption and tolerance of their meals, as well as their fluid intake.

In line with the Aged Care Quality Standards, RACFs need to uphold their responsibility of providing safe, adequate, nutritious and enjoyable food and involve residents in planning and delivery of meals. Residents need and should be provided with the right food to maintain their health and wellbeing and help to manage their diabetes. Unnecessary restrictions can result in poor intake and subsequent malnutrition.

Some residents with diabetes have additional dietary considerations. For instance, they may need more frequent and/or regular meals, snacks and drinks as part of their diabetes management plan, outside the normal mealtime routine of the facility. This additional food and drink is vital to them avoiding hypoglycaemia.

Menu and nutritional quality care review

An Accredited Practising Dietitian (APD) has the qualifications, knowledge and skills to provide an expert nutritional assessment and dietary advice.

APDs are able to:

- assess individual nutritional requirements (including interpreting laboratory tests about micro-nutrient status)
- develop individualised eating plans
- assess the physiology and impact of disease on macro-and micro-nutrient digestion, absorption and metabolism
- assess appropriate enteral formulas and regimens
- provide expert advice on menus to meet the food and nutrition needs of residents with diabetes
- carry out a comprehensive menu review.

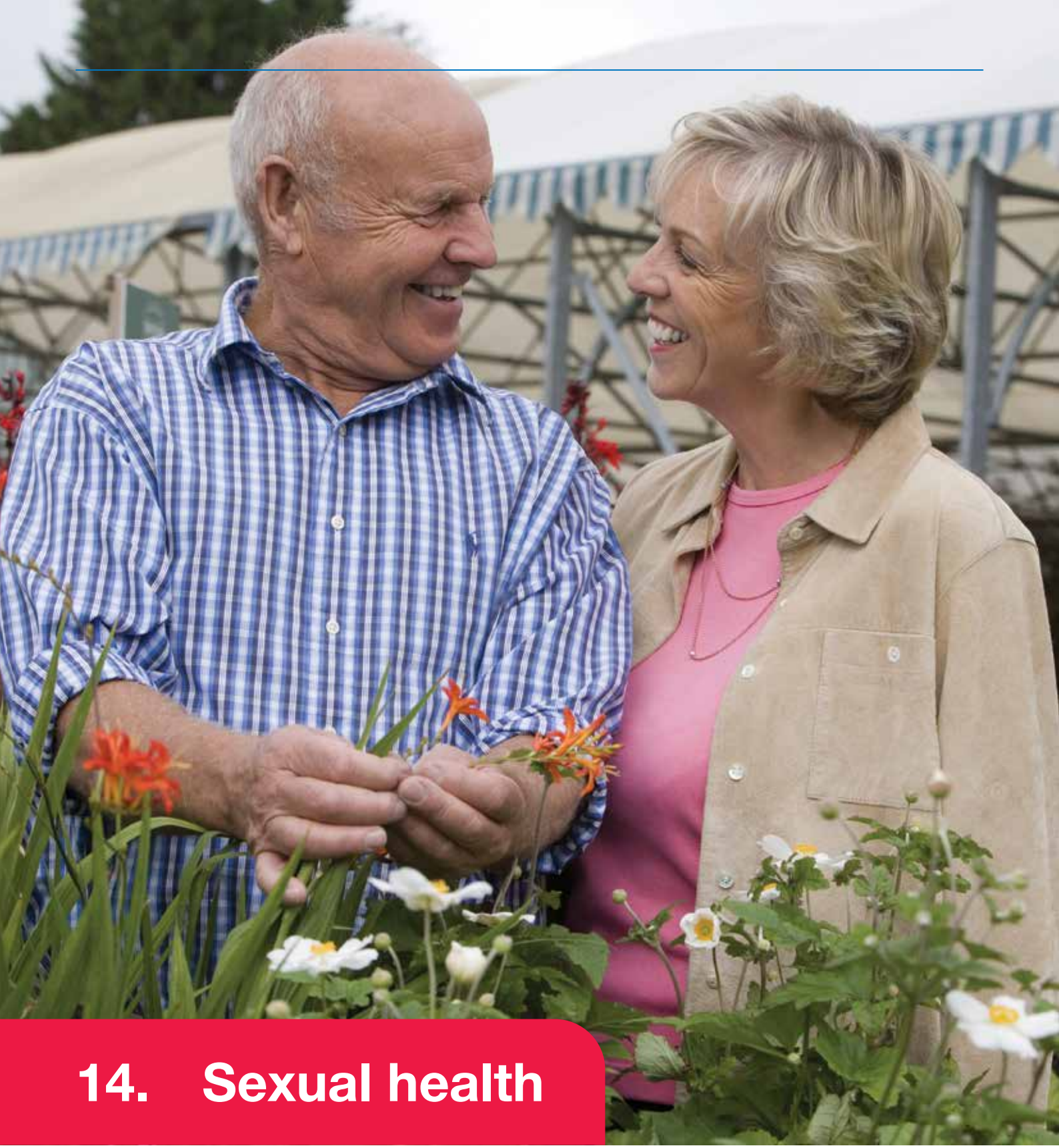
More information

Following are resources for more information on nutrition and diet:

- **Healthy eating & diabetes: a guide for aged care facilities (2012)**
  - Published by the Diabetes Centre at the Queen Elizabeth Hospital, South Australia, this guide specifically looks at the needs of people with diabetes in aged care. It covers hypoglycaemia and hyperglycaemia, sick days and some recipes
- **Best Practice Food and Nutrition Manual for Aged Care Facilities 2018**

Actions

Discuss with a dietitian and a diabetes educator the best meal choice and 'back-up plan' depending on the resident's medicines and individual appetite, likes and dislikes.



14. Sexual health

Fast facts

The sexual health of people who live in aged care is often overlooked. However, sexual health and sexual health problems should be assessed and managed in the same way as any other health concern.

Sexual health includes being able to maintain healthy intimate relationships. Sexual function is affected by low and high BGLs (blood glucose levels) and by long-term diabetes-related complications. Sexual health problems caused by diabetes-related complications can include erectile dysfunction in men and vaginal dryness in women.

Actions

- Make sure sexual health is acknowledged as important.
- If you think a resident is having sexual health problems, tell your supervisor.

More details

Diabetes can have an effect on sexual desire and function in both men and women.

Common causes of sexual difficulties

Sexual health problems, such as erectile dysfunction, prior to diagnosis or before blood glucose is managed effectively, can result from:

- persistent high BGLs
- overweight or obesity, particularly around the abdomen
- regular intake of alcohol, particularly if this is consistently above the recommended guidelines
- smoking
- hypertension
- some medicines, particularly those used to reduce blood pressure
- physical tiredness
- stress
- vaginal thrush.

After many years of diabetes, any of the above plus:

- in men, damage to the blood vessels and nerves of the penis
- in women, damage to the blood vessels and nerves of the vulval area
- in both women and men, kidney disease.

Suggestions for treatment

There is a range of treatments for erectile dysfunction in men. Much less is known about the underlying cause of sexual problems in women. Treatment for women may include the use of antifungal creams and vaginal lubricants.

Sexual health and sexual problems should be assessed and managed in the same way as any other health concern. Health professionals should undertake a sexual health assessment for people with diabetes, including older people, as part of their annual diabetes review and when sexual health problems are identified.

Sexual health and sexual problems should be assessed and managed in the same way as any other health concern.

