



Surrey Heartlands

HEALTH AND CARE PARTNERSHIP



Managing Diabetes

in Care Homes

Foreword

Managing Diabetes in Care Homes has been designed to be used as a resource and to provide guidance for adult Care Homes in Surrey Heartlands. Access to the same high standard of care should be delivered to all living with diabetes wherever they reside. Good quality care helps prevent the complications of diabetes, disability and reduces hospitals admissions. The document has been developed by the Surrey Heartlands Care Home Task and Finish Group:

Sam Cudby – Care Home Pharmacist, NW Surrey CCG

Perminder Oberai – Lead Medicines Optimisation Pharmacist, NW Surrey CCG

Julie Fleming – Diabetes Specialist, Dietitian Ashford and St Peter's Hospitals

Louise Gebhard – Lead Diabetes Specialist Nurse, NW Surrey CCG

Janet Ridout – Diabetes Specialist Nurse, Kingston Hospital Foundation Trust

Jo Butler – Diabetes Clinical Education Lead, Surrey Heartlands

The document has been reviewed by diabetes healthcare professionals, care home staff, clinical pharmacists and colleagues within NW Surrey CCG, Surrey Downs CCG and Guildford and Waverley CCG. The document has been ratified by NW Surrey, Surrey Downs and Guildford & Waverley CCGs.

Contents

Introduction	5
Aims for Care of Residents with Diabetes in Care Homes	5
What is Diabetes Mellitus?	6
Signs and Symptoms of Diabetes Mellitus	6
Common Signs of Diabetes	7
Types of Diabetes	7
Screening for Diabetes	8
Diagnosis of Diabetes	8
Diabetes Care Plan	8
Monitoring of Residents with Diabetes	9
Quiz	9
Diabetes and Diet	10
Regular Meals	11
Starchy Carbohydrate Foods	11
Fruit and Vegetables	11
Sugar	11
Diabetic Products	12
Special Occasions	12
Family Bringing in Food	12
Achieving and Maintaining a Healthy Weight	12
Alcohol	13
Oral Health	13
Dehydration	13
Quiz	13
Medicines to Manage Diabetes	14
Self-Medication	14
Management of Medicines	15
Brand and Generic Medicines	15
Oral Medicines	16
Injectable Therapies	17
GLP-1 Therapy	18
Insulin and GLP-1 Storage	18
Insulin Therapy	18
Quiz	18
Injection Technique for safe Insulin Administration	19
Where to inject insulin	19
Insulin injection sites	20
How to inject	20
Quiz	21
Blood Glucose Monitoring	22
Lancing Devices	23
Blood Glucose Monitoring Meters	23
Completing Blood Glucose Testing	24
Acute complications	24
Hypoglycaemia	24

Causes of Hypoglycaemia	25
Treatment of Hypoglycaemia	25
Prevention of Hypoglycaemia	27
'Hypo boxes'	27
Quiz	28
Hyperglycaemia	29
Treatment of Hyperglycaemia	29
Risk Factors for Hyperglycaemia	29
Sick Day Rules	30
Diabetic Ketoacidosis and Hyperglycaemic Hyperosmolar State	30
Quiz	31
Complications Associated with Diabetes	32
Diabetes and Eye Health	33
Diabetes and Foot Health	33
Diabetes and Kidney Health	33
Diabetes and Stroke	34
Diabetes and Heart	34
Diabetes and Pain	34
Diabetes and Hearing Loss	35
Diabetes and Oral Health	35
Diabetes and Gastro-Intestinal Symptoms	35
Diabetes and Infections	35
Quiz	35
Diabetes and Mental Health	36
Diabetes and Dementia	37
Why is Early Diagnosis of Either Condition Important?	37
Nutritional Barriers	38
Treatment	38
Diabetes and Dysphagia	39
Diabetes and Enteral Feeding Tubes	40
End of Life Care	42
Quiz	42
Contacts	43
Appendices	
Appendix 1: The Mental Capacity Act (MCA) and Care Planning	44
Appendix 2: Diabetes Assessment form	45
Appendix 3: Self-Medicating Risk Assessment Form	47
Appendix 4: Eight rights of Medicine Administration	48
Appendix 5: Food and Testing Diary (adapted from Portsmouth Diabetes Care)	49
Appendix 6: Table of Testing Times for Residents who need to Test at Different Times of the Day	50
Appendix 7: Treatment of Hypoglycaemia	51
Appendix 8: Action Plan for Blood Glucose Results	52
Appendix 9: Contact Details for Improving Access to Psychological Services (IAPT)	53
Glossary of Terms	54
References	55
Acknowledgements	56
Authors	56
Quiz answers	57

Introduction

The number of elderly people in the population is increasing. People are living longer and medical treatment is being transformed. Combined with a national and global rise in the number of people with diabetes it is not surprising that the number of people with diabetes in care homes may account for more than a quarter of residents over the age of 65 years with another 50% having pre-diabetes¹.

Diabetes presents an increasing health and economic challenge. Residents with diabetes are at greater risk of:

- Diabetes complications (e.g. harm to eyes, kidneys and feet, heart attack, stroke)
- Infections
- Hospitalisation
- Reduced quality of life
- Falls
- Physical and cognitive disability.

Aims for Care of Residents with Diabetes in Care Homes

Care homes should have a nominated member of staff responsible for the management of diabetes within the home. Part of their accountability should be to ensure all staff are given access to the appropriate diabetes education.

It is important that care home staff receive training so that they can manage residents with diabetes and ensure they receive the level of care to meet their individual needs.

This care should provide:

- Screening for diabetes on admission
- Sufficient support and opportunity to enable residents to manage their own diabetes where this is possible
- The highest degree of quality of life and wellbeing without subjecting residents to needless and disproportionate therapeutic and medical interventions.
- An agreed individualised care plan
- A well-balanced, individualised dietary plan based on the resident's MUST score (see glossary) to ensure nutritional wellbeing and prevent weight loss or weight gain.
- An ideal level of metabolic (i.e. chemical processes occurring in the body) control which:
 - » avoids the illness and lethargy of hyperglycaemia (high levels of glucose in the blood)
 - » reduces the risk of hypoglycaemia (low levels of glucose in the blood)

- A fully stocked hypo box (See page 27).
- The greatest level of physical and cognitive function to be achieved and sustained
- An annual review in line with the National Institute for Health and Care Excellence (NICE) Guideline 28²
- Daily foot checks and the understanding of the importance of foot care management
- Access to professionals such as a diabetes specialist nurse, GP, Pharmacist, Community Dietitian, District Nurse, Podiatrist.

Screening and treatment must be available on an individual basis depending on individual needs and, at all times, consider the capacity of the resident to make decisions on their own health care according to the Mental Capacity Act³ **(see Appendix 1)**.

What is Diabetes Mellitus?

Diabetes is a condition in which there is too much glucose (sugar) in the blood. Carbohydrates we eat and drink are broken down by the body to make glucose which goes into our blood stream. We also need insulin, a hormone which is produced by the pancreas to help move glucose from the blood into muscles and cells where it can be used as energy. In Type 1 diabetes the pancreas cannot make any insulin. In Type 2 diabetes the pancreas produces some insulin but either it is not enough or it cannot be used properly (insulin resistance). Type 2 diabetes accounts for 90 % of diabetes.

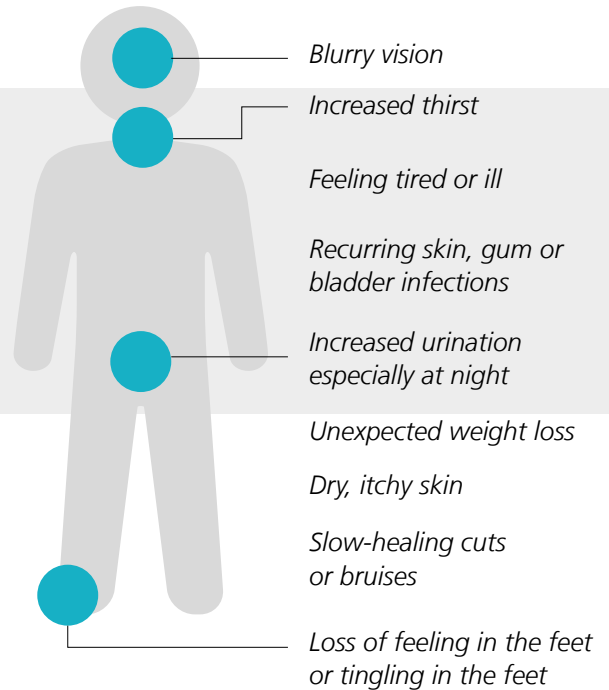
Signs and Symptoms of Diabetes Mellitus

Some residents with diabetes will not have any noticeable symptoms. The condition will only be identified by a blood test.

Diabetes may be indicated by:

- Frequency of urination (polyuria)
- Urinary incontinence
- The need to wake up at night to pass urine (nocturia)
- Excessive thirst (polydipsia)
- Blurred vision
- Excessive tiredness and lethargy
- Weight loss
- Frequent infections
- Falls
- Behavioural change and cognitive impairment

Common Signs of Diabetes



Types of Diabetes

There are two main types of diabetes and each is managed in a different way.

	Type 1	Type 2
What is it?	The body does not produce any insulin at all . It has rapid onset and is usually but not always diagnosed when patients are young. Some residents will already have type 1 diabetes on admission.	The body cannot use insulin effectively (insulin resistance) and / or the body does not produce enough insulin. Patients are usually but not always diagnosed after the age of 40 years.
Warning signs	Symptoms are usually of sudden onset . There is increased urination, thirst and hunger, extreme tiredness, blurred vision and weight loss.	There is increased thirst and urination, tiredness, recurrent urine infections, slow wound healing, pain and numbness in hands or feet. Symptoms can be mild and may go unnoticed.
Causes	Genetic or environmental, autoimmune factors and cannot be prevented .	Lifestyle, obesity, genetics, smoking, ageing. It can often be prevented with good lifestyle, diet and regular exercise.
Treatment	Insulin only	Diet and lifestyle, oral medicines, injectable medicines and / or insulin therapy.

Patients who have type 2 diabetes who need insulin to control their blood glucose do not have type 1 diabetes.

Screening for Diabetes

The early identification of residents with diabetes and other co-morbidities (additional diseases) and then achieving good control of blood glucose, blood pressure and cholesterol can prevent or delay the onset and progression of diabetes complications.

On admission to a care home, all new residents without a diagnosis of diabetes should be screened for diabetes^{4,5}. Thereafter, residents who indicate a risk of developing diabetes should be screened annually and residents who are not diagnosed with diabetes should be screened every 2 years.

