

# The McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings

*Age is opportunity no less,  
Than youth itself, though in another dress,  
And as the evening twilight fades away,  
The sky is filled with stars, invisible by day.*

(From *Morituri Salutamus*  
Henry Wadsworth Longfellow 1893)



This edition was first published in 2014 by The Centre for Nursing and Allied Health Research Deakin University and Barwon Health, Geelong, Australia. The Guidelines are due to be reviewed in 2016.

## **Disclaimer**

The *McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings* were developed using the best available evidence, which is attributed in the relevant places in the text and in the reference list. An interdisciplinary Expert Reference Group was consulted throughout the development process. Recommended guideline development processes were followed. The Guidelines were rigorously evaluated in a large regional and several small rural aged care facilities.

The Guidelines were designed to aid clinical decision-making following an individualised comprehensive assessment of the older person requiring care. The Guidelines were designed to be used with other general guidelines for managing older people. The authors and Expert Reference Group are not responsible for any actual care provided on the basis of The McKellar Guidelines and disclaim liability and responsibility to any person for the consequences of anything done or omitted by any person relying wholly or partially on the whole or part of the content of this publication.

Considering the diversity among residential and other aged care services in Australia, it is essential that the information in The McKellar Guidelines is delivered within local situations and service structures and resources. The needs, safety and comfort of the individual older person must be a care priority.

## **Conflict of interest**

The authors and members of the Expert Advisory Group have no conflict of interest to declare with respect to commercial enterprises, governments and non-government organisations. No fees were paid to the authors or the Expert Reference Group in connection with *The McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings* with the exception of Nicole Duggan who was employed as a research assistant on the project.

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## **Foreword**

Diabetes is a complex and serious disease.

As in most countries in the world, the prevalence of all types of diabetes in Australia – type 1, type 2 and gestational diabetes – is increasing at an alarming rate. Currently, approximately 280 Australians are diagnosed with diabetes each and every day, with the Australian Institute of Health and Welfare predicting that diabetes will soon account for the greatest burden of disease in our country. The implications for the health care system, and our economy in general, are profound.

The prevalence of diabetes amongst residents in aged care facilities varies between studies, but is typically around one in four – a significantly higher rate than in the general population. As our society ages, the number of people with diabetes living in aged care facilities, often with the additional burden of dementia, will undoubtedly increase. The need for high quality care and, in particular, skills and insight into managing older people with diabetes in such settings, has never been greater.

Staff in residential and other care settings face many challenges and often diabetes is not as visible as other medical and social issues. Diabetes can be undetected in many such residents, but is often what leads to cardiovascular disease, kidney failure, a loss of vision, foot ulcers, cognitive impairment and depression.

Improving the standard of care for people with diabetes living in such facilities is clearly a very worthwhile goal.

Professor Trisha Dunning AM and her team have done a fine job in developing these *McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings*. The guideline development process specified by the National Health and Medical Research Council was followed and, as a result, these guidelines are based on the best, currently-available evidence, as informed by an expert advisory group and other key stakeholders.

I commend these comprehensive and innovative guidelines to you and hope that they will help to improve the quality of life for the many Australians living in residential and other care settings.

**Craig Bennett**

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**September 2013**

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Table 1 on pages 8 and 9 and Figure 1 on page 77 were reproduced from Dunning, T (2009). *Care of People with Diabetes: A Manual of Nursing Practice Third edition*, Wiley Blackwell, Chichester with permission.

Table 2 on page 78 and 79 was reproduced from Dunning, T (2014). *Care of People with Diabetes: A Manual of Nursing Practice Fourth edition*, Wiley Blackwell, Chichester with permission.

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## Purpose of The McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings

The *McKellar Guidelines* address two significant societal issues: caring for older people and diabetes. Type 2 diabetes and dementia are the leading causes of disease burden in Australia and both conditions are expected to increase by 2023<sup>1</sup>. Achieving optimal diabetes care in any setting, especially in residential aged care facilities (RACF) is challenging, because of the complex nature of diabetes care and staffing and resource issues in many facilities and community settings. The primary aim of the McKellar Guidelines is to enhance the care, safety, comfort, quality of life and end of life care for older people with diabetes living in RACFs and other health care settings.

The *McKellar Guidelines* were guided by a philosophical framework and document optimal diabetes care for older people with diabetes and promote well-being, dignity and safety and respect people's personal diabetes knowledge accumulated through living with diabetes, often for many years. Optimal management refers to the standard of care that should be available to all older people with diabetes in Australia.

Each *McKellar Guideline* outlines the care context or rationale for the recommended care, key assessment processes and recommended care planning for 18 diabetes-related issues that impact on the individual's safety, quality of life and health-related costs. The Guidelines take a proactive, preventative approach that involves regular assessments of key diabetes-related risks such as hypo- and hyperglycaemia, diabetes-related falls risk, pain risk and glucose lowering medicine-related adverse events. The risk assessment information can then be used to plan care to reduce these risks. The proactive approach helps mitigate risks and improves benefits, identifies clinical deterioration early, and can reduce the need for hospitalisation and visits to the emergency department. It can also aid clinicians' decisions about when to adopt a supportive palliative care approach.

The Guidelines are a stand-alone document but they were designed to be integrated with currently used general guidelines, policies, assessment tools and management strategies. The Guidelines could be linked to care funding processes such as the Aged Care Funding Instrument (ACFI) and used by accreditation agencies to benchmark the standards of diabetes care in RACFs and other settings.



# Philosophical framework underpinning The McKellar Guidelines for Managing Older People with Diabetes in Residential and Other Care Settings

The following philosophical framework was developed as the context within which to develop the McKellar Guidelines. The philosophical framework was derived from the principles defined in the *Book of Outcomes, Results and Processes* (Aged Care Standards and Accreditation Agency 2009)<sup>2</sup>, a structured literature review, discussion with older people with diabetes and their families, and the clinical experience of the researchers and the Guidelines Reference Group.

Nursing and medical care should be based on the best available evidence. Older people with several comorbidities and those living in RACFs are usually excluded from the type of research that constitutes the best available evidence (National Health and Medical Research Council (1999) level 1 evidence)<sup>3</sup>. However, 'All types of research contributes to the totality of evidence upon which rational clinical decisions for individual patients and policy for the health of the general public can be safely based'<sup>4</sup>. Philosophical frameworks have been useful when developing guidelines in other practice areas where there is little level 1 evidence<sup>5</sup>. Thus, the following Philosophical Framework was developed to add value and context to the available evidence and other documentation regarding caring for older people with diabetes, especially those living in RACFs.

## Philosophical Framework

The characteristics of ageing are applicable to everybody, but ageing occurs on an individual basis and individual organs and tissues age at different rates. The effects of ageing are influenced by genetics, lifestyle factors such as smoking and alcohol consumption, and long standing diabetes control.

The focus of care should be on prevention, risk management and quality of life considering functional status and life expectancy. Significantly, 'older people with diabetes' (and older people in general) are not a homogenous group, even within age ranges. Thus, the lack of evidence from clinical trials makes it difficult to determine the standard of care relevant to all older people with diabetes. The philosophical framework is divided into four sections:

- Older people-related.
- Health professional-related.
- Medicine-related.
- Policy-related issues.

## Older people with diabetes-related issues

- Older people and/or their family/carers should be consulted when developing care plans for the individual.
- Dignity and privacy should be respected and safeguarded.
- Care plans for older people with diabetes including blood glucose targets should be tailored to the individual's needs, functional status, life expectancy and health status using a whole of life approach that encompasses end of life care. This requires taking account of the individual's choices, and their physical, emotional, psychological, spiritual and relationship characteristics, which are likely to change, sometimes on a day-to-day basis.

- Improving glycaemic control can reduce hypo- and hyperglycaemia and the related symptoms and consequences, improve functional and cognitive ability, quality of life, and reduce the attendant risk of falls and other adverse events.
- Functional health literacy and numeracy are important but changeable skills for older people. Functional literacy includes, but is not limited to, having access to information, being able to read and understand it, and being able to critically appraise and use the information<sup>6</sup>. Older peoples' health literacy can be compromised temporarily or permanently by changes in their health status due to diabetes and age-related changes such as cognitive impairment and dementia. Cognition can be affected in the short term by hypo- and hyperglycaemia and their consequences. Alternatively, older people may not have access to and the ability to use information, or both.

## Health professional-related issues

- All health professionals and other staff providing care for older people with diabetes in RACFs and other settings need to understand and respect the older person's choices. Where possible, their choices, including end of life care choices, should be documented in advanced care plans and/or other relevant proxy decision-making documentation. These important documents should be prepared and signed when the individual is physically and mentally able to make informed decisions, which might be before they are admitted to an RACF.
- In order to develop appropriate care plans for and with older people, health professionals need to understand the effect of diabetes on the ageing process and vice versa, and their joint effects on tissues, organs, physical and cognitive capability, education needs and learning style, and psychological and spiritual health.
- Educating and supporting self-caring older people, RACF staff and other care providers to deliver best practice diabetes care is essential. RACF and staff in other care settings have a responsibility to participate in continuing professional development forums and knowing and working within their knowledge and competence levels, scope of practice, relevant regulatory frameworks and codes of practice. Managers should not delegate duties/tasks to staff who do not have the knowledge or competence to perform the task and staff should not accept duties/tasks they are not competent to perform or which are outside their scope of practice or regulatory requirements.
- Care should be planned and delivered in partnership with an interdisciplinary team. This requires effective communication processes, shared understanding about the issues involved and shared, collaborative decision-making among the relevant stakeholders, including the resident and their families. Collaborative partnerships and effective communication are more likely to result in person-centred care and achieve better outcomes.
- Nursing care is different from medical care but the two are equally important and are mutually supportive and interdependent. The medical goals and recommended targets described in *Diabetes Management in General Practice 2012/13*<sup>7</sup> and *Guidelines for the Management and Care of Diabetes in the Elderly*<sup>8</sup> and other diabetes management guidelines may be appropriate for some functionally independent older people, but most of the recommendations in such guidelines do not address the needs of older people with functional and cognitive disabilities, frailty and other geriatric syndromes.

## Medicine-related issues

- Quality use of medicines (QUM) should guide medicine management. Processes for achieving QUM in aged care facilities are described in the *Guiding Principles for Medication Management in Residential Aged Care Facilities* (2012)<sup>9</sup>. QUM encompasses all types of medicines including complementary medicines and the entire medication pathway, not just administering medicines.
- Importantly, QUM encompasses using non-medicine options first when possible and when such options are safe; and stopping unnecessary medicines to reduce polypharmacy and medicine-related risks and adverse events.
- Routine medicine monitoring is paramount to QUM, recognising that organ dysfunction, in particular renal dysfunction, is common in older people and can influence medicine choices. The medicine regimen should be reviewed when a medicine is prescribed or stopped, health status changes and as an essential component of the annual diabetes assessment (annual cycle of care).
- Medicines play an important role in prevention and treatment but polypharmacy can contribute to reduced quality of life, discomfort, and lead to adverse medicine-related events. Thus, regular comprehensive medicine reviews and stopping unnecessary medicines is essential. The *Beers Criteria* (2012)<sup>10</sup> *Australian Medicines Handbook*<sup>11</sup> and *AMH Aged Care Companion*<sup>12</sup> provide important information about medicine precautions and contraindications in older people.
- Health professionals' role in QUM involves assessing the individual, safely preparing and administering medicines, monitoring outcomes, documenting, storing, and delegating medicine-related activities and reporting medicine-related benefits and adverse events within their role and scope of practice and their knowledge and competence. In some cases the scope of practice includes prescribing and adjusting medicine doses.

## Policy-related issues

- Governance processes should support the delivery of best practice personalised care for older people with diabetes in all practice settings.
- RACF and other staff should have ready access to the relevant resources and information to enable them to safely and competently deliver care within the level of their knowledge and competence.
- RACF and other managers are responsible for delegating responsibilities to staff commensurate with their level of knowledge and competence.
- Care plans should be reviewed regularly for example following a critical incident such as a fall or change in functional or health status and as part of the Annual Cycle of Care.

# List of Abbreviations

ACC	Annual Cycle of Care (Annual Diabetes Check)
ACD	Advanced Care Directive
ADL	Activities of Daily Living
BG	Blood glucose
CAM	Complementary and Alternative Medicines and other non-medicine complementary therapies
CKD	Chronic Kidney Disease
COPD	Chronic Obstructive Pulmonary Disease
DE	Diabetes Educator
DKA	Diabetic ketoacidosis
eGFR	<i>estimated</i> Glomerular filtration rate
GLM	Glucose lowering medicines (sometimes called Oral Hypoglycaemic Agents (OHA) or antidiabetic medicines)
GP	General Practitioner
HbA1c	Average blood glucose level over the three months preceding the test
HHS	Hyperosmolar Hyperglycaemic States (formerly known as Hyperosmolar non-ketotic coma or HONK)
Hypo	Hypoglycaemia
IGT	Impaired glucose tolerance/ glucose intolerance
IM	Intramuscular
IRS	Insulin resistance syndrome
IV	Intravenous therapy
LADA	Latent Autoimmune Diabetes in Adults
MI	Myocardial infarction
NHMRC	National Health and Medical Research Council
OGTT	Oral glucose tolerance test
mmol/L	millimoles/Litre—unit to describe the level of glucose in the blood
PCOC	Palliative Care Outcomes Collaboration
QUM	Quality use of medicines
RACF	Residential Aged Care Facility
SCORE	Strengthening Care Outcomes for Residents with Evidence
TIA	Transient ischaemic attack

# Definition of Terms

## **Diabetogenic medicines**

Medicines that cause the blood glucose to go high (hyperglycaemia). Commonly used diabetogenic medicines are corticosteroids (steroids), atypical antipsychotic medicines and diuretics.

## **Glucose Lowering Medicines**

Medicines that lower blood glucose such as metformin, sulphonylureas and insulin.

## **Hypoglycaemia**

Low blood glucose. For the purpose of this Guideline hypoglycaemia refers to blood glucose lower than 6 mmol/L.

## **Hyperglycaemia**

High blood glucose. For the purpose of this Guideline hyperglycaemia refers to blood glucose higher than 10–15 mmol/L.

## **Individualised care (personalised care)**

A care plan developed to suit the individual needs of the older person considering their wishes and goals, past and current health status (physical and mental), dependency level and life expectancy. The focus should be on respecting the person's wishes, safety, comfort and quality of life. The care plan should make provision for end of life care.

## **Pharmacovigilance**

Pharmacological science to detect, assess, understand and prevent the adverse long term and short term side effects of medicines. Critical incident and adverse medicine event reporting are part of pharmacovigilance.

## **Sarcopenia**

Advancing adult age is associated with profound changes in body composition, especially loss of skeletal muscle mass, which is referred to as sarcopenia. Loss of muscle mass is closely associated with age-related loss of muscle strength.

# Clinical features and symptoms and the consequences of hyperglycaemia in older people with diabetes

The classic signs and symptoms of diabetes are polyuria, thirst, polyphagia, lethargy, weight loss, hyperglycaemia and glycosuria. Many of these symptoms are often attributed to another cause or ‘old age’. When present, they have a significant effect on comfort and quality of life. However, older people present with a broad spectrum of signs and symptoms and some do not experience symptoms. Others have vague signs and symptoms such as tiredness, depression, vision changes, unexplained weight loss and falls.

Table 1 lists the classic signs and symptoms of diabetes and the clinical features and consequences that can occur in older people.

*Table 1. The clinical features and symptoms and the consequences of hyperglycaemia that are often present in older people with diabetes (Note – the table continues on next page).*

Clinical features that can be present in older people with diabetes	Some consequences that can be associated with each feature
Polyuria Glycosuria Incontinence Nocturia, especially in men	Dehydration. Older people have reduced ability to detect thirst, which increases the risk of dry mouth and dehydration if they are incontinent or have polyuria. Sleep disturbance. Cognitive changes. Increased risk of falls and actual falls.
Vision changes	Impaired activities of daily living including performing diabetes self-care, driving and reading. Increased risk of falls and actual falls.
Vascular and haematological changes: – Red blood cell deformity. – Increased platelet adhesiveness. – White cells’ – Reduced ability to migrate to source of infection and engulf pathogens.	Intermittent claudication. Stroke. Myocardial infarction. Renal disease. Gangrene. Increased risk of falls and actual falls. Cognitive changes. Increased infection risk. Slow wound healing.
Nutritional deficiencies	Vitamin B <sub>12</sub> , D and C deficiency. Anaemia. Sarcopenia. Increased risk of falls and actual falls. Lethargy.

*Table 1. The clinical features and symptoms and the consequences of hyperglycaemia that are often present in older people with diabetes (Continued).*

Clinical features that can be present in older people with diabetes	Some consequences that can be associated with each feature
Recurrent infections. Slow wound healing.	Increased risk of hospitalisation. Hyperglycaemia, diabetic ketoacidosis (DKA), Hyperosmolar hyperglycaemic states (HHS), Delirium, Cognitive changes. Increased risk of falls and actual falls.
Cognitive changes. Depression.	Reduced self-care. Memory changes that affect learning. Increased risk of intercurrent illnesses. Increased risk of falls and actual falls.
Reduced pain tolerance. Neuropathic pain.	Reduced quality of life. Depression. Under-recognised and under-treated pain. Behavioural changes associated with dementia.
Impaired recovery from major illnesses. Increased risk of delirium following surgery.	Rehabilitation may take longer. Inability to cope. May require palliative care. Pain.
Polypharmacy.	Increased risk of medicine-related adverse events, especially if renal disease is present. Increased risk of falls and actual falls. Cognitive changes.
Delirium. Hyperosmolar states. DKA.	Dehydration. Seizures. Thrombosis. Increased risk of falls and actual falls. HHS is More common in older people in RACF and mortality increases with age.

## Section 2. The Guidelines

The following section contains the McKellar Guidelines for specific aspects of diabetes management. Each McKellar Guideline has three sections:

- Care Context
- Assessment
- Care Plan

In addition, some Guidelines have a 'Note' section that highlights important information that needs to be considered when planning care. Other relevant McKellar Guidelines and Strengthening Care Outcomes for Residents with Evidence (SCORE)<sup>13</sup> Guidelines that could inform care decisions are also listed at the end of each Guideline.

### **Five diabetes-specific risk assessment tools are contained within the Guidelines:**

- Risk factors for diabetes
- Hypoglycaemia
- Glucose lowering medicines-related (GLM) adverse event
- Diabetes-specific falls
- Diabetes-specific pain.

The risk assessment tools were designed to be used to identify the individual's level of risk to enable proactive preventative care strategies to minimise the risk to be included in the care plan. They can also help identify clinical deterioration.