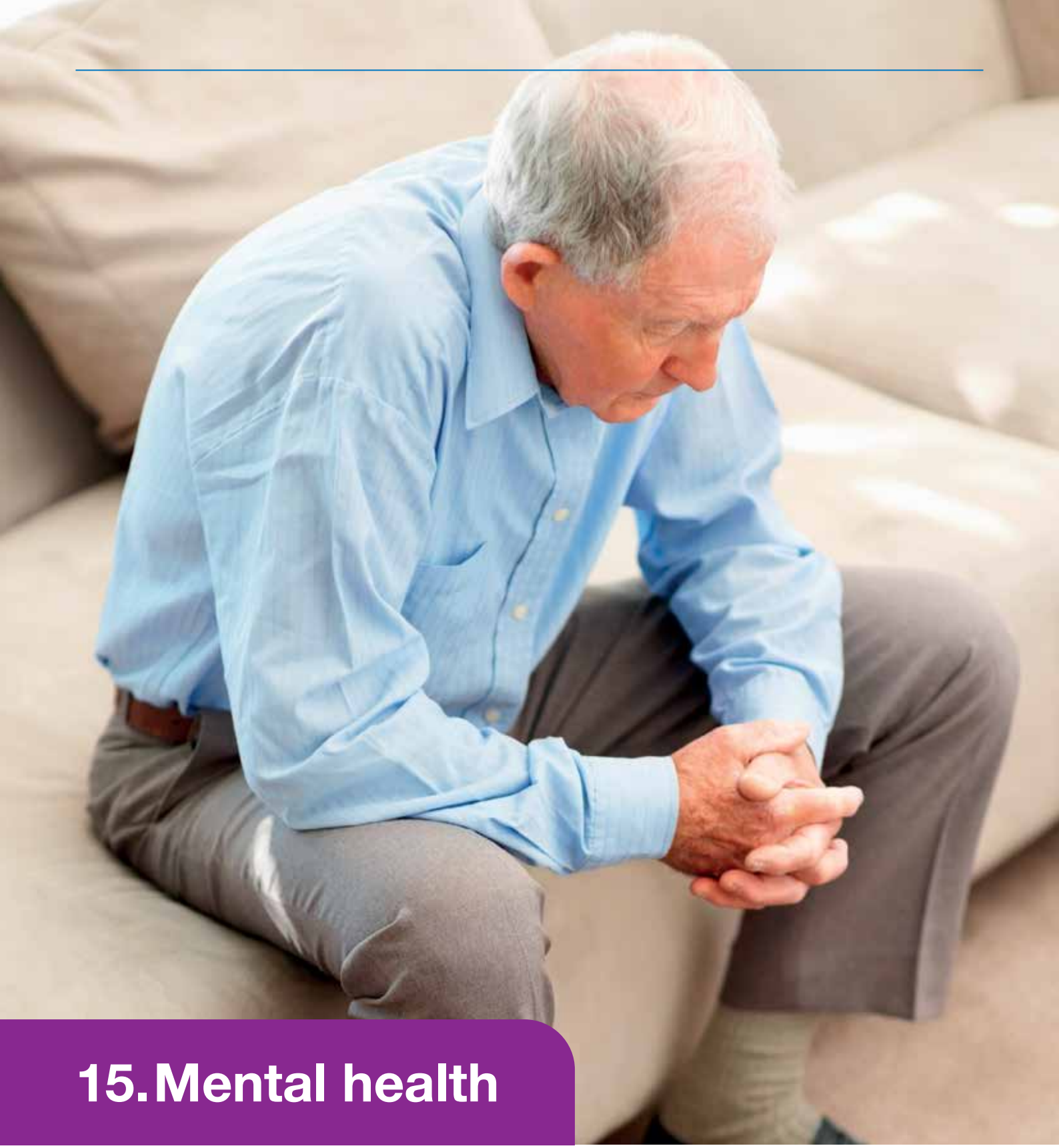
Treatment may include:

- medicines for male sexual dysfunction, such as:
  - oral medicines for example sildenalfil (Viagra, for example) or tadalafil (Cialis)
  - penile injections such as alprostadil (Caverject Impulse).
- mechanical means, such as:
  - penile pumps
  - penile implants.
- referral to a sexual health therapist/counsellor
- anti-fungal medicines for women for treatment of any fungal infections
- vaginal lubrication to reduce dryness and discomfort. Intercourse can cause damage and make sex unpleasant (which decreases the woman's desire). It can also cause breaks in the vaginal mucosa, increasing the risk of infection
- counselling to assist in re-framing sexual relationships and sexual activity. Body image can also be important in older people.

As people age, and as relationships change over time, it is natural for sexual relationships to undergo changes. If changes to sexual desire and function are sudden, unexpected or distressing to the resident, this should be investigated.

Actions

- Understand that discussion about sexual health with any person living with a chronic condition is part of their health care.
- Recognise that sexual health and sexual identity can be a significant part of older people's lives, including those living in aged care facilities.
- Obtain a sexual history as part of each resident's diabetes annual review.
- Give residents the opportunity to feel comfortable raising or discussing concerns they may have about their sexual health.
- Make sure older people have access to a safe and private environment where they can sexually express themselves.
- Include information about diabetes and its potential impact on sexual health as part of diabetes education for older people.
- Refer residents to an appropriately trained sexual health practitioner or counsellor, where indicated.



15. Mental health

Fast facts

Mental health may affect diabetes and also be affected by diabetes

Symptoms of anxiety and depression in older people are sometimes not recognised because they are seen to be part of 'getting older'.

It is important to tell a supervisor if you notice the following signs or symptoms in a resident:

- sadness
- tiredness or sleeping a lot
- trouble falling or staying asleep
- unexplained aches and pains
- slowed movement or speech
- reluctance to participate in activities
- loss of appetite or not eating
- neglecting personal care (if they usually do this)
- a fixation on death or talking about self-harm or suicide.

You can also help residents manage their own health by:

- detecting and reporting early any changes in their:
  - behaviour
  - mood
  - sleep patterns
  - appetite
  - pain
  - BGLs
  - physical symptoms.
- ensuring medicines are taken as prescribed
- encouraging residents to eat healthy and nutritious meals (see"13. Healthy eating" on page 67)
- providing opportunities for social activity and engagement with other residents, and their family members or support network (for example, encouraging them to eat meals in the dining room rather than alone)
- encouraging their active engagement in other preferred solitary or group activities, such as reading, arts and crafts
- providing regular opportunities for physical activity.

Symptoms of anxiety and depression in residents are sometimes not recognised because they can be seen as part of 'getting older'.

More details

> Having good mental health is as important in older age as at any other time of life. In older people, depression and anxiety can have a significant impact on their ability to self-care and self-manage their diabetes and other health conditions, placing them at increased risk of additional medical issues. Changes in cognition may further impact on mental and physical health and functioning.

Unfortunately, many people feel there is a stigma attached to depression and other mental health conditions, often viewing them as a weakness of character rather than a health problem. Older people can be more hesitant to share their experiences relating to anxiety and depression with others, often ignoring symptoms over long periods of time and only seeking professional help when things reach crisis point. As a result, depression and other mental health problems in this population are under-identified by health professionals and older people themselves.

Mood disorders

(including depression and anxiety)

Mood and anxiety disorders should not be assumed to be a normal part of ageing: residents should be comprehensively assessed to identify appropriate treatment and management options.