Diagnosis of Diabetes

The diagnosis of diabetes is based on the World health Organisation (WHO) criteria⁶:

- HbA1c blood test; a value ≥ 48 mmol/mol indicates diabetes, a value of 42 to 47 mmol/mol inclusive indicates a high risk for developing type 2 diabetes

or:

- If the resident has classic diabetes symptoms, a random venous plasma glucose concentration; a value ≥ 11.1 mmol/l indicates diabetes.
- fasting plasma glucose concentration; a value ≥ 7.0 mmol/l indicates diabetes
- two-hour plasma glucose concentration; a value ≥ 11.1 mmol/l two hours after 75g oral glucose tolerance test (OGTT) indicates diabetes. There are practical difficulties associated with an oral glucose tolerance test therefore an HbA1c is the most appropriate method of diagnosing diabetes taking into account the variables that can affect the result¹.

If the resident has no symptoms, a diagnosis of diabetes should not be based on a single abnormal glucose or HbA1c result. At least one additional abnormal plasma glucose either fasting or random or an additional HbA1c in the diabetic range is required. An oral glucose tolerance test although diagnostic may not be appropriate in an elderly resident.

Screening and treatment must be available on an individual basis depending on individual needs and, at all times, consider the capacity of the resident to make decisions on their own health care.

Diabetes Care Plan

An individualised care plan should be developed for every resident in conjunction with them (and their family members or carers if the resident wishes), the care home staff and the GP. It is important for care home staff to consider the wishes of the resident as well as their health status and include:

- medicine regimen, including medicine administration in relation to meal times
- medicine reviews
- clinical targets, including individualised glycaemic control, blood pressure and cholesterol
- blood glucose monitoring, clearly documenting why it is required, when testing should occur and what should happen with the results
- documentation of risk assessments and strategies to reduce risk, such as:

- » falls management
- » hypoglycaemia / hyperglycaemia management
- » pain management
- » sick day rules
- nutrition, considering food preferences, eating routines and religious beliefs
- level of physical activity / exercise
- diabetes education, focusing on goal setting, safety, risk management and complication prevention.

Monitoring of Residents with Diabetes

All residents with a diagnosis of diabetes should be assessed on admission to the care home, every 2 years and when required, based on individual need and if circumstances change. This will form the care management plan.

This assessment should include:

- a full history of their diabetes including information on:
 - » their knowledge of and ability to manage their diabetes care
 - » thirst
 - » polyuria
 - » frequency of urination
 - » nocturia
 - » lethargy (a lack of energy and enthusiasm)
 - » recurrent urine infections
 - » weight loss
 - » weight gain
 - » any blood glucose monitoring, current equipment and devices, if appropriate
 - » any recent hypoglycaemic events, symptoms and any treatment
 - » any complications
- a full medical history including any allergies
- current weight, BMI and MUST score
- appetite, food and fluid intake
- their history of smoking and alcohol intake
- mobility and their ability to be active or exercise
- mood
- details of referrals to:
 - » dietitian
 - » podiatrist
 - » retinal screening
- date of the review and name(s) of person(s) completing the form.

(See Appendix 2 for Diabetes Assessment form).

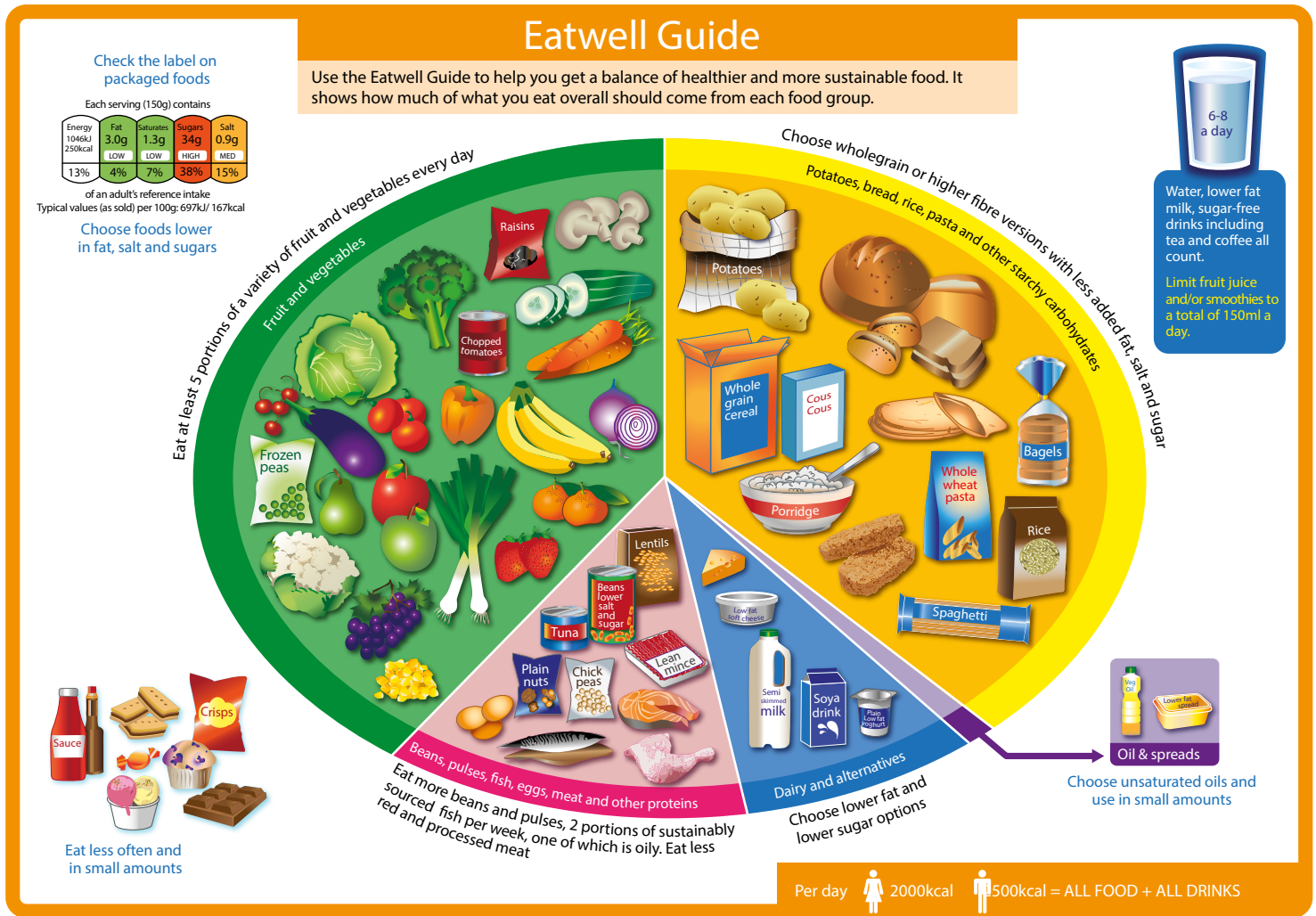
Quiz

1. If a person has diabetes are they at a higher or lower risk of a stroke or heart attack?
2. List some common symptoms of diabetes
3. What are the risk factors for developing type 2 diabetes?
4. Why is it important to prevent or delay the onset of type 2 diabetes in residents at risk?

Diabetes and Diet

The diet for a resident with diabetes is a normal, balanced, healthy diet; there is no need for a special diabetic diet.

A healthy diet does not necessarily mean restrictions, but choosing foods that will meet nutritional needs and control blood glucose levels. The 'Eatwell Plate' is a picture model designed by the Food Standards Agency⁷ which can be used for menu planning to help residents receive a nutritious, well balanced diet.



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

© Crown copyright 2016

Food choices, together with medicine and activities, are the foundation of diabetes management.

Regular Meals

Residents with diabetes:

who are on insulin or tablets for their diabetes need to eat regularly to prevent hypoglycaemia (low blood glucose); this means they need to eat regular meals of breakfast, lunch, an evening meal and may need snacks between meals according to their individual needs; this should be clearly identified in their care plan.

- there should be no more than 5 hours between meals and there should be no more than 12 hours between the last meal at night and the first meal in the morning;
 - » make suppers as late as possible
 - » ensure breakfast is offered as early as possible for residents at risk of hypoglycaemia

These points are particularly important for residents with poor nutritional intake, e.g. those with swallowing issues or poor appetites.

Starchy Carbohydrate Foods

For residents with diabetes:

- **each meal** or snack should contain a starchy carbohydrate food such as bread, rolls, cereal, porridge, potatoes, rice, pasta, noodles or chapattis; (high fibre options such as granary bread and wholegrain cereals will also help to prevent constipation)
- **regular consumption** of carbohydrate foods is essential for residents using insulin or taking sulphonylurea tablets so cake, ice-cream or milky drinks may be needed if other healthier carbohydrate foods are refused
- it is very important to **ensure plenty of fluids** are drunk such as water, tea, coffee or sugar-free fruit juice.

Fruit and Vegetables

For residents with diabetes:

- include **plenty of fruit and vegetables at each meal**. Five portions of fruit or vegetables are recommended each day (although it is recognised that this may not be achievable particularly in elderly residents with reduced appetite). Appropriate options include:
 - » a 150ml glass of unsweetened fruit juice with breakfast
 - » homemade vegetable soup
 - » offering a selection of fruits and vegetables as snacks.

Sugar

Residents with diabetes should:

- cut down on sugar and very sweet foods such as sugary drinks, sweets, chocolate and cakes. It is not necessary to exclude sugar completely from the diet, especially if this causes distress and increased confusion in a resident with dementia
- use artificial sweeteners for sweetening puddings and cereals, tea or coffee if needed
- drink sugar free drinks
- use half the amount of sugar in recipes; most recipes will still work well.

Diabetic Products

Residents with diabetes should avoid specialist diabetic foods as they offer no benefit, they may contain as many calories as the ordinary version of foods and may cause stomach upset and diarrhoea if taken in large amounts.

Special Occasions

Having diabetes does not stop the resident from joining in on special occasions, e.g. festivals or birthdays; the occasional sugary food, alcohol in moderation or celebration meal will do no harm providing it is part of a balanced, healthy diet. If the resident is having something sugary, it is best to have it just after a meal.

Family Bringing in Food

Families should be encouraged to bring in favourite treats for residents but the care home should be made aware of this so that:

- they know what the resident likes and can incorporate it into their daily life
- they can adjust daily requirements if other food has been given
- they can ensure food complies to food hygiene regulations.

Achieving and Maintaining a Healthy Weight

A healthy weight helps to improve diabetes control and helps to reduce the risk of heart disease and stroke.

If the resident is overweight, reduce portion size and cut down on fatty foods such as pastry, cream, fat on meat, crisps, cheese and biscuits and use lower fat alternatives such as semi-skimmed milk and low fat spreads.

If the resident is not able to maintain a healthy weight and is malnourished then consider food fortification using a 'food first' approach before considering food supplements. For these residents, low fat foods are inappropriate; full fat milk and dairy products should be given and other high fat foods which provide concentrated sources of calories.