# How to use the McKellar Guidelines

## Overview

The following information was developed to help health professionals caring for older people with diabetes use the McKellar Guidelines to provide safe best practice care.

The McKellar Guidelines describe how to incorporate individualised diabetes-specific assessment and care planning into older people's usual care plan to prevent/manage diabetes-specific issues.

## You can use the McKellar Guidelines to:

- **Assess** the individual's current diabetes care plan and use the information from the assessment and relevant McKellar Guidelines to develop a comprehensive diabetes-specific older person-centred care plan to maximise independence and minimise risk.
- **Plan** to prevent diabetes-related adverse events including hypoglycaemia, hyperglycaemia, diabetes-specific pain and falls and glucose lowering medicine-related adverse-events.
- **Monitor** the individual's general and diabetes health status to identify clinical deterioration early and implement diabetes-specific management strategies, which might be to implement palliative care and the person's end of life care plan.
- **Identify and manage** specific clinical issues such as hypo- and hyperglycaemia.
- **Prevent** diabetes-related adverse events including hypo- and hyperglycaemia, foot problems and intercurrent infections.
- **Improve** the individual's quality of life, comfort and safety by preventing/managing adverse events, falls and pain.
- **Enhance** the way staff communicate with other care staff and GPs about older people with diabetes care needs.
- **Enhance** staff's clinical knowledge about diabetes in older people and the diabetes-specific care issues that need to be considered in older people with diabetes.

## **The McKellar Guidelines**

The McKellar Guidelines focus on how to prevent adverse health outcomes, how to respond to diabetes-specific issues, how to communicate within the care team and how to consider the older persons' unique circumstance to ensure consistent best-practice diabetes-specific care for vulnerable older people with diabetes.

### **Preventative**

Proactively planning diabetes care involves gathering information to help decide how to prevent adverse events such as hypo- and hyperglycaemia and other diabetes-related issues such as falls and pain and enhance the individual's comfort and quality of life.

### **Responsive**

Caring for older people with diabetes is a continuous process because diabetes and general health status and other circumstances can change very quickly. Identifying, managing and responding to the changes will enhance safety, comfort and quality of life and could prevent transfer to hospital or the emergency department.

### **Effective communication**

Talking with older people with diabetes and their family carers and understanding their needs. Communicating effectively and efficiently with the interdisciplinary health care team including GPs, and where appropriate, general and specialist health professionals supports person-centred care and the development of streamlined, personalised and inclusive care plans.

### **Holistic and resident-centred care**

Respect, privacy and consider older peoples' unique needs and perspectives. Integrating diabetes-specific care into existing care by referring to relevant care guidelines promotes holistic and optimal health outcomes.

## **An example showing how to use the McKellar Guidelines**

### **Blood Glucose (BG) Monitoring**

BG monitoring helps health professionals understand older people with diabetes' current BG level and their BG pattern (pattern refers to when high, low and within range BG levels occur) and use the information to plan care. In order to use the information it is important to understand what the BG level means by thinking about the individual's:

- BG target range and usual BG pattern and noting when and how the pattern changes e.g. time of day, after participating in activities and before and after food.
- Glucose lowering medicine (GLM) regimen and how various medicines affect BG.
- Other factors that affect BG such as illness, infection, stress and pain

BG monitoring is a useful tool that helps health professionals and people with diabetes detect and respond to changes in BG patterns and proactively plan care to manage persistent low and high BG levels.

## What to do—BG Monitoring

Refer to the McKellar Guidelines—Care Planning page 23

1. Ensure the BG meter is reading accurately e.g. high and low quality control tests are conducted regularly and reagent strips are in date.
2. Follow the recommended BG testing technique (page 24) and perform the BG test for the resident or check their technique if they do their own BG tests.
3. Consider the individual's BG target range.
4. (NB General recommended BG range in the Guidelines is 6–15 mmol/L. NOTE: the recommended BG range *does not* refer to the reportable BG levels, which the GP decides to inform staff when to contact/telephone the GP (when the BG is outside the reportable levels).
5. Consider the individual's BG monitoring regimen and BG pattern, GLM regimen, activity level, food intake and current health status (illness, infection, stress, pain). Determine whether anything is different from usual e.g. the person did not eat breakfast or the person was more active than usual during the afternoon.
6. Determine whether the individuals' current BG monitoring regimen is appropriate by considering the factors that affect BG and their health status.
7. Use the information (Step 3, 4 & 5) to revise the diabetes care plan.
8. Consider increasing or reducing the individual's BG monitoring frequency to obtain BG information and prevent diabetes-specific adverse events e.g. increase BG testing frequency if the resident is unwell and after a hypo until the issues resolve.
9. Document the individual's BG and other related information described in the preceding steps. Think about:
  - i. 'what is the BG telling me' e.g. is it higher/lower than usual, if so why?
  - ii. 'what should I do e.g. offer a snack to prevent a hypo; discuss with the care team; repeat BG test in an hour'.

## Please note the following case study is an example only

Mrs Dee's care plan indicates:

- her BG usually ranges between 6 and 10 mmol/L
- her GP reportable range is less than 3 mmol/L or over 20 mmol/L
- she is prescribed Novomix 30, 12 units before breakfast and 8 units before dinner
- her BG is monitored three times per day before breakfast, lunch and dinner
- Mrs Dee's BG before breakfast at 0715hrs today was 7.2 mmol/L

Mrs Dee is due for her pre-lunch BG test—refer to BG monitoring.

You test Mrs Dee's BG at 1145hrs and it is 4.3 mmol/L.

You ask Mrs Dee what she ate today, what she has been doing during the morning, and how she feels.

Mrs Dee tells you she hasn't done anything in particular, she ate her normal breakfast and morning tea and feels fine.

Her BG is lower than usual and her insulin chart indicates her insulin was administered with breakfast.

## Planning care

Mrs Dee's BG is lower than usual.

You confirm that her insulin was administered before breakfast by checking her medicine chart.

You repeat the BG test at 1200; the result is 4.1 mmol/L.

Mrs Dee's BG is falling.

You arrange for Mrs Dee to have her lunch at 1200 if possible. If it is not possible to provide you arrange for her to have yoghurt, custard or fruit and ensure lunch is served on time. You repeat the BG test at 1215 to check that her BG is increasing.

You recheck her BG at 12.15pm and it is 6.2 mmol/L.

You talk with Mrs Dee about her diet, appetite and activity.

When documenting the incident you check back through Mrs Dees' BG record to determine whether the change in BG pattern is an isolated event or a frequent occurrence.

You use the McKellar Guidelines to complete the hypoglycaemia risk assessment tool to determine her level of hypoglycaemia risk and plan her BG tests, insulin and meals to prevent hypoglycaemia episodes. You consider undertaking other relevant risk assessment for Mrs Dee: e.g. GLM-related adverse event, and Diabetes-specific falls risk and use the information to revise the care plan to minimise these risks.

## Putting it into practice

Mrs Dee's care plan indicates:

- her BG usually ranges between 6 and 10 mmol/L
- her GP reportable range is less than 3 mmol/L or above 20 mmol/L
- she is prescribed Novomix 30, 12 units before breakfast and 8 units before dinner
- her BG is monitored three times per day before breakfast, lunch and dinner
- Mrs Dees' BG before breakfast at 0715 hrs today was 7.2 mmol/L

The morning staff handover information suggests Mrs Dee sustained a small skin tear on her left shin when she was out at lunch with her family and it is unclear what she ate for lunch.

You test Mrs Dee's BG at 1630 hrs and it is 18.3 mmol/L.

What would you do?

What questions would you ask Mrs Dee and her family?

What McKellar Guidelines could support you to assess the situation?

## Consulting with the GP

### Care Context

- General Practitioners (GPs) play an important role in managing diabetes in RACF by:
  - Undertaking an initial and ongoing assessment/s.
  - Supervising/conducting the Annual Diabetes Health Check, Annual Cycle of Care (ACC) and regular medicine reviews<sup>7</sup>.
  - Providing emergency care.
  - Referring to other health professionals when indicated.
  - Ordering relevant diagnostic and other investigations.
  - Participating in developing RACF policies and procedures and education programs including medicine management procedures<sup>9</sup>.
- It is often necessary for nursing staff to consult with the GP about a resident's health status.
- GPs often designate 'Reportable BG levels' (when to call the GP) in RACF but they are not very useful unless they are reported within a context. The information in this guideline outlines some of the context, to help RACF staff provide relevant information to the GP as well as the BG level.
- It is important to have appropriate resident information that outlines the context and health status available when consulting with a GP.
- GPs depend on nursing staff to provide accurate information, which helps them make appropriate care decisions, deliver best care to residents and prioritise their work.

### Preparation

#### Preparing to consult with the GP

- Have appropriate records/documents available before calling the GP including:
  - Medical record.
  - BG, falls, vital signs and pain records.
  - Results of risk assessment.
  - Medication charts.
  - Resident's care plan.
- Have appropriate diabetes-related information available including:
  - BG and time of last test.
  - The emerging BG pattern e.g. tending to increase or decrease.
  - Blood ketones type 1 and type 2 if resident is unwell and BG is persistently > 15 mmol/L.
  - Hydration status.
  - Symptoms such as lethargy, cognitive/behavioural changes, polyuria, thirst, exacerbated pain.
  - Sudden increase or decrease in weight.
  - Positive nitrates and leukocytes in urinalysis.
  - Changes in the resident's daily routine and functional status that indicate deterioration such as changes in:
    - Activity.
    - Stress.
    - Diet.
  - Medicine dose and dose frequency.
  - Signs of infection including:
    - Cough.
    - Elevated temperature.
    - Tachycardia.
    - Changes in BP.
    - Increased respiratory rate.
    - Diarrhoea and/or vomiting.
- Nurse's assessment whether the resident is deteriorating and needs to be referred to an endocrinologist, other specialist, diabetes educator or transferred to an acute facility or end of life care instituted.

Consulting

**Consulting with the GP**

- Inform the GP about any nursing care initiated such as:
  - Increased BG testing frequency.
  - IM glucagon administered for severe hypoglycaemia under standing orders.
  - Commenced Fluid Balance Chart and current fluid balance status.
  - Commenced vital sign observations and results of the observations.
  - Contacted family members and carers.

**After consulting with the GP**

- Document outcome of the communication.
- Follow established documentation, safety and quality procedures e.g. have the GP repeat medicine order to a second RN.



Other relevant guidelines in this document

Blood Glucose Monitoring	p.23
Falls Risk	p.47
Pain	p.52
Nutrition and Hydration	p.58

# Admission Assessment and Diabetes Risk Screening

## 1. Residents not known to have diabetes

### Care Context

Increasing age is a risk factor for diabetes: approximately 20% of older people have diabetes and a further 20% have diabetes risk factors or undiagnosed diabetes present on admission.

New diagnosis of diabetes is uncommon after age 85.

Diabetes increases the likelihood of admission to RACE. Therefore, screening for undiagnosed diabetes is the first step in planning quality diabetes care.

Diabetes (hyperglycaemia) is not a benign condition.

Significant diabetes complications such as cardiovascular disease, other comorbidities and geriatric syndromes are often present at diagnosis.

The typical diabetes signs and symptoms of diabetes might not be present.

Diabetes risk assessment should be integrated into usual admission assessment processes.

### Assessment

**Use the *Diabetes risk factor assessment tool* (next page) to assess risk of diabetes.**

**If 3 or more risk factors are present test blood glucose.**

Diabetes is likely if random blood glucose is  $\geq 11.1$  mmol/L or fasting blood glucose  $\geq 7.0$  mmol/L<sup>7</sup>.

Consult with GP to confirm the diagnosis, management and complication/comorbidity status.

Consult with resident and/or family carers to develop an individualised care plan.

Nocturia, especially in men, is associated with a range of health problems including type 2 diabetes and should be investigated.

Presence of metabolic syndrome; central obesity\* plus any two of four additional factors: raised triglycerides, reduced HDL-cholesterol, raised blood pressure, raised fasting plasma glucose, increases the impact of other risk factors that lead to cognitive decline especially visual working memory.

Progressive beta cell loss occurs in type 2 diabetes and significant loss can be present before diagnosis, which means Glucose Lowering Medicines (GLM) may be required to manage hyperglycaemia<sup>15</sup>.

### Note

*\*Obesity is a risk factor but weight loss may not be a desirable goal for older people because it might contribute to loss of muscle mass and strength.*

*Obese people can be sarcopenic.*

*Obesity is not an indicator of nutritional status.*

*The classic symptoms of diabetes; polyuria, polydipsia and weight loss may not be present because the ability to recognise thirst is impaired in older people and the renal threshold for glucose increases with age.*

*Non-specific symptoms might include:*

- confusion
- failure to thrive
- incontinence
- dehydration.

*If a resident is admitted with these symptoms, perform a capillary blood glucose (BG) test. If BG > 15 mmol/L notify GP who may suggest the resident has a fasting or random venous BG test.*

*If a random venous BG is 11.1 mmol/L or fasting BG 7.8 mmol/L the resident may have diabetes.*

*Post-prandial hyperglycaemia is more common in older people; therefore fasting venous BG may not detect diabetes<sup>16</sup>.*

## Diabetes risk assessment tool

Part A of the risk assessment tool was based on the AUSDRisk tool<sup>17</sup>, which is widely used in Australia and is a simple non-invasive way of identifying people at risk of diabetes who could benefit from treatment to reduce symptom burden, improve comfort and quality of life and reduce risks associated with hyperglycaemia such as hyperosmolar states.

Part B refers to symptoms that could indicate hyperglycaemia/diabetes in older people. However, signs and symptoms of diabetes may be non-specific or attributed to other causes in older people.

### How to complete the tool:

- Place a cross (X) in each relevant box.
- Allocate one point for each risk factor present.
- All of these factors increase the risk of diabetes.  
The more risk factors present the greater the risk of diabetes.

#### Part A

- Being inactive.
- Aged over 65 years.
- Has a close relative with diabetes.
- Overweight (BMI  $\geq$  30 Kg/M<sup>2</sup>).
- Of Asian, Middle Eastern, North African, Southern Europe, Pacific Islander or Australian Aboriginal and Torres Strait Islander birth.
- Hypertension.
- Cardiovascular disease.
- Previous stroke.
- Depression.
- Takes medicines that increase blood glucose such as corticosteroids and atypical antipsychotics.

**Score:** \_\_\_\_ / 10

#### Part B

Symptoms such as the following:

- Frequent urination.
- Nocturia, especially in men.
- Fatigue, lethargy, sleepiness.
- Slow healing of wounds such as skin tears and foot ulcers.
- Irritability.
- Candidiasis
- Cognitive changes or confusion

**Score:** \_\_\_\_ / 7



## What to do

Actions should be guided by the staff member's knowledge and competence and Role and Scope of Practice.

- Perform a blood glucose test; but note capillary blood glucose tests are not diagnostic.
- High post prandial blood glucose is common in older people: thus, fasting plasma glucose and HbA1c are likely to miss ~ 1/3 of diagnoses<sup>16</sup>.
- Oral glucose tolerance tests are impractical in RACF.
- Discuss the resident's diabetes risk score with GP and senior staff such as diabetes educator, Registered/Enrolled nurse and document the risk score, any other assessments undertaken, outcome and future care plan/s.
- Regularly assess resident to detect diabetes symptoms however, be aware older people may not experience the typical symptoms of diabetes, which is why regular risk screening is important.
- Undertake a medicines Review, at least annually.
- Plan to reduce and/or manage diabetes risk factors by managing and monitoring:
  - Obesity and weight-related issues by discussing resident's food preferences, reviewing food portions and encourage physical activity where possible but note, many older people are malnourished even when they are obese and weight loss could put them at risk of adverse events such as sarcopenia and falls.
  - BMI may not be an accurate predictor of adiposity in older people with diabetes due to changes in body composition.
  - Obesity exacerbates decline in physical functioning and increases risk of frailty. Therefore, weight loss can worsen sarcopenia, reduce bone mineral density and lead to nutrition deficits<sup>18</sup>.
  - Strategies that combine weight loss and physical activity may be beneficial in functionally independent older people<sup>19</sup>. Weight loss may put the individual at risk of loss of muscle mass and strength and adverse events. A strict 'diabetes diet' is rarely indicated and may put the person at risk of adverse events such as delayed wound healing and falls.
  - Higher body mass index is associated with better survival rates in people over 80 years<sup>20</sup>.
  - Repeat the risk assessment during the annual cycle of care.

### Note

*Some risk factors listed on the AUSDRISK tool were not included on the screening tool. Information about previous gestational diabetes is difficult to obtain. Smoking is not common in RACF but it could be relevant to ask about smoking in community-dwelling older people and those in low level care.*

*Most studies that determined BMI cut points did not include older people; thus cut points for older people are not established. Likewise, BMI indicating obesity is lower in some Asians than Caucasians.*

*Overweight Australians over 70 years are less likely to die within 10 years than those in the normal range<sup>21</sup>. General health, nutritional status and functional status might be more important than weight.*

*Significantly, thirst is often not present in older people when they are hyperglycaemic because thirst sensation is reduced.*

Care Plan

**Care plan—Diabetes diagnosed**

Medical and nursing staff

- Set management targets in consultation with resident/relatives and GP and in accordance with functional status:
  - Independent and relatively self-caring.
  - Frail.
  - Dementia.
- Monitor BG levels (refer to Blood Glucose Monitoring guidelines page 23 for recommended testing frequency).
- Undertake hypoglycaemia risk assessment if GLM commenced (see page 36).
- Explain the diagnosis and management to the resident and his/her family.
- Organise diabetes education within the resident’s capabilities.
- Undertake a diabetes-specific falls risk assessment.
- Undertake a comprehensive medicines review and GLM-related adverse event risk assessment. Ask about complementary and alternative medicines (CAM) and other non-CAM therapies.
- Undertake a complication assessment.
- If indicated, the GP may refer to an Endocrinologist, Diabetes Educator, Dietitian, Dentist, Geriatrician and/or other relevant health professional.

**Care plan—Diabetes not diagnosed**

**Risk factors present but BG not within the diagnostic range**

Test BG at least annually, when any symptoms suggestive of diabetes develop and when diabetogenic medicines are prescribed.