Depression is common throughout the Australian population. One in five Australians will have depression at some time in their adult life, with older people at higher risk. It is estimated that between 10% and 15% of older people experience depression, but this rate increases to around 35% among people living in RACFs.

Mood disorders such as major depression can have a significant impact on a person's physical health and vice versa. Research shows that having diabetes more than doubles the risk of developing depression. Conversely, depression can be a factor in the onset of type 2 diabetes.

Factors that can contribute to and/ or worsen symptoms of depression and anxiety may include:

- moving into residential aged care
- feeling unwell
- experiencing pain
- declining mobility and sensory abilities
- being in a chronic state of stress
- worry
- experiences of grief and loss
- a decrease in cognitive ability
- fewer social relationships and less engagement in meaningful activity.

Identifying depression in older people

Depression differs from normal changes in mood by the severity, persistence of symptoms and interference with psychosocial functioning. Psychiatrists use diagnostic criteria to assess for major depression and other mental health conditions. They maybe referred to by other mental health professionals such as clinical psychologists.

A person's symptoms may be consistent with a diagnosis of a depressive episode or major depressive disorder if for more than two weeks they have experienced one of the following, most days, most of the time:

- felt sad, down or miserable most of the time
- lost interest in life
- experienced fatigue or low energy (more than usual).

If any of these are present, consideration is then given for the following symptoms.

These relate to the severity of depression:

- impaired sleep
- persistent thoughts of death
- impaired concentration or memory
- lost interest or pleasure in most of their usual activities
- reduced or increased appetite
- agitation or slowing of movements
- guilt or self-blame.

It is important to watch for changes in a resident's mood or behaviour. Symptoms may be different for each individual. Monitoring changes in mood and behaviour on an individual basis is essential, So is encouraging timely assessment and treatment. This is because it can greatly improve their wellbeing and quality of life.

Other psychiatric disorders

Research suggests that psychiatric disorders can be a risk factor for diabetes, as well as being a complication of diabetes. Mental illness – and the antipsychotic medicines widely used to treat a variety of psychiatric conditions – can contribute to people having blood glucose levels outside of their target range. This increases the risk of diabetes-related complications.

Psychiatric disorders in older people can lead to:

- increased social deprivation
- poor quality of life
- cognitive decline
- disability
- increased risk for somatic and mood disorders
- increased risk of self-harm and/or suicide.

As with mood disorders, the clinical picture of psychiatric disorders in older people may be different from what is seen in younger adults. Symptoms may appear less, or milder, and therefore are often under-reported to health practitioners by staff. Although many RACFs monitor and document a resident's altered behaviour, it is important not to dismiss noticeable changes as being part of the person's particular 'behaviour' or 'ageing'.

Residents may be hesitant to share their experiences relating to anxiety and depression with others.



Mental illness may contribute to people having significantly poorer health than people without mental illness. They may also have a shorter life expectancy due to cardiovascular disease, which is the main cause of death in people with impaired glucose tolerance and type 2 diabetes.

People with mental illness are at increased risk of, and should be regularly assessed and monitored for:

- obesity
- metabolic syndrome (being overweight and hypertensive, having high blood lipids and insulin resistance, and cardiovascular)
- other conditions that increase their risk of heart attack or stroke
- diabetes, even if they do not have a family history of diabetes.

Next steps

The mental well-being and quality of life of residents can be improved significantly through timely assessment and treatment.

Treatments may include medical treatments and/or referral to appropriate mental health specialists for psychosocial/behavioural therapies.

In addition to community mental health services (both public and non-government organisations), there are a range of government-funded initiatives available. These help to minimise the cost to the person accessing appropriate allied health services.

Access to these services can be requested by the treating doctor if they are seen as potentially beneficial to the resident.

Mental wellbeing and quality of life of residents can be improved significantly by promoting active and healthy ageing. This involves creating living conditions and environments that allow older people to access more active and integrated lifestyles, in line with their functional abilities.

It is important that staff know how to recognise and report mood changes and potential psychiatric disorders. As well as know how to best to support residents in their day-to-day living.

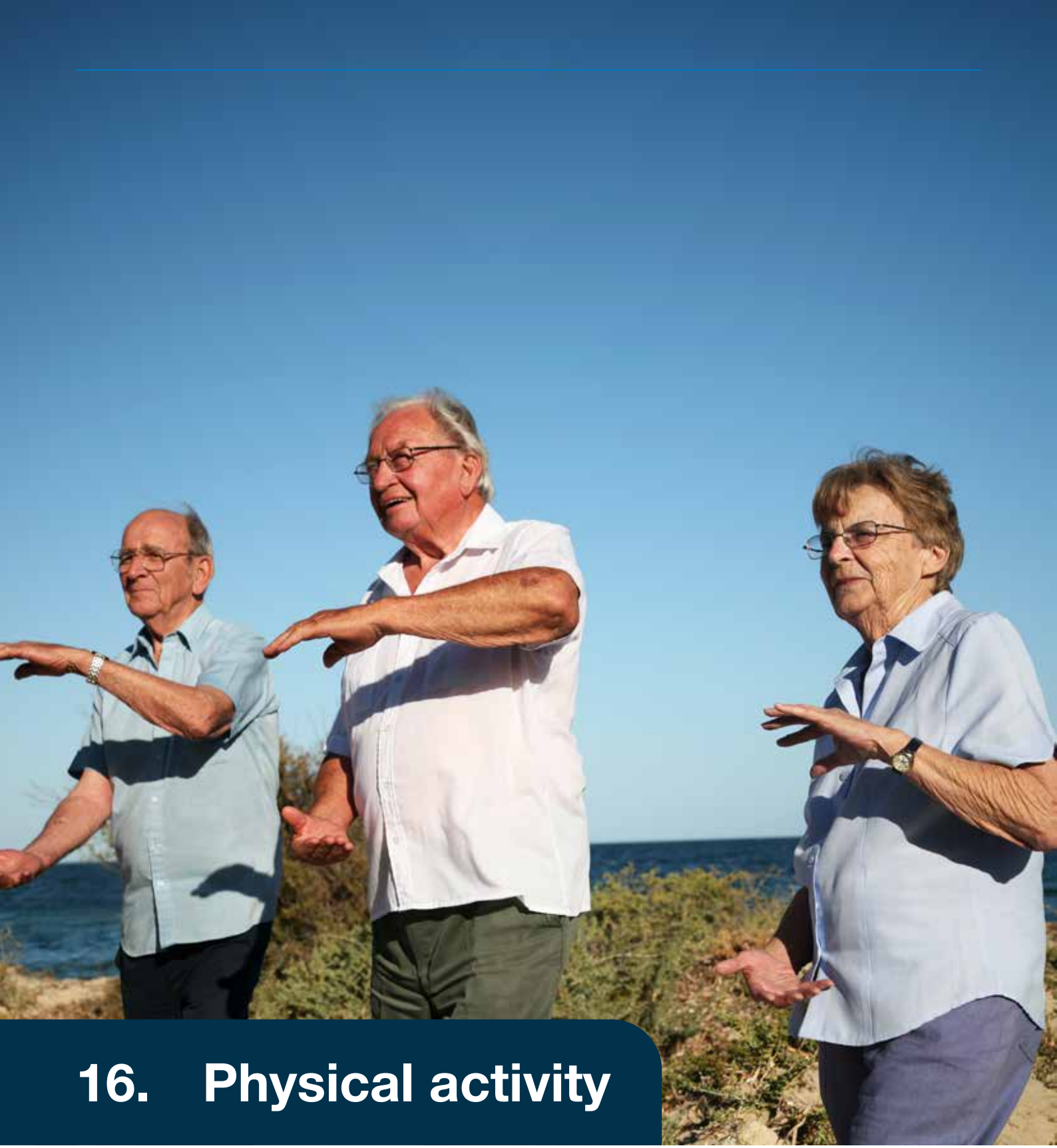
More information

A useful resource is *Managing depression growing older: a guide for professionals and carers* (2012) by Kerrie Eyers, Gordon Parker and Henry Brodaty, published by Allen and Unwin, copyright of the Black Dog Institute.

