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Appendix 1: The Modules

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Introduction to the ADEA Modules

Diabetes education and care for older people with diabetes

The prevalence of diabetes is increasing and is particularly high in older people, occurring in up to 20% of people over age 65. Quality and safety in health care are important considerations, particularly in vulnerable populations such as older people. Managing diabetes in older people is challenging, regardless of whether they live in the community or in low or high care residential aged care facilities.

These challenges include:

- A lack of evidence for many current education and management strategies, largely because older people are often excluded from research studies.
- The individual nature of the aging process generally, and of individual organs and tissues within individuals.
- The dilemma many health care professionals face when making difficult decisions to safeguard the individual and the public. For example, recommending a driver's license not be renewed, which affects the individual's independence and often access to health services.
- Coping with the increasing demand for aged care services, which need to be provided by knowledgeable competent practitioners, in the context of staff shortages.
- Having appropriate diabetes screening and prevention programs that target older people.
- Providing effective interdisciplinary team care.
- Supporting carers.
- Planning advanced care directives and determining end of life care.
- The prevalence of older people living in residential aged care services at risk of or having diabetes is likely to be high, estimates range from 11.5% to 35.5%.

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Health care providers and diabetes consumer organisations indicate there is a need for health care providers to have a good understanding about diabetes, the impact of aging on glucose homeostasis, and the resultant consequences for the individual, their families, and health service utilisation and costs. Thus, the Australian Diabetes Educators Association (ADEA) commissioned three self-directed learning modules that address managing diabetes in older people. The content of the three education modules was designed to help aged care workers (ACW), nurses (RN) and diabetes educators (DE) deliver evidence-based, holistic age-appropriate care for older people with diabetes living in community settings and in residential aged care facilities (RAC).

**The Modules**

The modules enable learning to be applied directly to caring for older people with diabetes, as well as building on previous formal and experiential learning. The three modules differ in complexity and self-learning and self-assessment activities to suit the relevant target audience, but they contain similar content and have the same aims.

Each module contains a number of learning activities and reflective activities to extend the learner’s learning about particular topics. Many of these activities involve applying information to case studies that represent common issues encountered in caring for older people with diabetes.

**Module Aims**

- To enhance knowledge to enable ACWs and RNs and DEs working with older people with diabetes to deliver effective, safe diabetes care that maintains or improves the quality of life and independence within the individual’s capabilities.
- To help ACWs, RNs and DEs understand and work within their level of competence and scope of practice relevant to providing care for older people with diabetes.
Overview of the modules

Module 1: Diabetes Management for Older People for Aged Care workers

Target Group

Module 1 was designed specifically for ACWs. An underlying assumption of Module 1 is that ACWs have limited knowledge about diabetes or the aging process other than that gained experientially, through the media, personal reading, training programs or through attending in-service education programs.

Key Learning Outcomes

After completing the module the learner will be able to:

- State the signs and symptoms of diabetes and how it is diagnosed.
- State the main treatment modes: healthy food plan, activity and medicines and recognise that healthy eating and activity are needed when medicines are commenced.
- State that people with diabetes should receive a cycle of care from their GP that includes blood tests, blood pressure measurement, foot assessment and physical assessment and medicine reviews at regular intervals.
- Describe the long term complications of diabetes and how they affect the individual’s ability to manage self-care.
- Describe the purpose of blood glucose monitoring (BGM), the significance of the BGM result and the relevant actions they should take if it is outside the target range.
- State the signs and symptoms of hypoglycaemia what they should do if they recognise an individual is having a ‘hypo’ or find a low reading when performing BGM.
• State the signs and symptoms of hyperglycaemia and what they should do if they find a high blood glucose (BG) when performing BGM.
• Describe how diabetes contributes to the risk of falls and some strategies they could use to reduce this risk.
• Outline how diabetes affects cognitive function.
• Describe the importance of personal care in diabetes including foot care, skin care, and dental care.
• Describe when, what and how to report changes in glycaemic status and/or other diabetes related issues affecting care.

Module 2: Diabetes Management for Older People for Nurses

Target Group

Module 2 was designed for RNs and ENs. Nurses undertaking Module 2 are expected to have a good understanding of the basic pathophysiology, diagnosis and management of diabetes from their undergraduate education, nursing experience, experiential learning, and in some cases, post graduate study. The content of Module 2 complies with the Royal College of Nursing Australia (RCNA) criteria for allocation of Continuing Professional Development (CPD) points.

Key learning outcomes

After completing the module the learner will be able to:
• Describe the impact of increasing age on body tissues and organs and the effects of diabetes on the ageing process.
• Describe the nurse’s role in primary prevention and early detection of diabetes in older persons.
• Describe the factors that need to be considered when developing a care plan for an older person with diabetes including the need for early referral to relevant services such as a DE, dietitian, podiatrist, physiotherapist, speech therapist, occupational therapist, community services and early discharge planning from acute or rehabilitation care settings.
• Discuss an appropriate food plan for an older person with diabetes considering their metabolic control, nutritional status, presence of complications and food preferences.

• Describe how the ageing process affects the pharmacodynamics and pharmacokinetics of glucose lowering medicines, antihypertensive agents and other medicines and the safety issues involved such as contraindications and interactions, including indications for a home medicines review.

• Describe the impact of hyperglycaemia on physical and mental functioning and the associated risk of falls, cognitive changes and hyperosmolar states.

• Describe the impact of hypoglycaemia on physical and mental functioning and the associated falls risk and safety issues.

• Describe the care of an older person scheduled to have a surgical procedure involving fasting and an investigation that involves using radioactive contrast media.

• Describe the annual cycle of care for diabetes, the various investigations and the recommended management targets.

• Discuss the education needs of older people with diabetes.

Module 3: Diabetes Management for Older People for Diabetes Educators

Target Group

Module 3 was designed for DEs who are expected to have specialist knowledge of diabetes education and management.

Module 3 complies with the:

• ADEA criteria for allocating credentialling and recredentialling points (CPs).
• RCNA criteria for allocating CPD points.

Key learning outcomes

After completing the module, the learner will be able to:
• Describe the impact of increasing age on body tissues and organs and the effects of diabetes on the aging process.

• Understand that aging occurs at different rates among individuals and in organs and tissues within individuals.

• Describe the DE’s role in the primary prevention and early detection of diabetes in older people including screening and diagnosis and in secondary prevention.

• Describe the factors that need to be considered when developing an education program and care plan for an older person with diabetes including the need for early referral to relevant services such as, dietitian, physiotherapist, speech therapist, occupational therapist, dentist, community services, general practitioner, endocrinologist and other medical specialists.

• Discuss an appropriate food plan for an older person with diabetes considering their metabolic control, nutritional status, presence of gastrointestinal complications and other complications and food preferences.

• Describe how the aging process affects the pharmacodynamics and pharmacokinetics of glucose lowering medicines, antihypertensive agents and other medicines in older people, and the safety issues involved including indications for a home medicines review.

• Describe how the changes in pharmacodynamics and pharmacokinetics affect medicine choices, interactions and contraindication.

• Describe the impact of hyperglycaemia on physical and mental functioning and the associated risk of falls, cognitive changes and hyperosmolar states and ketoacidosis.

• Describe the impact of hypoglycaemia on physical and mental functioning and the associated falls risk and the needed to reduce the risks.

• Plan an education session for an older person scheduled to have a surgical procedure involving fasting and an investigation that involves using radioactive contrast media.

• Tailor a diabetes education program for older people with diabetes.
• Describe the annual cycle of care for diabetes, the various investigations and the targets for same and clinical considerations for aged care and diabetes.

**Self-directed learning and reflection activities**

Self-directed learning activities are a key feature of all three modules. The activities were designed to encourage learners to reflect on their practice and use the information from the readings and web links provided and, where possible, apply the learning in their practice areas.

**How to use the modules**

Select the module that suits your situation: ACW, RN, or DE, and read through the module to get a feel for the content. There is no set time frame for completing the module. You should work at your own pace. You should also feel free to discuss the information and your learning with colleagues. Complete the learning activities.

**Recognition of the learning**

Strategies for acknowledging completion of the modules will be developed in conjunction with the ADEA. An application for endorsement of the modules as online learning for Continuing Professional Development by the Royal College of Nursing, Australia, will be made.
Self-directed learning module Diabetes education and care of older people with diabetes

Module 1: Aged Care Workers

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Terminology

The purpose of this section is to clarify the various terms used in aged care and diabetes care. Abbreviations and the terms associated with diabetes care can be found in this section of the learning module.

The people involved in providing care:

- ACW: Aged Care Worker
- PCW: Personal Care Worker
- PCA: Personal Care Assistant
- CW: Care Worker
- PC: Personal Carer
- PCG: Personal Care Giver
- CCW: Community Care Worker
- RCW: Residential Care Worker
- EN: Enrolled nurse
- RNI: Registered Nurse Division 1
- DE: Diabetes Educator
- CDE: Credentialled Diabetes Educator
- GP: General Practitioner

Acronyms and terms used associated with diabetes management:

- BGL: Blood glucose level
- BGM: Blood glucose monitoring
- BP: Blood Pressure
- CVD: Cardio Vascular Disease
- PVD: Peripheral Vascular Disease
- OHA: Oral hypoglycaemic agents
- ADL: Activities of Daily Living
- DKA: Diabetic Ketoacidosis
Objectives and Expected learning Outcomes

The objective of the module is to outline key information that ACWs require to provide safe and effective care for older people with diabetes. The module is a self-directed on-line learning module. It is recommended that ACWs complete one section of the module before proceeding to the next section. There is no set time frame for completing the module, ACWs should work through it at their own pace.

After completing the module, and with further workplace learning, the ACW is expected to be able to:

- Describe the role and scope of practice of the Aged Care Worker, with respect to caring for older people with diabetes.
- State the signs and symptoms of diabetes and how it is diagnosed.
• State the main treatment modes: healthy food plan, activity and medicines and recognise that healthy eating and activity are needed even when medicines are commenced.

• State that people with diabetes should receive a cycle of care from their GP that includes blood tests, measuring blood pressure regularly, foot assessment and physical assessment and medicine reviews at regular intervals.

• Describe the long term complications of diabetes and how they affect the individual’s ability to manage self-care.

• Describe the purpose of blood glucose monitoring (BGM), the significance of the BGM result and the relevant actions the ACW should take if it is outside the documented target range.

• State the signs and symptoms of hypoglycaemia and what the ACW should do if he or she recognises an individual is having a ‘hypo’ or finds a low blood glucose reading when they perform a BGM.

• State the signs and symptoms of hyperglycaemia and what the ACW should do if he or she finds high blood glucose (BG) when performing BGM.

• Describe how diabetes contributes to the risk of falling and some strategies the ACW could use to reduce this risk.

• Outline how diabetes affects cognitive function.

• Describe the importance of personal care to older people with diabetes including foot care, skin care and dental care.

• Describe when, what and how to report changes in blood glucose levels and/or other diabetes-related issues affecting care, and who to report them to.

• Outline the specific care needed by an older person with diabetes that is within the scope of practice of an ACW.

• Use the knowledge and experience gained from completing the learning module to contribute to better care of older people with diabetes to support their self-management in the community and in low level care and reduce complications associated with the disease.
• List the agencies and/or organisations that provide information, support and education for older people with diabetes.

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**Role and Scope of Practice**

ACWs provide personal care for older people with diabetes. Thus, they have the opportunity to collect and report valuable information that help health professionals such as GPs, RNs and ENs develop appropriate care plans for individuals in RAC facilities and in the community.

ACWs should refer to the relevant policies and guidelines of the Residential Aged Care Facilities and community health organisations in which they work and practice within their level of knowledge and competence when providing diabetes care including monitoring blood glucose and administering medicines. The scope of practice *might* include:

- Reporting information about the older person's diabetes status to senior staff such as RN, EN, facility manager or the CEO.
- Reporting information about the older person’s diabetes status to the community district nurse, community council liaison officer or GP.
- Reporting, recording and documenting the care they provide to an older person with diabetes in their personal history/file particularly noting any changes in their condition such as behaviour changes or new symptoms.
- Being knowledgable and aware of the differences between type 1 and type 2 diabetes.
- Only accepting delegated duties such as collecting a urine sample and performing a urinalysis, monitoring blood glucose monitoring (BGM) and administering medicines if they are trained and competent to perform these tasks.
- Reporting, recording and documenting all blood glucose levels (BGL) and understanding that a BG reading of 3.5mmol/L or below is abnormally low for older people with diabetes and requires immediate nursing and sometimes medical management.
• Understanding that a BG reading of 15 mmol/L or higher is too high. The level should be reported to the RN, EN to undertake further assessment and decide whether the person’s GP needs to be notified.

• Reporting, recording and documenting altered moods, concentration levels, drowsiness or unconscious state immediately.

• Reporting, recording and documenting mouth ulcers, dry mouth/tongue, ill-fitting dentures, offensive breath and sweet smelling or alcohol smelling breath.

• Reporting, recording and documenting skin changes, the location and the site of any bruising, skin tears or cuts, dry/cracked skin, rashes, discharge, redness, swelling or lumps.

Learning Resources

Recommended text


Recommended readings

The Charter of Residents’ Rights and Responsibilities (refer to Residential Aged Care Facility Policy and Procedure Manual or Staff Handbook)


Australian Government Department of Health and Ageing *Residential Care Standards*. 
Recommended internet websites

http://www.diabetesaustralia.com.au (Diabetes Australia)
http://www.diabetesvic.org.au/ (Diabetes Australia Victoria)
http://www.adea.com.au (Australian Diabetes Educators Association)
http://www.daa.asn.au (Dietitians Association Australia)
http://www.podiatryvic.com.au (Podiatry Association of Victoria)
http://www.bakeridi.edu.au (International Diabetes Institute)
http://www.physiotherapy.asn.au (Australian Physiotherapy Association)
http://www.healthinsite.gov.au (Health Direct Australia)
http://www.health.gov.au (Department of Health and Ageing, Australia)
http://www.iguard.org (Healthcare service monitoring medications)
www.patienteducationcounts.ca (Patient education and diabetes education information)

Aged Care Workers

Australian Aged Care Workers (ACWs) play an important role in providing optimal care for older people within the community and in residential aged care facilities (RAC) and contribute to older people’s dignity, wellbeing and quality of life. An increasing percentage of older people have the chronic disease, diabetes mellitus. Diabetes mellitus is usually just referred to as diabetes.

Older people living in RACs are called ‘residents’ and are classified according to their care needs into either low or high level care depending on their ability to care for themselves. Their needs often change over time, and many older people move form independent living in their own home, to low level care and then high level care.
In addition, older people may be admitted to a RAC for a short time, days or a couple of weeks, to enable their family carers to have respite care. Respite care provides very important support to people who care for their older relatives at home.