Other relevant guidelines in this document

Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Annual Cycle of Care	p.42
Falls Risk	p.47
Diabetes Health Assessment	p.42
Pain Associated with Diabetes	p.52
Nutrition and Hydration	p.58

# Admission Assessment and Diabetes Risk Screening

## 2. Residents With Diabetes

### Care Context

- Increasing age is a risk factor for diabetes and approximately 20% of older people have diabetes<sup>22</sup>.
- Diabetes (hyperglycaemia) is not a benign condition.
- Residents will often have significant diabetes complications and other comorbidities that affect Activities of Daily Living (ADL), safety, comfort and quality of life, when they are admitted to RACF.
- Type 2 diabetes is the most common type in older people but people with type 1 diabetes also grow old. In addition, Latent Autoimmune Diabetes in Adults (LADA) occurs in older people<sup>23</sup>.
- Diabetes assessment should be integrated into usual admission assessment processes undertaken by the GP and Registered Nurse (RN).
- There is less evidence that tight BG control in older people improves outcomes and tight BG control increases hypoglycaemia risk.
- Hyperglycaemia is associated with increased all cause and CVD mortality in people over 75 with diabetes duration less than 5 years<sup>24</sup>. In the short term it affects cognitive function, exacerbates pain and contributes to dehydration and increased risk of intercurrent infections.

### Assessment

In addition to the standard RACF Admission Assessment check:

- Functional status
- Medicines regimen and whether the resident is using medicines or nutritional supplements that increase blood glucose levels (diabetogenic substances), especially:
  - Corticosteroids.
  - Antipsychotics.
  - Thiazide diuretics.
  - Some enteral nutrition supplements.
  - Some CAM e.g. some forms of Cranberry.
- Whether the resident is using GLM: If taking insulin or sulphonylureas undertake a hypoglycaemia risk assessment (See Hypoglycaemia risk assessment tool page 32).
- Whether using CAM medicine or other CAM.
- Undertake GLM-related adverse event risk assessment (page 36)
- Undertake a diabetes-specific falls risk assessment (See Diabetes-specific falls risk assessment tool page 50).
- Assess diabetes complications status and their potential to cause symptoms and impact on comfort, falls and other risks.
- Undertake diabetes-specific pain risk assessment (See Diabetes-specific pain risk assessment tool page 54).
- Assess resident's self-care capability if functionally independent.
- Determine whether resident has an Advanced Care Plan (ACP) in place. If not, discuss the issues with the individual and/or their family and document an ACP and/or other proxy decision-making information. NOTE: not all Australian States have the same legislation concerning advanced care planning and other related end of life issues.

## Care Plan

- Individualise, manage and educate according to the resident's functional capacity and capability.
- If indicated, consult with GP who may refer the resident to an Endocrinologist, Diabetes Educator, Dietitian, Dentist and/or other relevant health professional.
- Regular BG monitoring and medical care is essential to effective care.

**GP and Nurses:**

- Plan Annual Cycle of Care (ACC) and document when completed.
- Have a plan in place to assess and manage BG and other parameters outside the resident's recommended target range.

## Targets:

- Management targets need to be individualised according to functional status, comorbidities and life expectancy.
- HbA1c 7- 7.5% for independent and self-caring with few complications if it can be achieved without risk.
- HbA1c up to 8.5% for frail people with life expectancy < 5 years<sup>25</sup> and needs insulin<sup>26</sup> established on an individual basis.
- BG range 6–15 mmol/L (generally). Important to note a change in the usual pattern rather than one or two high or low tests and try to determine the cause e.g. pain, illness, stress.
- BP threshold for treatment is <140/90 mmHg if present for three months and attained on 3 measurements, if no increased risk of postural hypotension; 140-145/90 for people > 80; 150/90 for frail people and 140/80 for people with renal impairment<sup>27</sup>.
- If eGFR is less than 60, a lower systolic BP might be indicated<sup>23,27</sup>.

- The various classes of antihypertensive medicines and diuretics, ACEI, beta blockers and calcium channel blockers have comparable effectiveness in managing cardiovascular risk<sup>28</sup>. Angiotensin-receptor blockers also have renal benefits<sup>29</sup>. Diuretics can precipitate falls in frail older people<sup>28</sup>.
- Develop a plan for managing:
  - Sick days.
  - Hypoglycaemia.
  - Hyperglycaemia.
- Plan to discuss ACP at a relevant time if such plans are not already in place.



Other relevant guidelines in this document

ALL of the guidelines

# Blood Glucose Monitoring

## Care Context

### Blood Glucose (BG) monitoring

- Is a significant component of diabetes management. Monitoring refers to BG testing, interpreting and acting on the BG test result and the emerging BG pattern.
- Must be performed by staff competent to operate BG meters and perform the test.
- Regular meter quality control testing is essential to the accuracy of the tests.
- Is essential for all residents with diabetes especially if they are on insulin or other glucose lowering medicines (GLMs).
- Testing frequency should be individualised according to functional status and will change over time; thus, should be assessed on a regular basis; at least as part of the annual cycle of care.
- Frequency should be individualised for each resident taking into consideration the person's disease and co-morbidity status, BG targets, current medicine regimen and life expectancy.
- Provides information about a resident's BG at the time the test is performed.
- Frequency should be determined and documented on admission in consultation with the resident, GP and carers/family.
- BG testing assists GP and staff to establish the resident's BG pattern and BG trends, detect hypo and hyperglycaemia and guide care decisions.
- Should be performed more frequently when clinically indicated e.g. during illness, when new medicines are commenced or medicines are stopped, changes in behaviour/cognition, stress, and altered nutritional intake.
- Should be reviewed as part of the annual cycle of care.
- HbA1c should be monitored every 6-12 months and the target should be individualised<sup>30</sup>:
  - Generally 7-8%.
  - Functionally independent 7-7.5%.
  - Frail and most people with dementia up to 8.5%.
- Self-monitoring should be encouraged where possible.

## Assessment

- Type of diabetes and medicine regimen.
- BG testing frequency and pattern before admission.
- Nutritional intake and activity level.
- Whether prescribed diabetogenic medicines.
- If resident is self-testing check:
  - BG testing technique.
  - Condition of the finger test sites and equipment.
  - Usual BG pattern.
  - BG testing preferences.

### Ensure the system supports accurate BG testing

- Appropriate equipment is available and a systematic quality management process is in place for blood glucose meters and staff competency. See Appendix A on page 77 for a blood glucose meter quality control test.
- Staff have the knowledge and competence to test BG, interpret the emerging pattern and act on the results.
- Processes for documenting and communicating test results.
- Staff safety e.g. possibility of finger stick injury.
- Infection control procedures e.g. safe disposal of sharps and used equipment.

### Note

**Blood glucose pattern** means the distribution of BG test results in the low, high and acceptable target ranges. Unless the situation is urgent e.g. hypoglycaemia or acute illness, the pattern is usually assessed 24–48 hours after a change in management.

- Monitor BG as per resident's individualised diabetes management plan:
  - Perform BG at appropriate time.
  - Use the correct site on the side of a finger and correct testing technique.
  - Document the result and review BG pattern to determine whether the BG is stable or is increasing or decreasing.
  - Ideally, residents with type 1 and those on insulin or sulphonylureas should have BG monitored before each meal.
- If the resident refuses a BG test e.g. resident with dementia, leave until later unless the resident has signs of hypoglycaemia in which case treat the hypoglycaemia and test BG when the resident settles.
- Test BG more frequently during illness (see p. 16–19), if the resident is fasting, if there is a change in medicine dose or if the resident's condition changes.
- Consult with the GP if BG pattern changes.

### Blood Glucose Targets

**Individualise, but the range for most residents is 6–15 mmol/L.**

**Hypoglycaemia – generally less than 6 mmol/L especially in frail older people.**

**Hyperglycaemia - greater than 15 mmol/L especially if consistently high.**

Report to senior staff if:

- BG level is above or below the resident's usual range OR if the resident's behaviour/cognition alters.
- The resident consistently refuses BG tests.

### Frequency of BG Monitoring

Individualise, but the minimum recommendation is:

1. Residents managed with diet only and if BG is stable: Daily BG at alternating times or less frequently.
2. Taking oral GLM especially some sulphonylureas and BG is stable: At least twice a day at alternating times.
3. Taking insulin: At least three times a day, before meals.
4. During illness: Refer to Hyperglycaemia and Sick Day Care Guideline (page 25).
5. Taking diabetogenic medicines: Refer to Managing Corticosteroids (Steroids) and Antipsychotic Medicines Guideline (page 38).
6. At any time the resident's clinical condition, behaviour and/or cognition changes.

### How to Test Blood Glucose

1. Preferred testing site: Side of the fingers near the tips or sides of the finger. Alternate test sites.
2. Use a new lancet for each resident and each test. Ideally each resident has his or her own device.
3. Clean and dry resident's hands using warm flannel/cloth. Do not use alcowipes, which dry the skin.
4. Insert test strip into meter.
5. Prick finger with lancet, gently massage from the base of the finger towards the tip to collect a drop of blood.
6. Place blood drop on test strip.
7. Apply gentle pressure on the puncture site with gauze/cotton wool.
8. Tell the resident the result.
9. Document BG level.
10. Dispose of used equipment appropriately.



Other relevant guidelines in this document

ALL the guidelines

### SCORE documents:

*Dehydration*  
*Delirium Hypoglycaemia*  
*Depression*  
*Cognitive Impairment and Dementia*

# Hyperglycaemia and Sick Day Care

## Care Context

### Hyperglycaemia

- Is a stress response to precipitating events such as infection, pain or mental distress.
- Is precipitated by
  - Illnesses.
  - Pain.
  - Distress.
  - Inappropriate medicines management.
- Occurs when the BG pattern shows most BG tests are > 15 mmol/L.
- Contributes to the development of long-term diabetes complications such as cardiovascular, nephropathy, neuropathic disease.
- Affects cognition and behaviour and can lead to delirium. Many features of delirium and hyperglycaemia are similar, as are the features of delirium, depression and dementia. Thus, it is important to identify the underlying features to treat appropriately.
- Increases falls risk.
- Increases pain.
- Reduces quality of life and compromises comfort.
- HbA1c > 8% is associated with increased morbidity and mortality in older people with diabetes<sup>31</sup>.
- If left untreated, hyperglycaemia increases the risk of hyperglycaemic emergencies: Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycaemic States (HHS) that require hospital admission and impact on mortality and quality of life<sup>32</sup>.
- Regular BG monitoring enables hyperglycaemia to be treated before DKA and HHS develop and avoid a hospital admission.

HHS still has a high mortality rate and can be the first presentation of diabetes in older people. It can be precipitated by illness, corticosteroids, diuretics, advanced renal disease, peritoneal dialysis, cardiovascular events, trauma, and surgery. Reduced thirst perception contributes to the risk of dehydration, a key feature of HHS<sup>33</sup>.

The prevalence of HHS is higher in RACF.

### Note

*It is essential to recognise and respond to clinical deterioration promptly to improve outcomes or to refer the individual for supportive palliative care or end of life care<sup>34</sup>.*

*The risk assessment tools in these Guidelines can aid decisions about clinical deterioration and when to consult the individual's doctor and the information to provide to the doctor.*

*Family and carers should be informed as soon as possible if the individual's health status changes.*

*Governance support is important to managing clinical deterioration promptly and appropriately.*

*Each person with diabetes should have an individualised sick day management plan.*

*The plan should include information about advanced care plans.*

*Top-up doses of insulin are contra-indicated in older people<sup>10</sup>.*

**Assessment (registered nurse or doctor)**

- Test BG.
- Test blood (preferable) or urine for ketones.
- Check for the presence of infection e.g. take temperature, urine test.
- Assess cardiac status; MI can be 'silent' or present as indigestion. Contact doctor and perform ECG (if possible). If urgent and relevant call an ambulance.
- Assess hydration status provide fluids if it is safe to do so.
- Assess pain and discomfort.

**Recognise diabetic ketoacidosis (DKA)**

DKA is:

- More common in type 1 diabetes.
- Usually has a rapid onset.
- Blood glucose > 15 mmol/L and blood and/or urine ketones present.
- Common causes are omitting insulin doses and infection.
- Mortality is high in older people.

**Signs**

- Hyperglycaemia.
- Ketones present in the blood or urine.
- Abdominal pain.
- Dehydration: decreased skin turgor, sunken eyes, dry mouth
- Changed cognition/behaviour.
- Delirium.
- Vision changes.
- Kussmaul's respiration (deep, sighing breaths) in early stage but are absent in the late stage.
- Tachycardia.
- Bradycardia.
- Polyuria.
- Polydipsia.
- Polyphagia.
- Determine whether prescribed doses of GLM/insulin were administered.

- Implement sick day care if indicated.
- A medicines review may be required if hyperglycaemia persists.
- Consult with the GP because laboratory and other diagnostic investigations may be required.

**Note**

*Infections can be present without significant signs and symptoms.*

*If BG remains > 15–20 mmol/L the likelihood of DKA or HHS increases.*

**Recognise hyperosmolar hyperglycaemic states (HHS)**

HHS is:

- More common in type 2 diabetes.
- Often has a slow onset.
- Has a high mortality rate (10–20%)<sup>35</sup>.
- Is more common in RACF and there is a slightly higher prevalence in females; approximately 30% of people who develop HHS do not have diagnosed diabetes<sup>35</sup>.
- Usual precipitant is a concomitant illness e.g. pneumonia, urinary tract infection.

**Signs**

- Increasing BG.
- Dehydration: decreased skin turgor, sunken eyes, dry mouth.
- Polyuria: may present as incontinence and could progress to acute renal failure.
- Neurological deficits are common but coma is rarely present.
- Drowsiness and lethargy.
- Delirium.
- Focal or generalised seizures.
- Vision changes.
- Hemiparesis.
- Sensory deficits possibly due to hypoxaemia.

*DKA and HHS are largely preventable.*

*Their presence usually requires transfer to ED/hospital.*



- Determine whether BG needs to be monitored more frequently e.g. because of signs and symptoms, DKA, HHS or illness.
- Commence sick day management if resident is unwell, there are signs of illness, ketones present in blood or urine and when BG >15–20 mmol/L on two consecutive readings.
- Do not stop insulin in residents with type 1 or type 2 diabetes.
- BG > 15–20 mmol/L retest within 2 hours.
- Review fluid and dietary intake, especially if self-caring in low level care.
- Adequate fluid is essential. If resident is unable to take fluids orally, IV fluid may be indicated. Replacing fluid helps normalise the BG.
- Administer GLM/insulin according to the prescribed regimen.
- Consult with the GP if resident is unable to tolerate medicines during illness.
- Residents with type 2 diabetes on oral GLM may need insulin on a temporary or permanent basis.
- The investigations might include:
  - Cognitive status.
  - Urea and Electrolytes.
  - Full Blood Examination.
  - Plasma Glucose.
  - Arterial pH.
  - Serum bicarbonate.
  - Serum ketones.
  - Urine ketones.
  - Serum osmolality.
  - Anion gap.
- Transfer to hospital if indicated. Usual management is an IV insulin infusion.
- Commence blood ketone or urine monitoring when BG >15 mmol/L especially in type 1 diabetes.
- Monitor resident's hydration status:
  - Review fluid and dietary intake, especially if self-caring in low level care or at home.
  - Commence fluid balance chart with two hourly subtotals.
  - Encourage the resident to drink.
- Monitor cognitive/neurological signs.
- Administer medicines according to the prescribed regimen.
- Consult with the GP if the resident is unable to tolerate medicines or fluids during illness and BG is increasing or falling.
- Identify and treat underlying cause, if possible.
- Increasing BG may precipitate DKA and HHS requiring admission to hospital.

#### Severe hyperglycaemia

- Persistently elevated BG > 15 mmol/L for 8–12 hours when the resident is unwell could be a medical emergency.
- Perform all of the steps described under mild hyperglycaemia and:
  - Place resident on his/her side and clear the mouth and nose to protect the airway.
  - Prepare to transfer the resident to hospital.

#### Mild hyperglycaemia

- Elevated BG > 15–20 mmol/L for 4–6 hours.
- If resident is unwell or shows signs of illness, signs of DKA/HHS are present and BG > 15 mmol/L for more than 6 hours, increase BG monitoring to 2 hourly.

**Consult with the GP early**

- The GP may:
  - Adjust insulin doses in type 1.
  - Initiate insulin in type 2.
  - Order investigations.
  - Transfer the resident to hospital.
  - Implement end of life care plan.
- The GP may refer to a DE or Endocrinologist.
- Top up insulin doses and sliding insulin scales are inappropriate in older people<sup>10</sup> unless insulin is given intravenously and the dose adjusted according to BG tests, which is unlikely to occur in RACF or community settings.

**Interpreting blood ketones**

Urine ketone testing is not as accurate as blood ketones. If blood ketone testing is not available in RACF, a laboratory blood test is indicated.

**Negative/trace - 1.0 and BG <4.0mmol/L**

- Encourage fluid and carbohydrate intake.
- Consider reducing insulin dose.
- Monitor BG and ketones four hourly.
- Continue to monitor BG and hypoglycaemia.

**Small 1.0 - 4 and BG ≤ 15.0 mmol/L.**

- Encourage fluid and carbohydrate intake.
- GP may increase or commence insulin.
- Monitor BG and ketones two hourly.
- Consult with the GP.

**Moderate/large\* - >1.5 and BG >15 mmol/L**

- Encourage fluid and carbohydrate intake.
- GP may increase or commence insulin.
- Monitor BG and ketones two hourly.
- Consult with the GP if blood ketones are moderate/high.
- Hospital admission may be needed<sup>36</sup>.

*\*Note*

*High ketones can be present when blood glucose is not particularly high.*

*High ketones is a serious finding that requires prompt treatment.*

*SCORE documents*

*Dehydration  
Delirium  
Depression*



## Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Managing Glucose Lowering Medicines	p.34
Managing Corticosteroid (Steroids) and Antipsychotic	p.38
Falls Risk	p.47
Pain Associated with Diabetes	p.52
Nutrition and Hydration	p.58
Oral Care	p.61

# Hypoglycaemia

## Care Context

- Insulin is a high risk medicine.
- Hypoglycaemia is the most common side effect of some sulphonylureas and insulin.
- Older people have more admissions to hospital for hypoglycaemia than hyperglycaemia<sup>37</sup>.
- Hypoglycaemia is defined as BG below 6 mmol/L for the purpose of this Guideline.
- The risk for hypoglycaemia is increased in aged care residents with type 2 diabetes.
- The prevalence of hypoglycaemia in hospitals and RACFs varies among studies but is underestimated<sup>38</sup>.
- HbA1c < 6% could indicate anaemia and/or frequent hypoglycaemia in older people, especially frail older people<sup>37</sup>.
- Hypoglycaemia is associated with increased morbidity and mortality.
- Hypoglycaemia due to sulphonylureas is associated with a higher prevalence of coma than insulin and recovery takes longer.
- Symptoms in older people often differ from 'text book' symptoms (see page 12).
- Frequent hypoglycaemia should trigger a nutrition and medicines review.
- Hypoglycaemia:
  - Is the most feared complication of some sulphonylureas and insulin.
  - Can provoke major cardiovascular events including MI, TIA and sudden death<sup>39,40</sup>
  - Increases falls risk.
  - Can lead to hypothermia if prolonged in cold weather.
  - Reduces Quality of Life and compromises comfort.
  - Affects cognitive function including short term and working memory<sup>41</sup> and is associated with dementia. Likewise, dementia is associated with hypoglycaemia<sup>42</sup>.

