

DIABETES MANAGEMENT IN AGED CARE: A PRACTICAL HANDBOOK



ndss
national diabetes services scheme

d **diabetes**
australia

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government administered by Diabetes Australia.

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, they may have complications and comorbidities. 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 was originally developed in response to many requests from aged care facilities for staff education and support in relation to caring for residents with diabetes. The first edition was developed in March 2012. This latest version includes important updates.

It contains new 'Fast facts' that have been developed for assistants in nursing and care workers and has more detailed sections for nurses or carers wanting to learn more about a topic. The new 'Fast facts' are also available as a separate document and can be found at www.ndss.com.au.

The DMAC can be used as a stand-alone resource. The following resources may be useful in addition to the DMAC:

- Diabetes management in aged care: fast facts for care workers
- Audit checklist: management of residents who have diabetes
- McKellar guidelines for managing older people with diabetes in residential and other care settings.

The DMAC and these other resources can be found at www.ndss.com.au.

Melanie Burkhardt

Chair,

National Diabetes Services Scheme (NDSS) Older People Living with Diabetes Program Expert Reference Group

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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.

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The updated DMAC contains new 'Fast facts' that have been developed for assistants in nursing and care workers and has more detailed sections for nurses or carers wanting to learn more about a topic.

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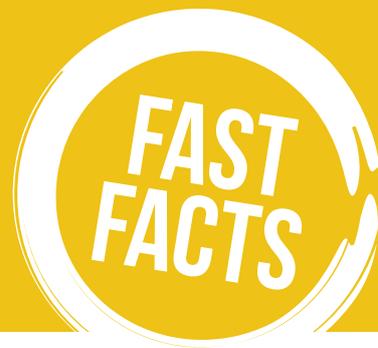
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1. What is diabetes?



1. What is diabetes?



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

To make your body work properly, you need to convert glucose from food to energy. This conversion occurs in the cells of the body. A hormone called insulin is essential for this to happen.

Insulin helps glucose move from the blood into the cells.

In people with diabetes, the pancreas doesn't produce enough – or any – insulin, or the insulin that is produced doesn't 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 can't maintain healthy levels of glucose in the blood.

1. What is diabetes?



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

‘People with diabetes can’t eat sugar’ – not true

Because diabetes is a condition where your blood glucose level is too high, many people think they need to avoid sugars and foods containing sugar. However, if they are eaten as part of a healthy meal plan – and combined with regular exercise – sugar, lollies and desserts 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 (unless it’s gestational diabetes, which needs managing while pregnant but usually goes away once the baby is born). 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 prevention. Nobody knows what causes type 1 diabetes.

There is no single cause of type 2 diabetes, but there are well-established risk factors. Your risk of developing diabetes is affected by things you can’t change, such as family history, age and your ethnic background. However, it’s estimated that 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’s not a direct cause. Some people who are overweight will not develop type 2 diabetes while some people who are a healthy weight will develop type 2 diabetes.

Type 1 diabetes is not preventable and is not caused by being overweight.

1. What is diabetes?



‘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’s 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 don’t 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’s true that 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 medications. Half of the 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.

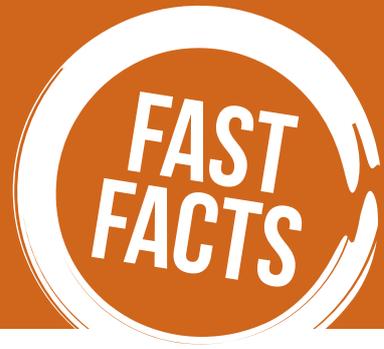
‘People who have diabetes complications have not looked after themselves properly’ – not true

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 avoid the damage diabetes can cause. People should not be blamed if they do have complications, as this may have been out of their control.

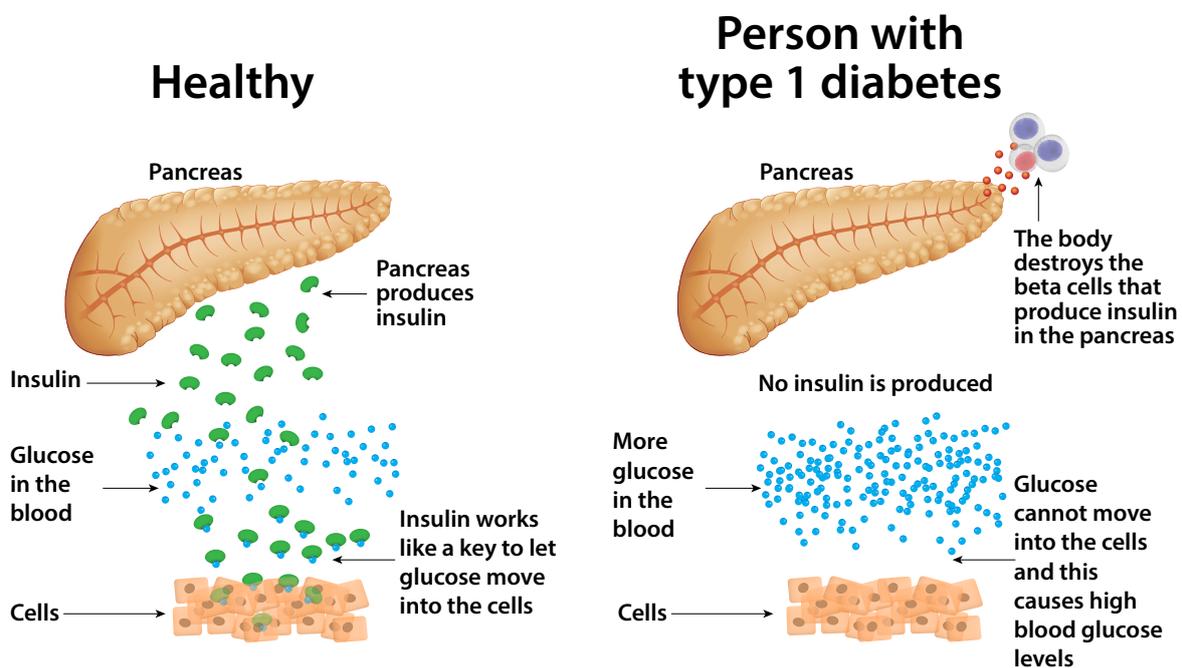
2. Type 1 diabetes



2. Type 1 diabetes



Type 1 diabetes



In type 1 diabetes, the pancreas stops making insulin.

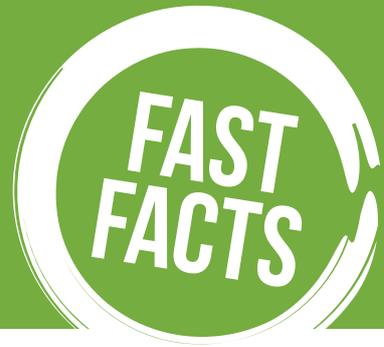
Type 1 diabetes:

- is an autoimmune disease where the body destroys the cells that 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 insulin every day for the rest of their life using a syringe or insulin pen device or by using an insulin pump.

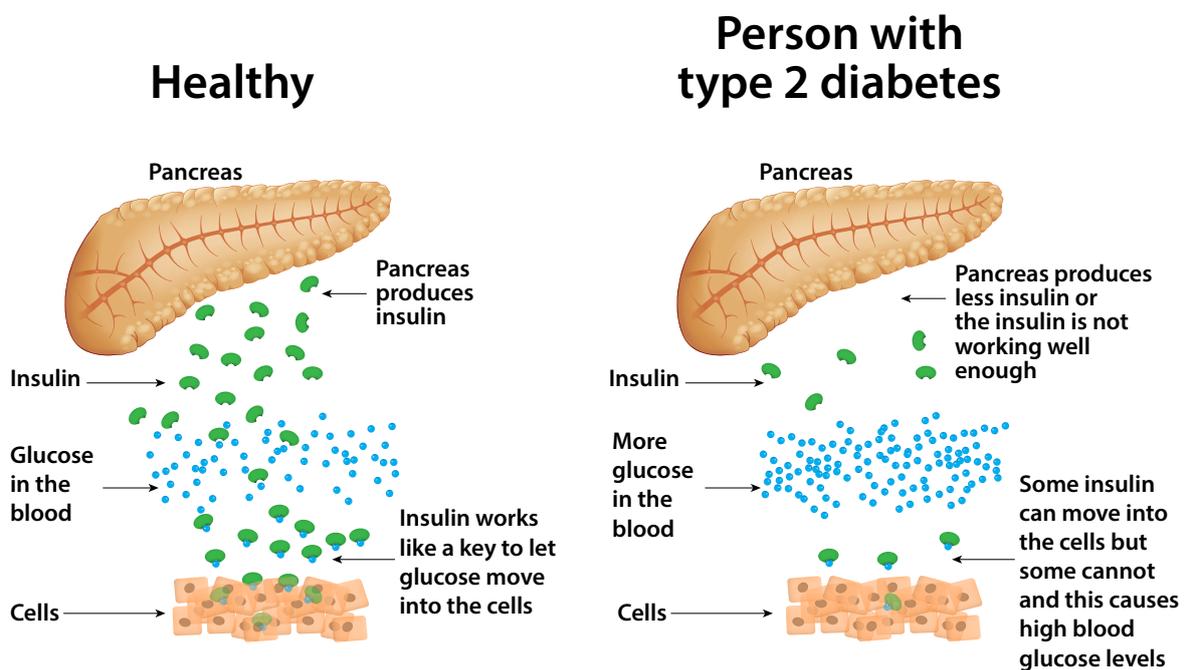
3. Type 2 diabetes



3. Type 2 diabetes



Type 2 diabetes



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

Type 2 diabetes:

- is a complex disease where the pancreas is not producing enough insulin or the insulin is not working well enough
- 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
- up to 25% of people over the age of 65 have type 2 diabetes
- most people who are diagnosed will eventually need glucose lowering medicines to manage their diabetes, and more than half will eventually need insulin.

3. Type 2 diabetes



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

Unlike type 1 diabetes, lifestyle factors also have an influence on type 2 diabetes occurring. Risk factors include poor quality diet, inactivity, obesity, smoking, high cholesterol and high blood pressure. Another major risk factor is ageing: as the body ages, organs and cells don't function as well as they used to, so processes like producing insulin also don't work as well.

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

This insulin resistance results in the body not using insulin as effectively as it should. When this happens, the pancreas needs to produce more insulin than usual to maintain normal blood glucose levels. If the body doesn't use insulin effectively, or doesn't produce enough insulin, blood glucose levels can't remain normal.

Type 2 diabetes also has an effect on blood lipid (fat) levels. Diabetes tends to lower 'good' cholesterol levels and raise triglyceride and 'bad' cholesterol levels. This increases the risk of heart disease and stroke and is associated with hypertension (high blood pressure).

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, and more than half of all people with type 2 diabetes will eventually need insulin.

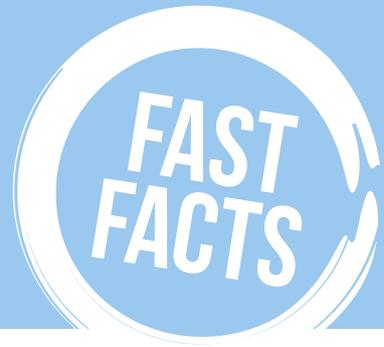
If someone with type 2 diabetes needs insulin, this doesn't mean they have type 1 diabetes. It means they have progressed to needing insulin to manage their type 2 diabetes (they are insulin-requiring, not insulin-dependent).

Most people with type 2 diabetes will need glucose lowering medicines to manage their diabetes at some point, and more than half of all people with type 2 diabetes will eventually need insulin.

4. Signs, symptoms and diagnosis



4. Signs, symptoms and diagnosis



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

The signs and symptoms of diabetes in older people can be non-specific, so they may not be as obvious as in younger people. As a result, diabetes can be mistaken for other causes – including 'getting old' – which can delay the diagnosis.