For more information about the symptoms of depression, refer to *Depression in adults: recognition and management* at **nice.org.uk/guidance/cg90**

The Black Dog Institute (**blackdoginstitute.org.au)** and Beyond Blue (**beyondblue.org.au**) websites also provide a range of facts sheets, resources and training for health practitioners.

For information and resources on managing emotional health in people living with diabetes, visit **ndss.com.au/health-professionals**



16. Physical activity

Fast facts

Regular physical activity is good for everyone, especially older people with diabetes.

Regular physical activity can:

- improve muscle strength and heart function
- reduce tension and stress
- increase mobility and improve balance
- improve quality of life
- help lower blood fats, blood pressure and BGLs
- reduce the risk of health problems.

Exercise may seem difficult for residents in RACFs. But with the help of an exercise physiologist* or physiotherapist, plans can be developed for residents with issues such as vision problems, hearing loss, reduced physical energy and flexibility, or pain.

You can help by:

- encouraging and supporting residents to participate in activities
- making sure residents wear comfortable, well-fitting shoes
- checking the resident's feet after exercise for any redness or blisters
- providing plenty of fluids during exercise
- ensuring residents do not start new activities without checking with a supervisor
- watching for hypoglycaemia in residents this might affect.

***NOTE:** An exercise physiologist is an allied health professional who specialises in designing, implementing and educating about exercise programs that prevent and manage chronic conditions and injuries.

Exercise may seem difficult for people in RACFs but with the help of an exercise physiologist* or physiotherapist, plans can be developed for residents with issues such as vision problems, hearing loss, reduced physical energy and flexibility, or pain.

More details

Physical movement or activity is beneficial for everyone. Especially older people with diabetes and/or other medical and mental health conditions. Regular physical activity can help improve health and wellbeing in older age.

There are three main categories of physical activity that can achieve improved health, independence and wellbeing for older people:

- endurance/fitness activities, where the aim is increasing the demand on the heart and lungs, such as brisk walking, bicycle riding, swimming and jogging
- strength training activities, where the aim is building muscle strength, such as resistance exercise, lifting weights, and stair climbing
- balance, mobility and flexibility (stretching) activities, where the aim is balance, walking, turning, going up and down steps, muscle flexibility and other mobility-related functions.

Participation in regular physical activity may help older people to:

- improve blood glucose management
- maintain independence
- stabilise blood pressure
- improve blood fats
- reduce the risk of colon cancer
- maintain muscle mass, strength and endurance
- improve coordination, balance and bone strength
- reduce the risk of falls
- improve mood, lift depressive symptoms and increase participation in other activities.

While residents in aged care may experience differing levels of limitation in their ability to undertake physical activity, the **Department of Health and Aged Care Physical activity and exercise guidelines for older Australians** encourage regular physical activity wherever possible.

There are five main recommendations for older people:

1. Some form of physical activity, no matter their age, weight or health problems
2. Be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility
3. Accumulate at least 30 minutes of moderate intensity physical activity on most, preferably all, days
4. If a resident has stopped physical activity, or is starting a new physical activity, they should start at a level that is easily managed and gradually build up to the recommended amount, type and frequency of activity
5. Continue to enjoy physical activity in a way suited to their ability, and follow safety procedures and guidelines.

Special considerations

Make sure residents with diabetes are assessed by an appropriate health professional (doctor, physiotherapist or exercise physiologist) before starting any new physical activity. Checking BGLs and diabetes management plan may also be required before, during and after physical activity. This will depend on the nature, duration and level of exercise and the person's diabetes management targets.

Monitoring and management may include:

- checking BGLs before, during and after the activity, especially if the person takes a sulphonylurea or insulin
- ensuring appropriate treatment for a hypo is nearby during exercise
- aiming to avoid hypoglycaemia, but if it occurs, ensuring it is recognised and treated promptly
- monitoring levels of tiredness from exercise, as tiredness and hypoglycaemia can manifest in similar ways. Any person with symptoms of either must be checked for hypoglycaemia
- monitoring for delayed hypoglycaemia, which can occur up to 24 hours after strenuous or unusual physical activity
- advising on and monitoring the level of exercise where the person's BGL is greater than 15 mmol/L
- monitoring pain and providing appropriate pain relief before or after exercise if the person has health problems that may be impacted by exercise
- modifying physical activities for people with mobility problems that may restrict some activities, such as arthritis or a stroke, or considering recommending chair-based exercises, water exercises, light resistance training or Tai Chi
- ensuring a focus on fun activities that encourage any level of activity. For example, older people with limited mobility, or who cannot walk and/or weight-bear, can benefit from batting a balloon while seated, or singing and moving to music. These activities encourage coordination and upper body and arm movements, laughter and breathing deeply – and they also support mental health and wellbeing
- providing opportunities for dancing, as this is an activity that most older people enjoy and that may have been part of their physical and social activity throughout their lives. They can participate with varying levels of intensity and it is a good all-round workout.

Actions

Physical activity is beneficial for all people, regardless of age – but the following precautions need to be taken to optimise its benefits:

- assess the resident's co-morbidities (other medical conditions), eyesight, cognitive function, psychological state and nutritional status before recommending or starting a physical exercise routine
- modify the physical activity to accommodate their individual needs
- consider referring them to a physiotherapist or exercise physiologist to provide specialised advice on their optimal activity program
- provide appropriate relief for health problems that may be made worse by exercise and improve the resident's capacity to exercise pain-free
- check that their clothing is appropriate for the activity, and that their footwear fits well, and is supportive and protective
- make sure they take appropriate diabetes-related precautions, such as having access to a blood glucose meter and 15g of fast-acting carbs (such as jellybeans or fruit juice)



17. Foot care

Fast facts

Foot care is an important part of managing diabetes. The risk of damage to the nerves and blood vessels in feet is increased by having diabetes.

In older people with diabetes, foot problems may contribute significantly to:

- pain or numbness
- a higher risk of falls
- the risk of significant wounds, infection and amputation.

All residents with diabetes should have a foot care plan. It is important that they – or you – undertake daily foot hygiene that includes:

- washing and drying their feet, especially between the toes
- moisturising the skin but avoiding between the toes
- looking at their feet and telling your supervisor about skin changes or pain.

Residents with diabetes may not be able to feel their feet, so it is important that they:

- wear shoes that fit well
- do not wear thongs – these are not recommended
- check the inside of their shoe for foreign bodies (such as stones) or broken lining or anything else that might damage their feet
- wear socks or stockings that are not too tight, with shoes
- never walk in bare feet, wear shoes during the day and have slippers available at night.