ACWs often perform intimate care for older people. Many older people rely on ACWs to assist them with their daily personal care needs such as toileting, washing, dressing, eating and drinking, as well as many other activities. The learning module provides information about diabetes and the nursing care of older people with diabetes. It includes learning activities for ACWs to complete, which will help them develop greater knowledge about caring for older people with diabetes.

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**Learning Activity**

Refer to your own facility or work place policies and procedures manual and answer the following question:

What role does an Aged Care Worker employed in a residential aged care facility have in providing care for older people with diabetes?

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**Normal Ageing**

Aging refers to the gradual decline of physical and mental capabilities, and is a normal part of life. The rate at which individuals age varies, but people gradually become less able to respond to stress and to perform the physical and mental activities of daily living. Healthy older people are able to maintain an independent self-care
lifestyle with few difficulties. Older people become dependent on others when they can no longer self-care due to impaired physical or cognitive health.

**Diabetes**

Diabetes is characterised by raised glucose levels in the blood. Diabetes affects the way the body uses its energy source: glucose, which is obtained from food. When food is eaten it is digested in the stomach. Carbohydrate foods such as bread, cereals, fruit and sweets are broken down into a simple sugar known as glucose. The glucose leaves the stomach and enters the small intestine where it is absorbed into the bloodstream.

A hormone, known as insulin, is produced in the beta cells. The beta cells are located in a special part of an organ called the pancreas, known as the Islets of Langerhans. The pancreas is located near the stomach, which means the insulin gets into the blood soon after the glucose. In the presence of insulin, glucose is taken up by the cells of the body and used as energy. Without insulin the glucose is unable to enter the cells and accumulates in the blood and is excreted in the urine. The normal BGL is between 4-6mmol/L. Glucose in blood is measured in millimoles per litre of blood (mmol/L).

In a healthy person, insulin secretion is stimulated by the rise in blood glucose after the glucose from food enters the blood. This is a part of blood glucose balance or glucose homeostasis. In diabetes, insulin secretion and insulin action, are defective, which causes elevated blood glucose levels and the symptoms of diabetes such as thirst, passing excess urine and tiredness. Glucose balance is affected by many factors including the ageing process.

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**Learning Activity**

Type 1 and 2 Diabetes

There are two main types of diabetes type 1 and type 2: both types of diabetes occur in older people. However, type 2 diabetes is the most common type of diabetes in older people. Research shows the number of people with type 1 and type 2 diabetes increases with age. An estimated 940,000 Australians have diabetes; most of them have type 2. In addition, many people have undiagnosed diabetes and many of these are older people.

Type 1

In type 1 diabetes, the pancreas produces very little or no insulin at all. There are many theories about how and why this occurs. One theory is that a particular virus triggers the immune system to destroy the insulin producing beta cells in the pancreas. Thus, the treatment consists of regular insulin injections.

Some people have a genetic predisposition to type 1 diabetes, meaning a hereditary factor is involved. People with type 1 diabetes usually have to take insulin injections for the rest of their lives and monitor their blood glucose levels regularly throughout the day and sometimes at night. Older people with type 1 diabetes require particular attention from ACWs, since one of the ACW's roles is to recognise and report any out
of the ordinary or unusual behaviours or symptoms so the cause can be identified and treated early.

Type 2

In type 2 diabetes, the pancreas produces insulin but the insulin does not work properly. The body becomes resistant to the insulin. When that happens, glucose cannot enter the cells, which causes the blood glucose to rise above the normal range. The prevalence of type 2 diabetes increases with age and for many older people with other age-related issues such as declining sight, hearing and dexterity, to name a few, this is not good news.

Older people with type 2 diabetes may gain weight and be less active: being overweight and inactive predispose older people to type 2 diabetes. People with type 2 diabetes do not always require medications to control the blood glucose levels at first, but usually they need tablets or insulin or a combination of both, over time.

Both people with type 1 diabetes and type 2 diabetes need to monitor their blood glucose levels especially if they are on diabetes tablets or insulin.

Learning activity


1. List six common symptoms of diabetes.
2. Think about the older people you cared for last week. Did any of them have three or more of the symptoms listed on the website?
3. What type of diabetes are they most likely to have?
Diabetes in older people

The normal ageing process complicates the care of older people with diabetes. The age-related issues that affect older people's ability to cope with diabetes include:

- The need to take several different medicines.
- The presence of depression and chronic pain
- Dementia and other cognitive changes.
- The increased risk of falls.
- Urinary incontinence, which might be caused by high blood glucose or other conditions.
- Diabetes complications such as blindness, kidney, heart and dental disease and nerve damage that can lead to lower limb amputations.

Factors that contribute to an increased prevalence of diabetes in older people include:

- Age, because insulin decreases with increasing age.
- Weight gain or obesity.
- High carbohydrate high fat diet.
- Sedentary lifestyle.
- Medicines that cause the blood glucose to go high, such as steroids and some medicines used to treat depression.
- Genetic predisposition

Research indicates that older people with one or more of the following conditions are more likely to develop type 2 diabetes:

- High blood pressure.
- High cholesterol levels in the blood.
- A family history of diabetes.
- Overweight and obesity.
- Aboriginal people have one of the highest rates of type 2 diabetes in the world.
Women who had gestational diabetes (raised blood glucose levels during pregnancy).

The cost of managing diabetes to the community is significant; the current predicted cost per year exceed $1 billion. These costs include doctor’s visits, specialist care, hospitalisations, nursing home care, community nursing and support agency care, laboratory tests, equipment used for self-management of diabetes, medicines, and workdays lost due the diabetes, just to name a few.

The human cost is just as significant because the health issues associated with diabetes affect people’s social life and quality of life. Thus diabetes care needs to be personalised and reviewed regularly because older people’s care needs change over time, sometimes rapidly.

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**Learning Activity**

Follow the link below and read the information under the heading: [http://www.diabetesaustralia.com.au Understanding Diabetes](http://www.diabetesaustralia.com.au) and download the document. Print and complete The Australian Type 2 Diabetes Risk Assessment Tool.

1. What was your score?
2. Are you at risk of developing diabetes?
3. If so, what can you do to reduce your risk?
4. Then think of an older person you know who might be at risk of type 2 diabetes.
5. State why you think they might be at risk.
Short and long term complications of diabetes in older people

Long term complications
The systems and organs of the body that are commonly affected by diabetes are the heart and blood vessels, the nervous system, the digestive tract including the mouth and the gums, the kidneys, the skin and the eyes. These occur when the blood glucose is high in the long term and significantly, can be present before diabetes is diagnosed.

Short term complications
Two conditions known as ‘hypoglycaemia’ and ‘hyperglycaemia’ require close monitoring because they cause serious and sometimes fatal outcomes. Both conditions affect the physical and mental/cognitive functioning of older people. In addition, the two states contribute to falls and infection rates.

Hypoglycaemia
Hypoglycaemia, or a low blood glucose level, 4mmol/L or lower, can occur when people take their diabetes medicines, oral hypoglycaemic agents (OHA) and do not eat. It also occurs when people are fasting or are vomiting. Hypoglycaemia can develop rapidly.

The signs of hypoglycaemia include confusion and sweating, unsteady gait. The treatment consists of giving the people glucose drinks or food if they are conscious. If they are unconscious they need urgent treatment and may need glucose into a vein in hospital.

Hyperglycaemia
Hyperglycaemia, or high blood glucose occurs more slowly, often over days or weeks. The symptoms of hyperglycaemia include thirst, passing excessive amounts of insulin or incontinence, tiredness and confusion. The causes of high blood glucose include increased intake of high sugar fluid or foods, not taking diabetes medicines and infections such as a urinary tract infection (UTI) or skin infection.
Learning Activity

Access the link http://www.diabetesvic.org.au/ and list the short and long term complications that older people with diabetes and carers need to consider. Explore both subheadings: type 1 diabetes and type 2 diabetes in providing a response to this learning activity.

1. For type 1 diabetes, list:
   - Short term complications
   - Long term complications

2. For type 2 diabetes, list:
   - Short term complications
   - Long term complications

Presentation and clinical characteristics of diabetes in older people

The usual symptoms of diabetes polyuria (frequent urination), polydipsia (excessive thirst), and unexplained weight loss, tiredness with a lack of energy, visual disturbances and infections may not be present in older people

Older people may have symptoms such as:
- Disturbed sleeping patterns.
- Increased episodes of incontinence either through the day or night.
- Weakness in leg strength whilst trying to mobilise or transfer from bed to chair.
• Tiredness and fatigue.
• Confusion.
• Depression or an emotional outburst of anger or sadness inappropriate to the moment.
• Chest pains or headaches.
• Numbness in the feet or legs.
• Signs of an infection for example offensive strong smelling, cloudy or blood stained coloured urine, an itchy groin or a slow healing leg, foot or toe wound.

Therefore, the nursing care of older people with diabetes is complex and must encompass cognitive function, falls risk, of impaired physical function, managing diet and medicines and social and spiritual care.

The ACW’s role in providing care is to observe, report and document any new symptoms or change in behaviour he or she notices when helping older people with their care.

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**Learning activity**

1. Think about the older people you cared for last week.
2. Did any of them have any of the symptoms described in the preceding section?
3. What could the symptoms mean?
4. What did you do when you noticed the symptoms?
5. What might you do differently next time?
Diagnosing diabetes in older people

The diagnosis is established by taking a blood test to measure the level of glucose in the blood. The blood tests are ordered by a GP or a specialist doctor and may include:

- A random blood glucose test, which means a blood test taken at any time of the day.
- A fasting blood glucose test, which is a blood sample collected following a period of fasting (no food or drink can be taken for at least 8 hours, other than water). The test is usually taken in the morning after fasting all night. Sometimes two FBGs are taken before the diagnosis is made.
- Less commonly, an oral glucose tolerance test (OGTT) will be performed. The test involves testing the person’s blood glucose, the person then drinks a glucose drink and another sample is collected two after they consumed the glucose drink. If the blood glucose levels remain elevated then the test proves positive to diabetes.

Learning Activity

Access the website: http://www.diabetesvic.org.au/ then answer the following question.

1. Why do ACWs need to know about blood glucose means when they provide care for older people with diabetes?
Assessments, treatment goals and nursing care in the management of diabetes in older people

There is no cure for diabetes, thus, having a management plan is important to manage existing complications and reduce the likelihood of new complications and other conditions developing. Regular assessments and good care along with medicines, a healthy food plan and physical activity are essential aspects of the care of people with diabetes.

The care should be individualised including the blood glucose targets and monitoring frequency. Importantly, the blood glucose level suitable for one older person may not be suitable for another. The doctor and the older person or their carer and the nursing staff are responsible for deciding the blood glucose target range and the monitoring frequency. Importantly, the care plan needs to be revised frequently, especially when the health status or medicines change and after an episode in hospital.

The care must take account of life expectancy and quality of life QOL. The aim is to assist older people to maintain their independence for as long as possible and safety remains an important consideration.

Learning Activity

1. Reflect on your ACW role. Then outline how the ACW contributes to the care plan for an older person.
2. Think about how the ACW helps the older person stay independent.
3. What strategies can the ACW use to make sure the older person is safe?
4. What does the ACW’s scope of practice encompass when managing older people with diabetes?
5. If you had diabetes and lived in an RAC, what would help you maintain your quality of life and independence?
Residential Aged Care Facilities

When older people are admitted to RACs they are screened for diabetes if they do not already have diabetes. After the initial screening a random blood glucose is taken at regular intervals, for example, every 3 to 6 months and the results documented in the residents’ personal file and reported to senior staff in charge.

Older people with diabetes are assessed more frequently and a nursing management plan is designed and revised according to individual needs. The ACW needs to know about the assessments and reviews to assist other staff provide individualised diabetes care. One important goal is to prevent falls for all residents. As indicated, older people with diabetes have a high falls risk.

Learning activity

Access the website: http://www.physiotherapy.asn.au
Scroll across the tabs to the “Physiotherapy & You” heading and click on the link “Older People”, read the article “Exercise can prevent falls”.

1. Describe how diabetes contributes to the risk of falls and list some strategies you could sue to reduce the risk.

You could also read:
Nutrition, Physical Activity and Medicines

A healthy food plan and a program of lifestyle activities are the foundations of good care for older people with diabetes to keep the blood glucose within the individual’s target range, often of 6-12 mmol/. However, medicines are usually needed. Commonly used types of medicines are called glucose lowering tablets and insulin injections, or a combination of both. Administering medicines is not within the scope of practice of ACWs, but they do need to know about the most common side effect of these medicines, hypoglycaemia. ACWs need to be able to recognise the signs and symptoms of hypoglycaemia and to report such symptoms to the nursing staff.

Learning Activity

Read Chapters 8, 9, and 10, in Diabetes for Dummies and the following websites:
http://www.diabetesaustralia.com.au (Diabetes Australia)
http://www.diabetesvic.org.au/ (Diabetes Australia Victoria)
http://www.adea.com.au (Australian Diabetes Educators Association)
http://www.daa.asn.au (Dietitians Association Australia) then:

1. Give an example of a healthy meal suitable for a resident with diabetes.
2. Are the meals where you work appropriate for older people with diabetes?
3. If not, how could they be improved?
4. List a low GI food and explain the benefits of low GI foods to older people with diabetes.
Physical activity is also important to the health and well being of older people with diabetes.

1. List six activities that older people in RAC facilities enjoy participating in and explain the benefits of each activity.

**Diabetes education**

Diabetes education is vital to diabetes care. The education needs to be appropriate to the older person and their cognitive ability. Education about diabetes is also important to ACWs and health professionals providing care for older people because research changes the type of care and medicines frequently. A diabetes educator usually provides diabetes education; in addition, there are many community services that provide diabetes education for both older people with diabetes and ACWs.

**Learning Activity**

Access the website www.adea.com.au and read the “Living with Diabetes” section, then:

1. List five different resources available to an older person living with diabetes.
Putting it all together

Learning activity

This last learning activity was designed to help you apply the information you learned to an ‘older person with diabetes.’ Read Mrs JL’s story through first and then complete the questions.

Mrs JL’s Story

Mrs JL, aged 94, lives in a RAC facility in the ‘low care’ section. She has one daughter who lives interstate. Mrs JL is very independent and able to perform the usual activities of daily living independently, but an ACW visits her each week. She is thin and likes to be well dressed. She asked the ACW to check her ankle, which has been ‘uncomfortable’ since she ‘had a bit of a fall’ yesterday, when the ACW made her weekly visit this morning. Mrs JL’s vision is poor, so she is finding it difficult to tell why her ankle is so sore. She states the discomfort kept her awake last night. When the ACW removed her stockings he/she noticed a brown discharge leaking form a sore just below her external malleolus.