Signs and symptoms in older people that may indicate diabetes are shown below.



**feeling very
thirsty**



blurry vision



extreme tiredness



slow wound-healing



**cognitive changes
or confusion**



**unexplained
weight loss**



**frequent
urination or
incontinence**

Actions

If you notice any of the signs or symptoms above, let your supervisor know.

4. Signs, symptoms and diagnosis



Older people who present with these symptoms should be screened for diabetes by measuring plasma glucose, as recommended for the general population.

Signs or symptoms of diabetes typically include:

- urinating more than usual
- feeling very thirsty
- increased or reduced appetite
- extreme tiredness/feeling lethargic
- weight loss
- glucose in the urine
- dry mouth, lips or skin, or sunken eyes
- flushed face
- feeling irritable
- blurred vision
- itchiness
- vaginal thrush in women and (occasionally) pubic thrush in men
- loss of sexual desire in women
- impotence in men.

Symptoms are often non-specific and can be attributed to 'old age'. This means that diabetes is often only diagnosed when an older person presents for a routine health check or is hospitalised for an underlying illness (which can often be a complication of diabetes). In some cases, their diabetes is not revealed until they have an acute diabetes-related complication, such as a stroke or heart attack.

It's important to understand the way diabetes presents and the different clinical features diabetes has in older people, so you can recognise opportunities to screen for diabetes and its complications.

As older people can experience unusual or atypical symptoms, it's 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'.

4. Signs, symptoms and diagnosis

Older people who are asymptomatic (not showing any symptoms) may be screened for diabetes using the Australian Type 2 Diabetes Assessment Tool, AUSDRISK, which can be found at www.diabetesaustralia.com.au/are-you-at-risk-type-2

An older person who shows symptoms or signs of diabetes, or who is identified as at-risk through a risk assessment, 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
- every year for those at high risk (that is, people with impaired glucose tolerance or impaired fasting glucose).

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 oral glucose tolerance test involves the person drinking a special fluid that contains a high amount of glucose and having a blood test prior to and two hours after having this drink.

There is some evidence that older people can have a normal fasting blood glucose level but an elevated glucose level at the two-hour point on OGT; and that these people have an increased risk of cardiovascular events (Barrett-Connor and Ferrara 1998).

The OGTT should be performed in a controlled situation to ensure the accuracy of the test: it should not be performed when the blood glucose is high because the glucose-loaded drink can cause a harmful event.

A Haemoglobin A1c (HbA1c) is a blood test that provides a long term pattern of blood glucose control over the past two to three months. This test is arranged by the doctor and can be used to diagnosis of diabetes.

A blood 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



5. Management in the residential care setting



For older people, especially those who live in an aged care facility, helping them maintain the best quality of life should be the main principle of diabetes management.

Monitoring their blood glucose levels is one way to do this, but it's just part of an overall management plan. Diabetes care requires a balance between healthy eating, physical activity and medicines, such as tablets and insulin, if taken. Other things like stress and other illness can also have an effect on a person's diabetes.



medicine



insulin



food



exercise



stress



other illness

5. Management in the residential care setting



Diabetes management needs to be tailored to each resident so that they are less likely to experience either high or low blood glucose levels.

The approach to managing diabetes in older people depends on a range of factors, including:

- the person's level of activity and health
- whether they have comorbidities (other medical conditions)
- whether they have diabetes complications
- their unique circumstances.

Often, management targets will be different from those used for younger people with diabetes, and they can vary from person to person. They need to be personalised according to functional status, comorbidities and life expectancy.

In older people who have had diabetes for several years, and who have established complications, tight control reduces the risk of micro-vascular events (such as eye damage). However, it doesn't reduce the incidence of macro-vascular events (such as heart attack) or even death - in fact, in some instances, it can increase this risk.

The management aims for older people with diabetes are:

- improving the person's duration and quality of life
- allowing residents to do the components of care they are still able to
- using lifestyle management, or medications to maintain blood glucose levels in a range that does not cause uncomfortable symptoms.

Diabetes management needs to be tailored to each resident.

5. Management in the residential care setting

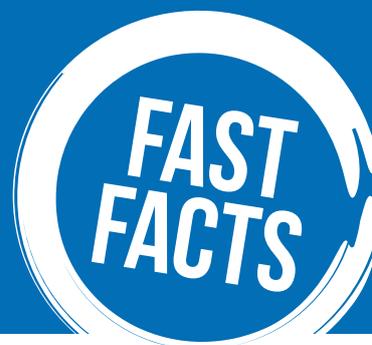
Actions

- The way each resident's diabetes is going to be managed needs to be clearly defined.
- Management targets need to be tailored to each individual.
- Try to continue the person's normal or pre-care setting routine whenever possible.
- If the resident is self-managing their diabetes, including blood glucose monitoring and injecting, they need to be regularly reviewed by the medical team to ensure this is still appropriate and safe.
- The resident, their family, carers and support network need access to diabetes education.
- Meals need to be healthy and tasty, suit the person's food preferences, culture, and eating and swallowing ability.

6. Blood glucose monitoring



6. Blood glucose monitoring



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

The levels should be set for each individual but reviewed regularly by their health care team. A person's recommended range may change over time, as they get older or as other health needs change.

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

The way to check BGLs is using a blood glucose meter. To use the meter, you place a test strip in the meter and add a small drop of blood from a finger-prick onto the testing 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 should be encouraged to do so; others may need assistance from care staff. Staff performing blood glucose monitoring should be trained in how to do this and in how to respond to readings recorded.

It's 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 control an individual will have a blood test that measures the BGL over the past two to three months. This test is arranged by the doctor and is called an A1c or a Haemoglobin A1c (HbA1c).

Some people who have type 2 diabetes that is managed by diet and activity alone, may not do regular blood glucose tests and may use the HbA1c to monitor their diabetes.



6. Blood glucose monitoring



Blood glucose monitoring can be 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 only be implemented in a way that is relevant to each person's health care needs and diabetes management.

While many residents will be able to monitor their own BGLs and manage their diabetes effectively, others may need support or assistance from care staff. Before you can provide this help, you will need competency-based training to perform structured, relevant blood glucose monitoring, and be reviewed on a regular basis.

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

Tips & traps: BGL essentials

When you perform blood glucose monitoring, it's important that you:

- 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 blood glucose target levels will be different for each person.

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).

6. Blood glucose monitoring

Management aims

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

Older people with diabetes have a higher risk of experiencing hypoglycaemia than 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 medications. Some medications carry a higher risk of hypoglycaemia than others – eg. insulin and sulphonylureas. People who manage their diabetes with only diet and lifestyle and no medications, do not experience hypoglycaemia. For further information about types of medications, refer to section 10.

Target blood glucose levels

For older people, target BGLs are aimed at preventing the symptoms of high or low BGLs and maintaining or improving quality of life. The primary aim is to avoid hypoglycaemia and the symptoms of hyperglycaemia.

The international standard way of measuring BGLs are in terms of millimoles per litre (mmol/L). This is a measurement of the concentration of glucose molecules in the blood.

The *McKellar Guidelines for Managing Older People in Residential and Other Care Settings* are 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 is 6–15 mmol/L. This means that:

- low blood glucose (hypoglycaemia) is regarded as generally less than 6 mmol/L, especially in frail older people, and
- too high blood glucose (hyperglycaemia) generally occurs when blood glucose is greater than 15 mmol/L, especially if it's consistently above 15 mmol/L.

6. Blood glucose monitoring

The following targets have been proposed before and after meals for older people – but diabetes care providers should suggest targets specific to the individual and their circumstances.

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

Causes of variations in blood glucose levels

BGLs increase or decrease for a number of reasons, including:

- the type and amount of food they have eaten
- any change in appetite that results in a decrease or increase in food intake
- an increase or decrease in exercise or physical activity
- alterations to blood glucose lowering medicines
- a missed dose or overdose of blood glucose lowering medicine
- emotional stress
- illness, infection and/or pain
- alcohol ingestion, particularly on an empty stomach
- illicit drug use
- medicines (such as prednisolone) used to treat other health conditions.

False readings may also occur if there are problems with:

- a person's BGL measurement technique
- the blood glucose meter or strips.

Guidelines on blood glucose monitoring

The frequency and timing of blood glucose monitoring should be tailored to each individual and should depend on health assessment recommendations made by the health practitioner in consultation with the resident and/or their family/carers, as appropriate. How often BGLs are monitored will depend on the resident's health status, disease status, comorbidities, blood glucose targets, current medicines regimen, quality of life and life expectancy.

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

Tips & traps: People are different

A blood glucose monitoring routine should be devised for each resident based on their individual needs and circumstances, as discussed with the resident and their carer, doctor and/or diabetes educator.

6. Blood glucose monitoring

The frequency of blood glucose monitoring needs to be increased when the resident is experiencing:

- ill health or stress
- changes in routine
- changes in eating habits
- changes to their medicines, particularly insulin and sulphonylureas
- 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 (e.g. which may be a patient self-monitoring or be done by a health professional) which indicates the BGL at that exact time. The second is checking HbA1c (Glycosylated Haemoglobin), which gives an indication of longer term (e.g. over 3 months) glycaemic control. The results of a BGL check are reported in different units to the results of a HbA1c and so 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 checking is very individualised. Someone managing their diabetes with lifestyle modification alone or low intensity medication 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 (e.g. sulphonylureas, 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 HbA1c checked once or twice a year. Whilst HbA1c is generally a very useful measure of long-term management, it is important to note that some medical conditions or procedures affecting the blood (e.g. anaemia or transfusion) may influence the HbA1c result and this needs to be taken into account 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, and
- two hours after breakfast, lunch and dinner.

When BGLs are stable and in the desired range:

- talk to the resident's doctor and diabetes educator about whether blood glucose monitoring is appropriate
- personalise blood glucose monitoring so it benefits the resident.

If blood glucose monitoring is deemed 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-meal times 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).

6. Blood glucose monitoring

Blood glucose measurement: type 1 diabetes

Initially, or when stabilising BGLs, take measurements at least three or four times a day, that is:

- 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.

People with type 1 diabetes may need to continue to monitor their BGLs three or four 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 (eg before breakfast and before dinner) because this doesn't provide important information about patterns or 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 aware of the different meters residents are using. You should be trained in the use of different types of meters, and your competency should be checked regularly.

These are the steps to follow when using a blood glucose meter:

- follow the instructions in the instruction manual
- always wear disposable gloves when performing a BGL check
- check that measurement strips have not expired
- if necessary, re-code the meter with each new box of strips, following the instruction manual (note that very few modern meters need to be re-coded)
- select a single-use, disposable lancet set to the best depth for each person

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

6. Blood glucose monitoring

- 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 finger tip, towards the top but away from the nail bed, as the preferred site for obtaining a drop of blood as shown here
- 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
- clear away the apparatus and dispose of the sharps in a sharps container.

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 people due to health problems that might make finger pricking difficult (such as oedema following mastectomy). The use of an alternative site should be discussed with the resident's health care team.



6. Blood glucose monitoring

Tips & traps: 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 as a result of 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 care staff who may be using it, including the doctor and diabetes educator.

Some blood glucose meters provide a computer 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.

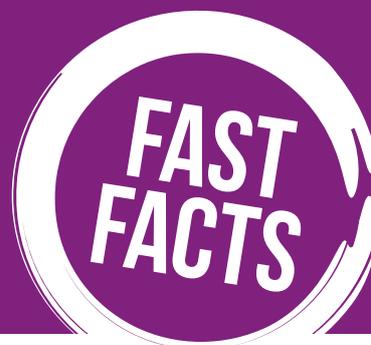
Actions

- 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 accuracy of the meter(s).
- All residents with diabetes should register with the National Diabetes Services Scheme (NDSS) so that if eligible they can purchase subsidised blood glucose monitoring strips. Refer to section 21 for more information about the NDSS.
- Contact the NDSS to find out where to access meter testing control solutions and other blood glucose monitor supplies.