## Assessment

- **Use the Hypoglycaemia risk assessment tool (page 32) to assess risk of hypoglycaemia.**
- Use the results of the assessment to plan care to reduce the hypoglycaemia risk.
- The hypoglycaemia risk factors are divided into two sections:
  - a) Hypoglycaemia unawareness
  - b) Resident-related.
 Systems-related factors also need to be considered.

## Prevention

**Implement preventative strategies****Individualise resident's care plan**

- Determine risk of hypoglycaemia and plan care to reduce the risk. Frail older people are at high risk. BG should be > 6 mmol/L.
- Determine appropriate BG range according to the resident's risk level.
- Monitor BG regularly to establish BG pattern and detect recurrent hypoglycaemia.
- Regular medicines review.
- Monitor renal and liver disease and review medicines if renal and/or liver function declines.
- Ensure 'standing orders' for IM glucagon are in place to treat severe hypoglycaemia.
- Ensure staff know how to recognise and manage mild and severe hypoglycaemia appropriately.

**Risk management strategies**

- Educate staff to recognise risk factors for hypoglycaemia, and treat hypoglycaemia.
- Monitor blood glucose to detect hypoglycaemia early.
- Know the resident's usual behaviour.
- Minimise distractions during medicine administration rounds.
- Administer GLM with meals.
- Increase BG testing frequency when the resident is fasting for investigation/procedures or refuses to eat.
- Ensure 'Hypo Kit' is readily accessible and is checked to ensure required equipment is in the kit and has not passed the expiry date.
- Restock Hypo Kit as soon as possible after use.
- Glucagon should be kept in the refrigerator. Note the expiry date is usually within 12 months of issue.

## Care Considerations

**Special considerations****Treating hypoglycaemia when the person is receiving enteral or texture modified foods.**

Enteral Route – administer 15g liquid carbohydrate e.g. ½ bottle lucozade OR 15g glucose dissolved in water OR 50% Dextrose mixed with water through the feeding tube.

Flush the tube with water before and after the glucose bolus.

Administer IM glucagon if resident does not respond.

**Note**

*The management plan for older people with severe frequent hypoglycaemia should be reviewed after each hypoglycaemic event.*

- The review should encompass:
  - Renal and liver status.
  - Medicine regimen.
  - Nutritional status.
- When GLM medicines are administered in relation to food.
- Administration technique.
- Food intake.

*Activity level: wandering behaviour is a form of activity and may increase if the individual is in pain or is stressed.*

**Texture Modified Diets**

If available, give 15g glucose gel squeezed onto a spoon for resident to swallow.

OR

Encourage resident to consume thickened beverage to the consistency specified by the speech pathologist in care plan.

**Medicines that can lower BG and increase hypo risk (other than GLMs)**

- Sulphonamides
- Salicylates
- Warfarin
- Clofibrate
- Chloramphenicol
- Probenecid
- Tuberculostatics
- MAO inhibitors.
- Some CAM e.g. Aloe, Ginseng, Bitter melon, Fenugreek, Opuntia
- Alcohol

*NOTE: Some of these medicines can also increase blood glucose.*

**Despite optimal preventative strategies, hypoglycaemia can still occur.**

**Recognise signs and symptoms**

- Signs and symptoms are influenced by whether the hypo is insulin- or sulphonylurea-induced and the rate the BG actually falls.
- Resident may not recognise signs and symptoms.
- Hypoglycaemia can be mistaken for other causes and hypo management may not be instigated or delayed.

**Mild BG - 4-6mmol/L**

- Pallor.
- Sweating.
- Shaking may be missed if resident has a disease such as Parkinson's disease.
- Pins and needles around mouth.
- Dizziness, can be attributed to postural hypotension.
- Palpitations.
- Headache.
- Confusion.
- Vision changes.
- Hunger

**Severe BG < 3 mmol/L**

- Confusion and behaviour change, often:
- Aggression.
- Irritability.
- Coma.
- Seizures.

**The following are common hypoglycaemic presentations in older people**

- Napping before meals.
- Cognitive changes.
- Behaviour changes.
- Falls.



Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Managing Glucose Lowering Medicines	p.34
Annual Cycle of Care	p.42
Falls Risk	p.47
Nutrition and Hydration	p.58
Oral Care	p.61

**Manage appropriately**

**Mild BG - 4-6 mmol/L**

If the resident is conscious and able to swallow

- Confirm BG level.
- Administer glucose gel OR 15g carbohydrate OR glucose tablets/jelly beans OR ½ bottle lucozade or 15g glucose powder dissolved in water.
- Repeat BG after 15 minutes.
- Oral glucose will only maintain BG for about one hour, give next meal OR additional snack.
- Check BG after 15 minutes.
- Reassure the resident.
- Seek cause.
- Document the event.

**Severe BG < 3 mmol/L**

If the resident is uncooperative and/or semi-conscious/unconscious:

- Place on side and protect airway.
- Test BG.
- Administer IM glucagon.
- Recheck BG, if > 4 mmol/L recheck after 15 minutes.

If resident RESPONDS to IM glucagon

- Once conscious follow up with long-acting carbohydrate.
- Monitor BG for 2-4 hours.
- Reassure the resident.
- Reassess medicine regimen and/or doses and administration time in relation to food.
- Seek cause.
- Document the event.

If the resident does NOT RESPOND:

- Call ambulance.
- Protect the airway.
- Stay with resident.
- If restless protect from injury/falls.
- Be aware a severe hypo can precipitate an MI.

**Both mild and severe:**

- Restock hypo kit and replace glucagon.
- Inform the GP.

**SCORE documents**

*Hypoglycaemia*  
*Dehydration*  
*Delirium*

# Hypoglycaemia risk assessment tool

## How to complete the tool:

- Place a cross (X) in each relevant box.
- Allocate one point for each risk factor present.
- The more risk factors present the greater the risk of hypoglycaemia.

### Hypoglycaemia unawareness

- Resident has hypoglycaemia unawareness. If possible, ask the resident whether he/she knows when they are having a hypo. If not cross the box.
- If the resident has dementia/cognitive impairment, cross the box.

### Resident-related

- Consistently low HbA1c  $\leq$  7%.
- On insulin.
- On sulphonylureas such as Gliclazide, Glibenclamide, Glimepiride, Glipizide.
- On insulin and sulphonylureas.
- Has renal disease.
- Has liver disease.
- Fasting for a procedure.

- Recent hypoglycaemia episode.
- Cognitive impairment/dementia.
- Food-related e.g.
  - low carbohydrate content in meals
  - swallowing difficulties
  - malabsorption e.g. gastrointestinal problems such as coeliac disease, gastrointestinal autonomic neuropathy
  - diarrhoea and vomiting
  - erratic appetite.
- On sedative medicines.

**Score:** \_\_\_\_ / 12

---

**High Risk—any one risk factor**

**Very High Risk—any or all of the following:**

- On glucose lowering medicines
- Has renal disease
- Has liver disease
- Has hypoglycaemic unawareness
- Has cognitive impairment
- Recent hypoglycaemic episode

## What to do

Actions should be guided by the staff member's knowledge and competence and Role and Scope of Practice.

Plan to reduce hypoglycaemia risk:

- Determine a safe BG range for the individual based on their hypoglycaemia risk and functional status, generally above 6 mmols/L, especially in frail older people.
- Individualise BG monitoring frequency according to resident's hypoglycaemia risk.
- Identify low BG levels when they occur (symptoms and blood glucose level).
- Monitor BG levels and note BG patterns to detect recurrent hypoglycaemia and potential cause/s.
- monitor BG if resident is fasting.
- Plan to administer resident's GLM to coincide with meal times.
- Monitor resident's food/fluid intake to detect food-related risks.
- Monitor resident to detect behaviour/cognition changes if/when occur, test BG if possible.

Treat hypoglycaemia if detected. and document BG level, hypoglycaemia management strategy and response in the resident's medical record.

Request a Medicines Review if:

- Renal function deteriorates.
- Hypoglycaemia occurs frequently.
- Nutritional intake changes.
- Renal disease develops or renal function declines. Reduce doses or stop renally excreted medicines.

Prevent future hypoglycaemia episodes:

- Detect declining liver and renal function.
- Medicines review.
- Refer to a diabetologist, diabetes educator or dietitian if indicated.
- Include hypoglycaemia risk assessment in the annual cycle of care assessment to detect:
  - Functional changes.
  - Cognitive changes: hypoglycaemia increases the risk of dementia and dementia increase the risk of hypoglycaemia.
  - Presence of diabetes-related complications such as renal and liver disease.

Consider Systems-related factors that predispose the person to hypoglycaemia:

- Meal times and sulphonylureas/insulin administration times should coincide.
- Hypo not treated, treatment inadequate or treatment delayed.
- 'Hypo kit' not readily available or restocked after use.

Ensure hypoglycaemia risk assessment is part of the annual cycle of care.

# Managing Glucose Lowering Medicines

## Care Context

- People over 65 take more medicines than any other age group: over 90% take at least one prescribed medicine and 50% take five or more<sup>43</sup>.
- Inappropriate prescribing occurs in 40% of older people living in RACF and about 20% of community dwelling older people 65 and older using the Beers or other criteria.
- Glucose lowering medicines (GLM) are an important part of diabetes treatment.
- Most people with diabetes require GLM.
- Quality Use of Medicines and resident safety are the key principles of medicine management.
- Medicines should be administered by qualified staff.
- Medicine management is an interdisciplinary activity. The Guideline does not include prescribing, which is a Doctor and Nurse Practitioner activity.
- Medicine management encompasses:
  - Assessing the resident and selecting the most appropriate medicine/s or other treatment.
  - Using non-medicine alternatives where possible.
  - Considering precautions, contraindications and potential medicine interactions<sup>10</sup>.
- Preparing the dose.
- Ensuring the dose is administered according to medicine recommendations e.g. insulin and sulphonylureas with food.
- Administering the medicine.
- Documenting the dose.
- Monitoring the effects in the short and long term.
- Monitoring the effects of insulin and sulphonylureas, including monitoring risk of and actual hypoglycaemic episodes.
- Safely disposing of used products.
- Educating the resident/carer.
- BG monitoring is essential when residents are prescribed GLM.
- Monitor renal and liver function because most medicines are detoxified in the liver and excreted through the kidneys. Renal and liver damage means the medicine may not be metabolised or excreted normally, which increases hypoglycaemia risk.
- Report critical incidents and medicines-related adverse events when relevant.

## Assessment

### Use the GLM-related adverse event risk assessment tool to assess risk of adverse events associated with GLMs.

- Use Beers Criteria or other appropriate tool to determine medicines that are contraindicated or should be used with caution in older people. Other tools include:
  - STOPP: Screening Tool of Older People's potentially inappropriate Prescriptions and START: Screening Tool to Alert doctors to Right Treatments
  - Medication Appropriateness Index (MAI)
  - Australian Inappropriate Medication Use and Prescribing Tool
  - Australian Prescriber Aged Care Companion<sup>12</sup>
- Risk and benefit should be considered with functional status. Functionally independent older people require medicines to prevent illness, alleviate symptoms, delay functional decline and treat illness.
- Frail older people and people with dementia are at increased risk of medicine-related adverse events and medicines should be stopped where possible. Medicines are used to maintain function and control symptoms.
- Medicine-related risks are more likely in frail older people, those with multiple comorbidities, low body weight, frailty and renal and liver disease, and include:
  - Adverse medicine reactions and interactions.
  - Hospital admission.
  - Functional impairment.
  - Geriatric Syndromes e.g. delirium, confusion, falls caused by a single medicine or combination of medicines.
  - Death.



Care Plan

- Document outcome of Adverse Medicine Event (AME) risk assessment in the care plan and the reasons resident is at risk e.g. AME score of 5 (high) because resident has consistently low blood glucose, polypharmacy and several comorbidities.
- Individualise BG goals
  - Maintain BG in an appropriate range for the individual to promote safety and maintain quality of life and independence, generally 6–15 mmol/L but may be higher if there is a high risk of hypoglycaemia.
  - Monitor BG to assess GLM efficacy and to detect hyperglycaemia and hypoglycaemia events.
- Note changes in condition
  - Acute illness/infection.
  - Psychological stress.
  - Altered behaviour/cognition.
  - Sudden onset of gastrointestinal symptoms such as diarrhoea and vomiting.
- Document changes in the care plan
  - Increasing/decreasing BG may require GLM dose reduction/increase or change of medicine.
  - Additional medicines or other treatment may be required to treat illnesses e.g. steroids for Chronic Obstructive Pulmonary Disease (COPD).
  - Medicine dose forms may need to be altered e.g. crushed if appropriate, liquid or patch formulations.
  - Resident has dysphagia.
  - Resident requires enteral feeding.
- Implement falls prevention strategies.
- Staff should manage medicines within their level of competency and within their role and scope of practice.
- Seek advice of pharmacist, GP and nurse practitioner if appropriate.



Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Annual Cycle of Care	p.42
Falls Risk	p.47
Nutrition and Hydration	p.58

SCORE documents

Hypoglycaemia  
Dehydration  
Delirium

Note

Use the following medicines with caution in people with renal disease:

- Antacids and laxatives containing magnesium, phosphorous and aluminium
- Cimetidine and ranitidine
- Products such as Magnivist, Omniscan and Optimark for contrast studies.

Medicines best avoided in older people:

- Amitriptyline
- Amiodarone
- Antihistamines
- Benzodiazepines
- Dextropropoxyphene
- Doxepin
- Fluoxetine
- Glibenclamide
- Imipramine
- Idomethacin
- Methyldopa
- NSAIDS
- Nitrofurantoin
- Oxybutynin
- Stat doses of insulin<sup>10 12</sup>

## Glucose lowering medicine (GLM)- related adverse event risk assessment tool

### How to complete the tool:

- Place a cross (X) in each relevant box.
- Allocate one point for each risk factor present.
- The more risk factors present the greater the risk of GLM-related adverse events.

- |  |  |
|--|--|
| <input type="checkbox"/> BG consistently < 4mmol/L.  | especially if combined with conventional medicines.  |
| <input type="checkbox"/> On sulphonylureas such as Gliclazide, Glibenclamide, Glimepiride, Glipizide.                      | e.g. CAM medicines such as fish oils, St John's Wort, some cranberry preparations can react with aspirin or warfarin and increase bleeding risk.                               |
| <input type="checkbox"/> On insulin.   |  |
| <input type="checkbox"/> On both sulphonylureas and insulin.   | <input type="checkbox"/> On high risk medicines such as warfarin, digoxin and insulin or medicines contraindicated in Beer's Criteria <sup>10</sup> or other tools (page 34) . |
| <input type="checkbox"/> Undernutrition because the muscle and liver stores are inadequate to respond to low BG.           |  |
| <input type="checkbox"/> Hypoglycaemic unawareness usually due to autonomic neuropathy.                                    | <input type="checkbox"/> Declining renal function.   |
| <input type="checkbox"/> Cognitive impairment  | <input type="checkbox"/> Declining liver function.   |
| <input type="checkbox"/> Has comorbidities such as hypertension, pain, nausea and vomiting; which increases risk of falls. | Other factors  |
| <input type="checkbox"/> Polypharmacy: takes 5 or more medicines regularly.  | <input type="checkbox"/> Residents with allergies/hypersensitivity.  |
| <input type="checkbox"/> Takes more than 12 medicine doses per day.  | <b>Score: _____ / 17</b>   |
| <input type="checkbox"/> Infrequent BG monitoring.   | <hr/>  |
| <input type="checkbox"/> GLM medicine doses too low resulting in increased BG and increased falls risk.                    | <b>Very High Risk – one or more of the following:</b>  |
| <input type="checkbox"/> Using some Complementary and Alternative Medicines (CAM),   | Prescribed any GLM   |
|  | Polypharmacy   |
|  | Has renal disease  |
|  | Has liver disease  |
|  | Is cognitively impaired/hypo unawareness   |
|  | Is malnourished  |
|  | Has comorbidities  |

## What to do

Actions should be guided by the staff member's knowledge and competence and Role and Scope of Practice.

Ensure Quality Use of Medicines (QUM) guides all aspects of medicines management.

Develop care plan to reduce GLM-related adverse event.

- Ensure GLM administration and BG monitoring times coincide.
- Plan to administer GLM with meals.
- Stop high risk medicines and reduce poplpharmacy were possible
- Use non-medicine options where possible
- If functionally independent and administering own medicines, assess medicine self-care behaviours.

Monitor BG to assess GLM effectiveness e.g. to detect persistent hypo- or hyperglycaemia.

Monitor renal/liver function and seek GP advice about GLM doses or change in GLM including potential dose adjustment.

Monitor resident for GLM side effects such as nausea and vomiting, diarrhoea and/or bloating.

Document BG level, hypoglycaemia or hyperglycaemia, management strategy and response in medical record.

Request a Medicines Review if:

- BG unstable/fluctuates.
- Resident is at high risk of falling.
- Functional status changes.
- Resident is at high risk of an adverse event

Prevent future GLM-related adverse events:

- Medicines review and stop high risk medicines or adjust doses.
- Annual cycle of care complication screening to detect:
  - Change in HbA1c.
  - Presence of microvascular and/or macrovascular complications.
  - Declining renal and liver function and declining functional status.

Review service/care processes such as:

- Staff medicines knowledge/competence.
- RACF Medicines Management policy including insulin policy/procedures and audit tool.

### Consider systems-related factors

- Medicines administered by staff with inadequate knowledge of medicines and/or diabetes.
- Infrequent medicines review.
- Medicine doses and meal times do not coincide.

# Managing Corticosteroid (Steroids) and Antipsychotic Medicines 1. Steroid Medicines

## Care Context

- Quality Use of Medicines (QUM) is the framework for managing all medicines<sup>44</sup>.
- Medicines should be administered by qualified staff.
- Diabetogenic medicines may be required to treat, manage or prevent conditions/ disease processes such as COPD and inflammatory disease.
- The potential for diabetogenic medicines to cause hyperglycaemia needs to be considered when prescribing and administering these medicines.
- Hyperglycaemia is a predictor of increased mortality in hospital<sup>45</sup> and in RACF.
- People with diabetes and non-diabetics with diabetes risk factors are at risk of developing hyperglycaemia when steroids are prescribed<sup>46</sup>.
- BG monitoring is essential to detect hyperglycaemia.
- Steroids are more likely to increase BG in the afternoon and evening if they are administered in the morning; BG often increases by 10 - 20%, however, it can increase by 300%<sup>46</sup>.
- The effect on BG begins about 3 hours after administration and peaks about 8 hours after a morning dose. If administered later in the day BG peaks after about 5 hours.
- The effect on BG declines overnight.
- Managing steroid-induced hyperglycaemia involves targeting the time of the peak effect on BG e.g. administer insulin at lunch time for a morning steroid dose<sup>47</sup>.