More details

Foot care is important in relation to a range of chronic health conditions. It is essential for residents who have diabetes, as they are more likely to develop serious foot problems. This is due to reduced blood flow and nerve damage in the feet, resulting in an altered sensation. This can lead to reduced awareness of skin tears, minor cuts and abrasions, ulceration and other skin problems and injuries that are slow to heal.

Foot care should be part of the multidisciplinary health care team assessment, monitoring and review process, and part of the diabetes annual assessment.

Assessing a resident's level of foot self-care should include:

- the resident's ability to:
  - see their feet
  - reach their feet
  - provide foot care as necessary.
- whether foot self-care has an impact on, or is affected by, other conditions (such as arthritis in the hands, the level of physical dexterity or obesity)
- whether the resident wants to care for their own feet.

A comprehensive foot history and assessment should include assessment, monitoring and review of:

- blisters, corns, bunions, in-growing toenails, arthritis
- ulceration
- amputation sites
- poor or slow wound healing
- skin tears, minor cuts or abrasions

- limping after a short walk
- footwear
- risk factors, including falls risk
- increased or unexplained pain in the feet
- altered mobility which may be due to foot problems
- the resident's level of/need for support in relation to foot and nail care.

Observation of both feet should check:
- skin colour and moisture
- skin integrity (checking for any blisters, corns, breaks, dry skin or callus formation)
- thickness of toenails, including any that are deformed or overgrown, discoloured or ingrowing
- any foot deformities, such as bunions, claw toes or hammer toes
- gait abnormalities, such as a strange walk or a flapping walk
- any signs of peripheral neuropathy, such as reports of burning or tingling feet, or insensitivity to pain or touch
- the temperature of the foot and whether it is warm or cold (cold may indicate peripheral vascular disease; hot and red may indicate cellulitis)
- the person's pulse on the top of the foot or behind the ankles.

The risk of damage to the nerves and blood vessels in feet is increased by having diabetes.

When to see a podiatrist

Podiatrists specialise in caring for people with lower limb problems. This includes diabetes-related problems such as poor circulation or nerve damage. There are a range of options for people with chronic health conditions to reduce the cost of getting allied health services. These include Medicare rebates.

Older people with diabetes should have a podiatry (and multidisciplinary) assessment of their feet when they are admitted to the RACF. Follow-up reviews will occur at different times – three-monthly, six-monthly or annually depending on their needs. However, there should be an additional review when any changes are noted in their feet or their general health status.

Low-risk
- have good blood flow
- are warm
- have no past history of ulcer or amputation.
- feel normal.

To be considered low risk, the person also needs to be able to care for their own feet. It is recommended that an annual review is performed by a podiatrist, unless otherwise specified.

High-risk
- a current ulcer
- had a foot ulcer in the past
- had an amputation in the past
- decreased sensation (such as numbness)
- corns or calluses
- deformed, thick or discoloured toenails
- foot deformities such as bunions, hammer toes or bony prominences
- foot deformities that are hot to the touch.

It is recommended that older people at high risk are reviewed by a podiatrist as soon as they develop any of the above problems and have ongoing reviews as advised by the podiatrist.

Blood supply

When there is not enough blood supply to the feet, the resident may complain of cold feet and leg cramps when walking or at night. Poor blood supply also means white blood cells cannot reach any site of broken skin on the foot. This increases the risk of an infection. If ulcerations and infections are not treated quickly, there is an increased risk of amputation. Any skin breakdown should be reported straight away and treated aggressively by the resident's doctor or nursing staff. Intravenous antibiotics may be needed to treat the infection.

If a resident has problems with blood supply to their feet, they may need a referral to a vascular surgeon for assessment and intervention. Any change in blood supply to the feet should be reported to the resident's treating doctor so they can arrange further investigations.

Nerve damage

If nerves in the feet are damaged, they cannot relay messages from the feet to the brain, or from the brain to the feet.

Older people with diabetes and early nerve damage may experience a loss of sensation (such as numbness) or they may report sensations such as pins and needles or burning feet.

When the nerve damage is complete, the person may no longer experience this discomfort, but they will lose reflexes in their feet. The belief that people with nerve damage (peripheral neuropathy) do not experience pain is often inaccurate. Although some people may experience no pain, peripheral neuropathy can be extremely painful, especially when there is an infection. Also, it can be worse at night and cause interrupted and disturbed sleep.

Loss of sensation can also mean that people may not be aware if they tread on a sharp object, even if it pierces the skin. If they have not felt the initial damage, they may also not notice any signs or symptoms of early infection.

It is essential for people with nerve damage in their feet to have their feet regularly monitored and assessed as an important part of daily care and diabetes annual review.

Residents should be referred to their treating doctor for urgent assessment if there is any foot deformity (even when the people themselves cannot feel any problem) and/or if the foot is hot to touch.

Hygiene

For residents with diabetes, foot care and hygiene should include:

- daily washing with warm (not hot) water and a gentle cleanser
- careful drying, especially between the toes



- the application of a urea-based lotion to all areas after drying except between toes (and the lotion should be massaged in completely)
- consultation with their doctor if they notice any abnormalities or changes to their feet.

Having a daily foot hygiene routine gives people the opportunity (with the assistance of staff, if needed) to assess their feet thoroughly and identify and act on problems early.

Residents with diabetes and early nerve damage may experience a loss of sensation (such as numbness) or they may report sensations such as pins and needles or burning feet.

Toenails

Some residents may be able to cut their own toenails, but you may wish to review their nail care technique. If residents cannot or would rather not, cut their toenails themselves, a regular visit to the podiatrist is the safest nail care alternative.

When observing a resident cutting their toenails, take note of their technique and make suggestions where appropriate. Check that the resident is:

- using appropriate toenail cutters, clippers or files
- cutting the nails after a bath or shower, when they are still soft
- not cutting or filing the nails too short
- cutting/filing the toenails straight across
- carefully filing any corners or ragged edges
- being careful not to cut the skin.

Things you should consider when observing the resident include:

- assessing toenails for thickness/hardness, deformity, changes in colour, redness, dry skin around the nails, or signs of infection (including fungal infection)
- reporting changes to the treating doctor and/or podiatrist for review
- referring people to a podiatrist to cut toenails that are too hard to cut, are deformed, or where there is concern for the safety of the person.

Footwear

Check the following features when assessing resident's footwear.

Socks

- Natural fibre socks (such as wool or cotton) are best, as they are more supportive, and natural fibres are better than synthetic for wear-and-tear time and reducing sweating.
- The socks need to fit correctly, as the wrong size will cause discomfort.
- If the seams are prominent, wear the socks inside out.
- Make sure the top of the sock is not too tight around the leg.

Shoes

When assessing a resident's shoes, check:

- the condition of the shoes
- the level of toe protection
- the thickness/flexibility of the sole (ideally, they would have a non-slip sole about 1cm thick)
- how the shoes are fastened (buckle, lace, velcro etc). This is a matter of individual preference and should be suited to the resident
- what material they are made of. Natural materials, such as leather or canvas, are better than synthetic materials, to increase wear-and-tear time and reduce sweating
- the suitability and depth of the shoe to accommodate orthotics (if needed)
- any seams, buckles or fasteners which could cause rubbing or pressure areas.

When looking at the fit of the shoes, check:

- whether there is enough room in the shoes to accommodate any foot deformities
- how well they fit, including the level of heel grip
- how well/securely the shoes hold the rest of the foot and stay on the feet when the resident is walking.