7. Hypoglycaemia (low blood glucose level)



7. Hypoglycaemia (low blood glucose level)



Hypoglycaemia (often known as a 'hypo') means a low BGL.

It can occur in people who inject insulin or take certain diabetes medications, and it can happen quickly. It doesn't occur in people who manage diabetes through a healthy eating plan without using medications.

Hypoglycaemia is dangerous, and can be fatal in older people. Causes of hypoglycaemia can include:

- too much insulin or diabetes medication
- 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. If it's not treated quickly, the resident's BGL will continue to fall and their condition may progress to:
 - confusion
 - loss of consciousness/seizures
 - in extreme cases, coma and death.
- DO NOT leave the resident alone.
- If you are trained in managing hypos, go ahead and treat the resident.
- 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.

The images below show some signs and symptoms of hypo that people may experience.



- 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

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

7. Hypoglycaemia (low blood glucose level)



Hypoglycaemia is a common and acute short-term complication of diabetes. It's often referred to as 'a hypo' or 'low blood glucose'.

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

For more information, see section 10 on medications.

Hypoglycaemia is defined as a BGL that is:

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

Hypoglycaemia is a serious complication of some diabetes medications, and potentially life-threatening.

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).

The target BGL range for most older people is 6–15 mmol/L, but it should be tailored to each individual by their health practitioner(s) (their doctor, medical specialist, endocrinologist and/or diabetes educator). The BGL should be aimed at preventing hypos, which generally occur at less than 6.0 mmol/L – especially in frail older people.

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

7. Hypoglycaemia (low blood glucose level)

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 medication, 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 the early symptoms are not always recognised by older people, due to the ageing process. However, people may report some or all of the following symptoms:

- 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 RACF 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 (eg 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 it's not addressed 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.

7. Hypoglycaemia (low blood glucose level)

Reducing the risk of hypoglycaemia

To reduce the risk of having a hypo, residents should eat regular, appropriate meals and snacks, as well as extra carbohydrate when they do any additional activity. They should also take the correct doses of medicines, including insulin, at the correct time. If they have lost their appetite or they are eating poorly, their doctor needs to review and/or reduce the dose of diabetes medications that carry a higher risk of hypoglycaemia such as a sulphonylurea or insulin.

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

Management of hypoglycaemia

Hypos come on quickly and can be dangerous, so they must be addressed 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's just a part of 'getting old'.

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

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

Tips & traps: Hypos are different too

Each person has a different experience of hypoglycaemia and they often respond differently to medication.

That is why it's essential to document in their care plan the specific signs and symptoms they experience with 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, then
- administer their insulin or tablets as prescribed (do not withhold prescribed medication), and
- call the person's health practitioner for review.

7. Hypoglycaemia (low blood glucose level)

Hypoglycaemia treatment

An individual plan should be devised for each resident according to any special dietary requirements they may have. This plan should include a BGL target and a hypo can be defined below that target with or without symptoms.

(A) If the person is conscious and able to swallow, follow steps (A1) to (A6).

Give the person just ONE of the following items.		
Quantity	Food/drink	
(A1)	Half a can (180mls) 150 ml	Regular (not diet) soft drink, OR 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 person's BGL again.
(A3)	If the person's BGL has not increased, or if they feel no better, repeat the original approach.	
If the BGL has increased, follow up with a person'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	
(A4)	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 person until their BGL is above 6mmol/L (or within their individualised target range). DO NOT leave them until they: <ul style="list-style-type: none"> • are symptom-free and comfortable • have another carer or can care for themselves. 	
(A6)	If the person's BGL has not increased after two initial treatments, call an ambulance to transfer them to a hospital emergency department.	

7. Hypoglycaemia (low blood glucose level)

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

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

Tips & traps: Glucogen® hypo kit

Anyone who is prescribed insulin or a sulphonylurea should have a Glucogen® kit ready for use in case they have a hypo and they can't swallow, or they are unconscious. The kit should be prescribed and documented by their doctor.

Glucogen® is a hormone that is also produced in the pancreas which has the opposite effect from insulin, and it speeds up people's recovery from hypoglycaemia. Glucogen® comes pre-measured in a syringe – so it's impossible to give too much – and 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.

7. Hypoglycaemia (low blood glucose level)

Note:

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

Actions

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

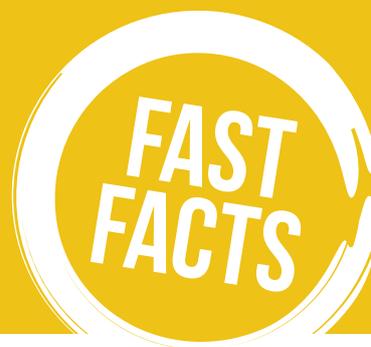
- the time of the hypo
- the BGL measurements that were taken (including how frequently they were taken and what results were recorded)
- the management approach (including any emergency protocols that were followed)
- who was involved or consulted during the episode
- your assessment of what caused the hypo
- any action taken to prevent a recurrence
- the outcome of the management approach
- any follow-up required (eg notifying the resident's doctor, or requesting a review).

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

8. Hyperglycaemia (high blood glucose level)



8. Hyperglycaemia (high blood glucose level)



Hyperglycaemia can occur in anyone who has diabetes, when their BGLs are too high. 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 adequately by insulin or medication
- 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)
- oral or genital thrush
- drier than normal skin and lips
- a urinary tract infection
- increased/excessive amounts of urine
- poor healing.



Older people sometimes feel no symptoms but others 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
- the sound of snoring while breathing.



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; if they have had high BGLs for several days; or if they have symptoms of hyperglycaemia.
- If you notice a resident with any of the 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.

8. Hyperglycaemia (high blood glucose level)



Hyperglycaemia is defined in the McKellar guidelines as a BGL above 15 mmol/L. This level can vary, though, with each person, and can occur at a lower level (eg 10–12mmol/L) for some people – so it should be individualised. The target level may be reviewed, and decreased or increased by the person's health practitioner over time, depending 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, while prolonged hyperglycaemia is linked with micro-vascular and macro-vascular complications.

In older people, it can be difficult to identify signs of hyperglycaemia due to functional, cognitive and age-related changes. Many of the features of hyperglycaemia are similar to those of delirium, so it's important to exclude hyperglycaemia as the cause. This makes it essential to undertake blood glucose monitoring in older people 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. Older people can also lose the ability to recognise when they are thirsty, which can be problematic. Mild or persistent hyperglycaemia (not high enough for the person 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 medication 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 identify and manage hyperglycaemia in older people who may not be able to recognise or report symptoms. Levels that are mildly but consistently above the person's target range can be identified by blood glucose monitoring and 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.

8. Hyperglycaemia (high blood glucose level)

Signs and symptoms of elevated BGLs

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)
- increased/excessive amounts of urine
- oral or genital thrush
- a urinary tract infection
- drier than normal skin and lips
- poor healing.

Even if people with diabetes don't report the signs and symptoms of hyperglycaemia themselves, you or other people around them may notice some 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 you or others may observe include:

- 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), with urinary or blood ketones* present
- difficulty in rousing them
- the sound of snoring while breathing.

* *Ketones are formed when the body doesn't have enough insulin. Glucose remains in the blood stream and can't 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.*

Tips & traps: Ketoacidosis

Ketoacidosis is a sign of insufficient insulin, and it's a serious, life threatening condition. It develops gradually over hours or days.

Most cases of ketoacidosis occur in people with type 1 diabetes; it very rarely occurs in people with type 2. It requires hospitalisation, as treatment requires insulin, potassium and fluids to correct.

Early signs/symptoms of ketoacidosis 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 signs/symptoms include:

- 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.

8. Hyperglycaemia (high blood glucose level)

Ketones should be checked if a person with type 1 diabetes has a BGL greater than 15 mmol/L or appears unwell, dehydrated or confused, or if they are vomiting. **In this instance, their doctor should be notified immediately.**

Ketones can be checked using a blood ketone monitor (following the manufacturer's instructions) or by using a urinary ketone dipstick (again, following the manufacturer's instructions).

Note that there is a delay in the development of urinary ketones, which means hyperglycaemia occurs before ketones are present in the urine. As a result, monitoring blood glucose and blood ketones is a more accurate option, allowing more timely management of the high glucose level.

Causes of high blood glucose levels

High BGLs can have a number of causes, including:

- poor timing of the administration of blood glucose lowering medicines or insulin in relation to meals
- an inadequate dose of blood glucose lowering medicines or insulin
- an omitted/missed dose of medicines or insulin that lower blood glucose
- too much carbohydrate in a meal
- illness, infection and/or pain
- emotional stress/adrenaline
- less physical activity than usual
- medicines used to treat other medical conditions, such as prednisolone steroids
- 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
- a faulty blood glucose meter or strip.

Remember to check that blood glucose meters are working properly.

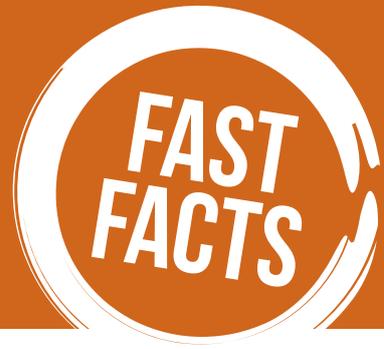
Actions

- 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.

9. Sick day management



9. Sick day management

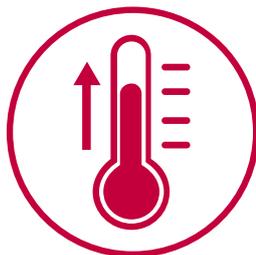


Being sick can make things more difficult for a person with diabetes. The illness might cause their blood glucose levels to rise, and it might also make it harder to manage their diabetes.

How diabetes is managed during an illness depends on whether the person 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.
- If you are trained, follow the sick day management guidelines in the next section.



fever



sore throat



**runny or stuffy
nose**



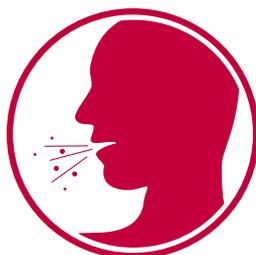
**muscle or body
aches**



headache



tiredness



cough



diarrhoea



vomiting

9. Sick day management



People with diabetes should develop a 'sick day plan' with their doctor and/or diabetes educator. In a RACF, it's the role of the nurse to action the sick day plan when needed.

Illness usually causes a rise in a person's BGLs. It's important that action is taken promptly when symptoms and signs of illness are observed or reported, like a cold or the flu, or infections (such as a urinary tract infection or a skin infection).

If a resident with diabetes becomes unwell, follow steps (1) to (9).

	Assess the person's condition:
(1)	<ul style="list-style-type: none">• Manage/treat the symptoms of the underlying cause where possible.• Contact the person's doctor if further treatment/review is required.
	Monitor them:
(2)	<ul style="list-style-type: none">• Measure their BGLs every two to four hours and record the results. This should be individualised to the person and will depend on their diabetes management and medication/insulin requirements.• Monitor their temperature, pulse, respirations and blood pressure four-hourly and record these details.
	Continue to treat:
(3)	<ul style="list-style-type: none">• Advise or supply extra fluids and ensure the person drinks them.• Make sure the person's diabetes medicines regimen continues – unless it is changed by the treating doctor.• Maintain a fluid balance chart.
	If the person has type 1 diabetes:
(4)	<ul style="list-style-type: none">• Check their urine or blood for the presence of ketones.• If ketones are present, report this to the person's doctor.• Check the resident every four hours until ketones are no longer present.
	Increase or change the person's medicines as prescribed by their doctor:
(5)	<ul style="list-style-type: none">• People treated with tablets may need insulin for the duration of the illness.• People with type 1 diabetes will likely need more insulin to manage their BGLs.
(6)	Document – in the person's notes – all treatment and care that has been given.