1. What do the words Mrs JL uses tell you about her personality?
2. How would you check your assumptions about Mrs JL?
3. What assessment do you think an ACW should perform?
4. Who should an ACW inform about Mrs JL’s ankle problem.

Mrs JL was assessed in the Emergency department of the hospital. She had an X-ray but no fractures were detected although she had bruises and grazes from the fall. Part of the assessment collecting wound swabs from her ankle and blood tests. The blood tests showed her random BG was 11.9 mmol/L and her vitamin D level was low.
1. Do you think Mrs JL has diabetes?
2. Why? Or Why not?
3. What other tests might be needed?
4. Do you think she can return to the low care facility or should she be admitted to the high care section of the RAC?
5. How might her care needs change if she has diabetes?
6. What extra care might an ACW need to provide?

Based on her BG level the hospital doctor starts her on vitamin D tablets and a low GI and low fat diet for the diabetes. He also suggests she stops eating all sweet foods and drinks milk and eats dairy products to improve her calcium intake to protect her bones. Mrs JL dislikes all types of bread and wheat products. She has ‘never drunk milk in my life’ and dairy products ‘upset my stomach’. She does not believe she has diabetes and cannot understand why the doctor told her to stop eating lollies. She only eats two lollies in the afternoon while she listens to her favourite radio program on the ABC.

1. How should the ACW respond to her comments about changing her diet as the doctor suggested?
2. How important is it that she stops eating lollies in the afternoon?
3. What strategies could the ACW implement to reduce Mrs JL’s risk of falling again?

Several weeks later Mrs JL said to the ACW ‘I feel unwell this afternoon, I am very tired because I have to wee all the time and I don’t feel like eating or listening to the radio today.’ ‘Can you just go away and let me sleep.’ Mrs JL appears confused and drowsy.

1. What questions could an ACW ask Mrs JL?
2. What assessments could an ACW undertake besides testing her BG?
3. Who would and ACW tell the BG test result on the meter reads ‘HHH’?
4. What should the ACW do?
5. What is the possible cause of Mrs JL’s condition?
6. Do you think the lollies caused the problem?
Mrs JL is admitted to hospital and is given an intravenous insulin infusion to control the blood glucose and commenced on 6 units of Lantus before breakfast. The diabetes educator in the hospital teaches her how to inject insulin and how to manage hypoglycaemia and records that she administers her insulin correctly in the medical record. After five days in hospital she is transferred to the rehabilitation unit. She spends a week in the unit before returning to her low level care unit. The ACW continues to check on her once a week. She still does not believe she has diabetes stating 'it is just a part of being old.

1. What education do ACWs need now Mrs JL’s treatment has changed?
2. What sort of questions could the ACW ask Mrs JL when he or she visits each week?
3. What behaviours should he or she watch out for?

When the ACW arrives for the weekly visit as arranged, Mrs JL is confused, her speech is slurred and she is unsteady on her feet.

1. What is the most likely cause of Mrs JL’s symptoms?
2. What should the ACW do?
3. Who should he or she tell about Mrs JL’s condition?

Three weeks later, after several similar episodes, Mrs JL falls and suffers bruising and grazes. She is frightened and is losing her confidence. After discussion with her doctor and her daughter she agrees to move to high level care.

1. What would the ACW’s role in Mrs JL’s care be in the high care section of the RAC?
2. How could she be encouraged to join in the RAC activities?
3. How could she react to the change in routines and meals?
Self-directed learning module: Diabetes education and care of older people with diabetes

Module 2: Registered Nurses and Enrolled Nurses

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**Introduction**

Diabetes mellitus is a complex metabolic disorder that disrupts glucose homeostasis due to deficient circulating levels of insulin in the blood or insulin resistance (Dunning, 2009). Diabetes is a debilitating, progressive illness with acute and chronic complications that significantly impair quality of life.

The prevalence of diabetes is increasing. Diabetes is a global epidemic. Currently 7.5% of Australians has diabetes and an estimated 25% of adults aged 75 and older have diabetes (Australian Institute of Health and Welfare, 2010). If diabetes is not managed it can have devastating physical, psychological and spiritual consequences and result in death (Zimmet & Alberti, 2006).

There is a considerable amount of evidence about diabetes management in older people that organisations can access to guide contemporary, evidenced based diabetes education and management. In 2003, The Australian Diabetes Educators Association (ADEA) developed *Guidelines for the Management and Care of Diabetes In the Elderly*, however, the Guidelines do not specifically address the nursing care of older people with diabetes.

Diabetes management in older people is complex and presents unique and distinctive challenges. Additionally, older people with diabetes have often managed their diabetes for a long time and have specific individual likes, dislikes and needs. Nurses are in a unique position to care for and support older people with diabetes. Quality diabetes nursing management of older people with diabetes is achievable when nurses are adequately educated and remain informed about the complex issues affecting older people with diabetes.

The current self-directed learning module was designed to extend the Registered/Enrolled Nurses’ understanding of diabetes to help them provide appropriate age-related nursing care for older people with diabetes.
The term nurse is used to refer to both RNs and ENs in the module but when completing the learning activities, please respond according to your role and scope of practice.

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**Key learning outcomes from completing this self-directed learning module**

After completing the module the Registered Nurse (RN) and Enrolled Nurse (EN) should be able to:

- Describe the impact of increasing age on body tissues and organs and the effects of diabetes on the ageing process.

- Describe the nurse’s role in primary prevention and early detection of diabetes in older people.

- Describe the factors that need to be considered when developing a care plan for an older person with diabetes including the need for early referral to relevant services such as a diabetes educator (DE), dietitian, podiatrist, physiotherapist, speech therapist, occupational therapist, general practitioner, community services and early discharge planning from acute or rehabilitation care settings.

- Describe the nurses’ role and responsibility when delegating care to other providers including aged care workers.

- Discuss an appropriate food plan for an older person with diabetes considering their metabolic control, nutritional status, presence of complications and food preferences.

- Describe how the ageing process affects the pharmacodynamics and pharmacokinetics of glucose lowering medicines, antihypertensive agents and other medicines and the safety issues involved such as contraindications, and interactions.

- Discuss the indications for a home medicines review.

- Describe the impact of hyperglycaemia on physical and mental functioning and the associated risk of falls, cognitive changes and hyperosmolar states.
Describe the impact of hypoglycaemia on physical and mental functioning and the associated falls risk and other safety issues.

Describe the care of an older person scheduled to have a surgical procedure involving fasting and an investigation that involves using radioactive contrast media.

Describe the annual cycle of care for diabetes, the various investigations and the recommended management targets.

Discuss the education needs of older people with diabetes.

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**Learning resources**

**Recommended texts**


**Readings and references**

Please note: To access some of readings you will need to register with Medscape online at http://www.medscape.com/ Registration is free.


Diabetes Australia (DA) and Royal Australian College of General Practitioners (RACGP) (2010/11) Diabetes Management in General Practice: Guidelines for Type 2 diabetes. Canberra.


**Web links**

Australian Institute of Health and Welfare (AIHW)

World Health Organisation (WHO)

Diabetes Australia (DA)

International Diabetes Federation (IDF)
www.idf.org (accessed 28th July 2010)

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**Diabetes: A review**

The prevalence of diabetes is increasing and is particularly high in older people, occurring in up to 20% of people over age 65. Quality and safety in health care are important considerations, particularly in vulnerable populations such as older people. Managing diabetes in older people is challenging, regardless of whether they live in the community or in low or high care residential aged care facilities.

The self-directed learning module was designed for RNs and ENs working in a generalist setting. Therefore, it is expected that RNs and ENs undertaking the module will have a good understanding of the basic pathophysiology, diagnosis and
management of diabetes. The following readings, resources and learning activities are included for RNs and ENs to review and extend their knowledge about these issues.

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**Learning Activity**

Please read the following journal articles and access the web links and complete the learning activity.


Refer to the readings and answer the following questions:

1. Describe the risk factors for type 2 diabetes.
2. List the classic symptoms of diabetes.
3. Explain the difference between type 1 and type 2 diabetes.
4. Discuss why it is important to diagnose pre diabetes.
Normal aging

Ageing is a normal physiological process; in fact it is a normal part of life. External signs of ageing include wrinkles, changes in posture/gait, dexterity and cognitive decline. The internal indications of ageing are more difficult to distinguish yet cells, tissues and organs age and their function and response to stress declines. Ageing is characterised by a progressive decline in organ functional reserve, which reduces the ability to maintain homeostasis under stress conditions (Knapowski, Wieczorowska & Witowski, 2002).

People may be the same physical age, yet demonstrate the signs and effects of ageing differently. Thus the ‘one size fits all’ approach to categorising normal ageing and delivering health care is not helpful.

Classification of ageing

Ageing is a unique and subjective experience for individuals. A 65 year old person may consider him or herself elderly, yet a 75 year old person might not. Chronologically, ageing can be divided into three main age groups:

1. Young old 65–74 years
2. Middle old 75–79 years
3. Old, over 80 years.

Criteria such as quality of life, independence and state of mind are important to consider when classifying age (Hammond & Jilek, 2003). Therefore, whilst it is imperative to understand the pathophysiology of ageing, older people must be regarded as individuals and the assessment take account of their circumstance and attributes and their experiences, preferences and goals.

In order to understand the effect of ageing, it is important to consider the pathophysiology of ageing and the associated factors that influence the ageing process. These include the individual’s:

- Genetic make up.
• Illness experiences.
• Environmental stressors such as sun exposure, smoking, pollutants and chemicals.
• Lifestyle factors such as physical activity.

To a certain extent, as people age they become frail. For example, if we were to compare the physical, cognitive and functional attributes of a person in their 40s to a person in their 70s, we would find distinct differences. We would also see significant differences in cell, tissue and organ function. Significantly, glucose tolerance progressively declines with ageing (Chang & Halter, 2003). Alterations in glucose-induced insulin release and resistance to insulin-mediated glucose disposal contributes to glucose intolerance (Sinclair, 2009).

Physical decline occurs when the body can no longer adapt to the physical and mental changes. Health problems often increase with advancing age and fatigue, stress, anxiety and depression are common. In addition, financial constraints may be present. Despite these factors, older age represents a period of growth and fulfillment for many people, for example through travel and grandchildren.

The effects of ageing and lifestyle factors such as increased adiposity, decreased physical activity, some medications and coexisting illness further impair glucose tolerance in older people (Chang & Halter, 2003). Chang and Halter (2003) present a visual representation of Normal adaptation to insulin resistance (Figure 2) and a Model of age-related hyperglycaemia (Figure 3).

Learning Activity

Read the following readings and then complete the questions.


1. List the causes of ageing.
2. List the major age-related effects on individual body systems.
3. State the two overlapping aging processes.
4. Describe the cellular mechanisms of ageing.
5. Describe the normal adaptation to insulin resistance and age-related hyperglycaemia.
6. Outline what you understand by: Alterations in glucose-induced insulin release and resistance to insulin-mediated glucose disposal contributes to glucose intolerance (Sinclair 2009).

**Reflective activity**

Reflect on a recent nursing experience and describe how you provided nursing care for an older person with diabetes. Relate the description of the pathophysiology of ageing to your experience and reflect on how you could do things differently in the future.
Diabetes and older people

Current Australian data suggests more than 25% of older people aged 75 years and older have diabetes (AIHW, 2010). The interaction between the ageing process, the functional decline in organs, tissues and cells, combined with age-related changes in carbohydrate metabolism, lifestyle factors and genetic and environmental stressors cause significant differences in the presentation, diagnosis and management of diabetes in older people (Meneilly & Tessier, 2001).

Thus, diabetes in older people is metabolically different from diabetes in younger people (Meneilly & Tessier, 2001). Additionally, older people are often diagnosed with diabetes when they become unwell and are less able to cope with the diagnosis or manage diabetes (Dunning, 2005). Therefore, the nursing management of older people with diabetes needs to reflect individual needs of older people diabetes.

The factors that contribute to the increasing diabetes prevalence in older people include:

- Weight gain.
- Decreased physical activity.
- Genetic predisposition.
- Diabetogenic medicines.
- Coexisting illness.
- Age-related reduction in insulin secretion.
- Age-related insulin resistance (Sinclair 2009).

It is important for nurses to understand the different ways diabetes manifests in older people in order to identify those at risk, initiate appropriate screening programs, ensure the appropriateness of diabetes management interventions including diabetes medicines, and to monitor the acute and chronic complications of diabetes.
Importantly, older people with diabetes may have multiple illnesses and/or physical deficits. Thus, the nursing management of older people with diabetes is often compounded by multiple acute and chronic conditions and self-care deficits. Nurses must ensure the management of diabetes in older people is appropriate.

Learning activity


1. List and describe the major age-related changes in carbohydrate metabolism that affect older people with diabetes.
2. Explain why it might be difficult to identify symptoms of diabetes in older people with diabetes.
3. Describe how diabetes is diagnosed in older people.

Primary prevention and early detection of diabetes in older people

An essential role of the nurse is the primary prevention and early detection of diabetes in older people. Diabetes is common in older people. Approximately 20% of older people have diabetes by age 75 and are also likely to have macrovascular and microvascular complications.

Older people access health services proportionally more often than other age groups (AIHW, 2010). Nurses employed in acute and community health services, including general practices and residential aged care facilities, are in optimal position to initiate diabetes prevention, screening and early detection strategies.
The most important primary prevention strategy to reduce the prevalence of type 2 diabetes is regular physical activity (Warburton, Nichol & Bredin, 2006). Likewise, secondary prevention of type 2 diabetes also involves exercise (Warburton, Nichol & Bredin, 2006). Older people should be encouraged to be active in order to reduce their risk of developing type 2 diabetes (ADEA, 2003).

Nurses need to promote safety when discussing exercise/activity with older people at risk of and diagnosed with diabetes and be aware of the inherent difficulties older people have participating in physical activity. Nurses might need to use innovative strategies to encourage older people to be physically active that take account of the limitations some older people face due to ageing and potential functional decline. Maintaining incidental activity is a key strategy to promote physical activity. Regular physical activity also enhances general health and well being.

Learning activity


1. Describe how you would support an older person with diabetes to participate in physical activity.
2. What safety issues do you need to consider when suggesting an activity program for an older person with diabetes on oral glucose lowering medicines?
3. Describe how you would ensure the safety of an older person with diabetes using insulin who participates in a cardiac rehabilitation program.
4. List some beneficial forms of physical activity for older people with diabetes.
5. Define incidental activity and list some ways you could encourage older people with diabetes to continue to undertake incidental activity safely.
Presentation and clinical features of diabetes in older people

The obvious signs and symptoms of diabetes, polydipisa, polyuria and polyphagia may not be present in older people with diabetes (Meneilly & Tessier, 2001; Dunning, 2005). Diabetes often presents with non-specific signs and symptoms in older people and can be mistaken for other causes including 'getting old' and the diagnosis delayed. The following signs and symptoms might indicate diabetes: confusion, failure to thrive and incontinence.