## Assessment

- GP/endocrinologist/specialist will confirm the need for steroid medicines and the dose and the dose frequency.
- Use the lowest effective dose for the shortest possible time.
- A short course, less than three days, may not require initiation of GLM or change in the GLM regimen.
- A course more than three days usually requires initiation of GLM or changes to the GLM regimen<sup>47</sup>.
- The need to initiate GLM is determined by the results of BG testing depending on type of diabetes and risk factors for diabetes in non-diabetics.
- Undertake a medicines review to determine which other medicines could affect BG and whether they are needed.
- Non-diabetics with diabetes risk factors may need GLM while they are on steroids.

### Some common medicines that can increase blood glucose besides corticosteroids and antipsychotics include:

- Adrenaline
- Asthma medicines
- Cyclosporin (Sirolimus, Tacrolimus)
- Nicotinic acid
- Phenytoin
- Lipitor
- Atenolol
- Thiazide diuretics
- Large amount of caffeine

### Note

*Some medicines can both increase and lower blood glucose.*

Care Plan

- The aim of management is safety, comfort and symptom control.
  - Individualise treatment according to the resident's preference and:
    - Steroid dose and dose frequency.
    - Steroid side effects.
    - Administration time.
    - The duration of the treatment.
    - BG pattern.
    - Symptoms of hyperglycaemia.
  - Type 1: continue usual insulin regimen but be aware the insulin dose may need to be increased while the resident is on steroids.
  - Type 2: may need GLM dose increase or insulin initiated while the resident is on steroids.
  - Do not administer insulin as a 'sliding scale' because administering insulin in the late afternoon increases risk of overnight hypoglycaemia.
  - Morning long acting or lunchtime premixed insulin is usually preferable to supplementary (stat) doses.
  - If on enteral feeds consider the contribution of the carbohydrate content in the feeds to BG.
- Monitor steroid side effects including:
- Hunger.
  - Weight gain.
  - Cognitive changes.
  - Skin changes e.g. rashes.
  - UTI and delirium risk associated with hyperglycaemia.
- These effects can contribute to functional decline and geriatric syndromes.

**BG monitoring**

- Test BG at least three times per day: breakfast, lunch and before the evening meal to determine the BG pattern. Minimal acceptable BG testing frequency: afternoon test e.g. before the evening meal.
- Residents NOT diagnosed with diabetes who have diabetes risk factors test BG for glucose, if BG high, refer to GP for management.
- Communicate with GP if BG is consistently above 15–20 mmol/L and/or symptoms of hyperglycaemia are present, to determine appropriate GLM, dose and dose frequency.
- Residents are at increased risk of falling if the BG is high.
- Usually steroids are not stopped suddenly; the dose is gradually reduced, therefore, BG testing is important because the GLM dose may need to be reduced as the steroid dose is reduced to avoid hypoglycaemia.
- Monitor blood ketones if BG >15–20 mmol/L or resident has symptoms of ketoacidosis especially Type 1 diabetes (urine ketone testing can be performed but is not as reliable or accurate as blood ketone testing).



Other relevant guidelines in this document

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Hypoglycaemia	p.29
Managing Glucose Lowering Medicines	p.34
Falls Risk	p.47
Well-Being, Quality of Life and Depression	p.64

*SCORE documents*

*Polypharmacy  
Delirium*

## Managing Corticosteroid (Steroids) and Antipsychotic Medicines 2. Antipsychotic Medicines

### Care Context

- Quality Use of Medicines (QUM) is the framework for managing all medicines.
- Medicines should be administered by qualified staff.
- Antipsychotic medicines may be required to treat or manage psychological conditions.
- The potential for antipsychotic medicines to cause hyperglycaemia needs to be considered when prescribing and administering these medicines.
- Hyperglycaemia is an independent predictor of increased mortality in hospital and RACF<sup>40,45</sup>.
- People with diabetes and non-diabetics with diabetes risk factors are at risk of developing hyperglycaemia when antipsychotic medicines are prescribed.
- BG monitoring is essential to detect hyperglycaemia.
- Antipsychotic medicine can contribute to insulin resistance and elevated BG levels, rapid weight gain and hyperlipidaemia.
- Antipsychotic medicines are an important component of mental health care for many older people.
- Cumulative large doses of benzodiazepines and antipsychotics can exacerbate delirium.

### Assessment

- GP/Endocrinologist/psychiatrist or other specialist will confirm the need for antipsychotic medicines and the dose and dose frequency.
- Consider other options if the antipsychotic medicine is not prescribed for a psychological condition.
- Before commencing, consider risk factors for delirium.
- The need to initiate GLM is determined by blood glucose testing depending on type of diabetes and risk factors for diabetes in non-diabetics.

### Note

*Pain may be a significant underlying contributor to agitation and aggression in older people with diabetes.*

*Antipsychotics are often used as first line management of agitation and aggression, which are common in people with dementia and increase resident distress<sup>48</sup>.*

*Antipsychotics are associated with strokes and death<sup>49</sup>.*

Care Plan

- The aim of management is to safely manage psychotic and other symptoms.
- Individualise treatment according to the individual's preference, indication for the antipsychotic medicine, type, dose and dose frequency, administration time, the duration of the treatment, BG pattern and symptoms.
- Undertake a medicines review to determine whether other medicines could affect BG and whether they are needed.
- Monitor weight: antipsychotic medicines often lead to weight gain, which increases insulin resistance.

**BG monitoring**

- Test BG at least once a day but vary the time of day the test is performed.
- Test BG of non-diabetic residents who have risk factors for diabetes.

- Non-diabetic residents may need insulin/GLM while they are on antipsychotic medicines because these medicines can cause hyperglycaemia, especially atypical antipsychotic medicines.
- Communicate with GP if the resident's BG is consistently above 15 mmol/L and/or symptoms of hyperglycaemia are present to determine appropriate insulin/GLM dose and dose regimen.



Other relevant guidelines in this document

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*SCORE documents*

*Polypharmacy  
Delirium*

## Older Person-Specific Annual Diabetes Check (Annual Cycle of Care)

### Care Context

The Annual Diabetes Check (Annual Cycle of Care) is an opportunity to review health status and the care plan. It is a key aspect of proactive, harm minimisation, risk management and individualised care<sup>7</sup>.

Currently, key care considerations relevant to frail older people and those with dementia are not encompassed in the ACC.

In addition to the periodic care review process, registered nurses should plan for the ACC.

- The ACC refers to a diabetes complication assessment process GPs undertake every twelve months.
- The main aim of the ACC for older people with diabetes is to identify, monitor and manage physical and mental function and complication status in order to proactively manage complications and their potential consequences to prevent avoidable risks such as dehydration, delirium, malnutrition, geriatric syndromes, falls and pain and to maintain quality of life.
- The assessment process and recommended metabolic targets should be based on functional status:
  - Functionally independent e.g. in the community, in low level care or receiving aged care community packages.
  - Frail older people who require assistance with ADLs.
  - People with dementia who may or may not be frail.

- Functional decline and long term complications affect an individual's safety, comfort and quality of life and their care plan.
- Key aspects of management and individualised care plans are not addressed in the RACGP ACC or the Australian Institute of Health and Welfare (AIHW) standards e.g. dental care, functional status, risk screens and cognition.
- Unnecessary investigations should be avoided because they do not reduce morbidity or mortality<sup>50</sup>.

### Note

*Reportable blood glucose levels are decided by the GP to set criteria for when staff should telephone the GP about a resident's health status.*

*They are not useful unless they are considered with other relevant information about the individual's health status; that is, within context; see Guideline for Consulting with the GP.*

*Reportable BG levels are not the same as recommended HbA1c and glycaemic targets*



**Consider**

- **eGFR** Decreasing eGFR may mean:
  - Metformin is contraindicated or dose adjustment needed.
  - Use caution and review Metformin dose if eGFR is  $< 45$  mL/minute/ $1.73M^2$  and serum creatinine  $> 1.5$  mg/dl
  - Stop Metformin if eGFR  $< 30$  mL/minute/ $1.73 M^2$  and serum creatinine  $> 1.7$  mg/dl.
  - Resident has or is at risk of anaemia.
- **B<sub>12</sub>** 10% of people prescribed metformin have deficient/sub therapeutic B<sub>12</sub> levels.
- **LFTs** Indicate liver function. Deteriorating liver function or liver disease can affect medicine metabolism, and some medicines cause liver damage and affect LFTs.
- **TFTs** Thyroid dysfunction can affect metabolic control.

Serum Albumin is an indicator of nutritional status.

Postural hypotension in residents;

- On antihypertensive medicines.
  - Atherosclerosis.
  - Autonomic nervous system dysfunction.
  - Dehydration, which can occur in hot weather due to reduced thirst sensation, diarrhoea and vomiting, and when fasting for procedures or religious reasons.
  - Sepsis.
  - Hormone imbalances.
  - Cardiac arrhythmias.

If present, review antihypertensive medicine regimen.

Increased blood pressure could predict fracture risk, independent of the effects on bone mineral density especially in women<sup>51</sup>.

**Assess for Geriatric Syndromes**

- Polypharmacy.
- Depression.
- Delirium.
- Renal disease.
- Cardiovascular disease.
- Frailty.
- Cognitive impairment.
- Urinary incontinence.
- Injurious falls.
- Pain.
- Infections.

**Annual Diabetes Assessment (annual cycle of care)**

The focus should be on individualised care, risk management and proactive care planning.

Functional assessment should be undertaken as part of the current ACC and the other parameters described in the following list should be assessed depending on whether the individual is functionally independent, is frail or has dementia.

**Functionally independent older people**

The aim is to maintain independence as long as possible.

Undertake current RACGP ACC:

**Biochemistry**

- HbA1c and review recommended target.
- Lipids.
- Liver function tests.
- Microalbuminuria and eGFR.
- Blood glucose pattern and review, recommended range and HbA1c target for the individual.
- Consider measuring testosterone in older men (refer to Sexual Health Guideline page 71).

**Diabetes status**

- Blood pressure.
- Eye examination.
- Foot examination.
- Nutrition review and weight.
- Mental health/depression
- Review diabetes self-care capability.
- Review individualised sick day care plan.
- Oral health including denture check.
- Immunisation status.

**Functional status**

- ADLs.
- Sensory – vision, hearing.
- Cognitive status.
- Continence – faecal and urinary.
- Social function.
- Sexual health and well-being.

Some commonly used assessment tools are shown on page 45.

**Mental health/depression**

Screening should be undertaken 2-4 weeks after admission to RACF and then every six months<sup>52,53</sup>.

Refer to Well-Being, Quality of Life and Depression Guideline on page 64

**Medicines review**

- If self-administering medicines, assess knowledge, competence and adherence to medicine regimen.
- Stop medicines where possible to avoid polypharmacy and reduce medicine-related risks and use non-medicines options alone or in combination with medicines.
- Refer to the Beers Criteria<sup>10</sup>, the Australian Medicines Handbook<sup>11</sup>, the Aged Care Companion Handbook<sup>12</sup> and other relevant tools (page 34)
- Ask about complementary and alternative medicines use.

**Other key assessments**

- Falls risk
- Pain risk
- Hypoglycaemia risk if on GLMs
- Number of presentations to hospital or ED and the reason for such presentations especially recurrent admissions for the same issue.
- Driving Safety: cars, motorised wheelchairs, Go Fors, if relevant<sup>54</sup>.
- Discuss Advance Care Planning issues.

**Frail older people and older people with dementia**

- All the assessment described for functionally independent older people as well as the following, but avoid unnecessary investigations and treatments:
- Document or review advanced care plan and proxy decision-making decisions and communicate to relevant people, especially family.
- Consider whether the individual would benefit from referral for supportive care/palliative approach according to their end of life stage page 62. Supportive care can be commenced at any time not just at the end of life.
- Assess for risk or presence of geriatric syndromes (page 43)
- Assess nutritional status e.g. serum, vitamins B<sub>12</sub> and D, folate, Hb and albumin.
- Consider measuring TFTs.
- Referral to geriatrician, dietitian or other specialist might be indicated.

**Assessment Tools include:****Risk tools in these Guidelines**

- Hypoglycaemia.
- Glucose lowering medicines
- (GLM)-related adverse event.
- Diabetes-specific falls.
- Diabetes-specific pain.

**Nutritional status**

- Malnutrition Screening Tool (MST) is widely used in Australia.
- Malnutrition Universal Screening Tool (MUST) for adults (Malnutrition Advisory Group).
- Simplified Nutritional Assessment Questionnaire (SNAQ).
- Nutritional Risk Screening (NRS-2002) for hospital settings.
- Mini Nutritional Assessment (MNA<sup>®</sup>) for the elderly.

**Depression**

- Ask about symptoms such as sadness, anxiety, hopelessness, insomnia, fatigue, poor concentration, suicidal thoughts, changes in self-care and decision-making.
- Symptoms differ from young people and DSM-IV.
- Patient Health Questionnaire (PHQ 2 or PHQ 9).
- Geriatric depression scale.
- Beck Depression Inventory.
- Hospital Depression Scale.
- Cornell Scale for Recognising Depression in Dementia.

**Pain**

- Abbey Pain Scale.
- Brief Pain Inventory.

**Falls Risk**

- Victorian Quality Council Falls Guidelines Tool

**Functional status**

- Barthel Index.
- Clinical Frailty Scale.
- Timed Up and Go Test.
- Tinetti Assessment Tool: Balance.
- Functional Reach test.
- Single leg stance test.

**Cognitive status**

- Abbreviated Mental Test Score (AMTS).
- Mini-Mental State Examination (MMSE).
- General Practitioner Assessment of Cognition (GPCOG).
- Rowland Universal Dementia Assessment Scale (RUDAS), which is useful for people from non-English speaking backgrounds.
- Psychogeriatric Assessment Scale (PAS).
- Montreal Cognitive Assessment (MoCA) especially to assess mild cognitive impairment.
- Confusion Assessment Method (CAM).
- Montreal Assessment Tools.

**Palliative Care**

- Memorial Assessment Scale (a measure to define symptoms and severity and treatment effectiveness in people unable to self-report).
- Edmonton Symptom Assessment Scale.
- Take a Spiritual History.

**Some assessment scales are available in the Medical Director software package many GPs use.**

## Care Plan

RACF staff can play a key role in:

- Identifying the need to review these aspects of care during the ACC and at other times e.g. during illness and when functional status changes.
- Documenting the date the ACC was performed to assist planning for the next ACC or indicate whether more frequent assessment is needed e.g. foot ulcer or changed functional or mental status.

GP is responsible for undertaking the ACC and acting on the findings:

- Decides whether:
  - the medicines regimen needs to be adjusted.
  - nutritional supplements are indicated e.g. vitamin B<sub>12</sub> and iron.
  - further investigation is indicated.
- Refers to specialist health practitioners if indicated.

## SCORE documents

ALL SCORE documents



Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Annual Cycle of Care	p.42
Falls Risk	p.47
Nutrition and Hydration	p.58

# Falls Risk

## Care Context

- People with diabetes are at increased risk of falling<sup>55</sup> due to the usual falls risk factors already monitored in standard falls risk tools AND diabetes-specific risks that are not encompassed in most current falls risk tools.
- Comprehensive, proactive, regular diabetes-specific falls risk screening is essential from admission.
- Falls are an indicator of frailty in older people<sup>56</sup> and are associated with increased risk of hip fracture.
- There is an association between the number of prescription medicines the person takes and incident falls<sup>57</sup>.

### **This guideline only addresses diabetes-specific falls risk factors.**

- The current guideline was designed to be used with the Victorian Quality Council Falls Guidelines<sup>58</sup> and strategies outlined in the RACGP 'Silver Book'<sup>59</sup>. The diabetes-specific risk tool does not encompass environmental or organisational factors that are already addressed in those publications.
- The Diabetes-Specific Falls Risk Assessment Tool can be used with or integrated into existing falls risk tools. It does not replace such tools and those tools do not replace the diabetes-specific falls risk tool.

## Assessment

Use the Falls Risk Assessment Tool used in your RACF that encompasses factors such as visual impairment, frailty, malnutrition and environmental factors WITH

### **The Diabetes-Specific Falls Risk Assessment Tool (page 47) when assessing falls risk.**

Take a detailed falls history and comprehensive physical and functional assessment.

Falls risk assessment should be:

- Undertaken as soon as practicable after admission to RACF.
- Ongoing, especially at any change in management, functional status or in the environment.
- Undertaken as part of the ACC.

Residents with concomitant bone disease and Vitamin D deficiency are at increased risk of fractures, especially if they fall<sup>56</sup>.

Some thiazolidinediones (TZD) are associated with increased risk of fractures, especially in women<sup>60</sup>.

Assess footwear. Ill-fitting footwear contributes to falls as well as predisposing the person to foot ulcers.