9. Sick day management

(7)	If the person can eat normally:
	<ul style="list-style-type: none">• Provide meals as usual, and give $\frac{1}{4}$ to $\frac{1}{2}$ a cup of unsweetened fluid every hour to prevent dehydration.• Suggested fluids include water, diet soft drinks or cordial, weak tea or coffee, vegetable juice or broth.
(8)	If the person cannot eat normally:
	<ul style="list-style-type: none">• Encourage sips of fluid every $\frac{1}{2}$ hour. This should include fluids containing carbohydrates (sugar, fructose or glucose) to replace meals and snacks.• Suggested fluids include fruit juices, normal (not diet) soft drinks, normal jelly, custard, ice cream, soups, milk, milkshakes, sports drinks and Icy Poles or ice blocks.• Document their fluid intake to ensure they are being actively monitored and encouraged to drink.
	Contact the doctor again if the person:
(9)	<ul style="list-style-type: none">• is unable to tolerate food or fluids.• continues to feel unwell and/or becomes drowsy.• has BGLs remaining above 15mmol/L for 24 hours, even with treatment.• begins to vomit and/or has diarrhoea.• has ketones present in their blood or urine.

Actions

Maintain clear and concise documentation of all:

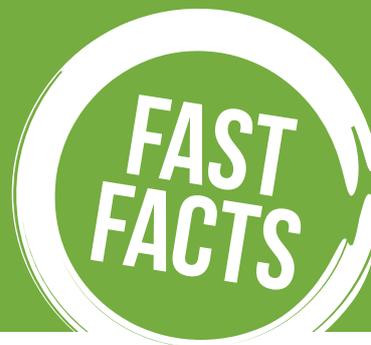
- observations (including those made by staff and those reported by the person and their family)
- measurements, including blood glucose monitoring and implementation of additional charting (such as a fluid balance chart)
- actions taken and care given
- changes to the person's care plan
- reporting to appropriate health practitioners for review/treatment
- phone calls made or received (in relation to care/treatment).

In an RACF, it's the role of the nurse to action the sick day plan when needed.

10. Glucose lowering medicines – for type 2 diabetes



10. Glucose lowering medicines – for type 2 diabetes



Glucose lowering medicines are prescribed for people with type 2 diabetes when their disease has progressed to the point where their blood glucose can no longer be effectively managed by diet and physical activity alone. In some cases this occurs soon after diagnosis, because some people with type 2 diabetes will have been living with the condition undiagnosed for some time.

More than 85% of people with type 2 diabetes eventually require glucose lowering medications.

Glucose lowering medicines are different from insulin, and they are not merely insulin that is given in tablet form.

The way your body uses medicines can change as you age, and medicines can work differently if you have a poor appetite, miss a meal or become less active.

Actions

- Follow the 'five rights' when administering medicine:

Staff should administer:

**the correct medicine
to the correct person
in the correct dose
by the correct method
at the correct time.**

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

10. Glucose lowering medicines – for type 2 diabetes



Glucose lowering medicines are prescribed for people with type 2 diabetes when their disease has progressed to the point where their blood glucose can no longer be effectively managed by diet and physical activity alone. A healthy diet and regular physical activity, however, 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 used to manage type 2 diabetes, and they work in different ways. It's important to recognise that glucose lowering medicines are different from insulin and they are not merely insulin that is given in tablet form. Most glucose lowering medicines increase the quantity of insulin within the circulation and/or increase the body's capacity to use the body's own insulin.

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

(1) Metformin

Metformin belongs to a family of medicines called biguanides, but it is the only medicine in this family that is used today.

Metformin is usually the first glucose lowering medicine that a person with type 2 diabetes is prescribed. Metformin has been in use for many years and is generally a very safe drug. It has a good effect on blood lipids and generally does not cause hypoglycaemia, unless the person is also taking other medicines such as sulphonylureas or insulin.

Metformin does not cause weight gain and it can be used with other glucose lowering medicines and insulin.

Generic or chemical name	Some brand names	Metformin lower blood glucose by:	The most common side effects are:
Metformin	Diabex, Diaformin, Formet, Metforbell, Glucohexal, Glucomet, Glucophage, Genrx metformin, Genepharm metformin	<ul style="list-style-type: none">• reducing the amount of glucose released into the blood from the liver• slowing down the amount of glucose absorbed from the small intestine	<ul style="list-style-type: none">• some nausea when the drug is first started• a metallic taste in the mouth• diarrhoea.
Metformin ER	Diabex XR, Diaformin XR, Metex XR	<ul style="list-style-type: none">• helping the muscle, liver and other cells become more sensitive and better able to take up insulin.	

10. Glucose lowering medicines – for type 2 diabetes

Precautions

- When kidney function falls, 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 and it is for that reason that metformin doses may need to be reduced as kidney function falls, and the drug avoided altogether when kidney function is very poor.
- A variety of situations can increase the risk of lactic acidosis, directly or indirectly, these include heart failure, dehydration, sepsis, shock and certain radiology tests.

Actions

- Document any diarrhoea.
- Inform the person's doctor.
- If diarrhoea does not resolve within a few days of starting metformin, even if the dose is lowered, the person's doctor should be contacted and metformin ceased.

10. Glucose lowering medicines – for type 2 diabetes

2) Sulphonylureas

This class of tablets can cause hypoglycaemia.

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

Sulphonylureas reduce BGLs by stimulating insulin secretion from the β -cells of the islets of Langerhans. There are also some extra-pancreatic effects such as an improved sensitivity of the peripheral tissues for insulin and a decrease of the insulin uptake by the liver.

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

This family of medicines can cause hypoglycaemia.

Generic or chemical name	Some brand names	Sulphonylureas lower blood glucose by:	The most common side effects are:
Gliclazide	Glyade, Mellihexal, Nidem, Genrx Gliclazide	• causing the pancreas to produce more insulin.	All sulphonylureas are capable of causing hypoglycaemia. They can result in: <ul style="list-style-type: none">• weight gain• skin rashes• stomach upsets• occasionally, jaundice (yellowing of the skin or the whites of eyes).
Glycazide ER	Diamicron MR, Glyade MR, Oziclide MR		
Glibenclamide	Daonil, Glimel		
Glipizide	Melizide®, Minidiab		
Glimepiride	Amaryl, Dimirel, Aylide, Diapride, Gilmepiride Sandoz		

Precautions

- Sulphonylureas should be taken immediately before a meal, and meals should be regularly timed with equal amounts of carbohydrates to prevent hypoglycaemia. Long-acting sulphonylureas (such as glibenclamide or glimepiride) are particularly hazardous in older people who miss meals, and should be avoided.
- Consider whether poor/variable appetite and food intake may be contraindications for the slow release variations of sulphonylureas.

10. Glucose lowering medicines – for type 2 diabetes

Actions

- Ensure food is provided after the person 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/treat hypoglycaemia.
- Document all hypoglycaemia episodes.
- Look for patterns that may indicate a dose reduction is advisable, and refer the resident to their doctor.
- Seek medical advice if the person is fasting for any reason other than acute illness. During acute illness, BGLs are likely to be elevated and a sulphonylurea will be required to manage these levels.
- Monitor weight gain, as this can be a result of the treatment of frequent hypoglycaemia.

(3) Thiazolidinediones (glitazones)

There are two medicines in this family, pioglitazone and rosiglitazone.

These medicines effectively lower BGLs, but are now generally only used when other drugs are not suitable, as there are a number of serious side effects (e.g. fluid retention), especially with rosiglitazone.

Glitazones take up to six weeks to start having an effect on BGLs and can be prescribed with metformin and/or sulphonylureas. It does not need to be taken with food.

Generic or chemical name	Some brand names	Glitazones lower blood glucose by:	The most common side effects are:
Rosiglitazone Pioglitazone	Avandia Actos	<ul style="list-style-type: none">• 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.	Glitazones 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.

10. Glucose lowering medicines – for type 2 diabetes

Precautions

- People taking glitazones have an increased rate of broken bones in the hands, upper arms and feet, which can be particularly problematic in older people.

Actions

- Contact the person's doctor immediately if they are taking a glitazone 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 person 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 has resolved
 - special skin care, particularly if the ankles, feet or legs are swollen.

10. Glucose lowering medicines – for type 2 diabetes

(4) Alpha glucosidase inhibitors

Acarbose works to lower blood glucose by blocking the absorption of carbohydrate 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, particularly bloating, wind and diarrhoea; and also because it 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.

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.

Generic or chemical name	Some brand names	Acarbose lower blood glucose by:	The most common side effects are:
Acarbose	Glucobay	<ul style="list-style-type: none">slowing down the digestion and absorption of certain carbohydrates in the intestine.	<p>The major side effects are:</p> <ul style="list-style-type: none">• bloating, flatulence (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.

Precautions

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

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

Actions

- Contact the person'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.

10. Glucose lowering medicines – for type 2 diabetes

(5) Dipeptidyl peptidase 4 inhibitors

Dipeptidyl peptidase 4 (DPP-4) inhibitors are a relatively new family of medicines for diabetes, at the time of writing there are five on the market in Australia.

DPP-4 inhibitors stimulate the secretion of insulin, by enhancing the effect of hormones known as the incretins. For this reason they are also sometimes described as 'incretin enhancers'. This effect on incretins means that they stimulate insulin secretion in a selective way, only when the body needs insulin to lower glucose levels. As a result of this there is a low risk of these drugs causing hypoglycaemia, unless they are combined with a sulphonylurea.

They can be used with a sulphonylureas, 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.

Generic or chemical name	Some brand names	Dipeptidyl peptidase 4 inhibitors lower blood glucose by:	The most common side effects are:
Sitagliptin	Januvia	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 angio-oedema increased chances of catching a cold
Vildagliptin	Galvus		
Alogliptin	Nesina		
Linagliptin	Trajenta		
Saxagliptin	Onglyza		

Precautions

- Some DPP-4 inhibitors are not recommended in people with kidney or liver impairment.

10. Glucose lowering medicines – for type 2 diabetes

6) Glucagon-like peptide-1 receptor agonists

Glucagon-like peptide-1 receptor agonists (GLP1RAs) are another relatively new family of medicines for diabetes.

GLP1RAs have some similarities to the DPP-4 inhibitors, in that they work on the incretin system, but 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. GLP1RAs are also sometimes described as 'incretin mimetics'. These drugs also have an effect to slow the movement of food through the gut, which makes people feel full sooner, so they eat less.

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.

The GLP1RAs typically cause people to lose around 3kg in weight and some people lose more.

GLP1RAs are inactive if taken by mouth and have to be given by injection under the skin of the abdomen.

The person is started on low dose and this is usually then increased to the full dose a few weeks later. This is done to minimise the risk of side effects, especially nausea and vomiting. Even with this precaution, some patients may have bothersome nausea and vomiting when they first start treatment, but in around three-quarters of people these side-effects will settle down.

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

Generic or chemical name	Some brand names	Incretin mimetics lower blood glucose by:	The most common side effects are:
Exenatide Liraglutide	Byetta, Bydreon Victoza	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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.

Exenatide comes as two different formulations, one is given twice-daily, one is given once-weekly.

10. Glucose lowering medicines – for type 2 diabetes

Precautions

- Incretin mimetics are not recommended for people with severe gastrointestinal disease or severe kidney disease.
- If a person experiences 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 person experiences nausea, vomiting or diarrhoea that continues for more than 24 hours.
- Monitor for hypoglycaemia if the person is taking a sulphonylurea as well as a GLP1RA. Their doctor may need to consider decreasing the dose of one the drugs to reduce the risk of hypoglycaemia.

10. Glucose lowering medicines – for type 2 diabetes

(7) Sodium-glucose transporter inhibitors

Sodium-glucose transporter (SGLT2) inhibitors are the newest family of medicines for diabetes. 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 drugs when diabetes control needs to be improved. Whilst they can be combined with a variety of other medicines, they are most often given alongside metformin. Because of this, SGLT2 inhibitors are available in combination tablets that also contain metformin.