Diabetes is often frequently diagnosed when the older person presents to hospital with an acute diabetes-related complication such as stroke (Meneilly & Tessier, 2001). Further, symptomatic older people should be screened for undiagnosed diabetes by measuring fasting plasma glucose as recommended for the general population (ADEA, 2003).

It is important to understand the different presentation and clinical features of diabetes in older people in order to recognise opportunities to screen for diabetes and its complications. Please refer to Table 1.6 in Dunning (2005): Classic signs and symptoms of diabetes and the clinical features that are more likely to be present in older people (p 18).

In addition to the age-related changes already discussed, Meneilly and Tessier (2001) described unique syndromes that occur in older people with diabetes, including:

- Diabetic neuropathic cachexia—weight loss, depression, painful peripheral neuropathy.
- Diabetic amyotrophy—painful muscle wasting of lower limbs exclusively in men.
- Malignant otitis externa—necrotising infection caused by *pseudomonas*.
- Papillary necrosispyelonephritis.
- Spontaneous resolving intradermal bullae of the feet.
- Painful limitations of the shoulder movements.
- Accidental hypothermia especially during hypoglycaemia and following a fall.
Learning activity

1. Describe why the diagnosis of diabetes can be overlooked in older people.
2. Describe three clinical indications for screening an older person for diabetes.
3. Describe the diabetes-related factors that contribute to the risk of falls in older people.
4. What strategies could nurses use to reduce the risk of falls when developing a care plan for a 70 year old person with diabetes on a morning dose of long acting insulin.
5. What duties would you delegate to an aged care worker (ACW)?
6. What factors would you consider before you delegated any duties to an ACW?

Reflective activity

Reflect on a recent nursing experience and describe how you provided nursing care for an older person with diabetes. Recall the individual’s clinical symptoms and determine whether the symptoms could be due to diabetes. Briefly describe how you could do things differently in the future.
Diabetes complications in older people

Diabetes can cause significant short term or acute and long term or chronic complications that impair quality of life and increase morbidity and mortality. In addition older people usually have other comorbidities.

The impact of diabetes acute and chronic complications can exacerbate age-related effects on impair self-care ability and quality of life. Significantly, people with diabetes are at higher risk and potential misdiagnosis of acute and chronic diabetes complications

Short term/acute complications

- Hypoglycaemia.
- Hyperglycaemia, which can lead to diabetic ketoacidosis (DKA) or Hyperosmolar Non-Ketotic Coma (HONK).
- Infections such as UTI, periodontal infections and foot infections.

Long term/chronic complications

- Macrovascular complications (disease of major blood vessels)
- Myocardial infarction
- Cerebrovascular accident
- Intermittent claudication
- Microvascular complications (disease of the small blood vessels)
- Retinopathy
- Nephropathy, which can lead to renal failure and dialysis.
- Neuropathy
- Peripheral (damage to the central and peripheral nerves)
- Autonomic
• Depression
• Impaired cognitive function and dementia (Dunning, 2009, Sinclair 2009).

Diabetes and its complications lead to:
• Shortened life expectancy.
• Higher mortality rates.
• Poorer quality of life.
  - Higher frequency of other chronic diseases.
  - Double the risk of macrovascular and significantly higher risk of microvascular complications.

The risk of severe or fatal hypoglycaemia, associated with the use of insulin and/or oral glucose lowering medicines is exponentially higher in older people with diabetes than their younger counterparts. The symptoms of hypoglycaemia tend to be less obvious and more non-specific. The individual may not recognise the signs and symptoms due to factors such as hypoglycaemia unawareness, because they are masked by medicines such as beta blockers, due to impaired cognitive function and dementia.

Identifying and managing diabetes complications in older people is complex. There are additional considerations nurses must incorporate in their care of older people with diabetes. Nurses must be aware that older people with diabetes may have a reduced ability to recognise and communicate a health concern due to cognitive impairment, may not be aware of their vulnerability concerning hypoglycaemic unawareness and may have functional decline that prevent or interfere with their ability to self care for their diabetes. Additionally, older people may have undiagnosed diabetes and present with a long term complication such as MI. As previously mentioned, research suggests approximately one-third of older people have undiagnosed diabetes (Sinclair, 2009).
Learning activity

Please read Chapter 27 p. 373-381; Chapter 28 p. 385-97 and Chapter 29 p. 403-413.

Use the information to:

| 1. List the factors that led to Mrs C’s presentation to the Emergency department. |
| 2. Is she safe to return home? |
| 3. Develop a care plan to improve her safety and prevent the episode recurring. |
| 4. Are there any tasks you could delegate to an ACW? |

Mrs. C, age 79, presented to the Emergency Department (ER). She has a history of Ischemic Heart Disease, Peripheral Vascular Disease, Osteoarthritis and type 2 diabetes. Mrs. C lives alone. Her neighbour found Mrs. C on her bathroom floor and called an ambulance. On presentation to ER Mrs. C is confused and anxious and is unable to appropriately respond to verbal questions. She appears frightened and disorientated. The baseline assessment shows:

- BGL 3.9 mmol/L
- BP 100/55
- Troponin/Cardiac enzymes No abnormality detected

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Diagnosing diabetes in older people

Several diabetes diagnostic criteria are used in different parts of the world, but more evidence is needed to determine the optimal method of screening for diabetes in older people. Commonly used diagnostic criteria include guidelines developed by the American Diabetes Association (ADA), World health Organisation (WHO), and the Australian Diabetes Society (ADS) Guidelines.
• Diagnostic criteria are: Symptoms of diabetes (polyuria, polydipsia, unexplained weight loss, and fatigue) and a casual plasma glucose > 11.1 mmol/L.

Or

• Fasting plasma glucose > 7.0 mmol/L where fasting refers to no food or drink for at least 8 hours other than water.

Or

• Two-hour plasma glucose > 11.1 mmol/L in an oral glucose tolerance test (OGTT) using a 75-gram glucose load.

There is some evidence that older people can have fasting blood glucose < 7.0 mmol/L but increase to diabetic levels at the 2-hour point on OGGT and that these people have an increased risk of cardiovascular events (Barrett-Connor & Ferrara 1998). OGGT should be performed in a controlled situation to ensure the accuracy of the test. OGGT should not be performed when the blood glucose is high because the glucose load can precipitate hyperglycaemia and lead to an adverse event.

Recommended screening frequency rates are: fasting glucose every three years in older people with low risk of diabetes, and yearly for those at high risk. Given the fact that older people can have significant hyperglycaemia without symptoms, and can present with atypical symptoms and syndromes, undertaking regular risk assessments is as important as regular blood glucose tests.

Learning activity

1. State the diabetes diagnosis criteria for older people.
2. Describe the clinical indications for screening for diabetes.
3. List the recommended diabetes screening intervals for older people.
4. How would you advise an older person to prepare for an OGGT?
Nursing care of older people with diabetes

Nursing care of older people with diabetes is complex. Nurses must consider the individual circumstance of the older person including where they live, medicines, self care ability, functional and cognitive ability, presence of illnesses including comorbidities and chronic diabetes complications, learning style/ability and support systems. Regular and ongoing physical, psychological, spiritual and social assessments are essential (Dunning, 2005).

Broadly, there are two categories of older people:

- Independent, self-caring, mobile, people living in the community.
- Older people who require assistance, either low-level or high-level residential care. (Dunning, 2005; Sinclair 2009)

Where possible, nurses must work closely with the older person with diabetes and their family or carers and the interdisciplinary health care team to establish diabetes management goals appropriate to the individual’s circumstances. Older people may have an established diagnosis of diabetes, and therefore be experienced in their diabetes care and body cues.

Alternatively, the diagnosis may be recent and the individual might need requiring intensive, individualised diabetes education and management. It may be difficult to establish person-centred care goals if the older person is cognitively impaired. In these cases the older person’s spouse, family member/carer and general practitioner should be consulted. In addition, dietitian, geriatrician and/or endocrinologist might need to be consulted.

Nursing care of the older person with diabetes should emphasise:

- Individualised assessment and planning.
- Safety and acute/chronic complication preventative strategies.
- Maintaining self-care ability, adequate nutrition, physical activity and independence.
- Education and support.
• Timely referral and access to the interdisciplinary health care team diabetes and other health professionals as relevant.

The ADEA (2003) recommend management targets and the frequency of assessing for older people with diabetes. However, these primarily relate to metabolic targets and screening. They do not encompass nursing care or emphasise the need to consider individual needs. Diabetes management requires an interdisciplinary approach. Care planning for older people with diabetes should include some or all of the following: diabetes educators, dietitians, podiatrist, physiotherapists, speech therapist and occupational therapist to ensure age appropriate, contemporary and collaborative care planning occurs.

Nursing focus of care of the older people with diabetes
• Safety.
• Functional and cognitive ability
• Nutritional requirements including feeding ability
• Physical activity
• Medicines (QUM)
• Assessment/review of systems to document base line data and identify problems and opportunities for health promotion/complication screening that encompasses:
  • Oral/dental,
  • Skin integrity
  • Musculoskeletal e.g. gait/posture,
  • Gastro intestinal tract
  • Renal status.
  • Senses e.g. vision, hearing, sense of smell
  • Nervous system.
  • Activities of daily living;
• Self-care capability such as administering medicines and monitoring blood glucose.

• Mental health and quality of life.

• Medicine regimen including complementary medicines.

• Nutritional status.

• Eventually, care transition needs that encompass stopping driving, end of life care, advanced care directives

• Transition in this context refers to life transitions. However, the term is also commonly applied to moving among health services.

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**Learning activity**

Consider all the information you have read so far, and your clinical and personal experience, and list five care transition points an older person admitted to ER following a fall in a shopping center might experience.

How could the nurse improve the transition experience of an older person?

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**Management aims**

As already indicated, care need to be individualised, but usually encompasses:

• Managing nutrition and hydration status

• Preventing hypoglycaemia and hyperglycaemia

• Reviewing medications to ensure safety and appropriateness
• Undertaking preventative health measures including diabetes complications, vaccinations, Mini Mental State Examination, depression tools, falls risk
• Managing co-existing illness to maximize functional ability and enhance quality of life
• Providing a safe environment to reduce the risk of falls
• Documenting Advance Care Directives or other relevant document of the individual’s care wishes (Dunning, 2009).

**Metabolic targets**

The glycaemic targets need to be individualised, as already indicated. Suggested glycaemic targets for specific groups of older people are:

- **Healthy older people**: fasting plasma glucose, 7 mmol/L; 2-hour plasma < 11 mmol/L and HbA1c, < 15% above the upper limit of normal.
- **Frail older people**: fasting plasma glucose, 10 mmol/L; 2-hour plasma glucose < 14 mmol/L, HbA1c < 40% above the upper limit of normal (Meneilly & Tessier 2001).

Achieving these targets in older people usually consists of adopting a stepwise approach and using non-pharmacological measures first, wherever possible, to reduce or avoid polypharmacy where possible, in keeping with quality use of medicines. A stepwise approach moves from simple to more complex and consists of:

- Dietary management and exercise.
- Oral agents such as Biguanides and Sulphonylureas.
- Considering other medicines such as Thiazolidinediones and insulin mimetics.
- Combining oral agents and insulin.
- Insulin.

Many factors need to be considered when deciding a medicine regimen for an older person including renal function, allergies, potential interactions with food and other medicines including complementary medicines. Older people have increased risk of vascular complications; therefore, comorbidities also need to be managed. Research
suggests managing systolic hypertension and lipid lowering medicines reduces cardiovascular risk independent of glycaemic control.

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**Learning activity**

1. Summarise the aims of diabetes management for older people with diabetes.
2. Describe the recommended metabolic targets for older people with diabetes.
3. Are these targets suitable to *all* older people with diabetes? What are some factors that limit the ability to achieve the recommended metabolic targets?
4. Discuss the importance of implementing a stepwise approach to achieving metabolic targets in older people with diabetes.

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**Reflective activity**

Reflect on a recent nursing experience and describe how you provided nursing care for an older person with diabetes. Describe how much consideration you gave to the older person’s diabetes status and indicate how you might do things differently in the future.
Nutrition and appropriate food plans for an older people with diabetes

It is important to take a broad approach to nutritional management in older people with diabetes rather than simply focusing on reducing fat and sugar (National Health and Medical Research Council 1999). The nutrition plan for an older person must be revised on a regular basis because requirements change due factors such as:

- Ageing.
- Concomitant disease.
- Financial constraints.
- Poor oral health.
- Limited mobility and vision.
- Inadequate knowledge.
- Social factors such as living alone, ability to shop and prepare meals, living in residential aged care facilities and having home delivered meals where personal choice is limited.

Significantly, Many older people are malnourished even though they appear overweight. For example, malnutrition occurs in 15% of homebound community dwelling older people, 35%-65% of hospitalised older people, and 50% of older people living in RACs (Szonyi 2004).

Vitamin and mineral supplements and enteral feeding may be required (nasogastric or PEG feeds).

Learning activity

1. Discuss the nurses' responsibilities for the nutritional management of older people with diabetes.
Pharmacodynamics and pharmacokinetics: diabetes medicines, ageing and safety

Diabetes is a chronic and progressive illness and more than 85% of people with type 2 diabetes eventually require pharmacotherapeutic management (Dunning, 2005). Insulin is essential for people with type 1 diabetes and will eventually be required by ≥50% of people with type 2 diabetes (Dunning, 2005).

Oral glucose lowering agents are used in people with type 2 diabetes and are chosen for their effect on the body/organs. It is essential for nurses to consider the time they administer of diabetes medicines in relation to food intake and activities, including rehabilitation activities, to avoid hypoglycaemia.

Caution is required when administering any medicine to any person for any reason. Older people present additional challenges when implementing pharmacotherapeutic management. The Quality Use of Medicines (QUM) is a framework for promoting optimal outcomes from medicine use and reducing medicines-related adverse events (Pharmaceutical Health and Rational use of Medicines (PHARM) Committee (2005).

Organ, tissue and cellular ageing affect the pharmacodynamics and pharmacokinetics of medicines. Thus, it is imperative nurses understand how aging affects medicines in order to ensure the safe use of diabetes medicines and other medicine in older people. Further, deciding on a medicine regimen requires careful consideration because many oral glucose lowering agents, like many other medicines, should not be crushed.

Learning activity

Refer to Table 1.3 in Dunning (2005) Major normal age-related changes according to the body systems, the consequence of the changes and some suggested management strategies (pp 8–9).
1. Indicate how age related changes to the liver and kidneys affect the efficiency of medicine in older people with diabetes.

2. Discuss how age related changes to nutrition and body composition affect the efficiency of medicine in older people with diabetes.