When a resident is buying new shoes, advise them to consider:

- making a cardboard outline of the foot and taking it to the shop to test it in any new shoe. If it doesn't fit properly, neither will the person's foot
- having their feet properly measured to make sure their shoes are long enough, wide enough and deep enough to properly accommodate their feet
- checking that the shop will give them a refund if the shoes are not worn and found to be unsuitable after purchase
- buying the shoes in the afternoon to ensure they will fit at any time of the day (as feet often swell during the day)
- wearing socks or stockings when trying on shoes to ensure they fit when wearing them later
- avoiding shoes that are not supportive or safe, including:
  - moccasin-style shoes, as the stitching doesn't stretch, and they do not hold and support a person's foot
  - slip-on shoes, including slippers, as these also slip off and may be dangerous
  - open-toed shoes, and shoes with narrow toes
  - high heels, as they are difficult to walk in and may cause falls and sprains
  - thongs, as they slip off easily and they do not support or protect the foot.
- When wearing new shoes, wear them for half an hour and check the feet for pressure marks or abrasions. If these are present, return the shoes to the shop and be refitted for a new pair.
- If the shoes fit well on the first day, add 30 minutes of wear every day.

Walking for exercise

If the resident enjoys walking and is able to do so easily and safely, walking for exercise should be encouraged.

To protect their feet from damage, check that they are wearing properly fitting walking shoes with socks. A podiatrist can also recommend appropriate shoes for walking if the resident is experiencing problems with their feet which may affect their ability to exercise.

If a resident complains of a sore foot or any discomfort after walking, their feet should be assessed immediately.

If the shoe fits.

- Thongs are not recommended for older people with diabetes, especially those with high-risk feet. Nerve damage means their ability to place their foot properly is impaired, and thongs also leave toes vulnerable to injury.
- Residents with diabetes may not be able to feel whether their shoes fit properly, or if there is a problem inside the shoe. Each day before they put on their shoes, encourage or help them to check the inside of their shoes for a stone or a broken lining or anything else that might damage their feet.
- Encourage them to wear socks or stockings with shoes, and to wear shoes during the day and have appropriate well-fitting slippers available at night.



18. Skin care

Fast facts

As skin ages, it becomes thinner and loses elasticity and moisture. As a result, older people's skin gets damaged more easily, and it takes longer to heal if it gets cracks or tears.

This process is a normal part of ageing, but diabetes can speed it up. Having diabetes can also make it slower to recover from skin infections and sores. It is important to:

- avoid over-washing the skin
- use warm – not hot – water to wash
- use a pH-neutral soap or non-soap cleanser
- pat the skin dry, rather than rubbing it vigorously
- avoid scratching dry skin and instead apply lotion to moisturise
- moisturise the entire body after each bath, shower or body wash
- limit time in the sun without skin protection
- use sunscreen.

Let a supervisor know if you notice any of the following on a resident's body:

- redness
- infection
- cracks
- itching
- bruises
- swelling of any of the limbs
- changes in skin colour, moisture or temperature.

Healthy, intact skin protects the body organs and their functions. Healthy skin is the first barrier to prevent infections and harmful germs from entering the body. Any breakdown in skin integrity makes the body susceptible to infection.

Glands near the hair follicles produce oil and sweat to moisturise and protect the skin. The action of these glands is controlled by the micro-circulation and nervous system. Unfortunately, diabetes can affect these systems and lead to damage to the nerves affecting the glands. When this happens, the skin dries out and becomes prone to cracking. This allows bacteria to enter and increases the risk of skin infections and irritations. This process occurs in normal ageing but diabetes speeds it up.

Residents with diabetes may need to be reminded about the importance of skin care and how to look after their skin. They are at higher risk of developing skin integrity problems if they:

- have any broken skin or pressure area
- have a skin infection
- are overweight or underweight
- have lost the subcutaneous layer of fat that acts to cushion the skin
- have diminished sensation due to peripheral neuropathy
- have reduced blood flow/circulation
- have reduced mobility or spend extended periods in bed or in a chair
- are dehydrated
- have poor nutrition
- experience incontinence
- are at falls risk

- are a smoker
- are taking certain medicines (such as warfarin or prednisolone)
- are confused or disoriented
- are unable to frequently/effectively assess their skin
- have difficulties washing or drying areas of their skin (for example, under abdominal or breast skin folds, between the toes, under their arms, around the groin and buttocks).

Older people's skin is more vulnerable to damage and stress, sustains injury easily, and takes longer to heal.



19. Eye care

Fast facts

Diabetes can increase the risk of damage to the tiny blood vessels in the back of the eye (called the retina). People with diabetes are recommended to have regular eye examinations by an optometrist or an ophthalmologist (eye doctor) to detect problems early.

It is important to make sure that vision problems in older people with diabetes is not assumed to be a normal part of ageing, these should be assessed by a doctor/optometrist.

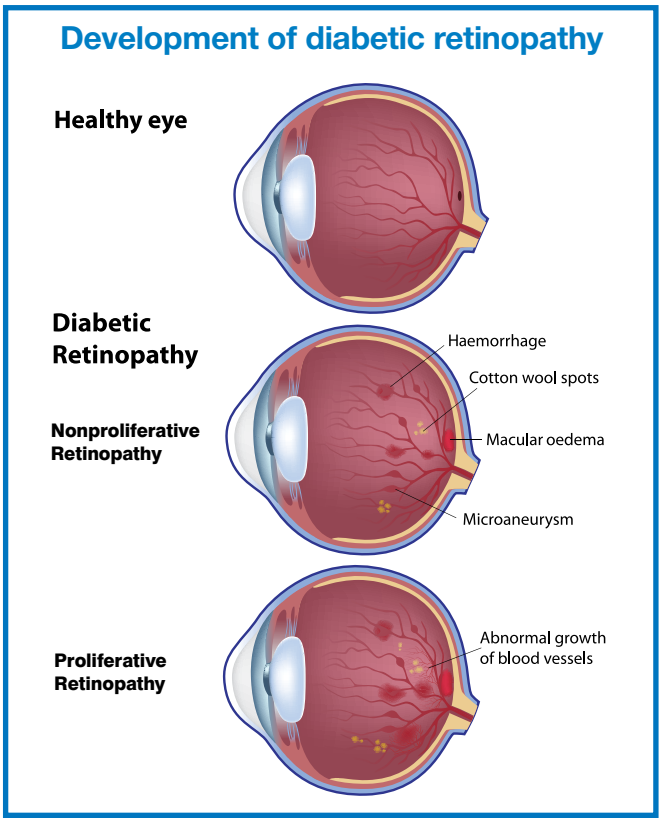
If a resident with diabetes reports any of the following, let your supervisor know:

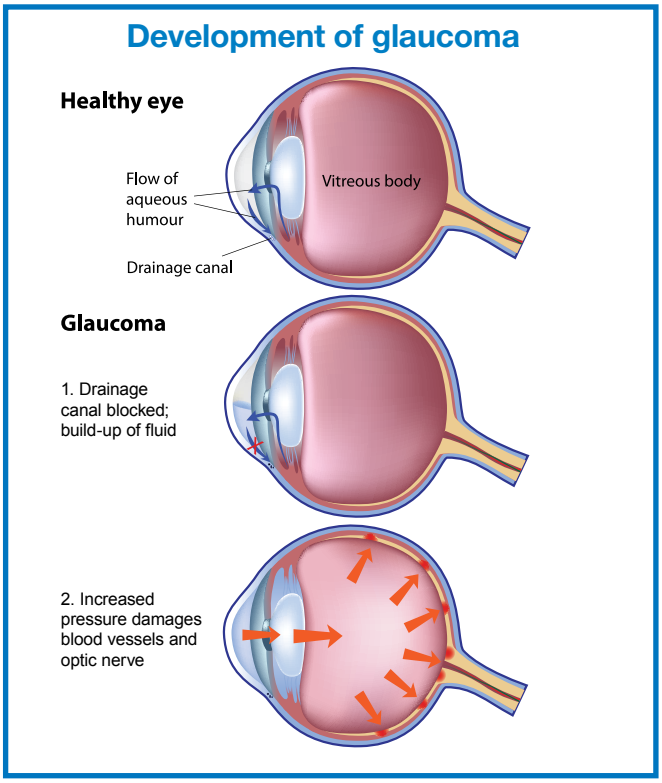
- sudden loss of sight or blurred vision
- flashes of lights in their eyes
- eye pain
- double vision
- redness or swelling of the eye or eyelid.

You can also help residents by ensuring they have:

- their glasses clean and accessible, so they can wear them when needed
- their sunglasses on when outside.

Residents with diabetes need regular eye examinations by an optometrist or an ophthalmologist (eye doctor) to detect problems early.





More details

People with diabetes have an increased risk of developing eye complications which, if left untreated, can lead to reduced vision and blindness. However, 98% of serious vision loss from diabetes can be prevented with regular eye examinations and early treatment. The earlier the treatment, the better the result.

Many people with diabetes do not notice changes in their vision until the condition is very serious. Therefore it is essential to have regular eye examinations to detect problems early. Often, diabetes-related eye complications have no signs or symptoms. There may be no obvious deterioration in vision until the condition is quite advanced.

Persistently high blood glucose levels can increase the risk of more serious eye problems in people with diabetes, including:

- retinopathy
- cataracts
- macular oedema
- glaucoma.

Changes in vision may be gradual and go unnoticed for some time. Therefore, people over 65 are recommended to have a regular annual eye examination. Any significant vision problems or loss of sight should be assessed by the doctor or optometrist in the first instance, and then the resident may need to be referred to a medical eye specialist (ophthalmologist). Older people with serious eye problems should be reviewed annually by an ophthalmologist.

Common signs and symptoms of vision problems (when present) may include:

- floaters and flashes
- blurry, blocked or dim vision
- poor night vision
- halos around lights or sparkles
- sensitivity to light and glare
- the need for brighter light for reading and other activities
- distortion or ‘holes’ in the person’s vision
- more frequent need for new glasses prescriptions.

98% of serious vision loss from diabetes can be prevented with regular eye examinations and early treatment.

Residents with diabetes are recommended to undertake (or be assisted to undertake) eye self-care by:

- reducing the effects of dry eyes through regular use of artificial tears during the day and lubricating ointment or gel at night
- managing sore, red eyes and/or crusty discharge by routinely bathing eyes with tepid saline
- having correct prescription lenses through regular eye examinations by an optometrist
- keeping their glasses clean and well fitting
- ensuring their glasses are accessible throughout the day and wearing them when they should
- ensuring appropriate sun protection by wearing appropriate ultraviolet (UV) protection, sunglasses and a hat with a broad brim when outside
- informing their treating doctor or optometrist if they are experiencing any signs or symptoms of eye problems.



20. Oral care

Fast facts

People with diabetes have more glucose in their saliva than other people, which can result in more tooth decay and gum disease.

Diabetes can also lead to some people having a dry mouth and other oral problems.

Signs and symptoms of oral health problems include:

- reduced appetite
- weight loss
- dry mouth
- bleeding gums
- red, swollen gums or tongue
- loose teeth
- a change in the way teeth fit together, or how the person is able to bite
- a change in the fit of dentures
- refusal to wear dentures
- pain or burning tongue or gums
- ulcers
- persistent bad breath.

Note: If you notice any of these in a resident who has diabetes, let a supervisor know.

People with diabetes have more glucose in their saliva than other people, which can result in more tooth decay and gum disease.

More details

Sub -optimal diabetes management can increase the risk of tooth decay and periodontal (gum) disease. This is because people with diabetes have more glucose in their saliva than other people. They may also experience a dry mouth and other oral problems.

Saliva in the mouth has many functions. It acts to:

- moisten and cleanse the mouth
- prevent infection (by providing antibodies) and reduce bad breath by controlling bacteria in the mouth
- reduce tooth decay and gum disease by neutralising acids and preventing infection brought on by dental plaque
- wash away dead skin cells that accumulate on the gums, tongue and cheeks
- protect against ulcers, sores and other effects of friction
- enable chewing and swallowing
- aid digestion by breaking down food
- improve the taste of food and enhance the eating experience
- keep the lips moist and reduce the risk of dryness and cracking
- reduce dryness and discomfort by lubricating the mouth and throat
- lubricate the mouth to make speaking easier.

Oral health

Oral health and effective mouth care is vital to diabetes management. Residents with diabetes need to be able to enjoy a wide range of nutritious foods. If they have gum disease, mouth or tooth pain, or difficulty eating it may impact on their overall health and wellbeing

Optimal oral care for older people with diabetes includes:

- maintaining good blood glucose management
- encouraging the use of fluoride toothpaste if the person has their own teeth
- checking for signs and symptoms of oral disease
- encouraging good oral hygiene practices – that is, flossing and brushing at least twice a day
- ensuring adequate hydration
- treating dry mouth
- discouraging smoking
- arranging regular dental check-ups
- ensuring dentures are clean, fit well and that the false plate is not damaged
- checking for mouth, gum or cheek sores, or ulceration
- contacting a dentist/dental therapist as soon as any problems arise.

People with diabetes have more glucose in their saliva than other people, which can result in more tooth decay and gum disease.

Common oral health problems associated with diabetes and ageing include:

- tooth decay
- periodontal (gum) disease
- mouth ulcers
- taste impairment
- dry mouth
- fungal yeast infection (Candidiasis), commonly on the tongue and palate
- systemic infections
- poorly fitting dentures

Dry mouth

Dry mouth can be due to:

- the side effects of many medicines
- dehydration
- hyperglycaemia
- nerve damage
- some medical conditions (including diabetes)
- smoking
- stress, anxiety or depression
- infection
- eating disorders
- open-mouthed breathing
- damage to salivary glands
- sweeteners in diet drinks.

NOTE: Dry mouth may be caused by hyperglycaemia and should be checked with a BGL and corrected by appropriate treatment.

Certain medicines can also cause a dry mouth. These include:

- some cold and flu medicines

- anti-depressants and anti-anxiety medicines
- antihistamines
- asthma medicines
- anti-Parkinson's medicines
- prednisolone
- diuretics
- anti-hypertensives
- epilepsy medicines
- some pain relievers.

The resident's doctor should be advised if any medicine they are taking causes a dry mouth, because an alternative may be available. Signs and symptoms of dry mouth include:

- difficulty eating (chewing and swallowing) and tasting food
- difficulty speaking
- chapped or cracked lips
- sticky mouth (in the corners of the mouth and lips)
- dry crusts at the corners of the mouth
- a dry, sore throat
- pale gums
- bad breath
- a persistent, dry cough
- white tongue (a fungal yeast infection, or Candidiasis, commonly found on the tongue and palate)
- red, inflamed soft tissues of the mouth and throat
- dry, matt-looking teeth (not moist and shiny)
- headache and dizziness (sometimes).