Taken on their own or with metformin, they rarely cause hypoglycaemia, but they may do so when combined with other drugs such as 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.

Generic or chemical name	Some brand names	SGLT2 inhibitors lower blood glucose by:	The most common side effects are:
Canagliflozin	Invokana	• decreasing the amount of glucose that is re-absorbed from the kidneys so that it goes out through the urine rather than staying in the blood.	• increased urinary tract infections and genital thrush • lowered blood pressure (especially in those taking diuretics).
Dapagliflozin	Forxiga		
Empagliflozin	Jardiance		

Precautions

- SGLT2 inhibitors should not be taken by people with severe kidney problems.
- Doses need to be adjusted for people with moderate kidney problems and for people over the age of 75.
- SGLT2 inhibitors can be problematic in people who are taking diuretics or who are dehydrated for other reasons.
- SGLT2 inhibitors have recently been linked to diabetic ketoacidosis (DKA) and in some cases this has occurred without people having a significant rise in BGL, which is usually the case in DKA associated with type 1 diabetes.

Actions

- Contact the person'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 present with signs or symptoms of metabolic acidosis in order to prevent delayed diagnosis and patient management.
- Contact the person's doctor if they are taking SGLT2 inhibitors and they experience recurrent or persistent urinary tract infections and/or genital thrush.

10. Glucose lowering medicines – for type 2 diabetes

Combination drugs

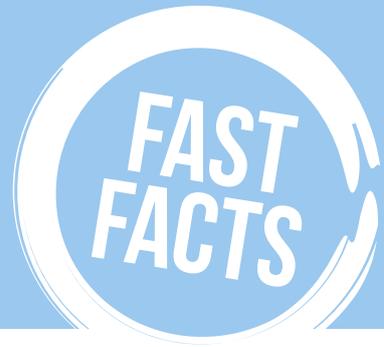
Many people with type 2 diabetes take a combination of more than one glucose lowering medicine to achieve and maintain target BGLs. Combination medicines combine two classes in one tablet. This also acts to reduce the overall number of tablets the person is taking and can reduce error and confusion about which tablets to take and when.

Examples of these include Janumet, Galvumet and Trajenta Met. As all of 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.

11. Insulin



11. Insulin



Insulin is manufactured in the beta cells of the pancreas.

- In all people with type 1 diabetes, their pancreas can't produce its own insulin, so they need to give themselves 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 can't be taken orally, via tablets or capsules: it must be given using a needle, insulin pen device or pump.

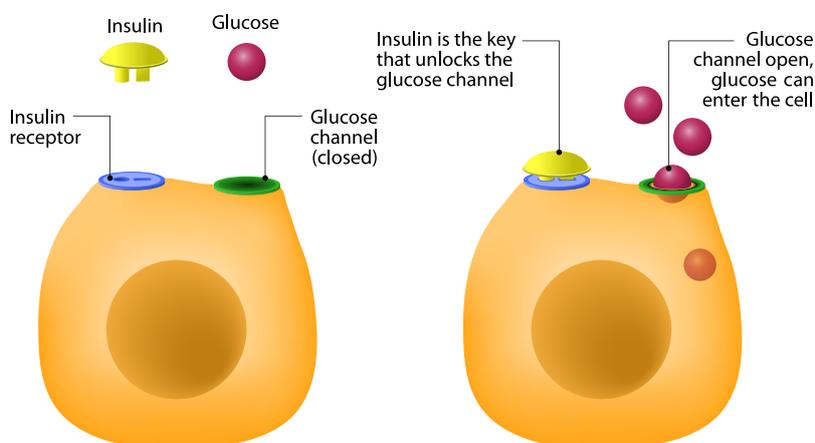
There are different types of insulin, including rapid-acting, short-acting, intermediate-acting, long-acting and pre-mixed insulin.

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.

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

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

HOW DOES INSULIN WORK?



11. Insulin



Insulin is manufactured 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
- transport glucose from the bloodstream and deposit it in the target cells of the body.

In this way, insulin helps to keep the BGLs of the body at an optimal level.

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 50% of people with type 2 diabetes will eventually need to inject 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.

In the past, insulin was obtained from animals such as pigs and cows. Insulins used today are produced in a laboratory and are almost identical to (and therefore classed as) human insulin.

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

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

Note:

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

More than 50% of people with type 2 diabetes will eventually need to inject insulin as medicine.

11. Insulin

Types of insulin

There are several different types of insulin. In Australia all insulin is 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.

Rapid-acting insulin (ultra short-acting analogues)

Insulin type	Rapid-acting (ultra short-acting analogue)
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 (ie 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.
Generic or chemical name	Brand name
Aspart	Novorapid
Lispro	Humalog
Glulisine	Apidra

Intermediate-acting insulin

Insulin type	Intermediate acting insulin
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.
Generic or chemical name	Brand name
Isophane	Protophane
Isophane (NPH)	Humulin NPH

11. Insulin

Long-acting analogue insulin

Insulin type	Long-acting analogue insulin
Onset	Works within 1–4 hours after injection
Peak	Peak action – very slight peak or peakless
Duration	Gone from the body in 12–24 hours
Appearance	Clear
When to administer	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 peakless profile. Note that Glargine cannot be mixed with any other insulin.
Generic or chemical name	Brand name
Detemir	Levemir
Glargine	Lantus

Pre-mixed insulin

Mixed insulins are made up using two different types of insulin: one short-acting and one intermediate.

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.

11. Insulin

Insulin type	Pre-mixed insulin
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	<p>Should be gently rolled and rocked before every use to ensure it's mixed together.</p> <p>Commonly given twice a day at breakfast and dinner, but occasionally used three times a day. Less frequently, mixed insulins are used once a day in combination with oral hypoglycaemic medicines.</p> <p>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.</p> <p>Mixtard and 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.</p>
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
Neutral 30% /isophane70%	Mixtard 30/70
Neutral 50% /isophane50%	Mixtard 50/50

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), which 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 not widely used in Australia at this time, but they may be in the future.

11. Insulin

Administering insulin

Follow the 'five rights' when administering insulin or any medicine:

Staff should administer:

**the correct medicine
to the correct person
in the correct dose
by the correct method
at the correct time.**

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.

Where to administer insulin

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

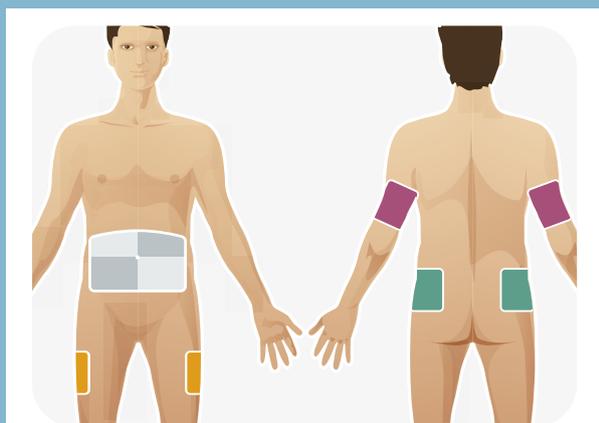
Residents should be informed and supported and, where required, assisted by staff to monitor and check their injection sites. Follow these tips and traps.

There is different legislation governing medicines in each state and territory.

11. Insulin

Tips & traps: 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 than the other sites, as it's not as affected by muscle action. Insulin can, however, 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 person should be given clear information and education 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 and should be avoided until the lump subsides.
- Lumps are most easily detected by gently palpating the person's abdomen (or other injection sites) while they are standing upright. This simple test can be carried out:
 - once a week for people who are injecting insulin four or more times a day, or
 - between once a fortnight and once a month for people having insulin injected less than four times per day.
- Where lumps occur (related to insulin use), this indicates the same area has been used too frequently for injections. This area should be avoided until any lumps have disappeared.
- Lumps may also be detected by sight. Take the opportunity to look for lumps and palpate whenever practical (eg during assisted showering), and educate the person so they can detect the lumps themselves, if appropriate.



- 1 Abdomen
- 2 Thighs
- 3 Arms
- 4 Buttocks



11. Insulin

Hypoglycaemia and insulin administration

Hypoglycaemia may occur if insulin doses are increased due to poor absorption in a site of lipohypertrophy, and then that site is avoided once the lipohypertrophy has been detected.

If a person has a hypoglycaemic event before a meal, always treat this first and then provide the meal (see section 7 of this guide). The person may be hypoglycaemic at this time for one of three reasons:

- due to the medicines/insulin provided previously or before the meal
- their meal may have been delayed, and/or
- as a result of their activity leading up to this time.

Withholding insulin after a hypoglycaemic episode is not best practice as it may lead to hyperglycaemia.

Choosing an insulin device

Insulin can be administered by syringe, insulin pen device or an insulin pump.

Insulin pen devices make injecting more simple and convenient. Re-usable insulin pen devices are used with 3ml insulin cartridges. It should be noted that 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 several different lengths.

Residents should be supported to continue to self-manage their diabetes, including self-administering insulin within their ability and capacity (both physical and mental).

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 credentialed diabetes educator, but it could be delivered by a doctor or endocrinologist.

Development and ongoing review of appropriate policies and procedures for RACFs and education strategies should be implemented and evaluated to ensure effective care is provided.

Tips & traps: hypoglycaemia

It's unlikely you would need to withhold insulin after a hypoglycaemic episode. Seek medical advice before withholding insulin. Treat the hypo, and then give the usual insulin dose as prescribed immediately before or with the meal. See section 7 for more detail.

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

11. Insulin

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.

Syringes and pen needles are for single use only.

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.

Recapping of needles should only be undertaken by the person with diabetes. Needle stick injuries are common among health care professionals, so they should not recap any used needles.

If the person with diabetes is unable to remove their own pen needle without help following their injection, health care professionals should instead administer injections using a syringe or consider using retractable (safety) pen needles to reduce the risk of needle stick injury when removing the pen needle.

Pen device needles and syringes must be disposed of in an approved sharps container.

All insulins in Australia are available in pre-filled disposable pens/devices. Pre-filled pens manufactured by different companies have slight differences, but basically operate in the same way and are easy to use. They are 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. These non-disposable pen devices are available free-of-charge.

Some insulins (including Humulin R, Humulin NPH, Humulin 30/70, Protaphane, Novorapid) also come in 10mL vials suitable for use with a normal syringe. Protaphane is also provided in an 'Innolet®' insulin delivery device.

Pen needles are available in a range of sizes (ie 4mm, 5mm, 6mm, and 8mm lengths). The length of the needle doesn't change the optimal absorption of insulin but should be selected according to the person's injection technique and the amount of subcutaneous fat and muscle tissue available at the injection site.

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 section 21 for more NDSS information.

11. Insulin

How to use an insulin pen/device or syringe

Correct injection technique is important to ensure optimal diabetes management.

If you administer insulin, you need to adhere to the following injection technique process for insulin pen/devices and syringes:

- Select and check the injection site and make sure it's clean (alcohol swabs are not required).
- Wash your hands before preparing the injection.
- Attach the needle to the pen/device (or open the syringe packet).
- If using cloudy insulin or a mixed insulin in a pen/device, gently roll or tip the pen/device up and down to ensure the insulin is mixed evenly.
- Following the instructions accompanying the pen/device, dial up two units, hold the pen/device upright and squirt the insulin into the air to prime the pen. This may need to be repeated until you can see the insulin coming out of the needle.
- If instructions are not provided, some insulin pen/devices have instructions available on the relevant websites.
- Dial/draw up the insulin dose.
- The method for mixing two types of insulin in the same syringe is to first draw up the clear insulin, then draw up the cloudy insulin. This allows the user to see if there are any cloudy particles in the clear insulin. If there are, this means the insulin has been contaminated. The affected vial should be immediately discarded because the onset, duration and action of the insulin will be affected.
- Inject into subcutaneous fat tissue (that is, fat tissue just below the skin) to ensure the optimal rate of absorption.
- Inject at 90 degrees into the abdomen (but a skin fold lift or insertion on an angle may be required – see 'Tips & traps').
- Push the plunger the whole way in.
- Count to 10 slowly, then withdraw the needle.
- Do not rub the injection site.