It is recognised that some residents may be underweight; they are nutritionally at risk because they:

- have an acute or chronic illness
- find self-feeding difficult
- have a poor appetite
- have swallowing issues

Food supplements such as Complan or Fortisip may be necessary in residents with dementia who are unable to eat meals or are unable to consume sufficient calories by other means. If blood glucose levels rise after these are consumed, they should not be stopped but diabetes tablets or insulin injections may be needed to control blood glucose levels. Advice from a dietitian is required for residents who need nutritional support.

Weight loss may also be due to poor control of diabetes and the dose of insulin or tablets for diabetes may need to be increased to help regain that control of diabetes; advice from a Diabetes Specialist Nurse or GP will be required.

Alcohol

Residents living with diabetes:

- can continue to include alcohol in their diet in moderation unless they have been medically advised to avoid alcohol
- should not exceed the recommended alcohol intake; i.e. no more than 2 units at any one time and no more than 14 units a week
- should only consume alcohol with food, especially if on insulin or tablets for diabetes
- should never drink alcohol on an empty stomach; it is important to have some starchy foods to eat before/during e.g. bread, toast, a meal containing potatoes, pasta or rice
- should be aware that a hypoglycaemic event can occur several hours after drinking alcohol; it is best to have an extra snack, e.g. sandwich, toast or crisps, if drinking alcohol.

Oral Health

Residents living with diabetes can be at least three times more likely to develop gum disease than those without diabetes. This may mean that their nutritional status is compromised as they are unable to eat or drink. Dietary adjustments should be made according to specific individual need.

Dehydration

A resident with uncontrolled diabetes may be at additional or greater risk of becoming dehydrated due to polyuria. Fluid intake should be monitored and treatment modified accordingly to reduce the chance of hyperglycaemia.

Reflection

- *Think about the last meal you ate, How well does it compare to the 'Eatwell Plate' model?*
- *How well does it compare to the last meal eaten by one of your residents?*

Quiz

1. List four foods that are high in carbohydrates and refined sugars
2. Why are regular meals important for a resident with diabetes?
3. List the principles of a healthy balanced diet.
4. Explain the importance of weight control in a resident with diabetes.

Medicines to Manage Diabetes

Self-Medication

Care home staff should assume that a resident can take and look after their medicines themselves, i.e. self-administer, unless a risk assessment has indicated otherwise; an individual risk assessment should be carried out to establish how much support a resident needs to continue taking and looking after their own medicines.

A risk assessment should consider:

- resident choice
- if self administration will be a risk to the resident or to others
- if the resident can take the correct dose of their own medicines at the right time and in the right way (for example, do they have the mental capacity and manual dexterity for self-administration?)
- how often the assessment will need to be repeated based upon the individual resident's need
- how the medicines will be stored
- the responsibilities of the care home staff.

This assessment should involve the resident (and their family members or carers if the resident wishes) and care home staff. All care home staff should have been trained to carry out this assessment. Other healthcare professionals, e.g. GP, pharmacist, should be involved if medicines regimen could be adjusted to enable the resident to self-administer.

For residents with diabetes the risk assessment could also consider:

- ability to use any equipment
- injection technique (if applicable)
- injection sites: position and appearance, (lipohypertrophy is when fatty lumps appear on the surface of the skin and is a common side effect of insulin injections if multiple injections are administered to the same area of the skin over a period of time).

(See Appendix 3 for an example of a Self-Medicating Risk Assessment form.)

Management of Medicines

Medicine to Manage Diabetes

The management of medicines in care homes is governed by legislation, regulation and professional standards⁸ and these are monitored and enforced by the Care Quality Commission (CQC).

All care staff must be:

- trained
- competent
- feel confident

to administer medicine to residents and there should be documentation in place to demonstrate this.

All registered nurses must comply with the Nursing and Midwifery Council Standards for Medicines Management⁹.

Additionally, it is important for all staff administering medicine to consider at all times the Eight Rights of Administration¹⁰, (**see Appendix 4**).

There are several different types of medicines that can be given to treat high blood glucose levels. They all have different modes of action and varying side effects. A comprehensive list and further information can be found on Surrey Prescribing Advisory Database (www.pad.res360.net/PAD/Search)¹¹.

Brand and Generic Medicines

Care home staff should be aware that all medicines have a brand name and a generic name; any concern over the name of a medicine should be discussed immediately with a Pharmacist before the medicine is given.

The generic name is the official name for the active ingredient, the brand name is the name chosen by the manufacturer, for example:

Generic Name	Brand Name
Metformin	Sukkarto SR® , Glucophage®
Insulin Glargine	Abasaglar® , Toujeo®
Amoxicillin	Amoxil®

While generic medicines are often cheaper than branded medicines this does not mean they are inferior in quality; they are the same strength and quality and have the same action as the branded medicine.

However, they may be a different colour, shape or form. Residents can get confused and think they have been supplied the wrong medicine. If the medicine looks different from the previous supply and you are unsure, **always check**.

Oral medicine

Class	Name (brand name)	Form(s)	How they Work	Main Side Effects / Disadvantages	Advantages
Biguanide	Metformin (Glucophage®).	Tablets. Slow-Release Sachets. Liquid. To be taken with or after food	Helps the liver to store excess glucose from the blood.	Gastro-intestinal side effects. Modified-release tablets cannot be crushed or broken; they must be swallowed whole.	No hypoglycaemia. Weight loss.
Sulphonylurea	Glibenclamide ¹ (long acting). [contraindicated in over 70 years] Glimepiride (Amaryl®). Gliclazide (Diamicon®). Tolbutamide. Glipizide (Minodiab®).	Tablets. Slow-Release Tablets (Gliclazide). To be taken just before food	Makes the pancreas produce more insulin	Hypoglycaemia risk, especially at high doses in the elderly or in renal impairment. Risk of hip fractures. Weight gain.	Similar HbA1c reductions to Metformin. Relatively well tolerated.
Gliptin (DPP-4 inhibitors)	Saxagliptin (Onglyza®). Sitagliptin (Januvia®). Vildagliptin (Galvus®). Linagliptin (Trajenta®).	Tablets.	Helps a stomach hormone to work more efficiently	Pancreatitis. Hypersensitivity reactions.	Similar HbA1c reductions to Glitazones. No weight gain. Low risk of hypoglycaemia.
Glitazone	Pioglitazone (Actos®).	Tablets.	Helps the body to use its insulin more efficiently	Fluid retention. Heart failure. Fractures. Weight gain. Bladder Cancer.	Similar HbA1c reductions to metformin and sulphonylureas. Low risk of hypoglycaemia.
SGLT-inhibitor	Dapagliflozin (Forxiga®) Canagliflozin (Invokana®) Empagliflozin (Jardiance®) avoid in ≥ 85 years Can have some combination products that have more	Tablets.	Makes the kidneys excrete glucose from the body	Increased diuresis. Increased risk of urinary tract and genital infections. Rarely, acute illness presenting with ketoacidosis but normal blood glucose levels. Can only be used if resident has good kidney function. Please make sure resident is well hydrated.	Low risk of hypoglycaemia. Can help weight loss.

NB. Sometimes medicines can be combined to produce one tablet. For example – metformin and sitagliptin combined is called Janumet®.

+Injectable Therapies

Injectable GLP-1 and insulin therapies can be used on their own or in conjunction with oral medicines.

Class of medicine	Name (brand name)	Form(s)	How they Work	Main Side Effects / Disadvantages	Advantages
GLP-1 (Twice a day dosing)	Byetta® (Exenatide)	Pre-filled disposable pen for subcutaneous injections. Twice daily dose BEFORE meals and NEVER after meals.	Is a copy of a stomach hormone that promotes insulin production and makes the patient feel full quicker.	Gastrointestinal side-effects, nausea, vomiting but these often stop a few weeks after starting therapy; reduced appetite; pancreatitis (uncommon); injection-site reactions.	Can help with weight loss.
GLP-1 (Once a day dosing)	Victoza® (Liraglutide); Lyxumia® (Lixisenatide)	Pre-filled disposable pen for subcutaneous injections; Once daily dose at the same time of day.			
GLP-1 (Once WEEKLY dosing)	Bydureon® (Exenatide); Trulicity® (Dulaglutide);	Powder and solvent for solution for injection pre-filled pen for subcutaneous injections; Once weekly dose at the same time of the same day each week.			
Long-acting Insulin	Levemir®, Lantus®, Abasaglar®, Toujeo®, Degludec®; Xultophy® (mixture of insulin and GLP-1)	prefilled pens or cartridges ; Once or twice a day dose (at same time each day; usually before food)	Replaces insulin which the body lacks.	Hypoglycaemia; fat hypertrophy at injection site; local reactions at injection site; transient oedema	very effective
Intermediate-acting Insulin	Humulin I®, Insulatard, Insuman Basal® (isophane)				
Intermediate PLUS quick-acting insulins	Humulin M3®, Insuman Comb® 15 or 25 or 50; Novomix® 30; Humalog Mix® 25 or 50;	prefilled pens/ cartridges ; twice a day (usually before breakfast and evening meal)			
Quick-acting insulins	Fiasp®, Novorapid® (aspart); Apidra® (glulisine); Humalog® (lispro)	prefilled pens/ cartridges ; taken just before meals but sometimes can be taken straightaway after meals.			

Residents age over 70 years should have a medication review as some medicines have limited experience in this cohort of patients.

GLP-1 Therapy

GLP-1 therapy, e.g. liraglutide or exenatide, can be used daily or weekly. Some GLP-1 therapies, e.g. exenatide, require administration before food, never after food; administration times should be clearly documented.

Insulin and GLP-1 Storage

- Insulin or GLP-1 devices currently in use should be stored at room temperature and should be discarded within one month of opening.
- Any device not in use should be stored in a drug fridge between 2 and 8°C.
- If insulin is kept in the fridge it should be taken out and left for about 15-20 minutes until it reaches room temperature before administering.
- Residents using GLP-1 should follow the insulin injection technique with regard to needle length, injection site and site rotation

Insulin Therapy

Prescribing insulin in a care home setting usually requires three major considerations:

- can the resident and / or care home staff recognise and manage hypoglycaemia?
- is advice available to educate and support the resident and / or care home staff on the use of insulin?
- is there any physical, cognitive or behavioural disability that may affect compliance with therapy?

Reflection on these questions determines who should administer the insulin, the resident or care staff.

Insulin therapy will be required if the resident is diagnosed with:

- type 1 diabetes
- type 2 diabetes and control has not been achieved with oral medicines alone.

ALL INSULINS ARE ASSOCIATED WITH A RISK OF HYPOGLYCAEMIA.

For residents with an erratic dietary intake, injections immediately before food of a short-acting, analogue insulin may be very useful. Some short-acting insulins may require administration:

- half an hour before food or
- immediately before food or
- immediately after food (<5mins after eating).

It is essential that the exact timing of insulin administration is clearly documented and followed.