**Learning activity**


1. The major classes of oral glucose lowering agents
2. The types of insulin available in Australia
3. The names of two insulin mimetics.
4. Two common insulin regimens used in older people with a) type 1 diabetes and b) type 2 diabetes.

Undertake a literature search and find out why is insulin classified as a high risk medicine.

1. Would you delegate insulin administration to an ACW?

**Special pharmacological considerations for older people with diabetes**

The physical and functional ageing related changes in older people necessitate special precautions when administering medicines including oral agents and insulin. Older people may find it difficult to open medicine packets/bottles and to swallow medicines and may experience more side effects from their medicines.
Additionally, the ageing process is associated with a decline in organ function; therefore, medicines may not be as effective and/or may cause a significant increase in medicine-related adverse events. Older people with diabetes should have regular renal and liver function tests to ensure the their diabetes medicines regimen is appropriate to their organ status.

Hypoglycaemia is a significant side effect of diabetes medicines in older people with diabetes. Hypoglycaemia can precipitate myocardial infarction. Severe prolonged hypoglycaemia is associated with sulfonylureas, especially long acting agents, which should be avoided in the elderly (Therapeutic Guidelines, 2009). Glitizides are less likely to cause hypoglycaemia and therefore may be a better choice for to the elderly (Therapeutic Guidelines, 2009).

Caution should be exercised when administering diabetes medicines to older people with diabetes and comorbidities such as heart failure and impaired renal function. For example, Metformin should be used cautiously in older people with heart failure and impaired renal function and other conditions that lead to hypoxia. They should be stopped 48 hours prior to surgery or administering contrast radiography (Therapeutic Guidelines, 2009).

Glitazones can cause fluid retention and should be avoided in people with oedema, and are contraindicated in some patients with heart failure (Therapeutic Guidelines, 2009).

**Learning activity**

Discuss the role of the RN and EN in the safe administration of diabetes medicines. Describe the appropriate diabetes medicines monitoring for an older person with diabetes.

Should diabetes medicines be withheld in older people with diabetes. In your answer refer to insulin and oral hypoglycaemic agents.

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Education modules for the management of diabetes in the older person. Final report
Hyperglycaemia and older people with diabetes

Hyperglycaemia is defined as a blood glucose level above 15 mmol/l. Symptoms of hyperglycaemia usually occur when blood glucose levels exceeds this level. Short term hyperglycaemia causes significant distress; prolonged hyperglycaemia is associated with devastating microvascular and macrovascular complications (Dunning, 2005).

1. Discuss the nurse’s role and responsibility when administering diabetes medicines.
2. Discuss the age related changes that increase the potential for adverse events associated with oral diabetes medicines and insulin.
3. Undertake a literature search and find out whether Diamicron MR, Metformin and Januvia can be crushed and administered through a PEG feeding tube.

Hyperglycaemia is difficult to identify in older people due to functional, cognitive and age-related changes. For example, fatigue in older people is often related to the ageing process, the ability to recognise thirst is compromised and polyuria may present as urge incontinence or urinary incontinence (Dunning, 2005).

Two major risks associated with hyperglycaemia are diabetic ketoacidosis (DKA), which is more common in type 1 diabetes, and hyperosmolar non-ketotic coma (HONK), which is more common in older people, especially those undiagnosed but at risk of diabetes. Older people are particularly at risk of both these conditions because they loose the ability to detect thirst and are less able to orally replace fluid loss. Likewise the respiratory response (buffer system) to ketoacidosis is altered.
Diabetic ketoacidosis (DKA)

DKA is rare in older people and mostly occurs in type 1 patients. However, it should be remembered that people with type 1 become old and, significantly, a new diagnosis of type 1 occurs in approximately 10% of new diabetes diagnosis in older people.

The presentation of DKA in the early stages includes:

- BGL greater than 17mmol/l
- Arterial pH less than 7.3
- Ketones in blood and urine. There may be an acetone smell on the breath.
- Marked diuresis.
- Nausea and vomiting.
- Abdominal cramping.
- Tachycardia.
- Fast shallow breathing. Kussmaul’s respiration.

Late symptoms include respiratory distress and absence of Kussmaul’s respirations, bradycardia, hypotension, hypothermia and altered conscious state leading to coma (Dunning, 2005).

Hyperosmolar non-ketotic coma (HONK)

HONK is characterised by markedly raised blood glucose levels and serum osmolarity, severe dehydration and the absence of ketones (Dunning, 2005). Confusion, cerebral oedema and seizures can be present.

Older people at the highest risk of developing HONK and may not have diagnosed diabetes. The following are common percipients of HONK:

- Untreated UTI. And other infections, which are the most common causes.
- Pneumonia.
- Myocardial infarction.
- Corticosteroid therapy.
- Age over 80 years
- Ineffective response to oral agents i.e. they do not control the blood glucose.
- Peritoneal dialysis
- Parenteral feeding with high caloric feeds
- Diuretic therapy especially thiazide diuretics.

Significantly, older people living in residential aged care facilities are particularly at risk of HONK.

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**Learning activity**


Then:

1. Outline the main points to consider when developing a nursing care plan for Mr T, an 80 year old man admitted to the ER from a residential aged care facility, with signs and symptoms suggestive of a myocardial infarction. Mr T has asthma, which is treated with low dose steroids. He was commenced on nasogastric feeds a week ago because he was ‘going off mentally’ and refused to eat.

2. What investigations are likely to be undertaken?

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**Hypoglycaemia and older people with diabetes**

Hypoglycaemia is a medical emergency requiring acute management. It is the most serious short-term complication of diabetes in older people and can cause significant morbidity and mortality. Hypoglycaemia may present with atypical symptoms, which
are often attributed to aging. For example, an older person may appear to have acute cognitive decline when they are actually hypoglycemic.

Hypoglycaemia is defined by a blood glucose level of less than 3.5 mmol/L in a person using insulin or oral glucose lowering agents (Dunning, 2005). Older people with diabetes are at higher risk of experiencing hypoglycaemia due to factors such as functional decline, impaired nutrition, polypharmacy, and hypoglycaemic unawareness. Thus, a more realistic blood glucose level for defining hypoglycaemia in older people with diabetes is < 4-5 mmol/L (Dunning, 2005).

Managing hypoglycaemia in older people


Hypoglycaemia management is a medical emergency and management will depend on the setting and individual older person.

Conscious and able to swallow:

- Check blood glucose (BG)
- Initiate treatment—quick acting carbohydrate (jelly beans, fruit juice, honey) if:
  - Impaired swallow reflex—use 15g tube of glucose paste placed under the tongue; vitamised/thickened pears/peaches/custards.
  - Enteral therapy—use 15g glucose powder dissolved in water and insert into tube.
- Stay with the patient
- Check BG after 15 minutes
  - BG low (less than 4mmol/l) repeat initial treatment.
  - Moderate increase in BG and patient cooperative provide long acting carbohydrate (glass of milk/sandwich or dried fruit); Impaired swallow reflex – vitamised fruit or milk based desert; Enteral therapy immediate or extra serve of enteral feed.
• If patient uncooperative, stay with patient and call doctor and ambulance.
• Monitor BG 1-2 hourly and then revert to usual testing regime.
• Determine cause and prevent future episodes, which might involve more frequent BG testing and reviewing the medicine regimen (*Therapeutic Guidelines*, 2010; Dunning, 2005).

Unconscious or unable to swallow—MEDICAL EMERGENCY

- Call ambulance or notify responsible doctor in hospital
- Ensure patient safe, place on side and clear airway.
- Do not administer anything orally (risk of aspiration)
- Observe and record signs and BGL.
- If ordered: Administer intramuscular Glucagon OR the medical emergent team will administer 50% glucose intravenously. Note: it can be difficult to achieve intravenous and extravasation of glucose is an adverse event and can lead to significant tissue damage.
- Stay with patient

**Learning activity**

http://emedicine.medscape.com/article/122122-overview (accessed 7 September 2010) and answer the following questions:

1. How would you manage the following hypoglycaemic episode. The ACW tested Mrs C’s blood glucose and informs you it is 3.9 mmol/L and Mrs C is behaving erratically and fell trying to get out of bed.
2. Consider immediate management and the longer term care needed.
3. What immediate safety issues are involved?
4. List three possible causes of Mrs C’s hypoglycaemic episode.
Surgery, fasting and/or use of radioactive contrast media in older people with diabetes

Older people require investigations and surgical procedures that may require fasting and sedation or anaesthesia. Surgery can lead to metabolic destabilisation for a number of reasons including medicines, pain and starvation. Many people are admitted on the day of the procedure, thus careful education and preadmission assessment are important to identify people most at risk of adverse events.

Fasting for surgical or diagnostic procedures including the use of contrast radiography is a particular problem for patients with type 1 diabetes because insulin should not be omitted because of the risk of DKA (Therapeutic Guidelines, 2009). Consideration must be given using an intravenous glucose/insulin/potassium infusion (Therapeutic Guidelines, 2009).

Metformin should be stopped 48 hours prior to diagnostic procedures and not recommenced until renal function has been demonstrated to be normal in patients with type 2 diabetes (Therapeutic Guidelines, 2009). Sulphonylureas and other insulin sensitisers should be stopped on the day of fasting, and blood glucose monitored closely (Therapeutic Guidelines, 2009).

Learning activity

Read Surgery in Elderly People Anaesthetic Considerations and Operative Issues, Perioperative Pain Management, Delirium and Post operative Cognitive Dysfunction, Other Complications
http://medicine.jrank.org/pages/1726/Surgery-in-Elderly-People.html
(accessed September 2010) then answer the following questions:
1. In what circumstances would an older person with type 1 diabetes NOT require an intravenous glucose/insulin/potassium infusion?

2. Why are intravenous glucose/insulin/potassium infusions used in people with diabetes undergoing surgery?

3. What are two main adverse events associated with intravenous glucose/insulin/potassium infusions?

4. How could nurse determine the severity of post operative pain in an older person with cognitive impairment.

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**Recommended cycle of care for older people with diabetes**

Older people with diabetes or at risk of developing diabetes should be afforded the same quality and quantity of diabetes-related services as the general population. Management goals and targets should be individualised to the person and address issues of frailty and other co-morbidities (Dunning, 2009).

Diabetes management in older people should be consistent with the recommendations of: Diabetes Australia (DA) and Royal Australian College of General Practitioners (RACGP) (2010/11) *Diabetes Management in General Practice: Guidelines for Type 2 diabetes*. These guidelines encompass the ‘annual cycle of care’ in general practice.

In addition, the ADEA (2003) recommend:

- Screening of asymptomatic older people by measuring fasting plasma glucose as recommend for the general population
- Undertaking regular comprehensive clinical and laboratory evaluation of metabolic control and screening for complications and comorbidities.
- Developing metabolic targets to avoid hypoglycaemia and hypertensive symptomatic issues.
• Assessing cognitive function using The Mini Mental State Examination (MMSE) as an adjunct to the planning of diabetes care and education.
• Regularly assessing and adjusting the metabolic targets according to the physical and mental health status of the individual.

Learning activity

Read the following publications and complete the following activities:

1. Do the three publications recommend the same metabolic targets?
2. Describe the significance of diabetes screening in older people with diabetes.
3. Outline the annual cycle of care recommended for people with diabetes in the DA and RACGP reference and discuss the appropriateness of the annual cycle to the care for older people with diabetes. In your answer consider cognitive, function and physical age related changes.
4. Discuss the barriers to healthcare and education elderly people with diabetes often encounter. Consider these from three perspectives: social/environmental, health professional-related and those related to the individual
Educating of older people with diabetes

Health literacy is defined as an individual’s ability to:

- Read
- Understand
- Use health care information
- To make decisions and follow instructions for treatment

(Nutbeam 2000)

17% of men and women aged 65-74 years have a sufficient level of health literacy; however, 83% do not. However, learning styles and ability to absorb and retain information changes as people age. Thus, education strategies need to be adapted to suit the individual’s physical and mental capabilities (Dunning, 2005).

In many cases, family and other carers may need to be included in education sessions. Likewise, optimal health outcomes rely on people with diabetes undertaking a considerable amount of self-care. Self-care is a complex process at any time in a person’s life but is particularly difficult for older people as their social, physical and mental circumstance change.

Learning activity

Read the following publications and then complete the activity:


1. How could health literacy can as people age?
2. How does low health literacy affect health outcomes for people with diabetes?
3. What effect does low health literacy have on people’s self-care ability?
Putting it all together

Mrs JL, aged 94, lives in a RAC facility in the ‘low care’ section. She has one daughter who lives interstate. Mrs JL is very independent and able to perform the usual activities of daily living independently, but an ACW visits her each week. She is thin and likes to be well dressed. She asked the ACW to check her ankle, which has been ‘uncomfortable’ since she ‘had a bit of a fall’ yesterday, when the ACW made her weekly visit this morning. Mrs JL’s vision is poor, so she is finding it difficult to tell why her ankle is so sore. She states the discomfort kept her awake last night. When the ACW removed her stockings he/she noticed a brown discharge leaking from a sore just below her external malleolus.

1. Describe the significance of Mrs JL being ‘very independent and able to perform the usual activities of daily living independently’.
2. What are the main nursing concerns about Mrs JL?
3. Describe the factors that could indicate Mrs JL has diabetes?
4. What nursing assessment would you perform?
5. What referrals would you make for Mrs JL?
6. What education would you provide to Mrs JL?
7. What information do the ACWs need about Mrs JL?

Mrs JL was assessed in the ER of the hospital. She had an X-ray but no fractures were detected although she had bruises and grazes from the fall. Part of the assessment involved collecting wound swabs from her ankle and blood tests. The blood tests showed her random BG was 11.9 mmol/L and her vitamin D level was low.

1. Discuss whether the random BG of 11.9 mmol/l indicates Mrs JL has diabetes.
2. Describe the diagnosis of an older person with diabetes.
3. Describe the nursing care Mrs JL requires in the ER.
4. Indicate how you would involve Mrs JL in decisions about her care.
5. Discuss strategies to involve ACWs in Mrs JL’s care.
Based on her BG level, the hospital doctor started Mrs JL on vitamin D tablets and a low GI and low fat diet for the diabetes. He also suggested she stops eating all sweet foods and drinks milk and eats dairy products to improve her calcium intake to protect her bones. Mrs JL dislikes all types of bread and wheat products. She has ‘never drunk milk in my life’ and diary products ‘upset my stomach.’ She does not believe she has diabetes and cannot understand why the doctor told her to stop eating lollies. She only eats two lollies in the afternoon while she listens to her favourite radio program on the ABC.

1. Describe the function of the inter-disciplinary health team in assessing and managing Mrs JL’s care.
2. Discuss Mrs JL’s nutritional management and suggest nutritional choices to ensure adequate nutrition whilst accommodating her food likes and dislikes.
3. Describe any additional nursing assessments you would make.
4. Discuss whether low level care is still appropriate for Mrs JL.
5. Discuss how you could safely support Mrs JL’s goal to remain in the low level RAC facility.
6. Is she at risk of falling and depression?