Note:

Long-acting insulin analogues should never be mixed in a syringe with any other insulin.

They should be given separately with syringes that have not been used for any other insulin.

11. Insulin

Tips & traps: Good injecting technique

- If the insulin injection is too shallow and is angled into the skin, the person may experience itching at the site of the injection.
- If the insulin is injected too deep and goes into the muscle, the rate of insulin uptake will not be optimal. As soon as the muscle is exercised, insulin will be used up too quickly and this may result in a hypo.
- To avoid injecting insulin into the muscle, try:
 - using a shorter needle length, or
 - using a skin fold and/or inserting the needle on an angle.
- The size of the needle depends on people's individual technique and body shape.

Each person should be assessed individually to check their likely composition of skin and muscle relative to injection site, age, weight and body composition.

- 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.
- Insulin and pre-filled insulin devices not in current use should be kept in an appropriate fridge but DO NOT allow them to freeze.
- Do not use insulin if it:
 - will not mix
 - is frozen or has previously been frozen
 - has formed crystals that will not dissolve when mixed
 - is discoloured, usually with an orange tinge.

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

- Bruising occasionally occurs. This is more common in people who are an unhealthy weight or who are taking blood thinners. It's not usually a cause for concern unless it happens constantly for no apparent reason. All bruising should be documented.

11. Insulin

Insulin pumps

There are many brands of insulin pumps available in Australia. While they are all slightly different, they basically operate in a similar way.

Insulin pumps are designed to mimic the way the body usually produces insulin, in people who don't have diabetes. The way this works is that a dose of background rapid-acting insulin (the basal dose) is delivered into the body constantly. The basal rates are set into the pump and can vary over a 24 hour period. In addition to the basal dose, extra doses of the rapid-acting insulin are delivered at meal times, 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, usually in the abdomen. This tube and cannula must be changed every two to three days. 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 commonly used for people with type 2 diabetes. Decisions about using insulin pumps are made by specialist diabetes health practitioner teams together with the person with diabetes.

Insulin pumps can enable better blood glucose management, but they require diligence on the part of the person using them. They often need to take more frequent blood glucose measurements and monitor their carbohydrate

consumption carefully. If used poorly, a pump will not deliver a better blood glucose result than multiple daily injections.

Pump consumables (parts that need to be changed regularly) are subsidised through the NDSS for those who are eligible.

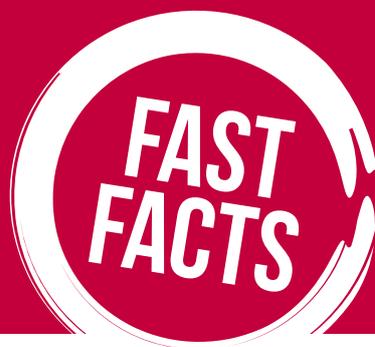
An older person using an insulin pump who is moving to an RACF will need a higher level of care, support and supervision. A medical review should be undertaken when they are admitted to assess the person's capacity, ability and willingness to continue to self-manage their diabetes. This includes their insulin pump, their level of blood glucose management and whether alternative insulin management is indicated. This should be done in consultation with the person and their family or support network.

A competent older person living in an RACF, maintaining target blood glucose levels, may choose to continue to self-manage using an insulin pump, and be effectively supported by appropriately qualified staff to do so.

12. Complications and screening



12. Complications and screening



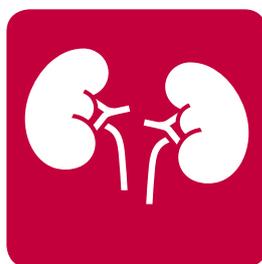
Managing diabetes well helps to prevent or delay diabetic complications, and to reduce their severity. High blood glucose, with any type of diabetes, can damage parts of the body. Diabetes complications can include:



**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**



skin problems



**increased risk of
depression and
alzheimer's**

All people with diabetes should have annual complications screening by their health care team to identify and monitor any issues.

12. Complications and screening



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

Diabetes-related health problems include:

- heart attack, stroke or heart failure
- vision problems, such as retinopathy, maculopathy, cataract leading to blindness
- kidney disease and kidney failure
- decreased blood supply to the legs which can lead to blood vessel and nerve damage to the feet causing ulceration, poor wound healing and the risk of amputation
- gastrointestinal problems
- sexual health problems in both genders
- dental problems
- increased risk of deafness
- increased risk of infection
- skin problems
- increased risk of depression and Alzheimer's.

Best practice in diabetes management recommends an annual 'complications screening' by a doctor to assess metabolic control and the presence of diabetes-related health problems. These tests are important in managing, preventing or minimising the risk of long-term complications developing in older people.

12. Complications and screening

Complications screening involves an annual assessment, or cycle of care, that may include:

• Glycaemic management

Glycated haemoglobin (HbA1c) is accessed via venous blood and should be taken six-monthly for people with well managed diabetes and three-monthly for people with poorly managed diabetes.

In older people, and after a person has had diabetes for a number of years, an HbA1c of 8.0% or 64 mmol/mol is acceptable.

For most people, the target HbA1c is less than or equal to 7.0% (53mmol/mol). However, in older people, this may be too restrictive and may result in frequent hypoglycaemic episodes, which is a concern – especially in those with ischaemic heart disease. If the person is not suffering any discomfort – such as thirst, polyuria, thrush, tiredness or delayed healing of wounds – an HbA1c of 8.0% or 64 mmol/mol is acceptable.

• Lipid profile

Lipid profile should be assessed at least annually for people with a normal lipid profile, or three- to six-monthly for people who have an abnormal lipid profile or who are being treated with a lipid-lowering agent. A healthy lipid profile is one with a total cholesterol (TC) of less than 4.0 mmol/L, low density lipoprotein (LDLs) less than 2.5 mmol/L, high density lipoprotein (HDLs) greater than 1.0 and triglycerides less than 1.5 mmol/L.

• Renal function

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

• Liver function

Routine monitoring of liver function tests in people with type 2 diabetes should occur at the start of drug therapy, and if people develop symptoms raising concern about liver function. Some oral hypoglycaemic agents, such as metformin, may be not be recommended in people with impaired liver function.

• Blood pressure

Blood pressure should be measured three-monthly for people with hypertension (high blood pressure) and six-monthly for all other people.

Treatment goals for an older person with diabetes are less than or equal to 130/80 mmHg. For those with established cardiovascular or kidney disease, targets should be individualised.

• Foot assessments

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

People with a past 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 people 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 hygiene routines.

12. Complications and screening

• 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 person should be referred by their doctor or optometrist to an ophthalmologist as soon as possible.

• Depression and anxiety

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

In older people, 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 undertaken by a doctor to assess older people as part of planning their diabetes care and education.

It's important to use a test geared to the individual and to undertake this at a time and place that best reflects their full ability and capacity. The person should ideally not be affected by adverse circumstances, such as 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 (due to the accompanying dehydration)
- insulin therapy (because of the associated hypoglycaemia)
- how long the person has had diabetes.

There are also reports that microalbuminuria is associated with sub-optimal performance on cognitive tests.

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 (especially to assess mild cognitive impairment)
- Confusion Assessment Method
- Montreal Assessment Tool.

• Other assessments

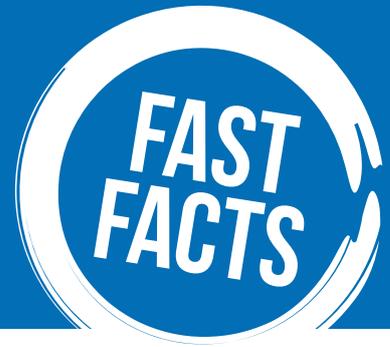
Other assessments of older people with diabetes that can be undertaken include reviews of:

- nutrition and weight
- diabetes self-care capacity
- the sick day care plan
- oral health
- immunisation status.

13. Healthy eating



13. Healthy eating



Healthy eating helps to manage diabetes.

People with diabetes should eat the same healthy foods as other residents: they don't need a special diet, and they can eat sugar and desserts.

Often, older people lose their appetite or have problems with their mouth, teeth or swallowing. If you notice this, let a supervisor know.

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

Read the following 'Tips & traps' for advice about how to help your residents maintain a healthy diet.

Tips & traps: Encourage healthy eating

- Make sure the resident's meal is set up where they can reach it, and their cutlery is also within easy reach. All food should be accessible and packets open.
- For people who can't see their meal properly, provide a description of where particular food is on the plate, and try to place things in the same layout for each meal.
- If the resident has dentures, make sure they are in place, and that they are clean and fit well.
- Check that the person 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 person has difficulty swallowing or increased coughing/choking during a meal, refer them for medical assessment. Softer meals may be helpful but pureed food is not necessary for most people and can be unappetising.
- Advise residents that if they are on a glucose lowering medicine (insulin or a sulphonylurea), skipping their meal could cause hypoglycaemia. If they don't eat their meal, they need to consume some carbohydrate from a different source (eg milk shake, toast or bread, fruit juice, custard or dessert).

13. Healthy eating



Diabetes can be better managed through healthy eating, regular physical activity and aiming for a healthy weight. No special diet is required. People with diabetes, and those at risk, are encouraged to choose the same healthy foods as all Australians.

It's important to take a broad approach to nutritional management in older people with diabetes rather than simply focusing on reducing fat and sugar. In fact, older people with diabetes are at increased risk of nutritional deficiencies, including vitamins D, C and B12, magnesium, zinc, calcium and folate.

Often, older people experience poor appetite and poor food intake, which can lead to weight loss and, of particular concern, muscle loss. This can compromise functional ability and contribute to a higher risk of falls.

An assessment by a dietitian to determine the person's individual dietary and nutritional requirements is an important part of diabetes management for older people.

If older people need a texture-modified diet or dietary supplements, these should be selected to have a low impact on blood glucose and to maximise nutritional intake. A dietitian should be consulted to ensure appropriate diet and fluids are consumed.

Older people also need an adequate fluid intake, as they may forget to drink, have decreased thirst sensation and/or may need physical assistance to drink. This makes them more reliant on assistance from care staff, who need to be diligent in monitoring their fluid intake.

The National Health and Medical Research Council (NHMRC) has published the Eat for Health Australian dietary guidelines 2013 and the Australian guide to healthy eating which provide information about healthy food choices for all Australians.

Go to: <http://www.eatforhealth.gov.au/guidelines>

A diet consistent with the Australian dietary guidelines encourages people to eat a variety of foods across and within the five food groups, and to avoid foods that contain too much added fat, salt and sugar. The guidelines aim to encourage people to adopt lifelong healthy eating habits, which will help to reduce the risk of health problems in later life. These problems can include heart disease, obesity and type 2 diabetes.

People with diabetes, and those at risk, are encouraged to choose the same healthy foods as all Australians.

13. Healthy eating

Dietary guidelines

The Australian Dietary Guidelines say we should all enjoy a wide variety of nutritious foods from the five food groups every day, including:

- plenty of vegetables of different types and colours, and legumes/beans
- fruit
- grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
- lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- milk, yoghurt, cheese and/or their alternatives, mostly reduced fat
- plenty of water.

We should limit our intake of foods containing saturated fat, added salt, added sugars and alcohol:

- Limit the intake of foods high in saturated fat, such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
- Replace high-fat foods which contain predominantly saturated fats – such as butter, cream, cooking margarine, coconut and palm oil – with foods that contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
- Limit the intake of foods and drinks containing added salt by:
 - reading food labels to choose lower sodium options among similar foods
 - not adding salt to foods in cooking or at the table.

- Limit the intake of foods and drinks containing added sugars, such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.
- When choosing to drink alcohol, limit the intake and consider alcohol free days.