### Note

*Many falls risk assessment tools have low sensitivity and specificity. Low risk scores can provide false reassurance that an individual is at low risk of falling<sup>61</sup>. Falls risk scores should be interpreted in the context of the individual and their particular circumstances and using clinical judgement.*

## Note

*Hyper- and hypoglycaemia contribute to falls risk.*

### **Hyperglycaemia**

*GLM under dosing and undiagnosed diabetes can lead to hyperglycaemia, which can induce frequent urination, incontinence, cognitive and behavioural changes and hyperosmolar states, see page 25.*

*Under dosing can occur due to under prescribing or not recognising changes in health status such as depression, pain and infection, which can lead to hyperglycaemia.*

*Not recognising signs and symptoms of hyperglycaemia, which are often not present in older people and are not identified due to inadequate BG testing.*

*Can contribute to polyuria and incontinence.*

*Can contribute to neuropathy and other lower limb problems<sup>62</sup>.*

### **Hypoglycaemia**

*HbA1c < 6% is associated with falls<sup>63</sup>.*

*Resident not recognising hypoglycaemia due to cognitive impairment and hypoglycaemic unawareness.*

*Staff not recognising hypoglycaemia signs and symptoms.*

*Delayed gastric emptying, which affects glucose entry into the blood circulation and affects the blood glucose pattern.*

*Cardiac effects including silent MI and coagulopathy.*

*Postural hypotension can be mistaken for hypoglycaemia or mask hypoglycaemia.*

*Cognitive impairment can make it difficult to detect hypoglycaemia.*

*Over dosing of GLM can cause hypoglycaemia, which in turn affects decision-making, leads to cognitive changes, and disorientation.*

*Relative over dosing can occur if the GLM are not administered with meals.*

### **Oral disease**

*Oral disease affects eating and thus intake, and increases the risk of hypoglycaemia in residents on sulphonylureas and insulin and compromises nutritional status.*

### **Anaemia**

*Even a small reduction in Hb increases fatigue, reduces ability to perform activities of daily living (ADL) and is closely linked to renal disease, where it occurs early in the course of the disease<sup>64</sup>.*

- Include diabetes-specific falls risk in the care plan and state the reasons for the level of risk.
- Monitor BG to detect hypo- and hyperglycaemia, which can affect cognition and behaviour and contribute falls.
- Monitor BG following a fall especially if taking GLM, especially sulphonylurea or insulin.
- Assess diabetes self-care ability regularly if self-caring in low level care including blood glucose testing and administering medicines.
- Undertake a comprehensive medicines assessment when indicated and as part of the ACC. Medicines should be considered in light of renal and liver status, blood glucose pattern, HbA1c, lipid levels, blood pressure, safety and resident's life expectancy.
- Undertake infection risk/assessment especially for urinary tract and foot infections, which increase falls risk.
- Assess nutritional status e.g. metformin can contribute to low vitamin B<sub>12</sub> levels<sup>65</sup>. Thiazolidiones can cause fluid retention (weight increase) and Exenatide can cause weight loss and nausea, which compromise nutritional status.
- Consider the need for nutritional supplements such as Vitamin D and protein supplementation to improve nutritional status.
- Encourage activity to improve muscle strength, gait and balance e.g. Tai chi and yoga within the individual's capability. Pain may need to be managed to enable people to participate in exercise<sup>66</sup>.

#### Medicines that increase the risk of falls

- Benzodiazepines especially in the first two weeks after commencing these medicines.
- Anticholinergics.
- Opioids in some older people. They are associated with fractures.
- Medicines that increase or lower blood glucose. See page 38 and page 34.
- Non-steroidal anti-inflammatory medicines (NSAIDs).

- Frailty can reduce appetite and contribute to malnutrition and falls risk.
- Refer the resident to health professionals if indicated e.g.:
  - Diabetes educator if the resident is low care and self-caring
  - Dietitian if the resident has nutritional deficiencies
  - Physiotherapist to maintain/improve the resident's mobility, strength and physical function.
  - Diabetologist if resident has brittle/unstable diabetes.
- Undertake foot care to detect reduced sensation to feet (peripheral neuropathy) and foot disease.
- Ensure the resident wears glasses if he or she has vision deficits.
- These factors should be assessed and documented as part of the Annual Cycle of Care.



#### Other relevant guidelines in this document

Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Managing Glucose Lowering Medicines	p.34
Managing Corticosteroid (Steroids) and Antipsychotic	p.38
Annual Cycle of Care	p.42
Pain Associated with Diabetes	p.52
Foot Care	p.56
Well-Being, Quality of Life and Depression	p.64

#### SCORE documents

Dehydration  
Delirium  
Physical restraint  
Polypharmacy

## Diabetes-specific falls risk assessment tool

### How to complete the tool:

- Place a cross (X) in each relevant box.
- Allocate one point for each risk factor present.
- The more risk factors present the greater the falls risk.

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Prescribed sulphonylureas and/or insulin, which can cause hypoglycaemia, which affects cognitive function and increases falls risk.</li> <li><input type="checkbox"/> Inadequate GLM doses increase the risk of hyperglycaemia. BG consistently over 15 mmol/L, can affect cognitive function and contribute to urinary frequency and incontinence.</li> <li><input type="checkbox"/> Prescribed antihypertensive medicines, which can cause or exacerbate postural hypotension<sup>67</sup>.</li> <li><input type="checkbox"/> Prescribed psychoactive medicines—sedatives, hypnotics, antidepressants, antipsychotics, which can cause confusion and hyperglycaemia.</li> <li><input type="checkbox"/> Previous hypoglycaemic event increases the risk of another hypoglycaemic event and falls risk. BG should not be below 6 mmol/L especially in frail older people.</li> <li><input type="checkbox"/> Presence of peripheral neuropathy, which affects balance and gait.</li> <li><input type="checkbox"/> Presence of autonomic neuropathy, which has a number of significant effects that contribute to falls risk including unrecognised hypoglycaemia.</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Oral cavity and dental disease, which affect food intake.</li> <li><input type="checkbox"/> Anaemia, which is associated with renal disease, affects mobility, physical function and strength<sup>68</sup>. Metformin can reduce the absorption of Vitamin B<sub>12</sub>, which contributes to anaemia.</li> <li><input type="checkbox"/> Retinopathy.</li> <li><input type="checkbox"/> Reduced renal function.</li> <li><input type="checkbox"/> Change in gait, balance and sensory perception.</li> <li><input type="checkbox"/> Frail older people and those with geriatric syndromes, cognitive impairment, depression or delirium</li> </ul> |
|---|--|

Score: \_\_\_\_ / 13

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**High Risk – any one risk factor present**

**Very High risk one or more of the following:**

Prescribed any GLM

Hypoglycaemia

Hyperglycaemia

Prescribed antihypertensive medicines

Has peripheral neuropathy

Has retinopathy

Has renal and/or liver disease



## What to do

Actions should be guided by the staff member's knowledge and competence and their Role and Scope of Practice.

In addition to general guidelines for reducing falls risk:

Plan to reduce diabetes-specific falls by modifying risk factors:

- Monitor BG and act on the results according to individual needs and diabetes-specific risk factors to:
  - Detect hypoglycaemia (BG < 6 mmol/L) and treat promptly.
  - Detect hyperglycaemia (BG > 15 mmol/L) and manage appropriately
  - Undertake infection screening, if persistent hyperglycaemia specifically UTI and feet.
  - Monitor blood glucose pattern to detect recurring hypo- /hyperglycaemia.
- Regular medicines review to determine effectiveness, risk and benefits of resident's medicines regimen according to his or her current clinical condition. Consider using non-medicine options and stop high risk medicines if possible.
- Monitor and identify change in resident's behaviour/cognition.
- Review resident's falls history to identify causes of falls.
- Assess resident for pain.
- Monitor pathology including Hb and FBE to identify anaemia.
- Undertake foot care to detect reduced sensation to feet (peripheral neuropathy) and foot disease.
- When indicated, refer the resident to

physiotherapist to maintain/improve the resident's mobility, strength and physical function.

- Ensure diabetes-specific falls risk assessment is part of the Annual Cycle of Care.
- Consider geriatrician review or falls clinic review.

## Pain Associated with Diabetes

### Care Context

- Pain is a common problem for older people: over 45% of older people in RACFs have pain on a regular basis<sup>69</sup>.
  - Pain is personal and subjective but the resident may not be able to communicate their pain.
  - Pain has a significant effect on quality of life, functional ability, sleep and psychological well-being<sup>70</sup>.
- Diabetes contributes to pain in a number of ways e.g. hyperglycaemia exacerbates pain and if associated with DKA causes abdominal pain.
- Hyperglycaemia contributes to abdominal pain; headache and depression-related pain.
  - Peripheral neuropathic pain, which can be burning, shooting or tingling, is often worse at night and is often relieved by “walking on cold surfaces.”
  - Gastrointestinal autonomic neuropathy can cause abdominal discomfort.
  - Myocardial pain, which is often atypical in people with diabetes.

### Assessment

- Use pain assessment tools currently used in RACF to document pain on admission and when indicated e.g.
  - Abbey Pain Scale<sup>71</sup>
  - Pain Assessment IN Advanced Dementia (PAIN AD)<sup>72</sup>
  - Modified Residents’ Verbal Brief Pain Inventory (M-RVBPI)<sup>73</sup>.
- Other tools include:
  - Short Form McGill Questionnaire
  - Pain Disability Index
  - Pictorial Pain Score (Faces Pain Scale).
  - Pain Thermometer

These tools should be used with observation and clinical judgement<sup>48</sup>.

- In addition, use the tool on page 54 to assess diabetes-specific factors that contribute to pain.
- X-ray, MRI and foot assessment might be indicated.
- Older people often under-report pain and may not use the word ‘pain’.
- Pain history should include asking questions about what the pain means to the individual.

- Some signs of pain can mimic hypo and hyperglycaemia symptoms:
  - Aggression.
  - Resistance.
  - Restlessness.
  - Groaning.
  - Sighing.
  - Physiological signs e.g. tachycardia and increased respiratory rate.
- The side effects of some medicines contribute to pain and discomfort e.g. muscle pain/discomfort can be related to lipid lowering medicines.

The diabetes-specific pain risk assessment tool determines risk of pain, not the presence and degree of pain. If the resident has a high pain risk, pain should also be assessed using a suitable tool such as the tools listed opposite.

## Care Plan

- Use the results of the diabetes-specific pain assessment to plan pain management strategies and document in the care plan.
- Pain management strategies depend on identifying and managing the factors that cause/contribute to the pain.
- Monitor BG and keep within an acceptable range, 6 to 15 mmol/L for most residents.
- Consider non-pharmacological pain management options as first line treatment if possible, but consider safety issues e.g. hot packs can burn insensitive neuropathic feet.
- If medicines are needed simple analgesia is usually first line treatment but generally avoid long acting medicines. Administering regular doses may be more effective than 'as needed' doses<sup>74</sup>.
- NSAIDs should only be used in the short term e.g. 1–2 days<sup>75</sup>.
- Monitor the effectiveness of the treatment.
- Review medicines to identify whether pain could be a side effect e.g. Statins can cause muscle aches and discomfort.



## Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Falls Risk	p.47
Foot Care	p.56
Nutrition and Hydration	p.58
Well-Being, Quality of Life and Depression	p.64
Cognitive Impairment and Dementia	p.67

## SCORE documents

*Delirium*  
*Polypharmacy*

## Diabetes-specific pain risk assessment tool

### How to complete the tool:

- Place a cross (X) in each relevant box.
- Allocate one point for each risk factor present.
- The more risk factors present the greater the diabetes-specific pain risk.
- Document risk in medical record.

- Hyperglycaemia.
- Hypoglycaemia e.g. headache.
- Peripheral neuropathy.
- Autonomic neuropathy.
- Periodontal disease.
- Advancing age.
- Duration of diabetes  $\geq$  25 years.
- Hypercholesterolemia.
- Hypertension.
- Obesity.
- Impaired cognition/dementia.
- Unnoticed/untreated injury/trauma e.g. skin tear or foot pressure ulcer.
- Diminished/impaired response to tactile stimuli.
- Autoimmune disease processes (e.g. RA).
- Weight loss.
- Depression.
- High pain score using any of the tools listed on page 52.

Score: \_\_\_\_ / 17

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**Very High Risk – any one or more risk factors present**

## What to do

Actions should be guided by the staff member's knowledge and competence and Role and Scope of Practice.

If resident is at risk of pain:

- Develop a care plan care to minimise risk and detect, manage and monitor pain early.
- Measure pain using existing pain assessment guides e.g. Abbey Pain Scale in conjunction with other methods such as observation and asking family/carers.

Monitor BG to establish resident's BG pattern and consult with GP to determine whether medicines need to be adjusted.

Use non-medical options to manage pain wherever possible in line with QUM principles.

Prevent, identify and manage:

- Hypoglycaemia.
- Hyperglycaemia.
- Injury/trauma.

Regularly assess:

- Functional status.
- Feet.
- Mouth.
- Skin.
- Behaviour.
- Cognition.
- Vital signs.
- Presence of pain.
- BG pattern.

Monitor signs and symptoms that could denote pain:

- Altered sensation.
- Loss of sensation.
- Muscle wasting.
- Dizziness/faintness.
- GI disturbance.
- Inability to perspire.
- Aggression.
- Resistance.
- Restlessness.
- Groaning.
- Sighing.
- Altered vital signs.

Administer medicines as prescribed.

Doses need to be individualised.

Monitor blood pathology.

Use bed cradles/spenco boots to protect feet/legs.

Document findings and actions in medical record.

Ensure pain risk is part of the Annual cycle of care detect

Refer to pain specialist if indicated.

## Foot Care

### Care Context

- Staff have a significant role in assessing, monitoring and ensuring best practice foot care is practiced on a daily basis
- Foot problems in older people with diabetes are major contributors to pain, morbidity and mortality and falls<sup>76</sup>.
- Common foot problems include:
  - Peripheral neuropathy and foot deformities such as Charcot's foot.
  - Pain.
  - Skin tears.
  - Ulceration.
  - Wound infections and can lead to amputations.
- Foot care requires a multidisciplinary approach and co-ordinated care that incorporates:
  - BG monitoring.
  - Checking foot wear.
  - Ongoing assessment and treatment to minimise the risk of developing:
    - Foot problems.
    - Falls.
    - Limitations to independence with ADL due to altered mobility.
- The belief that people with diabetes who have peripheral neuropathy do not experience pain is inaccurate.
- Peripheral neuropathy:
  - Can be very painful<sup>77</sup> especially at night and when infection is present and disturb sleep.
  - Significantly increases falls risk.
  - Reduces the capacity to exercise and join in communal activities.
- Good foot care is a key aspect of managing falls risk.

### Assessment

- All older people with diabetes in RACF require a podiatry and multidisciplinary team assessment of feet or stump/s if resident has had an amputation/s. The assessment should occur on admission, three monthly, annually and with a change in condition of the feet and/or health status.
- Assess diabetes-related complications such as peripheral neuropathy and/or ischaemia.
- Assess resident's ability to independently care for their feet.
- If independent, assess knowledge of foot care and reinforce/educate about preventative foot care.
- If dependent, develop a foot care plan.
- Assess need to refer to a wound care consultant and/or a podiatrist.
- Assess falls/trauma risk and develop care plan to minimise foot problems associated falls/trauma risks.
- Assess appropriateness of footwear.

### Prevention

- Provide a multidisciplinary team approach to residents' foot care.
- Ensure podiatry assessment is undertaken at least annually by including foot assessment in the in the ACC.
- Encourage resident to wear appropriate, well-fitting and comfortable footwear when walking to protect feet from injury and minimise falls risk.
- Use bed cradles/spenco boots to prevent and protect feet.
- Discourage loose shoes/slippers, which increase falls risk.
- Tight shoes/slippers cause blisters and callus.
- Provide daily foot hygiene, drying feet, especially between toes, and moisturising skin.
- Inspect feet daily and notify relevant staff of skin changes or pain as soon as possible.
- Commence relevant monitoring and management.
- Trim nails every 4–6 weeks. It is preferable that a podiatrist undertakes this task or an RN trained and competent to perform the task because of the risk of causing injury to insensate feet.

### Management

- Consult with GP who may refer to podiatrist, physiotherapist, occupational therapist, orthotist, or foot clinic specialist as required.
- Attend to wound care/dressings as per wound care plan.
- Use bed cradles/spenco boots to protect feet.
- Avoid 'hanging feet' in chairs for long periods. Feet can become oedematous, which increases pressure on feet in tight shoes.



#### Other relevant guidelines in this document

Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Falls Risk	p.47
Pain Associated with Diabetes	p.52
Nutrition and Hydration	p.58

# Nutrition and Hydration

## Care Context

- “Diabetic diets” do not improve glycaemic control in frail older people with diabetes and dietary restrictions are likely to lead to malnutrition<sup>78</sup>.
- All older people require assessment by a qualified dietitian to plan their individual dietary requirements.
- Older people with diabetes are at increased risk of nutritional deficiencies, which predict quality of life<sup>79</sup>.
- Known deficiencies associated with diabetes include vitamins D, C, B<sub>12</sub>, magnesium, zinc, calcium, folate.
- Older people with diabetes in RACF are often underweight.
- Overweight older people can be malnourished and have sarcopenia. Nutritional deficiencies compromise functional ability.
- Older malnourished people with diabetes may require texture modified diets or supplements. These foods should be selected to have a low impact on BG and maximise nutritional intake.
- Many GLM and other medicines used to manage diabetes and its complications should not be crushed.
- Most GLMs should be administered with food.
- Staff have a significant role in monitoring nutritional status on a daily basis e.g. noting intake and weight status.
- Nutritional deficiencies contribute to falls risk<sup>80,81</sup>.
- Encourage adequate fluid intake because older people forget to drink due to decreased thirst sensation.

## Assessment

- Nutrition Assessment by interdisciplinary staff e.g. dietitian, RN, GP include:
  - Biochemistry e.g. vitamins D and B<sub>12</sub> levels.
  - Weight and body mass index (BMI), but BMI is not a reliable indicator of obesity in older people.
  - Waist circumference.
  - Potential risk of interactions between medicines and vitamin supplements.
  - Functional capacity and physical activity levels.
  - Dental assessment.
  - Risk of hypo- and/or hyperglycaemia.
- Risk factors for nutritional deficiencies:
  - Hyperglycaemia.
  - Slow healing wounds.
  - Falls.
  - Geriatric syndrome.
  - Functional deficits.
  - Sensory deficits.
  - Altered taste and smell.
  - Dental problems.
  - Depression.
  - Renal disease.
  - Co-morbidities e.g. thyroid and cardiac disease.
  - Weight loss OR gain in the past three to six months.
  - Malabsorption conditions.



Care Plan

- Provide meals/fluids as per care plan.
- Observe, monitor and record the resident's enjoyment, consumption and tolerance of meals/feeds and fluids during each shift.
- Record input and output on food chart or fluid balance chart if indicated. Discuss poor intake, poor tolerance of meal/feeds with resident, family and relevant staff.
- Administer prescribed insulin and/or GLMs with meals and enteral feeds. Adhere to specific medication safety requirements concerning crushing and adding to enteral or thickened feeds.
- Do not crush extended release medicines.
- Monitor and record BG and discuss BG fluctuations, particularly hypo/hyperglycaemia, with relevant staff.
- Record and monitor resident's weight.
- Discuss weight fluctuations with relevant staff<sup>80</sup>.
- Refer to a dietitian in accordance with existing RACF policies.
- Refer to a GP if necessary e.g. weight loss or weight gain. Weight gain might be due to oedema and require a medicines review.
- Ensure nutrition assessment is part of the Annual Cycle of Care.



Other relevant guidelines in this document

Consulting with the GP	p.15
Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Managing Glucose Lowering Medicines	p.34
Annual Cycle of Care	p.42
Falls Risk	p.47
Pain Associated with Diabetes	p.52
Oral Care	p.61
Well-Being, Quality of Life and Depression	p.64
Annual Diabetes Check	p.42

SCORE documents

- Choking*
- Constipation*
- Dehydration*
- Delirium*
- Hypoglycaemia*
- Polypharmacy*
- Unplanned weight loss*

**General Nutrition Needs**

**Calorie Intake:** 20-30% of the diet depending on gender, body size and composition, activity needs and weight gains or losses.