Several weeks later Mrs JL told the ACW ‘I feel unwell this afternoon, I am very tired because I have to wee all the time and I don’t feel like eating or listening to the radio today.’ ‘Can you just go away and let me sleep.’ Mrs JL appeared confused and drowsy.

1. List the clinical symptoms in the preceding episode that indicate a diabetes-related problem.
2. What assessments should the RN/EN undertake?
3. What action is required when the BG meter reads ‘HHH’?
4. What role does the RN/EN have in educating and supporting the ACW in their role?
Mrs JL is admitted to hospital and is given an intravenous insulin infusion to control the blood glucose and commenced on 6 units of Lantus before breakfast. The hospital DE teaches her how to inject insulin and how to manage hypoglycaemia and records that Mrs JL administers her insulin correctly in the medical record. After five days in hospital she is transferred to the rehabilitation unit. She spends a week in the unit before returning to her usual low level care unit. The ACW continues to check on her once a week. She still does not believe she has diabetes stating ‘it is just a part of being old’.

1. What role do ACWs have in administering Mrs. JL’s insulin?
2. What symptoms/behaviours should the ACW observe and report to the nurse?
3. What questions about her health would you ask Mrs JL?
4. What nursing assessments would you undertake?
5. How would you manage Mrs. JL’s apparent ‘denial’ of her diabetes diagnosis?
6. What safety issues arise concerning insulin use how you would plan Mrs JL’s care to prevent these issues.
7. Identify other people who could provide practical support to Mrs. JL.

When the ACW arrives for the weekly visit as arranged, Mrs. JL is confused, her speech is slurred and she is unsteady on her feet.

1. What is the most likely cause of Mrs. JL’s symptoms?
2. What should the ACW do?
3. Who should the ACW tell about Mrs. JL’s condition?
4. What are the nurse’s responsibilities once the ACW informs you about Mrs. JL’s symptoms?
5. Who else should be notified about the episode?
6. What ongoing assessments should be attended?

Three weeks later, after several similar episodes, Mrs JL falls and suffers bruising and grazes. She is frightened and is losing her confidence. After discussion with her doctor and her daughter she agrees to move to high level care.
1. What is the ACW’s role in Mrs JL’s care in the high care section of the RAC?
2. What additional information does the ACW require and how does RN/EN provide supervision and support for ACW in RAC?
3. What is the RE’s role in Mrs JL’s care in the high care section of the RAC?
4. Who should be involved in developing her care plan?
5. Should the care plan involve developing an advanced care directive or other relevant documentation of her wishes?
6. How could Mrs JL be encouraged to join in the RAC activities?
7. How might she react to the change in routines and meals, and what are some possible consequences?
Self-directed learning module Diabetes education and care of older people with diabetes

Module 3: Diabetes Educators

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Introduction

Diabetes is the commonest chronic health condition in older Australians. The prevalence of diabetes in people over 75 years is > 20% and is increasing (Meneilly & Tessier 2001; Sinclair 2009). Thus, screening and early detection have a role in reducing the impact of diabetes and its comorbidities on older people. Most, older people, 90%, have type 2 diabetes but type 1 also occurs in older people and people with type 1 become old. The risk of death due to cardiovascular disease is high in type 2 diabetes due to hyperglycaemia, hyperlipidaemia and hypertension. In addition, advanced care directives and end of life decisions need to be considered. Thus, diabetes management is complex.

Older people have different health care needs from younger people and are at greater risk of concomitant diseases, trauma, polypharmacy and medicine-related adverse events. However, older people are often excluded from research trials, thus, it is sometimes difficult to determine the most effective care strategies. Older people represent a significant proportion of presentations to health services. A range of guidelines for managing diabetes in older people is available but the guidelines may not address the changing needs of older people, especially nursing care needs.

The Australian Diabetes Educators Association (ADEA) developed Guidelines for Managing Diabetes in Older People (ADEA 2003). The ADEA guidelines are primarily concerned with screening for diabetes, metabolic targets (blood glucose and lipids), complication screening (blood pressure targets, renal function, eye examination and cognitive function) and nutrition in older people with diabetes. The ADEA Guidelines specifically refer to healthy older people, and do not address nursing care.
Key learning outcomes from completing this module

It is expected that diabetes educators will have a good basic understanding of diabetes, education principles and medical management and medicines used to manage diabetes. The module was designed to extend that knowledge and challenge diabetes educators to apply their existing knowledge to completing this module.

- After completing the module the diabetes educator (DE) should be able to:
- Describe the main characteristics of normal aging.
- Describe the impact of increasing age on body tissues and organs.
- Describe the effects of diabetes on the aging process.
- Understand that aging occurs at different rates among individuals and in the organs and tissues within individuals.
- Describe the DE’s role in primary prevention and early detection of diabetes in older people.
- Describe the factors that need to be considered when developing an education program and care plan for an older person with diabetes.
- Discuss an appropriate food plan for an older person with diabetes considering their metabolic control, nutritional status, presence of gastrointestinal and other complications and food preferences.
- Describe how the aging process affects medicine pharmacodynamics and pharmacokinetics and the implications for medicine choices including glucose lowering medicines, antihypertensive agents and lipid lowering agents, and the safety issues involved.
- Describe the indications for a comprehensive medicine review.
- Describe the impact of hyperglycaemia on physical and mental functioning and the associated risk of falls, cognitive changes, pain, hyperosmolar states and ketoacidosis.
• Describe the impact of hypoglycaemia on physical and mental functioning and the associated falls risk.

• Plan an education session for an older person scheduled to have a surgical procedure involving fasting.

• Plan an education session for an older person scheduled to have an investigation that involves using radioactive contrast media.

• Plan a diabetes education program for older people newly diagnosed with diabetes.

• Describe the general practice annual cycle of care for diabetes.

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Learning resources

Recommended texts


Readings and references

Please note: To access some of readings you will need to register with Medscape online at http://www.medscape.com/ Registration is free.


Australian Nursing Federation, Royal College of Nursing Australia and Geriaction (1997) *Nursing Guidelines for Medication Management in Nursing Homes and Hostels* Canberra.


Diabetes Australia (DA) and Royal Australian College of General Practitioners (RACGP) (2010/11) *Diabetes Management in General Practice: Guidelines for Type 2 Diabetes*. Canberra.


**Web links**

Australian Institute of Health and Welfare (AIHW)

World Health Organisation (WHO)

Diabetes Australia (DA)

International Diabetes Federation (IDF)
Normal aging

Ageing is a normal process involving a gradual decline in physical and mental functioning that results in a reduced ability to respond to stress. However, older people are a diverse group, and ageing is individual: people age at different rates, and their specific tissues and organs age at different rates. ‘Old’ generally refers to people over 65 years but that is an arbitrary age and does not reflect an individual’s physical or mental capability. A more useful classification is: active old age, old age and advanced old age, which considers quality of life, independence and state of mind (Hammond & Jilek 2003). That is, there is a difference between relatively healthy, active, independent older people living in the community and the frail elderly who have significant care needs and often live in residential aged care facilities.

Physical decline occurs when the body can no longer adapt to physical and mental changes. Health problems often increase with advancing age and fatigue, stress, anxiety and depression are common. In addition, financial constraints may be present. Despite these factors, older age represents a period of growth and fulfilment for many people, for example through travel, hobbies, volunteer work, and grandchildren.

The individual’s genetic makeup is an important contributing factor to the aging process and the development of diabetes, but external factors such as illness, pollution, excess sun exposure, reduced physical activity, obesity and smoking play a role. Significantly, glucose metabolism changes with increasing age. For example, changes occur in glucose-induced insulin release and glucose-mediated glucose disposal, which contribute to glucose intolerance (Ioizzo et al. 1999) that reflect the early stages of the decline in beta cell function.
In addition, insulin resistance is often present and contributes to glucose intolerance especially tissue resistance to insulin-mediated glucose disposal (Ferrannini et al. 1996). However, the effects of the changes in glucose homeostasis differ between lean and obese older people. When the individual is stressed, the degree of insulin resistance increases, and metabolic decompensation can occur. However, it is not clear whether age-related insulin resistance is part of the normal ageing process or whether it can be attributed to the lifestyle changes that often accompany increasing age: both factors are most likely involved.

Other possible diabetes risk factors include lower testosterone levels in older men and higher levels in older women, but the relationship and significance of these abnormalities in unclear. In addition, autoimmune factors may play a role in insulin deficiency in lean older people.

Thus, regular screening to identify people with glucose intolerance and diabetes is important. In addition, regular assessment to detect diabetes-related complications is an important aspect of screening programmes. Significantly, more than 20% of newly diagnosed older people already have complications (National Health and Medical Research Council 1992).

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**Diabetes and older people**

Diabetes is common in older people. It is the sixth most common cause of death among older people and is metabolically different from diabetes in younger people (Meneilly & Tessier 2001). Approximately 20% of older people have diabetes by age 75 and are also likely to have macrovascular and microvascular complications. The prevalence of diabetes is higher in Aboriginal Australians and some ethnic groups. Older people represent a significant proportion of presentations to general practitioners (GP). The Beach data collected between 2000 and 2002 recorded 49,647 encounters with older people: 51.7% involved people over 75 (Australian Institute of Health and Welfare (AIHW) 2004).
The factors that contribute to the increasing diabetes prevalence in older people include:

- weight gain
- reduced physical activity
- genetic predisposition
- diabetogenic medicines
- coexisting illness
- age-related reduction in insulin secretion
- age-related insulin resistance (Sinclair 2009).

Understanding the different diabetes states can help health professionals plan health care, appropriately allocate resources, identify individuals at risk of diabetes, and initiate appropriate screening programs, including in aged care environments, so early management can be instituted and coexisting morbidity reduced. In particular, people who should be monitored regularly in the community and residential and acute care facilities:

- Are older, especially if they have IFG or IGT and become unwell.
- Have a family history of diabetes.
- Come from high risk ethnic groups such as people from the Indian subcontinent, China and Aboriginal and Torres Strait Islander peoples.
- Had gestational diabetes when they were young.
- Have known complications of diabetes such as renal, and cardiovascular disease, hypertension, dyslipidaemia.
- Are overweight and inactive.
- Are commenced on diabetogenic drugs such as glucocorticoids, thiazide and diuretics, beta blockers and some antipsychotic medicines such as Olanzapine.
Learning activity


1. List three risk factors for diabetes in older people that are *not* on the preceding list.
2. What are two differences between the effects of aging on glucose homeostasis in lean older people and obese older people?
3. How could the differences between lean and obese older people affect the diabetes education and management plan?

Presentation and clinical characteristics of diabetes in older people

More than 50% of older people have disturbed glucose homeostasis but do not have the classic symptoms associated with hyperglycaemia. The renal threshold for diabetes increases with age; thus, glucose does not appear in the urine until the blood glucose is high. In addition, the ability to recognise thirst is impaired with normal aging and polydipsia is unlikely even if the individual is hyperglycaemic, dehydrated and biochemically hyperosmolar. Because the symptoms are often non-specific and are often attributed to ‘getting old,’ diabetes is often diagnosed when an older person presents for a routine health check or is hospitalised for an intercurrent illness, often a complication of diabetes.

Learning activity

Use the information to list:

| a) The signs and symptoms that would alert you to the need to assess an older person presenting for a routine health assessment, for diabetes. |
| b) Three unique syndromes that occur in older people with diabetes. |

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**Diabetes complications and older people**

The long-term complications of diabetes cause significant morbidity and mortality and affect self-care and coping ability and quality of life of older people. Several inter-related factors contribute to long-term complications including prolonged hyperglycaemia, dyslipidaemia, and hypertension. Chronic hyperglycaemia contributes to:

- Oxidative damage through a variety of mechanisms and can affect antioxidant defences and/or increase the formation of free radicals or reactive oxygen species (ROS). ROS generated as a result of hyperglycaemia might contribute to the development of diabetes complications such as nephropathy, retinopathy and neuropathy. Oxidative stress increases the expression of advanced glycated end products (AGE), which results in a positive feedback loop of continued oxidative stress and inflammation.

- Increased tissue glycolysation, which occurs when glucose enters the polyol pathway during hyperglycaemic states where it is converted to fructose, which increases the rate of tissue glycolysation. Consequently, AGE develop and accumulate over time and are irreversible. The higher the blood glucose, the more AGE are formed. AGE disrupt the normal functioning of the vascular wall and stimulate cytokine growth factors.

- Inflammatory disease, which promotes cytokines, chemokines and adhesion molecule production.
As indicated in a previous section, genetic susceptibility also plays a role and differs significantly from person-to-person and may determine the impact of hyperglycaemia on individual homeostasis. Three broad levels of susceptibility have been described:

- 5% of people with diabetes develop complications, even when hyperglycaemia is relatively brief and mild.
- 20% tolerate prolonged hyperglycaemia.
- 5% demonstrate a moderate degree of susceptibility. Intensive blood glucose and blood pressure control may prevent or delay the onset of complications in this group (Raskin & Rosenstock 1986).

Long term diabetes complications are:

- Macrovascular disease such as myocardial infarction (MI) and stroke that also occur in non-diabetics, but the presence of diabetes increases the risk.
- Microvascular disease such as nephropathy and retinopathy, which are specific to diabetes.
  - Neuropathy:
    - peripheral leading to foot pathology
    - autonomic causing a range of pathologies such as gastroparesis, hypoglycaemia unawareness, erectile dysfunction (ED), silent MI, and silent urinary tract infections (UTI) that may be due to atonic bladder.

Other associated comorbidities/complications include:

- Depression.
- Renal anaemia, which occurs earlier in people with diabetes than in non-diabetics and leads to fatigue and reduced quality of life.
- Dementia and cognitive changes.
- Comorbidities such as arthritis, endocrine disorders such as thyroid disease, and osteoporosis.
- Hearing impairment
Many studies suggest tight blood glucose control, maintaining HbA1c < 7%, prevents complications, especially cardiovascular complications, and reduces mortality in a linear fashion. However, recent research raises concerns about the safety issues involved in intensifying treatment to attain tight control in people with type 2 diabetes, and suggests all-cause mortality is highest at the highest and lowest HbA1c values (Currie et al. 2010).

Learning activity


a) List three outcomes of Currie et al’s study.
b) Summarise their conclusions.
c) Suggest what implications their recommendations have for the nursing management older people with diabetes.
d) Suggest one limitation of the study.
e) Are there any other studies that identified similar findings?

Reflection

Read the back page entitled Goals for Management in Diabetes Australia (DA) and Royal Australian College of General Practitioners (RACGP) (2010/11) Diabetes Management in General Practice: Guidelines for Type 2 Diabetes. Canberra.