Dry mouth should be treated by managing the condition that is causing it, and oral hygiene.



Older people with diabetes are recommended to perform (or be assisted to perform) dental and oral self- care, including:

- cleaning their teeth or dentures
- rinsing and wiping their mouth immediately after eating
- brushing and rinsing their dentures immediately after eating
- using a toothpaste that contains fluoride, or a toothpaste/mouth care product specially formulated for dry mouth (e.g. Biotene)
- using a lip balm regularly
- always having access to water to drink throughout the day
- rinsing regularly with water or an appropriate mouth wash
- having a healthy diet and avoiding overly salty foods and foods/drinks with a high sugar content
- limiting the number of citrus juices and diet drinks (water is best)
- limiting their alcohol consumption
- using artificial saliva or sugar-free chewing gum, where recommended.

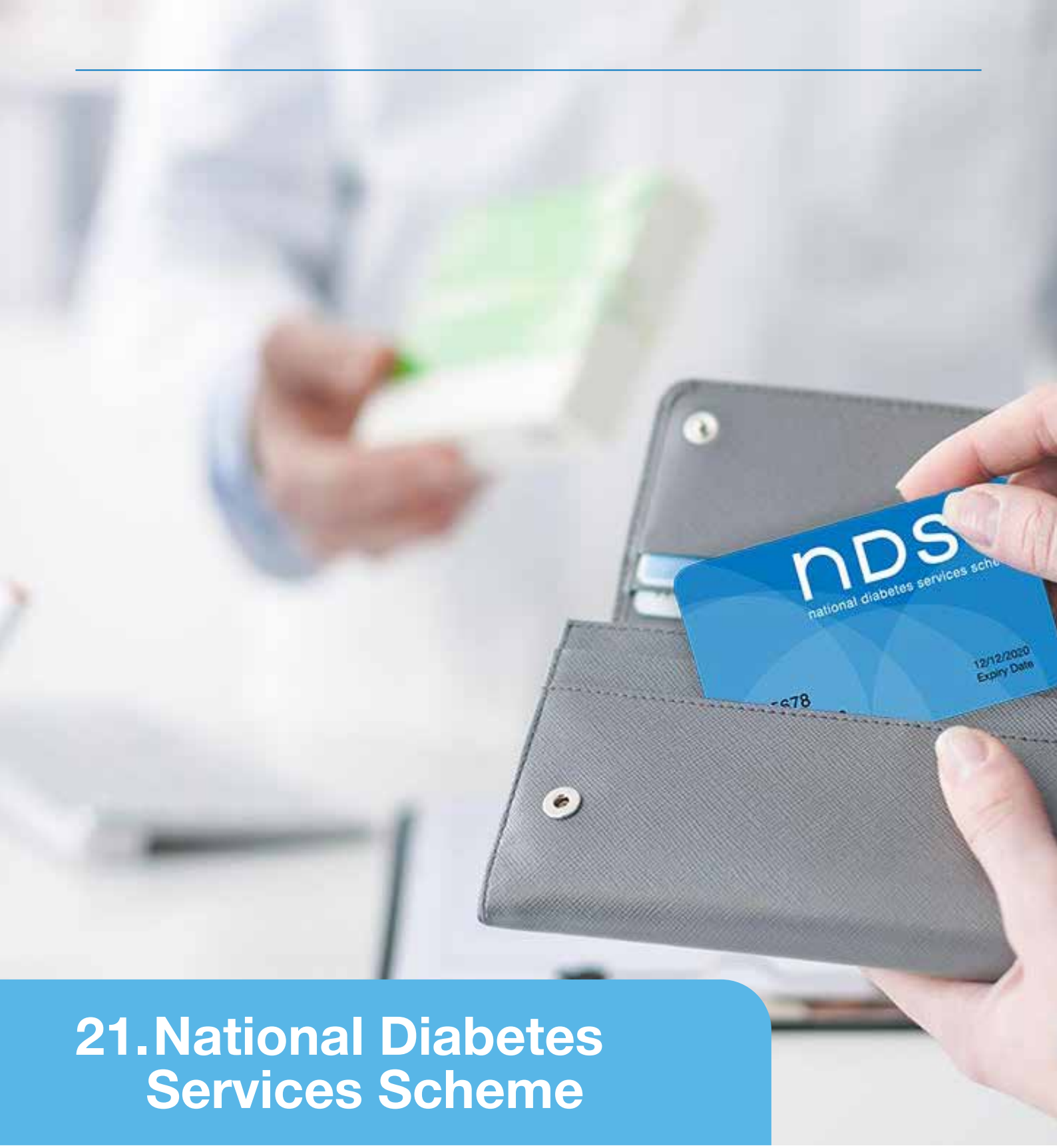
Actions

When oral health problems develop in residents with diabetes, early detection and referral is essential. They need review by a dentist, who may:

- put them on antibiotics
- prescribe anti-fungal medicine
- treat any ulcers
- remove tartar build up
- give them one or more fillings
- remove decayed teeth.

Alternatively, they may refer the resident to:

- a dental prosthetist, if necessary, for correcting, refitting or making new dentures for comfort and improved bite
- a periodontist, if gum problems persist.



21. National Diabetes Services Scheme

NDSS

The NDSS is an initiative of the Australian Government administered by Diabetes Australia since 1987. Registration with the NDSS is free and open to all Australian residents diagnosed with diabetes.

Through the NDSS, people with diabetes can access:

- support services such as face-to-face and online self-management education programs for practical help and guidance
- digital and printed diabetes and health information and resources
- subsidised diabetes products.

Registration

It is important to register all newly diagnosed aged care residents and those residents who have diabetes who are not yet registered with the NDSS. Contact the NDSS Helpline on **1800 637 700** to:

- update a resident's details with their new address when they move into the facility, or to advise the NDSS if the resident passes away
- check whether all eligible residents are registered
- register a resident who is newly diagnosed with diabetes
- update a resident's details if their diabetes management is changing to injecting insulin or a glucose-lowering medicine.

Services, products and resources

Support services for people with diabetes who live in RACFs, and resources for staff (such as this guide), are provided through state- and territory-based agents. All resources are listed on the NDSS website at **ndss.com.au** and agents are available through the NDSS Helpline **1800 637 700** to discuss the services and resources they offer to RACFs in their area.

A range of subsidised diabetes products can be accessed through the NDSS including:

- subsidised blood glucose testing strips
- subsidised urine testing strips
- subsidised insulin pump consumables (for approved people with type 1 diabetes who meet eligibility criteria)
- subsidised continuous and flash glucose monitoring products (if they have type 1 diabetes, or conditions similar to type 1 diabetes who meet the eligibility criteria)
- fully subsidised syringes or pen needles for insulin or approved non-insulin injectable medicines.

RACF residents can receive a further discount on some NDSS products if they hold one of the following concession cards:

- Health Care card
- Pensioner Concession card
- Pharmaceutical Benefits Scheme Safety Net card
- Department of Veterans' Affairs Concession card.

Subsidised diabetes products can be accessed at community pharmacies around Australia. The pharmacies are sometimes called 'NDSS Access Points'.

For more information about the NDSS, visit ndss.com.au or call the NDSS Helpline on 1800 637 700.



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