A local diabetes nurse specialist can play a very important role in the education of the resident and the care home, including catering staff.

Additionally, the advice and support of a community dietitian when insulin therapy is begun is essential.

Quiz

1. Which medicines used to treat diabetes are associated with hypoglycaemia?
2. Should short-acting insulins be given with or without food?
3. Can insulin therapy be used in patients with Type 2 diabetes?
4. If an insulin or GLP-1 device is currently in use, can it be stored at room temperature?

Injection Technique for safe Insulin Administration¹²

Every resident who injects their own insulin should have an assessment to ensure they are safe and able to administer insulin correctly. If not insulin must be administered by a trained and competent nurse.

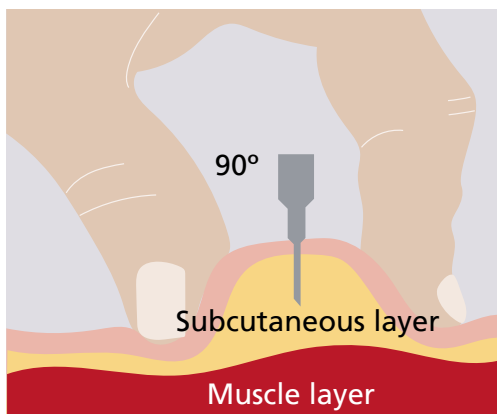
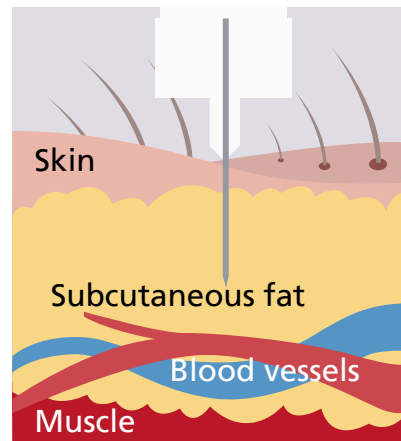
Where to inject insulin

Insulin is injected subcutaneously, which means into the fat layer under the skin.

In order for insulin to be absorbed properly, it should be injected into the subcutaneous fat, which is the layer of fat just below the skin as this is the best way for insulin to be utilized by the body. If you inject the insulin into muscle, the body will absorb it too quickly, it might not last as long, and the injection is usually more painful. This can lead to low or erratic blood glucose levels.

In this type of injection, a short needle of no more than 4mm should be used to inject insulin into the fatty layer between the skin and the muscle.

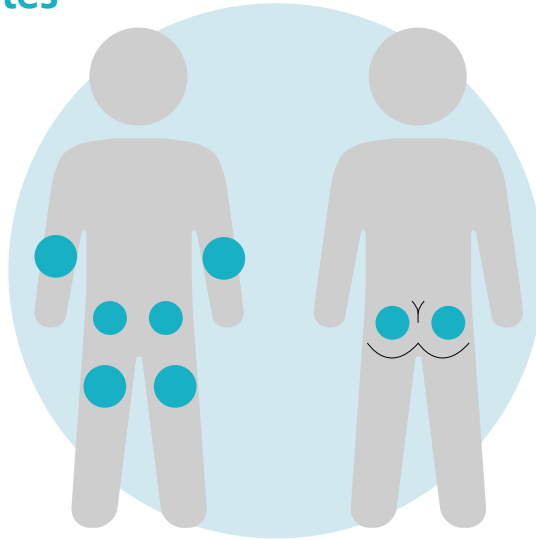
If the resident has been prescribed a larger needle then a lifted fold (see diagram below) will be required to avoid injection into muscle as this will increase chance of causing the blood glucose levels to drop (hypoglycaemia).



Best practice suggests rotation to different areas of the abdomen, keeping injection sites about an inch apart. Or you can inject insulin into other parts of the body, including the thigh, back of the upper arm and buttocks. This is important because using the same spot over time can cause lipohypertrophy. In this condition, fat either breaks down or builds up under the skin, causing lumps or indentations that interfere with insulin absorption.

Insulin injection sites

- **Thighs**
- **Arms**
- **Abdomen**
- **Buttocks**



Abdomen

The preferred site for human insulin/intermediate acting mix is the abdomen. Insulin is absorbed more quickly and predictably there, and this part of the body is also easy to reach. Select a site between the bottom of the patient's ribs and pubic area, steering clear of the 2-inch area surrounding the navel. Avoid areas around scars, moles, broken blood vessels or skin blemishes. These can interfere with the way the body absorbs insulin.

Thigh

If there is a risk of hypoglycaemia at night, human insulin/ intermediate insulin mix should be injected into the thigh or buttock if given in the evening as insulin is absorbed more slowly from these sites. You can inject into the upper outer areas of the thighs.

Arm

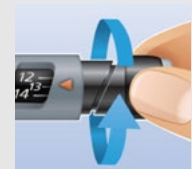
Use the fatty area on the back of the resident's arm, between the shoulder and elbow. The arm may not always be a suitable injection for residents with less body fat as there is a risk of injecting into a muscle which could lead to hypoglycaemia (low blood glucose).

- Quick acting and longer acting insulin analogues can be given in any of the injection sites.

How to inject insulin

- Ensure that you are wearing gloves for protection.
- Before injecting insulin, be sure to check its quality:
 - » If it was refrigerated, allow the insulin to come to room temperature.
 - » If the insulin is cloudy, mix the contents by rolling the pen between your hands for a few seconds.
 - » Be careful not to shake the pen.
 - » Short-acting insulin that isn't mixed with other insulin shouldn't be cloudy.
 - » Don't use insulin that is grainy, thickened, or discoloured.
- Check Right Patient, Right time, Right insulin and Right dose.
- Explain to the resident what you are about to do and gain consent.

- 1 Make sure you have a clean site and clean hands and check the resident's injection site.
- 2 Place a new **safety needle** onto the pen device if the resident cannot manage a regular pen needle and screw firmly into place, but do not over tighten.
- 3 If the insulin is cloudy, gently invert 10 times and roll between palms of hands 10 times to fully mix it.
- 4 Remove outer cap. Test dose, set the dial to 2 units and with the needle tip pointing away from you but still visible press the dose button, you should see a bead of insulin appear at the needle tip. Repeat if no insulin appears.
- 5 Set the dose as prescribed for the resident as per medicine chart.
- 6 Hold the pen in your fist; keep your thumb away from the dose button. With the pen at 90 degrees to the resident's prepared skin surface, gently push the needle through the skin into the injection site.
- 7 Push down the dose button with your thumb. Hold the needle in the injection site for a full 10 seconds after you have finished pushing the dose button. Then gently remove the needle from the skin.
- 8 The resident should remove the pen needle to prevent needle stick injury prior to placing in the sharps box ready for safe disposal. If the resident is unable to do this then you must use a safety needle. Check your policy for safe sharps disposal.



Quiz

1. Why is it important to rotate injection sites for patients using injectable therapies?
2. How often should the needle of an insulin pen be changed?
3. Why should a resident be encouraged to self-administer their own insulin?

Blood Glucose Monitoring

Effective glucose control may result in a reduction in hospital admissions for residents with diabetes. Agreed blood glucose target ranges for residents are based on:

- their physical capability
- their level of frailty
- the frequency of blood glucose monitoring

Blood glucose targets are not the same for everyone, as some residents are more at risk of hypoglycaemia (low blood glucose), for example residents with dementia, those with comorbidities and the frail. Each resident should have individual range and this should be documented clearly in the care plan. Not all residents need to have regular monitoring of blood glucose levels.

The safe recommended range for blood glucose in people with diabetes in a care home is ^{5,13}

- Fasting: 6-8.5 mmol/l
- 2 hours after meals 8-12 mmol/l
- Random blood glucose less than 9 mmol/l, above 11 mmol/l increases the symptoms of hyperglycaemia.

Blood glucose monitoring can be an effective part of diabetes management if the results are acted on. A finger prick test gives an accurate measure of the level of glucose within the blood at the time the sample is taken. This allows action to be taken if blood glucose levels are too high (hyperglycaemia) or too low (hypoglycaemia) and improves understanding of glycaemic control.

A list of recommended blood glucose meters and lancets for your area can be found on the Surrey Prescribing Advisory Database (<http://pad.res360.net/PAD/Search/DrugCondition/460>)¹¹.

An HbA1c test gives an average blood glucose measurement over 3 months. This is sometimes more useful than regular blood glucose monitoring. This should be checked a minimum of every six months and for many residents three-monthly HbA1c testing may be clinically useful. Depending of level of frailty, risk of hypoglycaemia and age, the target range for residents is 53-70mmol/mol^{13,14}. It should be noted that an HbA1c above 64mmol/mol may increase the symptoms of hyperglycaemia which could lead to infection and hospital admission¹⁴. Each resident should have an individual range and this should be documented in the notes.

It is important that care home staff only perform blood glucose monitoring if they:

- have a good understanding about diabetes or have been asked to carry out a test by someone who does.
- have received training on blood glucose monitoring, including how to use the specified meter, storage of strips and quality control.
- are aware of how to interpret the readings obtained.
- understand the resulting actions to be taken.
- have demonstrated competence.

The resident's individual management plan should clearly document if and when the blood glucose readings should be taken; see examples of 'Food and Testing Diary' (**Appendix 5**) and 'Table of Testing Times for Residents who need to Test at Different Times of the Day' (**Appendix 6**).

Additional monitoring may be required if:

- the resident is unwell or has an infection (sick day rules apply, see page 30)
- steroids are prescribed
- poor blood glucose control is suspected
- the resident is unaware of how they feel when hypoglycaemic
- the resident is prescribed Oral Nutritional Supplements.

NICE guidance² recommends the monitoring of blood glucose should only be used if it is going to be a part of the resident's self-management education to support lifestyle changes, adjust therapy or alert healthcare professionals. The continued benefit of blood glucose monitoring should be assessed in a structured way each year to ensure:

- there is a clear purpose for the monitoring
- how the results should be interpreted.

Lancing Devices

Residents should always be encouraged to self-test with their own lancing device (finger-pricker); an appropriate risk assessment must be in place. If this is not possible then a **suitably trained member of staff** can complete the test.

It is important that care home staff only use **disposable single-use lancing devices that are used once and then the entire lancing device is discarded**.

All staff involved in the management and provision of lancing devices should ensure that the right devices are provided for taking blood samples in multi-patient environments. In the report, Infection Prevention and Control Guidelines for Blood Glucose Monitoring in Care Homes¹⁵ the Health Protection Agency noted that some outbreaks of hepatitis B in care homes have been attributed to the incorrect use of lancing devices.

Blood Glucose Monitoring Meters

It is important that care home staff ensure they:

- know where the meter is kept
- are trained appropriately to use the meter
- understand the maintenance requirements of the meter, including any quality control procedures and calibrations.

Good practice is that quality control is performed daily.