Note these Guidelines were developed for the general population and not necessarily for frail older people. Think about the safety risks of the recommended fasting blood glucose 6.1–8mmol/L and HbA1c < 7% for a frail older person who lives alone and eats erratically.
List three reasons for a HbA1c < 7% besides 'good control?'
Diagnosing diabetes in older people

Several diabetes diagnostic criteria are used in different parts of the world but more evidence is needed to determine the optimal method of screening for diabetes in older people. Commonly used diagnostic criteria include the American Diabetes Association (ADA), World Health Organisation (WHO), and the Australian Diabetes Society (ADS) Guidelines. Blood glucose levels obtained using a blood glucose meter should be confirmed by testing a venous plasma blood sample.

Diagnostic criteria are:

- Symptoms of diabetes (polyuria, polydipsia, unexplained weight loss, and fatigue) plus casual plasma glucose > 11.1 mmol/L.
  
or
- Fasting plasma glucose > 7.0 (fasting refers to no food or drink for at least 8 hours other than water). Sometimes the fasting test is repeated once or twice.
  
or
- Fasting > 7.0 mmol/L and/or the two-hour plasma glucose > 11.1 mmol/L in an oral glucose tolerance test (OGTT) using a 75-gram glucose load.

There is some evidence that older people can have fasting blood glucose < 7.0 mmol/L but increase to diabetic levels at the 2-hour point on OGTT, and that these people have an increased risk of cardiovascular events (Barrett-Connor and Ferrara 1998). OGTT should be performed in a controlled situation to ensure the accuracy of the test. OGTT should not be performed when the blood glucose is high because the glucose load can precipitate an adverse event.

Recommended screening frequency rates are: fasting glucose every three years in older people with low risk of diabetes, and yearly for those at high risk. Given the fact that older people can have significant hyperglycaemia without symptoms, and can present with atypical symptoms and syndromes, undertaking regular risk assessments is as important as regular blood glucose tests.
Learning activity

Mr B, a tall thin man, lives next door to you. He knows you are a diabetes educator. He tells you his doctor told him he probably has diabetes and has to have an oral glucose tolerance test because the doctor did a finger prick and found 'a lot of sugar in the blood—more than 11.' Mr B is very worried that he might have diabetes and wants to know what the test involves.

1. What are your professional obligations to Mr B?
2. Are they the same as your social/neighbour role?
3. What would you tell him?
4. What do you think about the need for an oral glucose tolerance test?
5. Should he be investigated for type 1 diabetes? If so what test/s need to be performed?
6. Should you discuss the issues with Mr B’s GP?

Assessing older people with diabetes

Older people should be carefully assessed when they first present for care and have regular comprehensive assessments thereafter. Physical, psychological, spiritual and social issues likely to affect self-care, nursing management, care plans, and where relevant, discharge planning or transition to another care facility, need to be monitored. Significantly, advanced care planning and end of life care need to be considered and documented.

Establishing the individual’s health capability can help predict the amount of assistance they need and estimate the likelihood of adverse events such as hypoglycaemia, pressure ulcers, UTIs hypo and hyperglycaemia and falls. Part of a comprehensive assessment includes collecting information about the individual’s relationships to help identify their appropriate support people. The assessment should
also include assessing fitness to drive and whether the individual has developed an advanced care directives (ACD).

The individual’s blood glucose testing record is a useful source of information including the fact they do not test or test irregularly. Generally, older people fall into three categories:

- Those who are independent, self-caring, mobile and live in the community.
- Those who are largely self-caring and live in the community or low level aged care facilities who require some assistance to remain independent.
- Those who require significant care and live in RAC.

Assessment processes such as the physical activities of daily living (PADL), essential basic daily activities such as bathing and dressing; and Instrumental Activities of Daily Living (IADL), ability to live independently in society (Kock & Garratt 2001) are useful assessment tools.

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**Cognitive function**

Cognitive changes can be temporary and preventable or correctable due to acute metabolic disturbance such as hyper and hypoglycaemia, or permanent due to dementia. Cognitive changes caused by acute metabolic disturbances are progressive and usually reversible. However, people with diabetes have increased risk of cognitive decline and dementia.

Most researchers define cognitive decline by a change in neurocognitive test scores. However, the clinical relevance of some of these tests is unclear. The results of such tests need to be interpreted according a range of factors including the prevailing blood glucose level. In addition, it is important to use a test appropriate to the individual and undertake the test at an appropriate time and in appropriate place.

Potential mechanisms for cognitive decline include:
• cerebrovascular disease
• accumulation of advanced glycated end products (AGE)
• changes in cerebral insulin signalling (Bruce et al. 2006).

Risk factors for altered cognitive function include vascular disease, hyperglycaemia because of the accompanying dehydration, insulin therapy because of the associated hypoglycaemia, older age, and the duration of diabetes. There are also reports that microalbuminuria is associated with suboptimal performance on cognitive tests (Bruce et al. 2006).

Tests of cognitive function include:
• Folstein Mini-Mental State Examination (MMSE).
• Informant Questionnaire for Cognitive decline in the Elderly (IQCODE).
• Clinical Dementia Rating (CDR).
• Geriatric depression Scale (GDS 15 or 30).
• Rowland Universal Dementia Scale (RUDAS).
• Neurocognitive testing according to Diagnostic and Statistical Manual of Mental Disorders might be useful to exclude psychiatric pathology.

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**Learning activities**


1. Under what conditions should cognitive function, ADL and PADL assessments be undertaken if the aim is to determine the individual’s ability to continue to live independently at home and be safe?
2. What does ‘be safe’ mean in this context?

a) List significant factors that need to be assessed before developing a care plan for Mr T, a 70-year old man, who lives alone since his wife died, who was admitted to hospital in a hyperosmolar coma and was subsequently diagnosed with type 2 diabetes. He is confused but wants to stay in his home with his beloved dog.

b) Who else would you involve in the assessment and the care planning process?

c) What are three significant safety factors then need to be considered for this man?

d) What advocacy role might the diabetes educator have in negotiating this man’s care?

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**Treatment goals**

A prime consideration when planning care for older people is maintaining their dignity, quality of life and independence, keeping them free from unpleasant symptoms of hypo and hyperglycaemia, managing complications and comorbidities in a timely fashion and acknowledging the significant contribution the family carers make to the care of many older people. Effective diabetes management requires an interdisciplinary team approach: consistency and good communication with all relevant stakeholders are essential.

Management aims include:

- Preserving quality of life, independence and dignity.
- Detecting and managing IGT to enable early treatment.
- Maintaining an acceptable weight.
• Maintaining physical activity and other ADLs within the individual’s capabilities.
• Achieving an acceptable blood and lipid profile.
• Preventing complications of diabetes (short and long term).
• Limiting the effects of intercurrent illness.
• Maintaining psychological wellbeing.
• Managing risks such as falls and their associated consequences such as fractures.
• Realistically preparing for the future.
• Supporting relatives and carers.

Most clinicians agree that the blood glucose should be controlled to maintain safety and prevent hyperglycaemia and the associated symptoms and consequences. Likewise, hypoglycaemia presents considerable risks. At present there is no randomised control trial evidence in older people that defines safe, beneficial glycaemic targets in older people. Refer back to Diabetes Australia (DA) and Royal Australian College of General Practitioners (RACGP) (1010/11) Diabetes Management in General Practice: Guidelines for Type 2 Diabetes Canberra to remind yourself what the recommended targets are and reflect on their suitability for frail older people.

The glycaemic targets need to be individualised, as already indicated. Suggested glycaemic targets for specific groups of older people are:

- Healthy older people: fasting plasma glucose, 7 mmol/L; 2-hour plasma < 11 mmol/L and HbA1c, < 15% above the upper limit of normal.
- Frail older people: fasting plasma glucose, 10 mmol/L; 2-hour plasma glucose < 14 mmol/L, HbA1c < 40% above the upper limit of normal (Meneilly & Tessier 2001).

Managing metabolic abnormalities in older people usually consists of adopting a stepwise approach and using non-pharmacological measures first to reduce or avoid polypharmacy where possible, in keeping with quality use of medicines. A stepwise approach consists of:
1. Dietary management and exercise.
2. Oral agents such as Biguanides and Sulphonylureas.
3. Considering other medicines such as Thiazolidinediones and insulin mimetics.
4. Combining oral agents with insulin.
5. Insulin.

Learning activity

You receive a telephone call from a residential aged care facility about Mrs Z, who was recently admitted to the low-level care part of the facility. She has had type 2 diabetes for 10 years and believes her diabetes in ‘under control.’ She tests her blood glucose three times a week and takes her Metformin and Diamicron MR ‘most of the time.’ She visits her GP once a year.

a) What information would you collect before developing a care plan for Mrs Z?

b) What sources would you access to you collect the information?

c) Who would you include in the discussion about her care?

d) What safety factors need to be considered?

e) What blood glucose targets would be appropriate for her?

Nutrition

It is important to take a broad approach to nutritional management in older people with diabetes rather than simply focusing on reducing fat and sugar (National Health and Medical Research Council 1999). The nutrition plan for an older person must be revised on a regular basis because requirements change due to ageing, concomitant disease, financial constraints, poor oral health, limited mobility and vision, inadequate knowledge, and social factors such as living alone, ability to shop and prepare meals,
living in residential aged care facilities and having home delivered meals where personal choice is limited.

Significantly, weight loss between age 60 and 70 years predicts mortality in the following 10 years. Thus,

- Many older people are malnourished even though they appear overweight. Malnutrition occurs in 15% of homebound community dwelling older people, 35%–65% of hospitalised older people, and 50% of older people living in RACs (Szonyi 2004).

- Data about the nutritional needs of frail older people is limited.

- Enteral or parenteral feeding may be required (nasogastric or PEG feeds). If so, the medicine formulation may need to be changed because many medicines cannot be crushed and administered via enteral or parenteral routes. Likewise, using oral dispensers for orally administered medicines is important to reduce the risk of medicine-related errors.

- Older people often have trace element deficiencies and supplementing with zinc and magnesium, which are needed for optimal insulin action, and vitamins C, E and D might improve glycaemic control and bone health.

Body Mass Index (BMI) is commonly used to determine weight status and is useful to determine underweight in older people but is less useful to determine overweight because body shape changes and height loss occurs. Waist circumference is a more accurate measure of obesity in older people.

A range of screening tools is available to determine the nutritional status of older people. For example:

- Simple Nutrition Assessment Tool (SNACK).
- Mini Nutritional Assessment Tool (MNA).
- Nutrition Risk Index (NRI).
Learning activity

Read Chapter 15 in Sinclair A. (2009) *Diabetes in Old Age* Wiley-Blackwell, Chichester and complete the following activity:

1. What nutritional assessment tool would be appropriate to determine Mrs Z’s nutritional status and dietary needs?
2. Would the Mnemonic ‘Meals on Wheels’ discussed on page 216 help you decide her nutritional status?
3. Would you undertake the assessment yourself or would you refer her to a dietitian?
4. If you referred her to a dietitian, what information would you include in a referral letter?
5. When would you refer to a speech therapist?

Physical activity

Regular physical activity has physical and mental benefits for people with diabetes of all ages. It reduces cardiovascular risks and helps control blood glucose levels, reduces falls, and improves well being (Vaitkevicius et al 2002, Stressman et al. 2002. Aerobic exercise for at least 30 minutes per day and strength exercises help maintain muscle mass and energy, and adequate nutrition, especially protein, is important. However, many older people find it difficult to undertake physical activity because of declining muscle mass, general mobility, strength and energy. In addition, there are a number of relative and absolute contraindications to exercise. A physical activity program that includes aerobic endurance exercises and strength training improves cardiovascular health (American Heart Association 2003), strength and mobility and mental health. Beneficial activities include:

- Tai chi, which reduces blood pressure, blood glucose and lipids and improves balance and wellbeing (Tsai et al. 2003).
• Walking 30 minutes/day or for 10 minutes three times/day.
• Resistance training improves strength and reduces bone loss. It may improve the individual's capacity to undertake routine activities such as carrying groceries and gardening and help them maintain their independence (Meuleman et al. 2000).
• Swimming and gentle water exercises. Socks or wet suit bootees help protect at-risk neuropathic feet from trauma.
• Dancing.
• Chair exercises.

A great deal of activity can be incorporated into usual activities such as playing with grandchildren, housework and gardening. These activities are referred to as incidental activity. Pedometers are readily available and can help older people measure their activity level and set personal goals.

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**Learning activity**


1. Is the information in Vaitkevicius et al.’s study applicable in the Australian context?
2. How the information would influence your recommendations about a physical activity plan for Mr T.
Pharmacotherapeutic management

Only about 15% of people with type 2 diabetes maintain an acceptable blood glucose range using dietary measures alone (UKPDS 1988). In addition, people treated with diet only have more complications (Hippisley-Cox & Pringle 2004). Thus, oral agents and eventually insulin are required in most people. Managing medicines is an important aspect of the DE role. It is complex in older people because of the number of medicines required to manage primary diseases and comorbidities including changes in cognitive function.

In addition, decline in renal function and hepatic mass means medicine detoxification and excretion processes are slower, which increases the likelihood of medicine interactions and adverse events. Likewise, organ recovery from medicine adverse effects is altered. Reduced thirst and disturbed water homeostasis compounds the risk of medicine-related adverse events.

Significantly, 10–20% of acute admissions of older people, and 18% of deaths result from prescribed medicines (Ebbeson et al. 2001) and are often due to medicine interactions. The Quality Use of Medicines (QUM) is a framework for promoting optimal outcomes from medicine use and reducing medicine-related adverse events (PHARM 2005).
Learning activity

Read, Quality Use of Medicines (QUM) and Diabetes (2005) Pharmaceutical Health and Rational Use of Medicines (PHARM) Committee, Commonwealth Department of Health and Aging and answer the following questions:

1. How would you apply the QUM principles when you assessed Mrs Z’s medicine regimen?
2. What test results would you need to assess whether Metformin was appropriate for Mrs Z?
3. What questions would you ask her about Diamicron MR?

Normal ageing causes a number of age-related changes in liver and renal function, nutritional status, and body composition, which affect medicine pharmacokinetics and pharmacodynamics and influence the choice of medicine. QUM suggests using the lowest number of medicines at the lowest effective dose administered in simple regimens reduces medicine-related morbidity and mortality and makes it easier for people to independently self-manage their medicine regimens.