**Protein:** 10-20% of the diet but not less than 0.8g/kg/day.

**Carbohydrate:** Individualised, total carbohydrate content is more important than the source of the carbohydrate.

**Fat:** Individualised, consider the resident's risk of cardiovascular disease, risk of malnutrition, and life expectancy if reducing saturated fat.

**Fibre:** Individualise the amount of fibre needed to maintain regular bowel habits and help regulate blood glucose. Introduce gradually and ensure adequate fluid intake.

Individualise micronutrient supplementation if indicated e.g. Vitamins D and B<sub>12</sub>.

Include pre and probiotic foods for gut health to improve immunity.

**Type of meals/feeding route<sup>78,81</sup>**

**Texture Modified Diet:** Some products are made from modified food starch that is metabolised to glucose and can contribute to hyperglycaemia.

**Oral:** the quantity of extra carbohydrate in the thickener depends on the individual's liquid intake.

**Enteral:** Short and long term use of diabetes-specific enteral diets and supplements. Diabetes-specific enteral formulas are preferable to standard formulas because they have a lower impact on BG levels.

Diets need to be individualised.

# Oral Care

## Care Context

- Older people with diabetes are at high risk of developing oral diseases and dental problems. Contributing factors include:
  - Persistent hyperglycaemia.
  - Duration of diabetes.
  - Co-morbidities
  - Cognitive ability.
  - Inadequate dental or self-care ability.
  - Diet high in sugar that increases. Glucose in saliva.
  - Inadequate oral hygiene.
  - Decreased saliva flow (xerostemia).
  - Ill-fitting dentures.
  - Inadequate oral hygiene provided by staff.

- Oral candidiasis can indicate an underlying health issue.
- Dental or oral infections can lead to hyperglycaemia.
- Poor oral care can result in tooth loss, caries, periodontal disease, poor food intake, infection and hyperglycaemia and may be present on admission.
- Risk of hypoglycaemia is increased by impaired oral intake if the older person with diabetes is prescribed insulin or sulphonylureas.
- Reduced appetite could indicate oral health problems.
- Weight loss could indicate reduced oral intake that could be linked to oral disease.

## Assessment

- Oral health assessment should be part of the comprehensive admission assessment.
- Oral assessment by a dentist should be conducted at least annually as part of the Annual Cycle of Care or more often if required.
- The GP may refer the resident to a dentist.
- Assess low level care resident’s oral self-care capacity.
- Assess resident’s oral health including the factors listed in the care context and:
  - Bleeding gums.
  - Pain.

- Ill-fitting dentures.
- Halitosis.
- Dry mouth syndrome, which could be associated with reduced thirst sensation.
- Assess for possible oral/dental infection if resident is unwell or blood glucose levels are elevated. Use RACF specific assessment tool, e.g. the Oral Health Assessment Tool (OHAT)<sup>82</sup>.
- Ensure oral health assessment is part of the Annual Cycle of Care.

## Care Plan

- Provide oral care as per RACF oral hygiene and oral health care guidelines.
- Monitor BG levels.
- Monitor diet —consult with GP who may refer to dentist, dietitian, speech pathologist and occupational therapist as required.
- Encourage resident to inform staff of any discomfort or pain in their teeth or gums or denture-related issues such as ill-fitting, missing, and broken/chipped teeth.
- Monitor BG more often if resident has signs or symptoms of oral infection (see page 23).



Other relevant guidelines in this document

Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Managing Glucose Lowering Medicines	p.34
Annual Cycle of Care	p.42
Pain Associated with Diabetes	p.52
Nutrition and Hydration	p.58

### SCORE documents

*Oral and dental hygiene*

# Supportive Approach, Palliative and End of Life Care

## Care Context

- Palliative and End of Life (EOL) care planning is an integral part of the care of older people in all care settings. A staged approach from a supportive approach to care to palliation when indicated can be beneficial.
- Dying with dignity is a key value.
- Effective palliative and EOL care requires an interdisciplinary team approach to ensure comfort, symptom control and quality of life.
- Proactive planning for end of life care before or from admission to the RACF is a key aspect of care planning<sup>83</sup> and should be part of the ACC especially as functional status declines. Legislation regarding EOL and ACP issues differ among the States.
- Nurses have a key role in discussing EOL care if the resident is capable of developing an ACP, liaising with the family, GP and other carers and documenting the resident's end of life wishes.
- Palliative care encompasses four main stages stable, unstable, deteriorating and terminal (Palliative Care Outcomes Collaboration, (PCOC)<sup>84</sup>. Older people with diabetes experience many periods of instability that may resolve or progress to the terminal stage
- Palliative care should be based on the individual's choices, Advanced Care Plans (ACP), culture and physical, spiritual and mental needs and involve the relevant members of the interdisciplinary care team.
- Referral to diabetes and palliative care specialists should be considered, when indicated. Religious and spiritual support should be offered to the resident and their family.

## Assessment

- Determine the PCOC stage.
- It can be difficult to recognise impending death. Some or all of the following symptoms can indicate the person is deteriorating and entering the terminal stage but remedial causes should be assessed and managed e.g. HHS, DKA, delirium, hypoglycaemia. Indications the person is entering the terminal stage:
  - peripheral shutdown
  - cyanosis
  - changed breathing e.g.: Cheyne-Stokes respiration
  - drowsiness and reduced cognition
  - uncharacteristic restlessness and agitation
  - hypotension
  - tachycardia
  - reduced ability to swallow
  - inability to cough up upper airway secretions.
- Symptom assessment tools such as the Memorial Assessment Scale can help detect symptoms and their severity.

## Care Plan

- Recognise impending death and implement the resident's ACP.
- ACPs:
  - Are ideally prepared before admission to RACF.
  - Are discussed with the GP, family and hospital/RACF initially and are part of the ACC.
  - Stipulate future medical care to be received or refused.
  - Include enduring power of attorney, will, informed consent, proxy and instructions for resuscitation or not for resuscitation.
  - Include wishes for diabetes care such as continuing medicines and BG monitoring.
- Should be appropriately signed and witnessed.
- Should be discussed when the BG pattern is stable and mood/decision-making is not compromised by hypo or hyperglycaemia.
- Should be discussed with relatives or other legal guardians.
- Should be implemented when the resident is no longer able to communicate their wishes<sup>85</sup> and consider the goals of the Liverpool Care Pathway for the Dying Patient<sup>86</sup>.



Other relevant guidelines in this document

ALL of the Guidelines



Other relevant documents

Guidelines for Managing Diabetes at the End of Life<sup>85</sup>

Respecting Patient Choices<sup>87</sup>

## Well-Being, Quality of Life and Depression

### Care Context

- Well-Being
  - Comprises physical, mental, social and spiritual factors and is personal and subjective.
  - Diminished well-being impacts on an individual's quality of life and increases the level of care he or she requires.
- Quality of Life (QoL)
  - Is subjective and personal.
  - Can alter with age, illness, or loss of independence, particularly in people with chronic illnesses.
  - People with diabetes in RACFs may report changes in their quality of life.
- Consider the different inter-related features among dementia, delirium and depression. Many features coexist. Residents with dementia are at increased risk of both delirium and depression. Undertaking a thorough assessment and medicines review and a detailed history can help decide appropriate treatment (see Appendix B)<sup>88</sup>.
- Depression
  - Is common in older people with diabetes<sup>16</sup>; 30% of people with diabetes are depressed and diabetes is a risk factor for depression.
  - Is often undiagnosed and untreated.
  - Is a diabetes risk factor.
  - Impacts on an individual's quality of life and increases the level of care they require.
  - Contributes to pain and hyperglycaemia.

### Note:

*Although there are many valid tools to measure QoL, they may not measure an individual's QoL issues.*

## Assessment

- Should be undertaken by appropriately qualified RNs and GP.
- Assess current mental health and well-being using appropriate standardised geriatric assessment tools according to cognitive functional status, as part of the comprehensive assessment when resident is admitted to the RACF.
- Document:
  - Cognitive history, dementia, behavioural issues and mental health disorders e.g. depression, anxiety or other psychiatric disorders and any current treatment e.g. antipsychotic medications.
- Assess diabetes-specific factors that could impact on well-being, QoL and mood:
  - BG pattern: hypo and hyperglycaemia temporarily affect mood and behaviour.
  - Pain e.g. caused by peripheral neuropathy, diabetic foot ulcers, leg ulcers.
  - Factors that could affect ADL e.g. altered vision, altered mobility due to neuropathic pain, foot or leg ulcers, wound infections, systemic infections and/or incontinence.
  - Dissatisfaction with meal plan.
  - Ability to participate in physical activity and communal recreational activities.
- Consult with GP about referral for psychogeriatric assessment as required.
- Monitor using regular formal assessment and daily observation as recommended by multidisciplinary health specialists and when health status changes.
- Monitor as part of ACC.

**Consider developing a resident-generated quality of life tool**

Such tools make it possible to measure change in quality of life using the individual resident's priorities but they may not be useful to compare older people with each other.

- Ask the resident to list 3–5 top quality of life goals he or she has.
- Give each goal a rating scale (e.g. 1 to 5 where 1 = Poor quality of life and 5 = Very good quality of life).
- Use the rating scale to measure the resident's quality of life goals at regular intervals.

## Assessment Tools

**Tools to measure depression:**

- Geriatric Depression Scale.
- Beck Depression Inventory.
- Hospital Anxiety and Depression Scale.
- DSM-IV criteria for major depression.

**Tools to measure well-being include:**

- Patient Health Questionnaire (PHQ 2 or PHQ 9).
- WHO 5

**Tools to measure diabetes-related distress:**

- Problem Areas in Diabetes Scale (PAID)<sup>89</sup>.
- Diabetes Distress Scale<sup>90</sup>.

## Care Plan

- Respect the resident's choice for his/her care when resident is cognitively able to make such choices and document them clearly in the care plan.
- Liaise with resident's carer/family about his or her care as required
- Monitor BG to detect BG fluctuations that could affect QoL, well-being and mental health.
- Monitor behaviour and cognition and test BG if there are any sudden changes in the resident's behaviour and/or cognition.
- Monitor BG levels until stable then reassess behaviour/cognition and BG testing frequency
- Monitor QoL using generic and the resident-generated quality of life tool.
- Identify and manage pain.
- Record effectiveness of pain management and report unrelieved pain to appropriate health professional for further assessment and management.
- Review nutrition, exercise, recreational activities and social interaction and refer to appropriate allied health professional as required.
- Review care plan and medications needed based on the outcome of ongoing assessment of behaviour/cognition, pain management, nutrition, exercise, recreational activities and social interaction.
- Ensure effective palliative care processes are planned and implemented.
- Liaise with resident's carer/family about changes to the resident's care as required.



Other relevant guidelines in this document

ALL of the Guidelines



# Cognitive Impairment and Dementia

## Care Context

- The prevalence of dementia is predicted to rise to around one million by 2050<sup>91</sup>.
- More than 90% of people with dementia will develop behavioural and psychological symptoms at some stage<sup>92</sup>.
- The behavioural and psychological symptoms of dementia can affect staff ability to deliver some diabetes care such as blood glucose testing and managing hypoglycaemia and administering medicines.
- Older people with diabetes, particularly type 2, are at increased risk of cognitive impairment in the short term due to hypo- and hyperglycaemia.
- Diabetes may also increase the risk of Alzheimer's disease.
- Older people are at increased risk of cognitive impairment and dementia, including vascular dementia, which is a long term complication associated with persistent hyperglycaemia. Hospital admission rates are higher and length of stay is longer for people with dementia.
- People with dementia are likely to be admitted to residential aged care from hospital<sup>93,94</sup>.
- Caring for people with dementia represents a significant burden, which is recognised in the Aged Care Funding Instrument (ACFI).

**Tools used to assess cognitive function**

A risk score to predict 10 year dementia risk in people with type 2 diabetes was recently published and may be useful to include in the ACC to enable proactive care planning with the individual<sup>95</sup>.

Tools to assess cognitive function, memory, learning and planning can be used with people with diabetes but subtle changes should be monitored.

Cognitive assessment tools include:

- Mini-Mental State Examination (MMSE).
- General Practitioner Assessment of Cognition (GPCOG).
- Rowland Universal Dementia Assessment Scale (RUDAS), which is useful for people from non-English speaking backgrounds.
- Psychogeriatric Assessment Scale (PAS).
- Montreal Cognitive Assessment (MoCA) especially to assess mild cognitive impairment.

The tools can also be used to monitor changes in cognitive function following treatment initiation; for example, monitoring cognitive function and blood glucose levels to determine whether reducing hyperglycaemia is associated with improvements in memory and learning, especially verbal learning<sup>96</sup>.

However, these tools may fail to identify cognitive changes in the early stages in highly educated people<sup>94</sup>. Thus, assessing residents who lose things, miss meals or exhibit behaviours consistent with cognitive changes, based on knowledge of the resident and expert clinical judgment is important.

Depression often accompanies dementia and can be assessed using the Geriatric Depression Scale. Hyperglycaemia also contributes to lowered mood and affects mental functioning and ability to perform ADLs.

**Functional assessment**

- Assessing the individual's ability to perform activities of daily living is important.
- The individual should be encouraged to be as socially engaged and independent as possible.
- Safety is a key consideration and should encompass a comprehensive risk assessment for issues such as pain, falls, hypo- and hyperglycaemia and driving.
- People with diabetes, especially those on glucose lowering medicines should have a driving assessment as part of the annual cycle of care if the individual is still driving<sup>54</sup>.

Tools to assess functional ability include:

- Berg Balance Scale.
- de Morton Mobility Index (DEMMI).
- Modified Elderly Mobility Scale (MEMS).
- Timed Up and Go Test.
- Tinnetti Assessment Tool: Balance.
- Barthel Index.
- Functional Independence Measure (FIM) and Functional Assessment Measure (FAM).
- Performance Orientated Mobility Assessment.
- Clinical Frailty Scale.

- The processes for assessing older people for cognitive impairment and dementia are well documented in existing guidelines and these assessment processes should be undertaken for people with diabetes on admission to residential aged care and when indicated thereafter.
- Diagnosing cognitive impairment and dementia early (preferably before admission) enables the individual and carers to plan ahead and prepare important documents such as advance care plans, power of attorney and wills.
- Assess for behavioural and psychological symptoms of dementia.
- The following information concerns extra assessment necessary when the person has diabetes.

#### Clinical and laboratory assessment

- A comprehensive history that encompasses cognitive, behavioural and psychological factors is essential. The family and other carers can be particularly helpful supplying important information about cognitive and behavioural changes over time.
  - Tools to help carers supply relevant information include the AD8 and the Short Informant Questionnaire on Cognitive Decline in the Elderly. General practitioner information supplied on admission could include the General Practitioner Assessment of Cognition. These tools only take a short time to complete and are less affected by education level, race and culture than some other tools<sup>97</sup>.
  - A medicines review is essential with the aim of reducing polypharmacy by stopping unnecessary medicines (deprescribing) that are contraindicated or should be used with caution<sup>10</sup>.
- Physical, potentially correctable causes of changed cognition for people with diabetes include:
- Hypoxia secondary to cardiac and/or lung disease, or diabetic ketoacidosis.
  - Infection: common diabetes-associated infections are urinary tract infections, respiratory tract infections and foot infections (cellulitis).
  - Hypoglycaemia, which might be associated with the doses or dose frequency of glucose lowering medicines, especially when renal or liver disease is present and/or oral intake is inadequate.
  - Hyperglycaemia, which can be a result of infections, other illnesses, medicines such as corticosteroid, atypical antipsychotics and diuretics and inadequate doses of glucose lowering medicine.
  - Dehydration, which is a result of hyperglycaemia, inadequate fluid intake, especially on hot days due to changed ability to sense thirst, and vomiting and diarrhoea. If dehydration is not corrected, it can lead to hyperosmolar states or ketoacidosis and delirium.
  - Delirium should be considered and the underlying cause/s identified and managed. These include medicine side effects and interactions.
  - Urinary incontinence, which can be a consequence of hyperglycaemia and contributes to dehydration.
  - Thyroid disease, which often accompanies type 1 diabetes.
  - Low vitamin B<sub>12</sub> and vitamin D levels. Metformin is known to interfere with the absorption of vitamin B<sub>12</sub> and can contribute to anaemia and tiredness. Low vitamin D contributes to fracture risk, especially if the individual falls.
  - Sleep deprivation, which can be a consequence of pain, dehydration, and/or incontinence.

### Individualise the care plan

Individualising the care plan to include the individual's preferences, ensure pharmacovigilance, safety, dignity and quality of life is essential:

- Manage blood glucose levels to achieve an optimal BG range that is safe for the individual.
- Manage high blood pressure, high cholesterol and heart disease to slow the progression of vascular dementia
- Undertake a comprehensive medicine review to determine whether any medicines can be stopped (deprescribing) and actual or potential interactions recognised to minimise the side effects and adverse events associated with medicines. The review should include Herbal medicines.
- Use non-medicine options where possible for example music, cognitive stimulation, sensory stimulation.
- Optimise physical and mental functioning.
- Encourage relevant physical activity such as gardening and tai chi.
- Educate the individual and relevant family, carers and health professionals.
- Promote quality of life.
- Promote comfort, dignity and autonomy within the individual's capability.
- Promote sleep.
- Manage stress, which might be a consequence of care e.g. changing incontinence pads, fatigue, pain, and incontinence, or environmental changes e.g. staff changes and/or, family members leaving/arriving.
- Ensure the individual has an advance care plan and other relevant information such as power of attorney, treatment limitation documents, not for resuscitation and will, documented.

Managing behavioural and psychological symptoms of dementia (BPSD)

Know the resident with diabetes and their usual behaviour pattern to enable crises or triggers to BPSD to be identified and managed early.

Plan activities and care to coincide with the resident's 'best time of day'.

Plan physical and mental stimulation activities.

Minimise problems. As soon as behaviour change is noticed assess the individual for pain, blood glucose: high and low affects cognition, continence, infection, medications and any changes in the environment that could trigger confusion and distress.

Do not force blood glucose tests if the resident refuses. Try again later. If hypoglycaemia is suspected, treat it.

Refer to the GP if infection or medicine problem is a likely cause (Consulting with the GP guideline).

Refer to resources listed in the 'Other relevant documents' box for staff support.



Other relevant guidelines in this document

ALL of the Guidelines

#### *SCORE documents*

*Delirium*  
*Hypoglycaemia*  
*Depression*  
*Polypharmacy*



Other relevant documents

DCRC, DBMAS (2012) Behaviour Management – A Guide to Good Practice; Managing Behavioural and Psychological Symptoms of Dementia. Australian Government Publication.