It may be sensible for all residents in the home to use the same type of meter so staff become confident with the process for a particular meter.

Completing Blood Glucose Testing

It is important that care home staff ensure that they:

- have received training
- comply with all infection-prevention principles; wash hands and wear gloves
- explain the procedure they are about to complete clearly to the resident
- ensure the resident has clean hands that have been washed with soap and water
- keep the resident's hand below the heart to aid blood flow.
- ensure the machine is clean and in working order and are able to calibrate if necessary
- check the tests strips are for the correct resident, correct for the machine being used and are in date
- select the site for testing; normally the side of a finger rather than the pad of a finger
- use a single lancing device
- follow the Glucose Meter Manufacturer's instructions to complete the test
- clean the finger after the test and stem the blood flow
- document the result and any action required.
- inform a senior member of staff if the result is not in the resident's target range
- complete any actions required
- follow local guidelines for disposal of sharps. Understand what actions to take.

Acute Complications

Hypoglycaemia

Hypoglycaemia (sometimes called hypo) is a lower than normal level of glucose in the bloodstream. Hypoglycaemia is a blood glucose level less than 4mmol/l and the symptoms come on quickly, although the resident may not notice them. To reduce the risk of hypoglycaemia no resident who is taking medicine for diabetes should have a fasting glucose less than 6 mmol/l¹³ Blood glucose levels of less than 5 mmol/l should be 'strictly avoided'¹³.

The resident may feel:



Dizzy



Shaky



Sweaty



Anxious



Headache



Weak or tired



Fast heartbeat



Hungry



Blurry vision



Nervous or upset

Hypoglycaemia increases the risk of falls. If a resident has had diabetes for a long time or has a history of dementia, warning signs of hypoglycaemia may be absent and the resident may not be aware they are suffering from hypoglycaemia; care staff will need to recognise these symptoms for them.

Causes of Hypoglycaemia

The existence of co-morbidities is an important factor in the occurrence of hypoglycaemia and includes:

- advanced age
- polypharmacy (five or more medicines)
- Changes in a resident's medication.
- taking medicines such as beta-blockers (e.g. bisoprolol) that can mask the symptoms of hypoglycaemia
- kidney or liver disease
- recent hospital admission
- history of hypoglycaemia
- poor nutrition/poor appetite
- not enough starchy carbohydrate
- missed or delayed meals or snacks
- alcohol, more than the recommended amount or taken on an empty stomach (see page 14)
- fasting, such as for a blood test, medical treatment or cultural reasons.
- increased activity
- cognitive impairment, for example dementia
- use of a sulphonylurea medicine or insulin therapy
- acute illness
- hypoglycaemia unawareness.

Treatment of Hypoglycaemia (see Appendix 7)

Residents who are conscious, orientated and able to swallow:

Ensure the hypoglycaemic treatment of choice is in the care plan and available to the resident and staff. If the resident tells you they are hypoglycaemic or if you think the resident is hypoglycaemic act immediately. If you cannot check the blood glucose DO NOT DELAY TREATMENT. A resident experiencing hypoglycaemia who is conscious, orientated and able to swallow and can treat themselves with supervision should be given 15-20g quick acting carbohydrate, for example:

- 5-7 dextrose tablets
- 5 jelly babies
- 150-200ml pure smooth fruit juice e.g. orange
- 3-4 heaped teaspoons of sugar dissolved in some warm, not hot, water
- 1-2 tubes of glucose gel for example DextroGel® or GlucoGel®
- 1 bottle (60ml) Glucojuice®

This amount is usually enough to treat a hypoglycaemic event.

- The blood glucose levels should be checked after 10-15 minutes. Follow the blood glucose monitoring procedure.
- If the level is still not above 4mmol/l, then the steps listed above should be repeated.
- If blood glucose remains less than 4.0mmol/l after 30-45 minutes or 3 cycles, contact a doctor¹⁶.

Once blood glucose is above 4.0mmol/l and the resident has recovered, give a long acting carbohydrate of their choice, taking into consideration any specific dietary requirements, for example:

- one slice of bread or toast
- two biscuits
- 200-300mL glass of milk (not soya)
- the next meal (which must contain carbohydrate) within 30 minutes.

DO NOT miss out any insulin injection, if due, (however, a dose review may be required).

Continue to check the blood glucose level for 24 – 48 hours¹⁶ as some diabetes medicine can cause further hypoglycaemia.

Residents who are conscious but confused, disorientated, aggressive or unable to cooperate but are able to swallow:

If the resident tells you they are hypoglycaemic or if you think the resident is hypoglycaemic act immediately. If you cannot check the blood glucose do NOT delay treatment. A resident experiencing hypoglycaemia that is conscious although confused, disorientated and able to swallow but needs assistance, encouragement or instruction should be given 15-20g quick acting carbohydrate of their choice, for example:

- 5-7 dextrose tablets
- 5 jelly babies
- 150-200ml pure smooth fruit juice e.g. orange
- 3-4 heaped teaspoons of sugar dissolved in warm not hot water
- 1-2 tubes of glucose gel for example DextroGel® or GlucoGel®
- 1 bottle (60ml) Glucojuice®

This amount is usually enough to treat a hypoglycaemic event.

- The blood-glucose levels should be checked after 10-15 minutes. Follow the blood glucose monitoring procedure.
- If the level is still not above 4mmol/l, then the steps listed above should be repeated.
- If blood-glucose remains less than 4.0mmol/l after 30-45 minutes or 3 cycles, contact a doctor.

Once blood-glucose is above 4.0mmol/l and the resident has recovered, give a long acting carbohydrate of their choice, taking into consideration any specific dietary requirements, for example:

- one slice of bread or toast
- two biscuits
- 200-300mL glass of milk (not soya)
- the next meal (which must contain carbohydrate) within 30 minutes.

DO NOT miss out any insulin injection, if due, (however, a dose review may be required).

Continue to check the blood glucose level for 24 – 48 hours as some diabetes medicine can cause further hypoglycaemia. Seek medical advice

Residents who are very aggressive, unconscious or having seizures:

If you cannot check the blood glucose do **NOT** delay treatment. Do **NOT** put any oral glucose in the resident's mouth

- A trained member of staff should give a glucagon injection but only if this is prescribed.
- Check blood glucose after 10-15 minutes
- Once the resident is conscious and can swallow give a long acting carbohydrate of their choice as described above but double the amount as residents given glucagon require more long acting carbohydrate.
- Glucagon injection must only be administered by a qualified nurse as per written prescription instructions.
- **Where an individual is living in a residential home then emergency ambulance services (999) must be called.**

If the resident loses consciousness and a trained member of staff is able to administer a glucagon injection, give this injection, seek urgent medical help - dial 999 and explain the action you have taken.

It is important that care home staff clearly document any hypoglycaemic event including:

- the time
- any known reason for hypoglycaemia
- when the GP was notified results of the blood glucose monitoring.

Ensure regular blood glucose monitoring is continued for 24 to 48 hours.

Prevention of Hypoglycaemia

Prevention can improve the resident's quality of life, confidence and adherence to medication and potentially reduce unnecessary hospital admissions. This can be achieved by the following:

- keep the blood glucose level in the target range.
- make sure diabetes medicine is the correct dose, taken at the correct time in relation to meals.
- make sure there is starchy carbohydrate with each meal.
- the resident may need a snack before increased activity (for example a trip out or physiotherapy).
- keep a food diary for the resident and ask the community dietitian to review.
- alcohol should not be taken in excess or on an empty stomach.
- if the resident's blood glucose is regularly low their medication will need to be reviewed.

'Hypo boxes'

It is important that care home staff have rapid access to necessary treatment for a hypoglycaemic event. A hypo box is required and all staff should know where it is kept for easy access. A designated plastic box with lid should be labelled and laminated instructions on the treatment of hypoglycaemia (**see Appendix 7**) should be attached to the inside of the lid.

Contents of a hypo box:

- 2 x 200ml cartons of pure smooth fruit juice e.g. orange
- 2 packets of glucose tablets
- Dextrose gel
- 1 bottle (60ml) Glucojuice®
- A small packet of biscuits
- Access to glucagon injection which should either be stored in the fridge or stored at room temperature and labelled with an expiry date of 18 months.

The hypo box should be checked daily to ensure all items are in place and in date. The contents should be replenished after use.

Quiz

1. At what blood glucose level is hypoglycaemia?
2. What are the signs and symptoms of hypoglycaemia?
3. How often is the hypo box checked?
4. After treating hypoglycaemia with quick acting glucose what should you do next?

Hyperglycaemia

Hyperglycaemia is an excess of glucose in the bloodstream. The symptoms may come on slowly over days or even weeks.

The resident may feel:



Very hungry



Very thirsty



Dry skin



Infections or injuries
heal more slowly
than usual



Sleepy



Needing to pass
urine more
than usual



Blurry vision

Treatment for Hyperglycaemia

Prevention of hyperglycaemia relies on management of blood glucose levels and diabetes medicine if necessary.

Control of high blood sugar is important to prevent complications caused by chronic hyperglycaemia. A GP may need to review the treatment plan for a resident who becomes hyperglycemic and they may decide to take one of the following actions:

- recommend dietary changes
- recommend more movement and / or exercise
- recommend regular blood glucose monitoring.
- review and alter the dose of the medicine, add another medicine or change the medicine

Risk Factors for Hyperglycaemia

These include:

- omission or reduction of insulin or medicines for diabetes
- increased carbohydrate / sugar intake
- reduced activity
- an infection such as flu
- severe illness
- an emotional or psychological upset
- adding some medicines can make blood glucose levels rise such as steroids e.g. prednisolone
- stopping a resident's diabetes medicine

Increase blood glucose monitoring during periods of hyperglycaemia and follow the Action Plan for Blood Glucose Results. **(Appendix 8)**

Sick Day Rules

Common illnesses which upset the control of diabetes include:

- the common cold
- flu
- sore throat
- stomach upset
- urinary tract infections.

Remember, blood glucose levels may rise even if the resident is unable to eat or drink.

Blood glucose levels should be recorded at least four times a day during periods of illness. Check blood or urine for ketones. If ketones are present seek medical advice immediately. It is important for care home staff to ensure that:

- insulin is still administered
- oral medication is still administered unless the resident is vomiting or has severe diarrhoea. If the resident cannot take their medicine seek medical advice.
- ensure the resident drinks plenty of fluids such as water, diet or sugar free drinks to prevent dehydration.
- If meals cannot be tolerated replace with either
- cereal
- porridge
- soup and bread
- milk pudding
- ice cream
- plain biscuits.

If the resident cannot eat, meals can be replaced with sugary fluids such non-diet lemonade, cola, or fruit juice which can be sipped slowly over the hour. Letting fizzy drinks go flat may help keep them down. Sips of sugary drinks are particularly vital if the resident is not eating. Residents can also eat sweets such as jelly beans or jelly babies.