Special considerations in aged care

Food and nutrition have a role in meeting the physical and functional needs of people in aged care and adding to their quality of life. RACFs have a responsibility to provide safe, adequate, nutritious and enjoyable food.

Residents need – and should be provided with – the right food to maintain their health and wellbeing, and to help them manage their diabetes. They need meals that are varied, appealing, healthy and well balanced, and that take their personal preferences and nutritional needs into account.

Meals should be enjoyable and of good quality and quantity. Unnecessary restrictions can result in poor intake and subsequent malnutrition. Wherever possible, meal times should be seen as an opportunity to encourage residents to meet and socialise.

People should be given help to eat if they need it. This includes, where necessary:

- preparing the meals in a way that makes it easier for them to eat
- providing special devices to make it easier for them to feed themselves
- providing staff assistance with feeding.

Some older people may have lost their ability to taste food properly, so they will benefit from food with extra flavouring added, such as herbs, spices, juices, vinegars and sauces.

13. Healthy eating

For the older person, dietary composition should generally be made up of:

- Carbohydrate intake: at least 20% – 30% of the daily energy (kilojoule) intake, but likely 40% – 50% of the diet, depending on gender, body size and composition, activity needs and weight gains or losses. Carbohydrate intake should be individualised, bearing in mind that the total carbohydrate content is more important than the source of the carbohydrate.
- Protein: 10% – 20% of the diet but no less than 0.8g/kg/day.
- Fat: individualised – consider the person's risk of cardiovascular disease or malnutrition, and their life expectancy, if reducing saturated fats.
- Fibre: individualise the amount of fibre needed to maintain regular bowel habits and help regulate blood glucose. Introduce fibre gradually and ensure adequate fluid intake.
- Textured/modified diets: some thickening products are made from food starch that is metabolised into glucose and can contribute to hyperglycaemia.
 - Oral: the quantity of extra carbohydrate in the thickener depends on the individual's liquid intake.
 - Enteral: short-term or long-term use of diabetes-specific enteral (tube-fed) diets and supplements may be required. These are preferable to standard formulas because they have a lower impact on blood glucose levels.

A dietitian should be asked to review a person's diet/intake if any concerns arise.

Menu planning

Menu planning is a complex task. It needs to take into account not only nutritional requirements and diabetes management but also the individual's food preferences and choice, their enjoyment, consumption and tolerance of their meals, and their fluid intake.

It's important that the menu planning process takes into consideration the needs and choices of all residents, including those with diabetes.

Special dietary requirements in aged care

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

These kinds of arrangements may be indicated for older people who are:

- underweight or malnourished
- overweight
- having chewing or swallowing difficulties
- receiving enteral (tube-fed) nutrition
- experiencing constipation
- at risk of hypoglycaemia (see the section 7)
- on a glucose lowering medicine that can cause hypoglycaemia
- on insulin.

13. Healthy eating

Menu and nutritional quality care review

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

They are able to:

- assess individual nutritional needs (including interpreting laboratory tests about micro-nutrient status)
- develop personal eating plans
- develop medical nutritional therapy plans
- assess the physiology and impact of disease on macro- and micro-nutrient digestion, absorption and metabolism
- assess appropriate enteral formulas and regimens. An APD can provide expert advice on menus to meet the food and nutrition needs of older people with diabetes. It's also good practice to have an APD review the RACFs menu plan at least annually.

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.

Go to: www.diabetesoutreach.org.au/education

- ***Eat for Health Australian Dietary Guidelines (2013)***

Published by the National Health and Medical Research Council, these guidelines provide information on how to achieve and maintain healthy eating and promote health and wellbeing for all Australians.

Go to: www.eatforhealth.gov.au/guidelines

Actions

Discuss with a dietitian and a diabetes educator the best meal choices and 'back-up plan' depending on the person's medicine regimen and individual appetite, likes and dislikes.

14. Sexual health



14. Sexual health



Sexual health is often overlooked in people who live in residential care. 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 blood glucose levels and by long-term diabetes complications. Sexual health problems caused by diabetes 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 a supervisor.

14. Sexual health



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

Common causes of sexual difficulties in people with diabetes

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 excessive
- 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 are a range of treatments for erectile dysfunction in men, such as penile implants, medicines that increase blood flow to the penis and non-surgical vacuum pumps.

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 practitioners 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.

14. Sexual health

Treatment may include:

- medicines for male sexual dysfunction, such as:
 - oral medicines eg sildenafil (Viagra, for example) or tadalafil (Cialis)
 - penile injections such as Caverject
- mechanical means, such as:
 - penile pumps
 - penile implants
- referral to a sexual health therapist/counsellor
- antifungal 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), and breaks in the vaginal mucosa are a potential site of infection
- counselling to assist in reframing sexual relationships and sexual activity. Body image can also be important in older people.

As people age, and as relationships change over time, it's natural for sexual relationships to undergo changes and these may or may not worry the people concerned. If changes to sexual desire and function are sudden, unexpected or unwanted, this should be investigated.

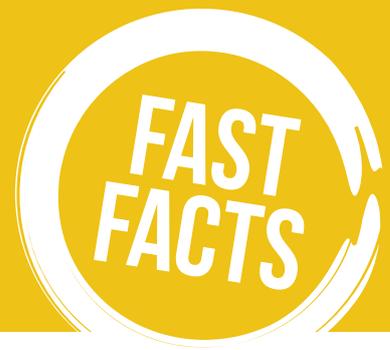
Actions

- Understand that discussion about sexual health with any person living with a chronic disease 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.
- Undertake 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



15. Mental health



Depression is a condition that 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 old'.

It's 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
 - pain
 - BGLs
 - physical symptoms.
- ensuring they take their medicines as prescribed
- encouraging them to eat healthy and nutritious meals
- giving them 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 opportunities for physical activity.

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

15. Mental health



Maintaining 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 older people still seem to feel there is a stigma attached to depression and other mental health conditions, 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 practitioners and older people themselves.

Depression

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.

If depression goes untreated in older people with diabetes, it can negatively affect their self-care. Then, if they don't manage their diabetes well, they may suffer short- and long-term consequences.

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's estimated that between 10% and 15% of older people

experience depression, but this rate increases to around 35% among people living in RACFs.

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

Feeling depressed or anxious can make it more difficult for an older person to self-manage their diabetes and other health conditions, including their mood. Factors that can contribute to and/or worsen symptoms of depression and anxiety may include:

- 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 fluctuations in mood by the severity, persistence of symptoms and interference with psychosocial functioning. Diagnostic criteria either, ICD-10 or DSM-5, are used to assess major depression and other mental health conditions by psychiatrists, and may be referred to by other mental health practitioners such as clinical psychologists.

15. Mental health

A person's symptoms may be consistent with a diagnosis of a depressive episode or major depressive disorder according to ICD-10 and DSM-5 criteria, respectively, 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:

- poor sleep
- persistent thoughts of death
- poor concentration or impaired memory
- lost interest or pleasure in most of their usual activities
- poor or increased appetite
- agitation or slowing of movements
- guilt or self-blame
- experiencing symptoms in at least three of the four categories in the box below.

1. Behaviour	2. Thoughts
Stopped going out	"I'm a failure"
Not getting things done at work	"It's my fault"
Loss of appetite or binge eating	"Nothing good ever happens to me"
Withdrawn from family and friends	"I'm worthless"
Relying on alcohol and sedatives	"Life is not worth living"
Stopped doing things they enjoyed	
Unable to concentrate	
3. Feelings	4. Physical
Overwhelmed	Tired all the time
Guilty	Sick and run down
Irritable	Headaches and muscle pains
Frustrated	Churning gut
Unhappy	Sleep disturbances
Indecisive	Poor appetite/weight loss
Disappointed	
Miserable	
Sad/tearful	

15. Mental health

It's important to watch for noticeable changes in an older person's mood or behaviour. Symptoms may be different for each individual. Monitoring changes in mood and behaviour on an individual basis is essential, along with advocating for timely assessment and treatment, as this can greatly improve their wellbeing and quality of life. Treatments may include medical treatments and/or referral to appropriate mental health specialists for psychosocial/behavioural treatments.

In addition to community mental health services (both public and non-government organisations), there are a range of government-funded initiatives available to minimise the cost to the person of accessing appropriate allied health services. Access to these initiatives can be requested by the treating doctor if they are seen as potentially beneficial to the resident.

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 significantly poorer blood glucose management, and can result in increases in 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, and 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 the picture in younger adults. Symptoms may appear less, or milder, and therefore are often under-reported to health practitioners by care staff. Although many RACFs monitor and document an older person's altered behaviour, it's important not to dismiss noticeable changes as being part of the person's particular 'behaviour' or 'ageing'.

Older people can be more 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 disease may be putting them at risk of heart attack or stroke)
- diabetes, even if they don't have a family history of diabetes.

This is due to the fact that:

- the medicines they take almost invariably cause weight gain, which leads to insulin resistance
- the condition – and the medicines – may cause them to be less active, contributing to weight gain
- for a variety of reasons associated with their disease, many people with a poorly managed mental illness can experience socioeconomic disadvantage, which is a risk factor for diabetes.

The mental wellbeing and quality of life of older adults can be improved significantly through timely assessment and treatment, and 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.

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 the Black Dog Institute.

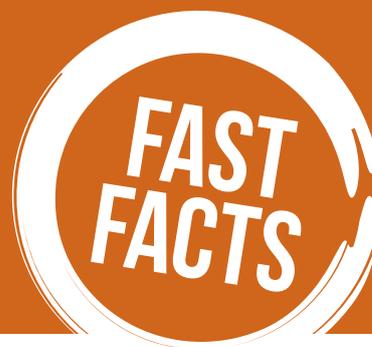
For more information about the symptoms of depression, refer to *Depression in adults: recognition and management* at <http://www.nice.org.uk/guidance/cg90>

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

16. Physical activity



16. Physical activity



Regular exercise is good for everyone, even older people.

It can:

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

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.

You can help by:

- encouraging and supporting residents to participate in activities
- making sure residents wear comfortable, well-fitting shoes
- check the residents 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 disease 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.

16. Physical activity



Physical movement or activity is beneficial for everyone, especially older people with diabetes and/or other medical and mental health conditions. Health and wellbeing in older age can be improved with regular physical activity.

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

- endurance/fitness activities, where a major emphasis is on increasing the demand on the heart and lungs, such as brisk walking, bicycle riding, swimming and jogging
- strength training activities, where the emphasis is on building muscle strength, such as resistance exercise, lifting weights, and stair climbing
- balance, mobility and flexibility (stretching) activities, where the emphasis is on 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 older people living in RACFs may experience differing levels of limitation in their ability to undertake physical activity, the

Department of Health's *Recommendations on physical activity for health for older Australians* (2013) encourage regular physical activity wherever possible.

There are five main recommendations:

1. Older people should do some form of physical activity, no matter their age, weight, health problems or abilities.
2. Older people should be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility.
3. Older people should accumulate at least 30 minutes of moderate intensity physical activity on most, preferably all, days.
4. Older people who have stopped physical activity, or who are starting a new physical activity, should start at a level that is easily managed and gradually build up to the recommended amount, type and frequency of activity.
5. Older people who continue to enjoy a lifetime of vigorous physical activity should carry on doing so in a manner suited to their capacity into later life, provided recommended safety procedures and guidelines are adhered to.

Special considerations

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

16. Physical activity

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 exacerbated by (or restrict) 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 can't 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's a good all-round workout.

Actions

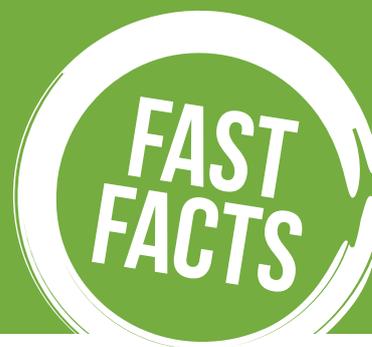
Physical activity is beneficial for all people, regardless of age – but the following precautions need to be taken to optimise its benefits:

- Assess the resident's comorbidities (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 and adequate pain relief for health problems that may be exacerbated 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 fast-acting glucose.