12 Top Tips for behaviour management when working with people with dementia.

ReBOC (Reducing Behaviours of Concern) Guide (2012)

Available on the Dementia Behaviour Management Advisory Service (DBMAS) website:  
[http://dbmas.org.au/Want\\_to\\_know\\_more\\_/Resources1.aspx](http://dbmas.org.au/Want_to_know_more_/Resources1.aspx)

# Sexual Health and Well-Being

## Care Context

- Sexual health is a broad concept encompassing body image, self-esteem, romance, social relationships, sensual expression, and sexual behaviour and sexual self-esteem<sup>98,99</sup>.
  - Older people often have sexual health concerns but they frequently do not discuss them with health professionals.
  - Sexual health is frequently overlooked in older people and sexual expression is often regarded as ‘problem behaviour’ in aged care facilities.
  - People at risk of sexual health issues should have a comprehensive assessment to detect underlying physical, psychological and social factors that compromise their sexual health and well-being. The information should be used to include an individualised sexual health component in their care plan.
  - RACFs should have education programs and policies in place to help staff manage residents’ sexual health and well-being.
  - Definitions of sexual health vary and often focus on sexual dysfunction. However, sexual health is a composite entity encompassing:
    - interest in sex
    - sexual functioning
    - satisfaction
    - healthy intimate relationships
    - sexual self-esteem<sup>99</sup>.
  - The sexual health and well being of older people can be compromised by a number of factors such as:
    - stereotypical and ageist attitudes
    - health professionals often feel uncomfortable discussing and do not proactively address such issues, especially with older people.
  - Older people often need to reframe their sexual relationships and body image, for example when a partner dies or when they enter an aged care facility.
- Sexual health can be affected by;
    - beliefs and attitudes about sexual health and sexual functioning.
    - medicines
    - functional and physical disabilities
    - cognitive changes
    - hypo- and hyperglycaemia
    - autonomic neuropathy
    - cardiovascular disease
    - untreated pain
    - intercurrent illness
    - alcohol consumption
    - depression.
- These effects can be cumulative.
- Erectile dysfunction is common in men with diabetes, smokers and men over 40 years.
  - Women with diabetes report vaginal dryness and sexual dissatisfaction.
  - All aged care facilities should have sexual health policies, yet only approximately 20% actually do so<sup>100</sup>.
  - Most sexual health problems are multifaceted encompassing physical, medical, psychological, social and relationship components that have additive effects in addition to the effects of comorbidities and intercurrent illnesses.
  - Frontal lobe dementias may present as sexual dysinhibition. However, the most common sexual-related issue is loss of libido.
  - Issues that could need to be considered include consent to sexual activity by the person with dementia, their vulnerability and the fact they may forget sexual activity due to memory deficits.

## Assessment

- Undertake a comprehensive physical health assessment, sexual history and medicine review.
- Discuss sexual health with everybody with a chronic disease. Sexual health plays a significant role in successful ageing<sup>101</sup>.
- The PLISSIT model helps the health professional determine their level of knowledge and competence to undertake sexual health management and counselling.
- The PLISSIT Model<sup>102</sup> is a simple model that most health professionals can use. PLISSIT is an acronym for: Permission (being open so the individual feels comfortable discussing sexual health issues), Limited Information (providing limited relevant information), Specific Suggestions, and Intensive Therapy (usually requires referral to a trained sex counsellor).
- The sexual health history should encompass the following factors that contribute to sexual dysfunction::
  - low libido
  - physical disabilities
  - psychological issues such as depression and anxiety and sexual beliefs and expectations
  - relationship problems (including loss of a partner)
  - neurological disorders such as cerebrovascular accidents especially in the left hemisphere
  - hormonal disorders
  - metabolic disorders such as renal disease and cancer<sup>98,103</sup>.
- Pain and functional disabilities that inhibit sexual enjoyment.
- The social situation especially in RACF where there are specific expectations and ‘house rules.’
- Review the medicine regimen. Some medications affect sexual health e.g. psychotherapeutic medicines, cardiovascular medicines such as beta blockers, thiazide diuretics, Digoxin and Clofibrate, chemotherapeutic agents, Cimetidine, opioids, narcotics, corticosteroids, antiandrogens, immunosuppressants and drugs of addiction such as nicotine and alcohol can affect sexual health<sup>104,105</sup>.
- Limit episodes of hypo- and hyperglycaemia, which affect mood, sexual functioning and spontaneity.
- Consider measuring serum testosterone. Low testosterone is associated with osteoporosis in one in eight men and other age-related physical changes that affect quality of life and life expectancy. Changes associated with reducing testosterone levels are gradual and non-specific and often undiagnosed.
- Ask men about erectile dysfunction (ED), which can result from nerve and microvascular disease as well as medicines, and often has a psychological component.
- Investigations for ED include serum free testosterone (SFT), prolactin and blood glucose. If the SFT is low, LH and FSH should be checked to differentiate between testicular and pituitary causes of ED.
- Testosterone replacement *might be* appropriate for *some* older men with documented testosterone deficiency and symptoms<sup>106</sup> and those at high risk of osteoporosis<sup>107</sup>.
- Ask women about sexual health concerns such as reduced vaginal lubrication and painful intercourse, which can be associated with vaginal atrophy.

Ask every older person with diabetes about his or her sexual health and well being when they are admitted to aged care services and during the annual diabetes assessment.

Provide opportunities for older people to discuss sexual health issues during routine consultations and the annual diabetes assessment.

If a sexual health problem is identified, take a sexual history and assessment and provide or refer the person for counselling and management based on the findings.

Ensure sexual health education programs and policies are in place in place to help staff assess and maintain older peoples' sexual health and well being.

Protect older people with dementia from inappropriate and/or unwanted sexual advances from other residents, staff and visitors.

When planning care be aware that continence care and showering and bathing can be misconstrued as sexual behaviours by older people with dementia and trigger inappropriate advances from the individual or aggressive behaviour in an attempt to protect themselves from unwanted sexual activity.

Make sure education programs encompass information about how to manage older people who make inappropriate sexual advances to staff, other residents and who exhibit inappropriate sexual behaviour, rather than dismiss it as 'behaviours of concern.'

Provide appropriate vaginal lubrication for older women when relevant.

Consider whether testosterone replacement therapy would benefit men with documented testosterone deficiency and symptoms and those at risk of osteoporosis. Testosterone replacement is not indicated if symptoms are not present.



#### Other relevant documents

Organisational policy documents about intimacy and sexuality in the aged care settings.

Testosterone replacement for older men with low testosterone without symptoms and men with prostate cancer is controversial and is generally not recommended<sup>107, 108</sup>.

Low dose testosterone replacement is associated with lower fasting blood glucose, HbA1c, and cholesterol and improved quality of life in men with type 2 diabetes and metabolic syndrome<sup>108</sup>.

If testosterone replacement therapy is prescribed, the use should be monitored and the dose adjusted according to the individual's serum testosterone level and physical response e.g. well being, serum vitamin D and calcium levels, and serum testosterone, sexual functioning, well being and falls and fractures.

Choose a testosterone dose form that suits the individual's needs.

Medicines to help functionally independent older men achieve an erection might be appropriate e.g. in low level care and men receiving aged care packages in the community. A comprehensive cardiovascular assessment should be undertaken before prescribing oral phosphodiesterase type 5 inhibitors (PDE 5) because they are associated with cardiovascular events.



#### Other relevant guidelines in this document

Consulting with the GP	p.15
Admission Assessment	p.17
Blood Glucose Monitoring	p.23
Hyperglycaemia	p.25
Hypoglycaemia	p.29
Managing Glucose Lowering Medicines	p.34
Pain Associated with Diabetes	p.52
Well-Being, Quality of Life and Depression	p.64
Cognitive Impairment and Dementia	p.67
Older Person-Specific Annual Diabetes Check	p.42

## Managing a Disaster if RACF is Affected

### Care Context

- Frail older people with chronic diseases or disabilities are at increased risk during and after a disaster especially if they are dependent on care givers.
- A disaster may result in consequences such as:
  - Increased distress, anxiety, confusion, disorientation.
  - Increased falls risk.
  - Lack of safe water and food and special dietary requirements.
  - Hypothermia.
  - Hyperthermia – heat stress; dehydration.
  - Hypoglycaemia.
  - Hyperglycaemia.
  - Lack of continuity of care due to lack of food, water, equipment, shortage of correct medications, limited patient documentation and identification, unfamiliar staff, volunteers or lack of staff.

### Assessment

- Proactively assess RACF preparedness to cope with a disaster as per RACF and/or state disaster management plan.
- Assess residents most at risk of adverse events and medical emergencies during an emergency in accordance with their history current condition and disaster situation.
- Coordinate staff and volunteers to assess and group residents according to the level of medical care required.
- Assess individual resident's physical status to ensure safety and minimise adverse events such as:
  - Hypothermia.
  - Hyperthermia.
  - Hypoglycaemia.
  - Hyperglycaemia.
  - Dehydration.
  - Falls.
  - Increased pain.
  - Medicines-related adverse events.
  - MI/CVA.



- Have emergency diabetes supply kits prepared. Kits should contain all resident with diabetes' treatment needs:
  - GLM in correct storage conditions e.g. insulin in insulated cold bags.
  - Insulin injection equipment.
  - BG meters.
  - Medication and BG charts.
  - Glucagon and hypo kit to manage hypoglycaemia in insulated cold bag.
  - Other prescribed medicines and standing order medications.
  - Relevant Guidelines e.g. Managing Hypoglycaemia/hyperglycaemia.
- Enact RACF disaster/evacuation management plan if needed:
  - Early evacuation to the nearest designated shelter for residents with special needs.
  - Listen to radio and SES updates and instructions.
- Prioritise resident identification, physical safety, reassurance/psychological care.
- Implement emergency care plans for residents with diabetes and prioritise ongoing assessments for hypo and hyperglycaemia and potential complications such as increased anxiety, confusion, behavioural issues, falls and MI.
- Attempt to maintain continuity of care to avoid complications related to diabetes.
- Reassure resident and their family if possible.
- Continue BG monitoring regimen if practical.
- Test for ketones if BG is consistently > 15 mmol/L, especially resident's with Type 1 diabetes.
- Administer GLM with meals/feeds.
- Administer other prescribed medications.
- Provide meals/feeds as close as possible to usual meal schedule.

Ensure and encourage adequate fluid intake.



Other relevant documents

The RACF's disaster plan document.

- Monitor and document vital signs as indicated by the resident's condition.
- Document observations and all medicines administered.
- Manage wounds as required where practically possible.
- Assess for and offer pain relief as required and document on medication chart or resident notes.
- Protect residents from falls considering the changed environment and circumstances.
- Be mindful of potential MI due to stress and hypoglycaemia.
- Protect residents from hypothermia, hyperthermia.
- Be mindful of increased potential for incontinence due to stress and changed environment.

### Post Disaster Recovery

Be aware of physical, cognitive, emotional and behavioural effects from the distress of the event and the potential impact it can have on:

- The management of residents with diabetes including
- BG patterns
- Need to reassess frequency of BGL monitoring.
- Need to reassess GLM doses and dose frequency.
- Post disaster counselling for residents and staff.



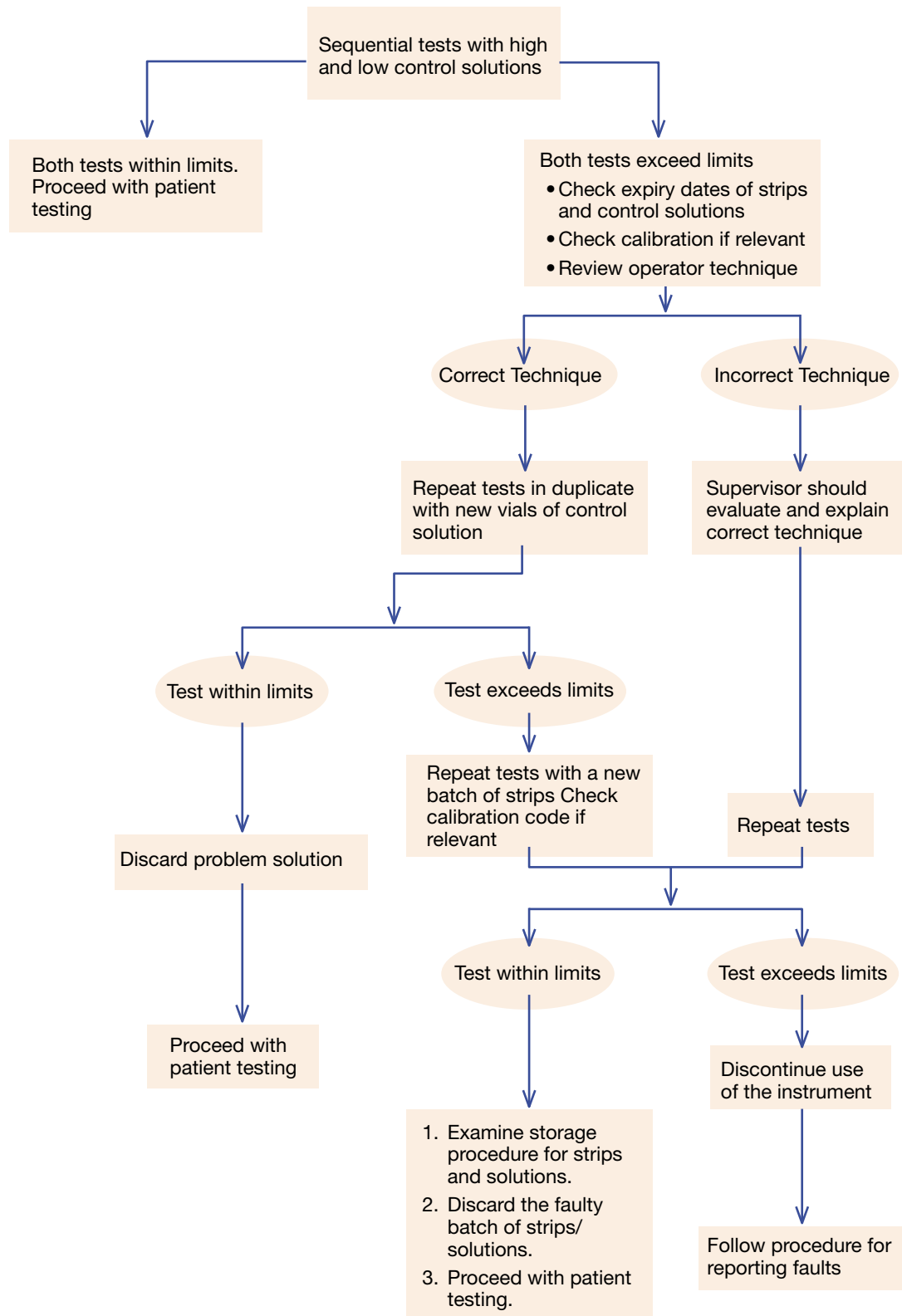
Other relevant guidelines in this document

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Nutrition and Hydration	p.58



# Appendix A

## Quality control flow chart for checking blood glucose meters.



**Figure 1. An example of a quality control flow chart for checking blood glucose meters.**

Reproduced from Dunning T (2014). *Care of People with Diabetes: A Manual of Nursing Practice*. Wiley Blackwell, Chichester with permission. Quality testing is an essential aspect of quality diabetes care and control solutions can be obtained from pharmacies or strip manufacturers.

## Appendix B

# Presenting features of dementia, delirium and depression

**Table 2: Some of the presenting features of dementia, delirium and depression**

Reproduced from Dunning T (2014). *Care of People with Diabetes: A Manual of Nursing Practice*. 4th Edition. Wiley Blackwell, Chichester with permission.

Parameter	Dementia	Delirium	Depression
Onset	Usually slow and progressive occurring over years	Usually occurs over hours or days	May be sudden and often occurs during significant life transitions such as death of a loved one and admission into an aged care home. Changes persist for at least two weeks.
Course	Symptoms are irreversible and gradually progress over time	The course is usually short and cognitive changes may fluctuate over the day and may be worse at night.  Once the underlying cause/s is/are identified and treated, symptoms usually abate to the individual's predelirium state.	Usually worse in the morning but could be seasonal (chapter 15).  Usually improves with treatment (non-medicine options and medicines as a last resort).
Duration	Depends on the type of dementia present and varies from months to several years.	Usually less than four weeks.	Variable from weeks to years.
Cognition			
1. Alertness	Generally alert	Varies from lethargic to hyperactive.	Normal but may be apathetic.
2. Attention span	Usually normal in the early stages	Depends on the degree of delirium.	Depends on interest and severity of the depression.
3. Thinking	Often have difficulty finding words and remembering and recalling people, and events.  Difficulty learning new information.  May wander, become agitated, especially in the afternoon (Sundowner's syndrome) or withdrawn and may have coexisting depression.  Multiple cognitive deficits may be present.	Have difficulty organising thoughts  Several types of delirium are described:  Hyperactive (agitation, restlessness, hallucinations)  Hypoactive (sleepy, difficult to rouse)  Mixed (combination of hyper- and hypoactive symptoms).	Thinking is usually intact but can be disordered.  Disinterest in activities and usual activities  Withdrawn  Appetite often changes

<b>Parameter</b>	<b>Dementia</b>	<b>Delirium</b>	<b>Depression</b>
Mood	May be associated with depression	Mood changes: may be angry, afraid, tearful	
Commonly used screening and diagnostic tools *	Mini-Mental Status Exam (Folstein) Clock Drawing Test. Mini-Co Dementia Screen. Cohen-Mansfield Agitation Inventory (CMAI) if behavioural issues are present.	Confusion Assessment Method (CAM) IWATCH DEATH (Infections, Withdrawal, Acute metabolic, Toxins, drugs CNS pathology, Hypoxia, Deficiencies, Endocrine, Acute vascular, Trauma, Heavy metals	Geriatric Depression Scale (GDS) and the GDS Short Form Cornell Scale for Depression Patient Health Questionnaire (PHQ) and PHQ-2. Whooley Depression Screen. SIG ECAPS (DSM-1V Criteria
Laboratory investigations	TSH, electrolytes, Ca Blood glucose and ketones	Na, K+, Na, Ca, Urea and electrolytes, creatinine, liver function tests, Hb, white cell count (which can be elevated in hyperglycaemia without indicating infection) Blood glucose and ketones Oxygen saturation, blood gasses, urinalysis and culture Alcohol/drug screen Chest X-ray.	TSH, Vitamin B <sub>12</sub> , folate, Ferritin, Iron, K+, Hb, ESR, Albumin, Full blood count

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