If the resident is vomiting or unable to eat or drink seek medical advice immediately.

Diabetic Ketoacidosis and Hyperglycaemic Hyperosmolar State

In residents with type 1 diabetes, prolonged episodes of hyperglycaemia may lead to a life-threatening condition called Diabetic Ketoacidosis (DKA). If a resident develops this, call 999 immediately.

Symptoms of DKA include:

- increasing thirst
- nausea and vomiting
- blurred vision
- rapid and deep breathing
- stomach pain
- altered level of consciousness
- A smell of pear drops (acetone) on the breath.

Certain medicines, used to treat type 2 diabetes called sodium-glucose co-transporter 2 (SGLT2) inhibitors (canagliflozin, dapagliflozin, or empagliflozin) can have a rare side effect where the resident presents with symptoms of DKA but instead of having high blood glucose levels they present with glucose levels in the normal range.

In residents with type 2 diabetes, prolonged episodes of hyperglycaemia may lead to a life-threatening condition called Hyperosmolar Hyperglycaemic State (HHS).

Symptoms of HHS include:

- frequent urination
- increasing thirst
- nausea
- dry skin
- disorientation, drowsiness or loss of consciousness.

Increase blood glucose monitoring to at least 4 times a day. Check blood or urine for ketones. If ketones are present or the resident has symptoms of DKA or HHS they should be sent to hospital immediately.

IF A RESIDENT LOSES CONSCIOUSNESS THEY SHOULD BE SENT TO HOSPITAL IMMEDIATELY

See appendix 8 for an action plan for blood glucose results

Reflection

- *Are any residents within your care home at risk of DKA or HHS?*
- *How do you measure ketones in your care home?*

Quiz

1. Give an example of when blood glucose monitoring should be used
2. Why should only single-use lancets be used?
3. When should a Blood Glucose Meter be calibrated?
4. What are the symptoms of hyperglycaemia?
5. What should you do if you suspect a resident is suffering from DKA or HHS?

Complications Associated with Diabetes

Below is a list of possible complications that may occur due to poorly controlled blood glucose, cholesterol or blood pressure. They may also occur due to the long duration the person has been living with diabetes.

Day to Day Complications	Details
Hypoglycaemia	Blood glucose below 4.0 mmol/l or personal low target reading. Consider seeking advice to alter medicine/insulin. Treat immediately as per protocol.
Hyperglycaemia	Raised blood glucose is 15mmol/l or more ¹⁷ . Seek advice from GP if occurs on regular basis. May indicate Diabetic ketoacidosis, Type 1 diabetes) or Hyperosmolar Hyperglycaemic State (Type 2 diabetes).
Urinary tract infection	May be due to persistently high blood glucose.
Unsteady walking balance, pain in the leg, tingling of the feet	Due to damage of the nerves or blood vessels to the feet (Neuropathy and Peripheral Vascular Disease). Ensure safe footwear.
Foot problems	Neuropathy can cause change in shape of feet. Increased risk of skin breaks and deformed nails. Ensure regular podiatry to keep nails trimmed.
Healing of wounds	Cuts and lesions take longer to heal.
Altered appetite	Nerve damage to gut leading to altered appetite and digestion of food. (Gastroparesis)
Mental health	Depression and anxiety
Hearing loss	Higher risk of developing hearing problems
Gum disease	Higher prevalence of gum disease
Long term Complications	
Eye Problems	Diabetic retinopathy, glaucoma and cataracts.
Hypertension	Raised blood pressure. Will be monitored by GP
Heart problems and stroke	Increased risk if blood pressure, cholesterol and blood glucose not adequately controlled.
Kidney problems	Nephropathy.

Diabetes and Eye Health

Visual loss due to diabetic retinopathy, i.e. damage to the retina in the eye, will reduce the resident's quality of life.

It is important for care home staff to ensure that:

- annual diabetic eye screening occurs. GP will refer to local Diabetes Retinal Screening Service as this can detect retinopathy early and allow for treatment
- regular eye tests at optician occur.

Diabetes and Foot Health

Podiatry (diagnosis, treatment, and prevention of diseases of the foot) plays an important role in the education, monitoring and treatment of residents with diabetes. Diabetic foot disease is a preventable disabling condition. It is important that all residents with diabetes have daily foot checks in order that problems can be found early and action taken immediately. Complications of diabetic foot disease may include:

- neuropathy (dysfunction of one or more peripheral nerves causing numbness or weakness)
- impaired circulation
- deformity
- ulceration
- amputation.

During daily personal care it is important for care home staff to ensure that:

- the resident's feet are washed daily and dried thoroughly
- the resident's feet are examined daily for cuts or breaks in the skin, including between the toes and around the heels
- clean, dry dressings are applied to any cuts or breaks until they are healed: do not tie or wrap dressings around toes
- a moisturiser is applied to any areas of dry skin but NOT between the toes
- any signs of infection, such as redness, swelling, discharge, pain, smell or heat, are reported immediately to the GP
- toenails are filed weekly reducing both the length and thickness.
- all corns and callouses are treated regularly by a registered podiatrist
- the resident wears well-fitting socks, stockings or tights
- the resident wears well-fitting shoes that can be loosened during the day if the feet become swollen
- direct heat on feet from electric blankets and hot water bottles is avoided
- the circulation and sensation in the resident's feet are checked annually by a suitably trained and competent professional.

Diabetes and Kidney Health

Residents with diabetes are at risk of damage to the small blood vessels in the kidneys. The kidneys then cannot function as well and cannot filter away the body's waste products as efficiently as they should. This leads to the build up of waste products in the blood. The resident's body will retain more water and salt than it should, which can result in weight gain and ankle swelling. There may also be protein in the urine.

Diabetes and Stroke

If it is not controlled, diabetes can double the risk of having a stroke because high levels of glucose in the blood can damage the blood vessels making them harder and narrower and more likely to become blocked. If this happens in a vessel leading to the brain, it could result in a stroke.

It is important for care home staff to ensure that the resident:

- eats a healthy, balanced diet based on their own dietary likes and dislikes
- maintains a healthy weight
- is as active as they are able
- is encouraged to give up smoking if applicable as smoking damages artery walls and makes blood more likely to clot.

Diabetes and the Heart

Diabetes increases the risk of a myocardial infarction (heart attack). High levels of glucose in the blood can damage the walls of the arteries allowing fatty deposits to develop. If these fatty deposits develop in the coronary arteries (i.e. the arteries that supply the heart muscle with oxygen-rich blood) then coronary heart disease may develop which can then cause angina or a heart attack.

It is important for care home staff to ensure that the resident:

- eats a healthy, balanced diet based on their own dietary likes and dislikes
- maintains a healthy weight
- is as active as they are able
- is encouraged to give up smoking if applicable.

Diabetes and Pain

Common causes of pain in residents with diabetes include:

- peripheral neuropathy, characterised by a burning pain or an increased sensitivity to pain
- Charcot foot (deformed shape of the foot)
- foot ulceration
- peripheral arterial disease (a build-up of fatty deposits in the arteries which restricts blood supply to leg muscles)
- musculo-skeletal pain
- osteoarthritis
- back pain.

It is important for care home staff to ensure that:

- the resident's blood glucose levels are controlled as this may help to reduce pain due to peripheral neuropathy
- pain relief medicine is used appropriately
- a vascular risk assessment is completed
- foot care is part of the daily routine

Diabetes and Hearing Loss

It is thought that the high blood glucose levels associated with diabetes cause damage to the small blood vessels in the inner ear, similar to the damage in the eyes and the kidneys. Harmful outcomes can occur in the ear as residents with diabetes become older.

It is important for care home staff to ensure that they understand:

- the best way to communicate with residents with hearing loss
- how to use and clean hearing aids
- how to check ears for wax and how to use appropriate drops to treat wax.

Diabetes and Oral Health

Residents with diabetes have a risk of periodontal (gum) disease. This is an infection of the gum and bone that hold the teeth in place and can lead to painful chewing difficulties and tooth loss. Additionally, a dry mouth can cause soreness, ulcers, infections and tooth decay. It is again thought to be associated with the high blood glucose levels causing damage to the small blood vessels in the gums.

It is important for care home staff to ensure that:

- there is daily brushing and flossing as indicated
- residents attend regular dental check-ups
- there is good blood glucose control.

Diabetes and Gastro-Intestinal Symptoms

The entire gastro-intestinal (GI) tract can be affected by diabetes, from the oesophagus (the long tube that carries the food from the throat to the stomach) to the rectum. Because of this, symptoms can be varied and as they are not commonly associated with diabetes, could go untreated. People with diabetes can develop gastroparesis (delayed gastric emptying) as a complication of diabetes.

The nerves that help food move through the gastric tract are damaged and food remains undigested in the stomach. Some of the signs and symptoms are an early feeling of fullness during a meal, nausea, vomiting, weight loss, abdominal bloating and difficulty in controlling blood glucose levels. If these symptoms occur in a resident with diabetes and undiagnosed gastroparesis, the resident may need to be referred to the GP.

Diabetes and Infections

Diabetes can slow down the body's ability to fight infection and to heal; high glucose levels allow bacteria to grow and infections to develop more quickly. Early treatment can prevent more serious issues. Infections can cause blood glucose levels to rise, see **Sick Day Rules on page 30**.

Quiz

1. Which common illnesses could upset the control of diabetes?
2. Name four complications of having diabetes
3. Why is retinal screening important?
4. What would be the signs of poor foot care?

Diabetes and Mental Health

A diagnosis of diabetes can often lead to denial, anger, fear and / or depression; this can range from a mild feeling of irritation to serious clinical unhappiness.

Diabetes and mental health is often underestimated. Medication and care plans may be altered to ensure the resident has the best quality of life.

Denial is a difficult emotion and happens when a resident does not believe that something has happened to them. Many residents experience denial on diagnosis of diabetes.

A diagnosis of diabetes may seem unfair and the changes required too difficult to deal with and may result in them neglecting their diabetes management and not complying with the recommended treatment.

Diabetes can be a difficult condition to accept and it is common for depression, a feeling of sadness that lasts longer than a week, to develop before or following a diagnosis.

Depressive symptoms have been correlated with:

- Worsened blood glucose levels and diabetes complications, such as coronary heart disease
- Greater difficulty sticking to diet, exercise and medication regimes

It is important for care home staff to ensure that any changes in mood are documented and reported so that appropriate care and support can be offered.

The Surrey 'Improving Access to Psychological Services' (IAPT) can provide Cognitive Behavioural Therapy tailored for people living with Long Term Conditions, in the form of: Face to face sessions; Telephone based sessions; Online Therapy (including Space for Diabetes Wellbeing); Counselling for depression.

See appendix 9 for IAPT contact details.

Reflection

- *Consider how poor mental health, such as depression, affects a resident with diabetes.*

Diabetes and Dementia

Diabetes and dementia are both progressive, long term conditions. People with type 2 diabetes are at greater risk of developing dementia mainly Alzheimers disease and vascular dementia¹⁶.