Regular medication reviews are recommended and are particularly beneficial if physical and cognitive assessments are also undertaken. Dose adjustments are required for a wide range of medicines when renal impairment is present because of the reduced clearance rate (Howes 2001). Renal impairment alone may not represent a contraindication to a medicine, or mean dose adjustments are necessary unless more than 50% of the drug is excreted via the kidneys or has active metabolites, and renal function is reduced to < 50%, with the exception of drugs with a low therapeutic index such as digoxin (Howes 2001). In addition, changes in body composition can alter the volume distribution of the medicine and steady state plasma levels may be higher than required.
Medicines that may require dose adjustments in older people with mild renal impairment include oral hypoglycaemic agents, ACE inhibitors, calcium channel blockers, antiarrhythmics, beta blockers, ionotropes, NSAIDs and sedatives.

Medicines such as biguanides and potassium-sparing diuretics are usually relatively or absolutely contraindicated in people with established renal disease. Signs of excess doses are specific to the particular medicine, but common features include delirium, hypotension, respiratory depression, bradycardia and hypoglycaemia. All of these contribute to falls risk, and behavioural changes that affect safety and self-care capacity.

Some medicines induce glucose tolerance and lead to hyperglycaemia e.g. thiazide diuretics, beta blockers, atypical antipsychotics, and glucocorticoids and increase the risk of hyperosmolar states and ketoacidosis. Many factors need to be considered when deciding a medicine regimen for an older person including renal function, allergies, potential interactions with food and other medicines including complementary medicines. Older people have increased risk of vascular complications; therefore, comorbidities also need to be managed. Research suggests managing systolic hypertension and lipid lowering medicines reduces cardiovascular risk independent of glycaemic control.

Learning activity

**Diabetic ketoacidosis (DKA)**

DKA is rare in older people and mostly occurs in type 1 diabetes. If it does occur, the individual is less likely to have had previous episodes of DKA and usually requires larger doses of insulin and longer time in hospital than younger people. In addition, the mortality rate is higher. Treatment is with fluid replacement and insulin, usually in an IV infusion with glucose and potassium. The fluid replacement rate needs to be monitored very carefully to prevent cerebral oedema, a particular risk in older people.

Where possible the underlying cause needs to be ascertained and treated. Frequent episodes of hyperglycaemia may be an indication that the individual is no longer coping or has an underlying pathology.

**Hyperosmolar non-ketotic coma (HONK)**

HONK mainly occurs in older people with a concomitant illness, often an infection, and reduced fluid intake. It is characterised by hyperglycaemia, hyperosmolarity that cause osmotic diuresis that leads to intracellular dehydration (Sergo & Nelson, 2010). Older people living in residential age care facilities are at the highest risk of HONK. Changes in cognitive function occur but coma is rare despite the name. The mortality rate is high 1–20%.

Infection is the most significant precipitating event. Other causes include myocardial infarction, thiazide diuretics and corticosteroid medicines, undiagnosed diabetes can present with DKA or HONK. Treatment is similar to DKA.

However, diabetes is often diagnosed when the individual present with HONK.

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**Learning activity**

Then answer the following questions:

1. What proportion of people presenting in HONK do NOT have a previous diagnosis of diabetes?
2. What are the signs and symptoms of HONK in an older person?
3. What laboratory investigations are undertaken?
4. Based on the information in Sergo and Nelson’s paper, design a care plan for a 75 year old lady who presents to the emergency department and is diagnosed with HONK. Consider:
   a. Initial management.
   b. Care in the ICU or ward.
   c. Longer term care.
   d. What implications are there for diabetes education and diabetes self-care?

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**Investigations and surgical procedures**

Older people require investigations and surgical procedures that may require fasting and sedation or anaesthesia. Surgery can lead to metabolic destabilisation for a number of reasons including, medicines, pain, and starvation. Many people are admitted on the day of surgery, thus careful education and preadmission assessment are important to identify people most at risk of adverse events.

Several guidelines for managing blood glucose during surgical procedures are available including intravenous insulin infusions, which are preferred for other than minor procedures.

In addition, the individual may require investigative procedures before surgery. These procedures could include angiography, scans and blood tests and might involve using radio-contrast media and fasting.
Learning Activity

Read Surgery in Elderly People Anesthetic Considerations and Operative Issues, Perioperative Pain Management, Delirium And Postoperative Cognitive Dysfunction, Other Complications http://medicine.jrank.org/pages/1726/Surgery-in-Elderly-People.html (accessed August 2010) and answer the following questions:

What factors need to be considered when educating an older person about preparing for a surgical procedure?

1. What history and physical and mental assessment would you undertake?
2. Briefly outline the key preparation, management and monitoring information that should be included on an insulin infusion protocol.
3. Undertake a literature review to determine the key information you would provide an older person with significant renal impairment scheduled for an investigative procedure that required an intravenous injection of radio-contrast media.

Older people and the risk of falls

Falls have multifactorial causes including gait and balance changes, confusion, joint problems such as arthritis, cardiovascular disease, weakness and lethargy, postural hypotension, visual impairment, medicines and environmental hazards. Significantly, older age is an independent predictor of falls. Serious complications such as injury, death and loss of confidence and loss of independence are common consequences of falls in older people. Generally the cause of falling is multifactorial and complex due to impairments in multiple systems as well as external or environmental factors.

The individual’s falls risk needs to be assessed regularly. Common diabetes-related causes of falls include:
• Hypoglycaemia.
• Hyperglycaemia.
• Fluid disturbances such as dehydration, fluid overload, oedema.
• Postural hypotension.
• Autonomic and peripheral neuropathy.
• Foot disorders.
• Mobility, balance and gait disorders.
• Cognitive impairment, delirium and depression.
• Comorbidities such as arthritis, anaemia, incontinence.
• Medications especially centrally acting and psychoactive medicines and polypharmacy.

Environmental factors include stairs, mats, slippery surfaces such as baths and showers. A home assessment can reduce environmental hazards and help the older person remain at home.

Learning Activity


Consider the diabetes-related factors that contribute to falls risk.

1. Then design a falls prevention program for Mrs KE, an 80-year old lady with diabetes on 10 units of Lantus at night, who was admitted to hospital with a urinary tract infection.

2. Investigate the Australian Vitalcall program and answer the following questions:

a) How many older Australians are admitted to hospitals due to falls each year?

b) How many older Australian who fall at home wait hours before help arrives?

c) Outline the Vitalcall program and whether you would recommend it to Mrs KE and her relatives.
Diabetes education

Learning styles and ability to absorb and retain information changes as people age. Thus, education strategies need to be adapted to suit the individual’s physical and mental capabilities. In many cases, family and other carers may need to be included in education sessions. Likewise, optimal health outcomes rely on people with diabetes undertaking a considerable amount of self-care.

Self-care is a complex process at any time of a person’s life but is particularly difficult for older people as their social, physical and mental circumstances change. In addition health literacy needs to be considered as well as vision, hearing, and manual dexterity.

Learning activity


1. Consider the barriers to self-care the authors identified then indicate how you would undertake a self-management assessment to determine Mr BR’s care needs.
2. How would you assess Mr BR’s health literacy level?
3. What impact would a low health literacy score have on how you teach Mr BR to test his blood glucose?
Mr BR is 75 and lives with his wife who is 70 and has severe respiratory disease. They have two children who both live interstate. Mr BR is currently on BD Metformin and Diamicron MR, but his most recent HbA1c is 8.9% and has been slowly increasing. He often forgets to take his medicines and he recently fell while walking his dog.

Care of older people living in residential aged care facilities

The prevalence of diabetes in residential aged care facilities (RAC) ranges from 11.5%-35.5%, but many residents are at risk of diabetes. However, diabetes care is often sub optimal in RAC (Nicholls 2005). Likewise, RAC staff have diabetes knowledge deficits (Aspray et al. 2006) especially non-nursing staff. A number of guidelines for managing diabetes in RAC exist and need to be considered when developing care plans.

Older people living in residential aged care facilities are vulnerable and largely depend on other people for their care. Care often focuses on safety and quality of life. Thus, the appropriate blood glucose level to achieve these goals may differ for each individual. Significantly, the care plan should be developed by an interdisciplinary health care team, in collaboration with the resident, or according to their predetermined wishes (Advanced Care Directive). The safety of the environment also needs to be considered. Medicines management can represent a significant threat to safety, especially if the resident requires insulin.

Learning activity

Consider the recommendations Stomski makes. Then answer the following questions:
1. What information needs to be included in education programs preparing aged care staff to administer insulin to an older person with type 2 diabetes and mild cognitive impairment?

2. What should the ‘formal assessment’ recommended in the third bullet point encompass and who should undertake it?

3. How will a medication chart reduce medicine-related errors?

4. The recommendations do not include the need for regular comprehensive medicine reviews. List three triggers that indicate a medicine review was required.

Then

1. Outline the main points to consider when developing a nursing care and education plan for Mr T, an 80 year old man admitted to the ER from a residential aged care facility, with signs and symptoms suggestive of a myocardial infarction. Mr T has asthma, which is treated with low dose steroids. He was commenced on nasogastric feeds a week ago because he was ‘going off mentally’ and refused to eat.

2. What investigations are likely to be undertaken?

Learning activity

Undertake a literature search to determine the most recent Government diabetes education funding initiatives for residential aged care.

Reflect on the information and consider how you could contribute to the safety and quality of care of older people with diabetes living in low care residential facility.
Putting it all together

The following activity was designed around a fictitious lady Mrs JL. It was developed to encompass most to the content of the module and related readings. It requires the DE to think about their role, the roles of other health professionals and ACWs involved in caring for Mrs JL, and how the DE can support nurses and ACWs to provide best practice care within their scope of practice, and advocate for Mrs JL.

Mrs JL’s story

Mrs JL, aged 94, lives in a RAC facility in the ‘low care’ section. She has one daughter who lives interstate. Mrs JL is very independent and able to perform the usual activities of daily living independently, but an ACW visits her each week. She is thin and likes to be well dressed. She asked the ACW to check her ankle, which has been ‘uncomfortable’ since she ‘had a bit of a fall’ yesterday, when the ACW made her weekly visit this morning.

Mrs JL’s vision is poor, so she is finding it difficult to tell why her ankle is so sore. She states the discomfort kept her awake last night. When the ACW removed her stockings he/she noticed a brown discharge leaking from a sore just below her external malleolus.

1. What do the words Mrs JL uses tell you about her personality?
2. How would you check your assumptions about Mrs JL?
3. What assessments would you perform?
4. What actions would take?

Mrs JL was assessed in the Emergency Department (ER) of the hospital. She had an X-ray but no fractures were detected although she had bruises and grazes from the fall. Part of the assessment involved collecting wound swabs from her ankle and blood tests. The blood tests showed her random BG was 11.9 mmol/L and her vitamin D level was low.
1. Does Mrs JL have diabetes?

2. What other assessment is required to make a definitive diagnosis?

3. Does she have type 1 or type 2 diabetes? Give reasons for your answer.

4. How could the DE be involved in developing a care plan for Mrs JL?

5. What key factors should the DE advise nurses in the RAC to consider when developing a care plan for Mrs JL; noting she does not have a diagnosis of diabetes.

6. Is it safe for Mrs JL to return to her low care facility home or should she be admitted to the high care section of the RAC?

7. Indicate how the health professionals could involve Mrs JL in decisions about her care.

8. What role does the ACW have in Mrs JL’s care?

9. How could the DE support the ACW to competently perform his or her role?

Based on her BG level, the hospital doctor starts her on vitamin D tablets and a low GI and low fat diet for the diabetes. He also suggests she stops eating all sweet foods and drinks milk and eats dairy products to improve her calcium intake to protect her bones and refers her to the DE ‘for a bit of a chat.’ Mrs JL dislikes all types of bread and wheat products. She has ‘never drunk milk in my life’ and diary products ‘upset my stomach.’ She does not believe she has diabetes and cannot understand why the doctor told her to stop eating lollies. She only eats two lollies in the afternoon while she listens to her favourite radio program on the ABC.

4. How could the DE respond to Mrs JL’s comments about changing her diet, as the doctor suggested?

5. How important is it that she stops eating lollies in the afternoon?

6. What other members of the interdisciplinary team could be involved in Mrs JL’s care?

7. Is she at increased risk of fractures if she falls?

8. If so, what falls prevention strategies could the DE help implement?

9. What is the role of vitamin D and calcium in bone health and fracture prevention?
Several weeks later Mrs JL told the ACW ‘I feel unwell this afternoon, I am very tired because I have to wee all the time and I don’t feel like eating or listening to the radio today.’ ‘Can you just go away and let me sleep.’ Mrs JL appeared confused and drowsy.

7. What assessments should an ACW undertake?
8. What potential diagnosis does a BG meter reading ‘HHH’ suggest?
9. What is the likely underlying cause?
10. What assessments should the DE undertake besides testing her BG?
11. What action should the DE take?
12. Do you think the lollies contributed to the problem?

Mrs JL is admitted to hospital and is given an intravenous insulin/glucose/potassium infusion to control the blood glucose and normalise the glucose homeostasis. After the IV was ceased she was commenced on 6 units of Lantus before breakfast. The hospital DE taught her how to inject insulin and how to manage hypoglycaemia and records that Mrs JL ‘administers her insulin correctly’ in the medical record.

After five days in hospital Mrs JL is transferred to the rehabilitation unit. She spends a week in the unit before returning to her low level care home. The ACW continues to check on her once a week. Mrs JL still does not believe she has diabetes stating ‘it is just a part of being old.’

4. What education do the visiting ACWs need now Mrs JL’s treatment has changed?
5. What sort of questions could the ACW ask Mrs JL when he or she visits each week?
6. What behaviours should he or she watch out for?
7. Would you accept the hospital DE’s assessment that Mrs JL correctly administers her insulin, or would you reassess her technique in her home environment?
8. What is the DE’s role in Mrs JL’s care?
9. Which other members of the interdisciplinary team should be involved, and why?
When the ACW arrives for the next weekly visit as arranged, Mrs JL is confused, her speech is slurred and she is unsteady on her feet.

4. What is the most likely cause of Mrs JL's symptoms?
5. What other conditions could cause these symptoms?
6. What should the ACW do?
7. Who should he or she tell about Mrs JL's condition?
8. What is the DE's role in a) managing the episode and b) ongoing care?
9. Who else should be informed about the episode?
10. Does Mrs JL's treatment need to change?
11. Should her cognitive function be assessed?
12. If so, when should it be assessed?

Three weeks later, after several similar episodes, Mrs JL falls and suffers bruising and grazes. She is frightened and is losing her confidence. After discussion with her doctor and her daughter she agrees to move to high level care.

4. What is the ACW's role in Mrs JL's care in the high care section of the RAC?
5. What is the DE's role in Mrs JL's care in the high care section of the RAC?
6. Could she have remained at home using Vitalcall and daily home care nurse visits?
7. Who should be involved in developing her care plan?
8. Should the care plan involve developing an advanced care directive or other relevant documentation of her care wishes?
9. How could she be encouraged to join in the RAC activities?
10. How might she react to the change in routines and meals, and what are some possible consequences?