17. Foot care



17. Foot care



Foot care is an important part of managing diabetes. The nerves and blood vessels to the feet can be damaged by having diabetes for many years.

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

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



The nerves and blood vessels to the feet can be damaged by having diabetes for many years.

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

- washing and drying their feet, especially between the toes
- moisturising the skin but avoid 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's 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 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.

17. Foot care



Foot care is important in relation to a range of chronic health conditions. It's essential for older people 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 a lower level of 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 person's level of foot self-care should include:

- the person'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 person 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 toe nails, 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 person'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 toe nails, 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
- sensation in the feet (or lack of), such as numbness or pins and needles
- the temperature of the foot and whether it's 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.

17. Foot care

When to see a podiatrist

Podiatrists specialise in caring for people with lower limb problems, including diabetes-related problems such as poor circulation and/or nerve damage. A range of initiatives are available to minimise the cost to the person of accessing allied health services, such as Medicare rebates for people with chronic health conditions.

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 feet

Older people with diabetes are assessed as low risk when their feet:

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

To be considered low-risk, the person also needs to be able to care for their own feet.

It's recommended that older people at low risk have an annual review by a podiatrist, unless otherwise specified.

High-risk feet

Older people with diabetes are assessed as high risk when they have:

- had a foot ulcer in the past
- had an amputation in the past
- an ulcer at present
- decreased sensation (such as numbness)

- corns or calluses
- deformed, thick toe nails or discoloured toe nails
- foot deformities such as bunions, hammer toes or bony prominences
- foot deformities that are hot to the touch.

It's 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 blood supply to the feet is insufficient, the person (where able) may complain of cold feet and, often, leg cramps on walking or at night. Insufficient blood supply also means white blood cells can't reach any site of broken skin on the foot and an infection is likely to occur. If not assessed and treated promptly, infections – and subsequent ulceration – may result in amputation. Any skin breakdown should therefore be reported promptly and treated aggressively by the person's doctor or their nursing or care staff. Intravenous antibiotics may be needed to treat the infection.

Note:

If a person 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 person's treating doctor so they can arrange further investigations.

17. Foot care

Nerve damage

If nerves in the feet are damaged, they can't 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 infection involved. 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.

Note: It's 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.

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

Hygiene

For older people 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.

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.

17. Foot care

Toe nails

Many people can cut their own toe nails, but you may wish to suggest observing them every now and then to review their nail care. If residents can't, or would rather not, cut their toe nails themselves, a regular visit to the podiatrist is the safest nail care alternative.

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

- using appropriate toe nail 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 toe nails 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 toe nails for thickness/hardness, deformity, discolouration, 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 toe nails 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 people'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 someone'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.

17. Foot care

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 person is walking.

When someone 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 don't 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 don't 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.

17. Foot care

Tips & traps: 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.
- They should avoid any non-supportive or ill-fitting footwear.
- People 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.

Walking for exercise

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

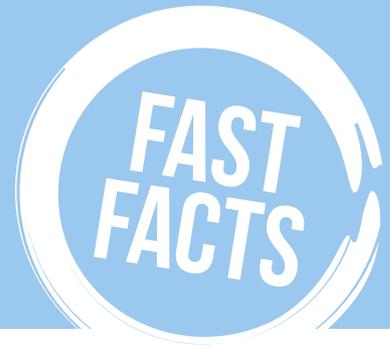
To protect their feet from damage, check that they are wearing properly fitting walking shoes with socks. A podiatrist can also recommend appropriate shoes for walking if the person is experiencing problems with their feet which may affect their ability to exercise.

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

18. Skin care



18. Skin care



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

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's 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
- moisturise the entire body after each bath, shower or body wash
- let a supervisor know if you notice any of the following in your residents:
 - redness
 - infection
 - cracks
 - itching
 - bruises
 - swelling of any of the limbs
 - changes in skin colour, moisture or temperature.

Having diabetes can also make it slower to recover from skin infections and sores.

18. Skin care



Healthy, intact skin protects the body organs and their functions. Healthy skin is the first barrier to infections and prevents harmful organisms from entering the body. As skin ages, it becomes thinner (sometimes very frail) and loses elasticity and moisture. Older people's skin is more vulnerable to damage and stress, sustains injury easily, and takes longer to heal. 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, which allows bacteria to enter and increases the risk of skin infections and irritations. This process occurs in normal ageing but is accelerated by diabetes.

Older people 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 (eg 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.

18. Skin care

Residents may need education and support and should be advised to:

- avoid over-washing the skin
- use warm – not hot – water to wash
- use a pH-neutral soap or non-soap cleanser
- not spend too long bathing, or in the pool
- pat themselves dry thoroughly, rather than rubbing the skin vigorously
- avoid scratching dry skin and instead apply lotion to moisturise
- moisturise the entire skin after each bath, shower or body wash (sorbolene is an effective, inexpensive moisturiser)
- limit time in the sun without skin protection
- use sunscreen.

Actions

When you are observing a resident's skin condition, check for:

- colour, moisture and temperature
- skin integrity – dry skin, blisters, breaks, abrasions, injury, rashes, cracks
- any skin abnormalities, such as skin tags, dark areas, changes to moles
- any reddened areas or pressure-prone areas
- any infection or poor healing
- itching
- bruising
- swelling of any of the limbs.

19. Eye care



19. Eye care



Diabetes can cause damage to the tiny blood vessels on the back of the eye (called the retina). People with diabetes need regular eye examinations by an optometrist or an ophthalmologist (eye doctor) to detect problems early.

It's important to make sure that diminishing sight in older people with diabetes is not assumed to be a normal part of ageing, and it should be assessed by a doctor/optometrist.

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

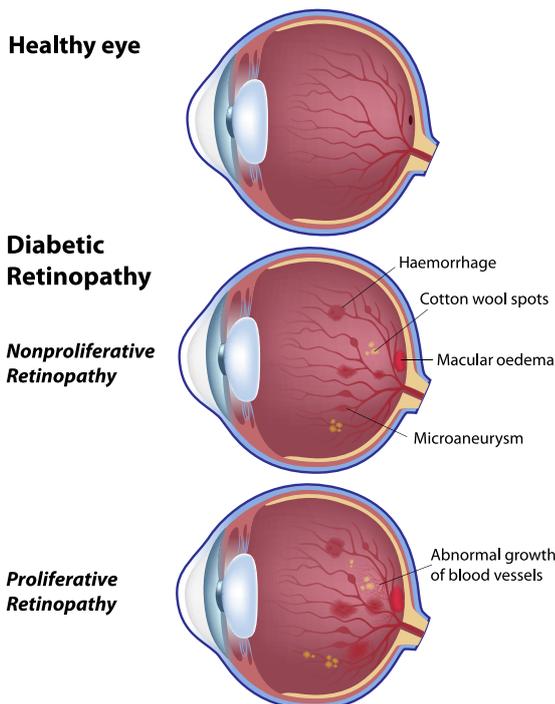
- sudden loss of sight or blurred vision
- flashes of lights in their eyes
- eye pain
- double vision
- redness or swelling of the eye or eyelid.

You can also help your residents by ensuring they have:

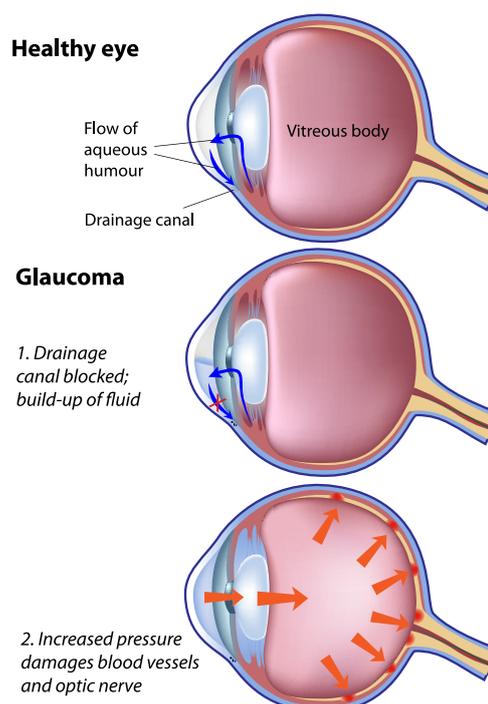
- their glasses clean and accessible, so they can wear them when they need them
- their sunglasses on when outside.

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

Development of diabetic retinopathy



Development of glaucoma



19. Eye care



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 don't notice changes in their vision until the condition is very serious, so it's essential to have regular eye examinations to detect problems early. Often, diabetes-related eye complications have no signs or symptoms, and 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 also be gradual and go unnoticed for some time, so people over 65 should have a regular annual dilated eye examination. It's important that diminishing sight in older people with diabetes is not assumed to be part of normal ageing. 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.

19. Eye care

Older people with diabetes should be assessed by the doctor, optometrist and/or eye specialist if they experience:

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

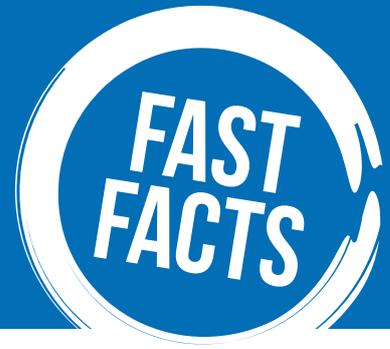
Older people with diabetes should undertake (or be assisted to undertake) eye self-care by:

- 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



20. Oral care



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.

Following are some of the signs and symptoms of oral health problems. If you notice any of these in a resident who has diabetes, let a supervisor know:

- 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.

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

20. Oral care



Poor 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 by neutralising acids produced by dental plaque
- 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 good diabetes management. Older people with diabetes need to be able to enjoy a diet that will result in good health and good diabetes care. If they have oral disease, pain, discomfort, tooth cavities, loss of teeth, difficulty eating, chewing and swallowing, and/or ulceration, they will not be able to do this.

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.

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.

Common 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.

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 blood glucose reading 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.

20. Oral care

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 effectively managing the condition that is causing it, and by good oral hygiene.

Older people with diabetes should undertake (or be assisted to undertake) dental and oral self-care, including:

- performing oral hygiene (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 (eg 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 older people with diabetes, early detection and referral is essential. They need to be sent for 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 person 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



21. National Diabetes Services Scheme

The National Diabetes Services Scheme (NDSS) is an initiative of the Australian Government. The scheme provides diabetes-related products at subsidised prices, as well as a range of information and services to people with diabetes. Registration is free and open to all Australians diagnosed with diabetes.

Registration

People who are registered on the NDSS have access to quality diabetes self-management support and education services delivered through:

- the infoline (phone 1300 136 588)
- the website at www.ndss.com.au
- individual and group education programs
- a range of diabetes-related resources, including fact sheets.

It's important to register all newly diagnosed residents and those who have diabetes who are not yet registered with the NDSS. Contact the NDSS on 1300 136 588 to:

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

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 www.ndss.com.au and agents are available through the NDSS Infoline 1300 136 588 to discuss the services and resources they offer to RACFs in their area.

The NDSS supplies a large range of subsidised products that help people to affordably self-manage their diabetes. These include:

- subsidised blood glucose testing strips
- subsidised urine testing strips
- free insulin syringes and pen needles (if insulin or an approved non-insulin injectable medication is required)
- subsidised insulin pump consumables (for approved people with type 1 diabetes or gestational diabetes).

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
- Safety Net Card
- Department of Veterans' Affairs Card.

Diabetes-related products can be accessed through community pharmacy NDSS Access Points. RACF staff can find these on the NDSS Online Services Directory at <http://osd.ndss.com.au/search/>

For more information about the NDSS, visit the website at www.ndss.com.au or call the infoline on 1300 136 588.

22. Bibliography and references



22. Bibliography and references

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ndss
national diabetes services scheme

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