In combination:

- dementia makes management of diabetes difficult
- poorly controlled diabetes has an impact on the safety and well-being of residents with dementia.

There are many different types of dementia; the most common is Alzheimers but there is also vascular dementia, Lewy body dementia, Parkinson's, Creutzfeldt-Jakob disease (CJD) and Wernicke-Korsakoff syndrome (alcohol-related dementia). Early symptoms include:

- forgetfulness
- difficulty in finding the right words
- repetitiveness
- change in behaviour.
- short-term memory loss

As the condition gradually worsens the resident may become:

- disorientated
- unable to complete daily living skills
- uncertain in social situations
- unable to make decisions.

Why is Early Diagnosis of Either Condition Important?

A cognitive assessment at the time of admission to the care home and at annual intervals is recommended. It is important to explain to the resident why you are completing this assessment and that their consent is documented. This is a general assessment and a more formal assessment can be carried out by the GP. There may be benefits from early detection of mental impairment such as:

- improvements in quality of life
- more informed care planning.

Residents with diabetes are encouraged to manage the condition themselves.

Dementia could lead to difficulties with:

- self-management
- adherence with medicine
- safe insulin injections.

Having both conditions may mean residents require support to manage higher targets for blood glucose and blood pressure to keep them safe and to help them make sensible decisions.

Diagnosing diabetes early in residents who already have dementia will ensure they receive regular reviews and management of any risk factors that can lead to developing diabetes complications.

Further reading and detailed advice can be found in Diabetes and Dementia Guidance on Practical Management, TREND UK¹⁸.

Nutritional Barriers

Residents with dementia may be anorexic or undernourished, have difficulties feeding and have an inability to communicate their needs. It is important that care home staff employ strategies that maximise dietary intake including:

- serving one course at a time, as this can reduce confusion
- using resident's own crockery, as this generates greater familiarity
- allowing grazing and extra time for the resident to return to their meal
- serving something that they like, e.g. ice cream, milk shakes, when other food is refused; this reduces the risk of hypoglycaemia
- reducing environmental stimuli, e.g. turning off the TV in the dining area, if aggressive or negative behaviours are present during mealtimes
- prompting, encouraging and supporting as required.

Treatment

All currently available treatments for diabetes can be used in care home settings for residents with diabetes who have mental health needs. Thought should be given to ensure:

- insulin and / or medicine regimens are simplified and optimised to avoid hypoglycaemia
- symptoms of hypoglycaemia are clearly documented and the resident is observed for these signs
- blood glucose monitoring is kept to a minimum and only used to inform actions
- treatments do not require frequent renal and hepatic function blood tests
- adequate nutritional planning is in place
- optimising blood glucose and blood pressure levels, ensuring adequate hydration and avoiding electrolyte disturbances will also help to maintain cognitive function.

For every resident, there should be an individualised care plan and treatment should be tailored to food intake and their dietary likes and dislikes.

Diabetes and Dysphagia

Diabetic neuropathy (nerve damage) is a common complication of diabetes. It is often due to diabetic microvascular injuries (involving small blood vessels that supply the nerves), macrovascular conditions (diseases and conditions of the large blood vessels) and /or chronic hyperglycemia.

This nerve damage can result in dysphagia - a difficulty in swallowing. Administration of medicines becomes complex, with pharmaceutical and legal challenges. Seek advice from the Care Home Pharmacist for all patients recommended a diet modification by a Speech and Language Therapist (SLT) due to any swallowing issues.

The International Dysphagia Diet Standardisation Initiative have published standard definitions for texture modified foods and thickened fluids for people with dysphagia¹⁹. This framework consists of a continuum of eight levels (0 – 7) and includes descriptors for both liquid thickness and food texture levels, (see diagram).



These descriptors can be used to support safe oral administration of medicines and allow, where possible, tablets and capsules to be administered whole; i.e. a licensed medicine in a suitable formulation to meet the patient's needs. Examples of this would be:

- an orodispersible tablet (tablets that can be dissolved in the mouth)
- a small tablet or capsule swallowed whole with a teaspoon of food of a suitable consistency (providing there is no interaction).

It is a misconception that patients with dysphagia cannot swallow solid oral formulations and must be prescribed liquids. Some thinner liquid medicines can increase the risk of coughing and inhaling the liquid into the lungs (aspiration). To facilitate a safer swallow, medicine may need to be formulated as thicker fluids or mixed with textured food. This may mean that licensed medicine may have to be administered in an unlicensed manner, e.g:

- crushing a tablet and mixing with a small amount of pureed food
- dispersing a tablet a 10ml of water and mixing with slightly thick fluid
- opening a capsule and sprinkling the contents into a small amount of liquidised food.

This will need to be clearly indicated in the directions and on the Care Plan.

Not all tablets and capsules are suitable for crushing, dispersing or opening. Contact a pharmacist for information and advice on whether this form of manipulation is appropriate. (Usually pharmacists will look at information found in the Handbook of Drug Administration via Enteral Feeding Tubes²⁰). The following table gives some examples.

Medicine	Comments / Alternative
Metformin 500mg tablets	1. Crush the tablets well and mix with water (unlicensed*) 2. Metformin 500mg/5ml solution Do not crush Modified-Release (MR) tablets as this may damage the mechanism for slowing absorption.
Gliclazide 80mg tablets	1. Disperse tablets in 10ml of water and mix with water or orange juice (unlicensed*) 2. Gliclazide 80mg/5ml oral suspension (unlicensed*, most cost-effective strength, shelf life is 30 days once opened) Do not crush Modified-Release (MR) tablets as this may damage the mechanism for slowing absorption.
Sitagliptin	1. Consider alternative third line options such as insulin or pioglitazone tablets 2. No information available on administering sitagliptin to patients with swallowing difficulties. The tablets will dissolve rapidly in water but they are film-coated and may taste unpleasant
Pioglitazone	1. Crush the tablets well and mix with water (unlicensed*)
Dapagliflozin	1. Consider alternative options as tablets must be swallowed whole

*** Manipulation of a licensed product in this way will be outside of the product's marketing authorisation / license. Decisions should always be made on an individual basis with the specific needs and best interests of the resident taken into account and on the advice of the care home pharmacist.**

Diabetes and Enteral Feeding Tubes

The use of enteral feeding tubes (EFT) has increased as a result of improved awareness of the importance of maintaining adequate nutritional intake. An enteral feeding tube provides a way of providing nutrition when oral intake is inadequate or not advised. This has implications for all involved in prescribing, supplying and administering medicines as they become liable for any adverse event that the resident may experience. The medicines policy within the home must contain specific information relating to safe administration of medicine via a feeding tube as this has implications for all those involved in prescribing, supplying and administering the medicine both legally and professionally.

Information on how to administer a medicine safely via an EFT should be discussed with a pharmacist. (Usually pharmacists find this information in the Handbook of Drug Administration via Enteral Feeding Tubes²⁰)

Medicine volumes and flushes should always be recorded on a fluid balance chart. It is good practice to flush the tube before and after each medicine administered and before recommencing the feed. This will help to prevent interactions between the feed and the medicines being administered.

Regular medicine reviews are essential for all residents receiving medicine via an EFT.

When deciding which medicine formulation is appropriate for administration via an EFT, several factors need to be considered. It is not necessarily correct to assume that a liquid is preferable to a tablet; there may be unwanted side-effects to the excipients (contents) in a liquid. The choice of formulation should also consider the needs of the resident and the practicality of the administration.

For example, guidance on how to administer a tablet that disperses is given below:

1. Stop the enteral feed.
2. Flush the enteral feeding tube with the recommended volume of water.
3. Check: can the medicine be administered with feed, or should a specific time interval be allowed before administering the medicine?
4. Select an appropriate size and type of syringe.
5. Remove the plunger and place the tablet into the barrel of the syringe.
6. Draw 10 ml of water into the syringe and allow the tablet to disintegrate, shaking as necessary.
7. Inspect the syringe contents to ensure that there are no large visible particles that might block the tube.
8. Flush the medicine dose down the enteral feeding tube.
9. Draw an equal volume of water into the syringe and flush this via the enteral feeding tube.
10. Finally, flush with the recommended volume of water.
11. Re-start the feed, unless a specific time interval is needed following the administration of the medicine.

Medicine	Option	Comments
Metformin 500mg tablets	Tablets do not disperse well in water but can be crushed and mixed with 10ml of water to form a fine suspension that flushes easily. (Unlicensed).	Feed decreases, delays and reduces the absorption of metformin; however the dose should be taken with or after the feed. 500mg/5ml oral solution available.
Gliclazide 80mg tablets	Do not crush tablets as this may affect the pharmacokinetics and glycaemic control. Tablets disperse in 10ml of water within 5 minutes to give a coarse dispersion that flushes without blockage but leaves a residue on the syringe and possibly inside the tube. (Unlicensed).	No specific interaction with food is documented. As it is possible that some residue may be left in the syringe blood glucose levels must be monitored closely.

End of Life Care

End of Life Care (EoLC) involves providing support so that every resident is kept as comfortable as possible, is not in any distress and dies with dignity.

Care home staff will need to be proactive in recognising the onset of a resident's terminal decline in health and liaising with the appropriate End of Life Care (EoLC) Services to access high quality EoLC, symptom management and the provision of psychosocial support.

It is important for care home staff to be aware that at the end of life:

- maintenance of a normal level of glucose in the blood may be detrimental to quality of life and an inappropriate goal
- a glycaemic range of 7–10 mmol/l (fasting) and 9–15 mmol/l (after a meal), or even higher in the final days, may enhance comfort
- glucose control may worsen with the presence of certain malignant tumours, infection and / or the use of steroids
- neuropathic pain can intensify during illness and appropriate pain management will be required
- support should be given at meal times to maintain weight
- alternative, more suitable forms of the medicine, e.g. liquids, may be required
- insulin and / or diabetic medicines could be discontinued in type 2 diabetes
- insulin must never be stopped in those known to have type 1 diabetes
- unnecessary investigations such as blood glucose testing are burdensome and should be avoided, unless glucose control is not steady and / or recurrent hypoglycaemia has been an issue
- dehydration should be avoided
- gastro-intestinal disorders can worsen.

Further reading and detailed advice can be found in End of Life Diabetes Care, Clinical Care Recommendations Diabetes UK 3rd Edition March 2018²¹.

'You matter because you are. You matter to the last moment of your life and we will do all we can; not only to help you die peacefully, but also to live until you die.'

Dame Cicely Saunders, Pioneer in Hospice Care

Quiz

1. List three strategies that can help maximise dietary intake for patients with dementia
2. Is it important to make sure a patient with diabetes has good glucose control if they are the end of their life?
3. What are the aims of diabetes care in the final days?

Contacts

Write any useful contacts you may need to manage your patients with diabetes here.

Name and role	Address	Telephone Number



Appendix 1: The Mental Capacity Act (MCA) and Care Planning

- The Mental Capacity Act (MCA) 2005 ensures a person-centred care and respects resident's rights
- Care staff who support residents are required to work within the framework of the MCA and follow the MCA Code of Practice (the Code)
- Care planning is key to ensuring that the MCA is implemented
- Care and support plans should promote the resident's freedom to make decisions about their care and support as far as they are able
- Care planning should show how residents are supported to be involved in developing and reviewing their care
- Care plans must provide evidence of consent, or, where there is lack capacity to consent, there must be a clearly recorded assessment of capacity with supporting evidence
- Care planning documents must demonstrate how any decisions made on behalf of a resident who does not have capacity are made in their best interests
- Care and support plans must be regularly reviewed to make sure they continue to meet resident's changing needs and choices
- Care planning documents must demonstrate how residents who are deprived of their liberty have their rights protected.

Appendix 2: Diabetes Assessment Form

Date	
Name of Resident	
Date of Birth	

Initial Screening

Any Signs and symptoms of diabetes?	Yes	No	Don't know
Thirst			
Frequency of urination			
Passing urine at night			
Lethargy			
Blurred vision			
Weight loss			
Infections			

Diagnosis of Diabetes

Test	HbA1c	Fasting glucose	Random glucose	Oral glucose tolerance test
Date Completed				
Result				

Clinical Profile

Observation	Weight	Height	BMI	Blood Pressure		Mobility
				Lying	Standing	
Date						
Result						

Blood Tests

Test	Cholesterol	Electrolytes	eGFR	Liver Function Test
Date Completed				
Result				

Past Medical History

Review	Yes	No	Details
Any Known Allergies?			
Any Family History of Diabetes?			
Any History of Coronary Heart Disease?			
Any History of Stroke?			
Any History of Peripheral Artery Disease?			
Any History of Hypertension?			
Any History of Chronic Kidney Disease?			
History of hypoglycaemia?			

Completed form:	Stored in Care Plan Y / N	Shared with GP Y / N
	Shared with Other Healthcare Professional Y / N (details): _____	

Review	Referral for Retinal Screening	Referral to Podiatrist
Date Completed		
Comments		

Action Taken

Completed By	
Designation	
Signature	

Appendix 3: Self-Medicating Risk Assessment

Name of Resident _____

Criteria	Y/N	Comments
1. Can the resident verbalise that he / she wants to self-medicate?		
2. Can the resident explain what each medicine is for? This does not necessarily need to be in medical terms, e.g. furosemide: this is my water tablet digoxin: this is for my heart		
3. Can the resident read the instructions on his / her medicines? e.g. a) the dose required b) how many times it is to be taken c) any special instructions i.e. before food... d) date it expires		
4. Is the resident aware that their medicine can cause side effects and that any concerns that they may have should be reported to a member of staff?		
5. Will the resident inform the person in charge when his / her medicine is 'running out'?		
6. Does the resident need any aids to assist him / her in self-medicine? e.g. not child proof containers if dexterity is a problem		
7. Does the resident always agree to store the medicine in the secure storage provided in his / her room?		
8. Will the resident only take medicines as prescribed for him / her and if any Homely Remedies are used a member of staff will be informed in case of any drug interactions?		

Signature of resident: _____

Is the Resident deemed suitable for self-administration: Yes / No

Signature of member of staff: _____

Designation: _____ Date _____

Appendix 4: Eight Rights of Medicine Administration

1. Right patient

- Check the name on the order and the patient.
- Use 2 identifiers.
- Ask patient to identify himself/herself.
- When available, use technology (for example, bar-code system).

2. Right medicine

- Check the medicine label.
- Check the order.

3. Right dose

- Check the order.
- Confirm appropriateness of the dose using a current drug reference.
- If necessary, calculate the dose and have another nurse calculate the dose as well.

4. Right route

- Again, check the order and appropriateness of the route ordered.
- Confirm that the patient can take or receive the medicine by the ordered route.

5. Right time

- Check the frequency of the ordered medicine.
- Double-check that you are giving the ordered dose at the correct time.
- Confirm when the last dose was given.

6. Right documentation

- Document administration AFTER giving the ordered medicine.
- Chart the time, route, and any other specific information as necessary. For example, the site of an injection or any laboratory value or vital sign that needed to be checked before giving the drug.

7. Right reason

- Confirm the rationale for the ordered medicine. What is the patient's history? Why is he/she taking this medicine?
- Revisit the reasons for long-term medicine use.

8. Right response

- Make sure that the drug led to the desired effect. If an antihypertensive was given, has his/her blood pressure improved? Does the patient verbalize improvement in depression while on an antidepressant?
- Be sure to document your monitoring of the patient and any other nursing interventions that are applicable.








Appendix 5: Food and Testing Diary Form

Name of Resident _____








Day	1	2	3	4	5	6	7
Blood Sugar Reading before							
Breakfast: Foods eaten							
Blood Sugar Reading 2 hours after Breakfast							
Blood Sugar Reading before lunch							
Lunch: Foods eaten							
Blood sugar reading 2 hours after lunch							
Blood Sugar Reading before Evening Meal							
Evening meal: Foods eaten							
Blood Sugar Reading 2 hours after evening meal							
Blood Sugar Reading at Bedtime							

Appendix 6: Table of Testing Times for Residents who need to Test at Different Times of the Day

Name of Resident _____

Monday		Before breakfast 					
Tuesday	2hrs. after breakfast 						
Wednesday		Before lunch 					
Thursday			2hrs. after lunch 				
Friday				Before dinner 			
Saturday					2hrs. after dinner 		
Sunday						Before bedtime 	

Appendix 7: Treatment of Hypoglycaemia

The resident can treat themselves, may require supervision	The resident cannot treat themselves and requires help	
	Able to swallow	Unable to swallow
<p>Check blood glucose. If the blood glucose is 4-5mmol/l the resident may require a snack or next meal. If the blood glucose is below 4 mmol/l give 15-20g carbohydrate either:</p> <p style="text-align: center;">↓</p>	<p>If the blood glucose is below 4mmol/l and the patient is conscious and able to swallow but may need assistance and instruction give 15 -20g carbohydrate either:</p> <p style="text-align: center;">↓</p>	<p>If the blood glucose is below 4mmol/l and the patient is unable to swallow or is not conscious, or is very aggressive</p> <p style="text-align: center;">↓</p>
1-2 tubes DextroGel or GlucoGel		<p>The resident should be put in the recovery position without causing injury (on their side with their head tilted back)</p> <p>Do NOT put glucose treatments in their mouth i.e. GlucoGel</p> <p>a trained member of staff should give:</p> <p>a glucagon injection but only if this is on the resident's medicine chart</p>  <p>If the resident loses consciousness and a trained member of staff is able to administer a glucagon injection, give this injection, seek urgent medical help - dial 999 and explain the action you have taken. Glucagon injection can only be given once.</p> <p>Check blood glucose after 10-15 minutes. Follow the monitoring procedure</p>
1 bottle (60ml) Glucojuice®		
200 mls (small carton) smooth fruit juice e.g. orange		
5-7 dextrose tablets		
3-4 heaped teaspoons sugar dissolved in warm water. <i>Not to be used for residents taking Acarbose</i>		
5 jelly babies		
<p>The blood glucose levels should be checked after 10-15 minutes. Follow the blood glucose monitoring procedure. If the level is still not above 4mmol/l, then the steps listed above should be repeated. If blood glucose remains less than 4.0mmol/l after 30-45 minutes or 3 cycles, contact a doctor or dial 999. When the patient feels better give long acting carbohydrate (starchy food) – banana, 2 digestive biscuits, 1 slice bread/toast 200-300mls milk (not soya), normal meal if it is due.</p>	<p>The blood-glucose levels should be checked after 10-15 minutes. Follow the blood glucose monitoring procedure. If the level is still not above 4mmol/l, then the steps listed above should be repeated. If blood glucose remains less than 4.0mmol/l after 30-45 minutes or 3 cycles, contact a doctor or dial 999. When the patient feels better give some long acting carbohydrate (starchy food) – banana, 2 digestive biscuits, 1 slice bread/toast 200-300mls milk (not soya), normal meal if it is due.</p>	<p>If the resident does not respond to treatment or loses consciousness or no one is available to administer a glucagon injection, seek urgent medical help and dial 999. Once the resident is conscious and can swallow give a long acting carbohydrate(starchy food) – banana, 2 digestive biscuits, 1 slice bread/toast 200-300mls milk (not soya), normal meal if it is due but double the amount as residents given glucagon require more long acting carbohydrate.</p>

Appendix 8: Action Plan for Blood Glucose Results



Appendix 9: Contact Details for Improving Access to Psychological Services (IAPT)

Mind Matters- NHS (offers on-site clinics and both CBT and counselling)

Tel. 0300 330 5450
www.mindmattersnhs.co.uk/surrey

Talking Therapies Surrey Online (ONLY ONLINE CBT)

Tel. 0300 365 2000
www.berkshirehealthcare.nhs.uk/Surreyonline

ThinkAction Woking (CBT and Counselling)

Tel. 03000 12 00 12
www.thinkaction.org.uk
Text TALK to 82085

Centre for Psychology (CBT and Counselling)

Tel. 01483 901 429
www.centreforpsychology.co.uk

DHC- NHS Talking Therapies (CBT and Counselling)

Tel. 01306 735473
www.dhctalkingtherapies.co.uk

IESO Digital Health (ONLY ONLINE CBT)

Tel. 01954 230066
www.iesohealth.com/surrey
Text Mind Online to 66777

Glossary of Terms

Fasting plasma glucose	Is a blood test used to diagnose diabetes or pre-diabetes. Blood is taken after fasting for 8 hours.
Hypoglycaemia	Low blood glucose
Hyperglycaemia	High blood glucose
MUST Score	Malnutrition Universal Screening Tool: A five-step screening tool to identify adults, who are malnourished, at risk of malnutrition (undernutrition), or obese.
BMI	Body Mass Index. A measure of weight compared to height to determine if a person is as underweight, normal weight, overweight, or obese.
OGTT	Oral glucose tolerance test. Blood glucose is measured before and after a glucose drink to determine if a person has raised blood glucose levels. Used to diagnose diabetes
HbA1c	Also called glycated haemoglobin. A measurement of average blood glucose over 2-3 months. Usually measured 3-6 monthly.
Polyuria	Passing excessive amounts of urine
Nocturia	Passing excessive amounts of urine at night
Retinal Screening	Eye screening to look for diabetic retinopathy which can cause people to lose their sight.
Glucagon injection	An injection which increases blood glucose levels. Glucagon is a hormone which causes the liver to release stored glucose into the blood.
Ketones	Toxic chemicals that occur if there is not enough insulin to convert glucose into energy. Can result in ketoacidosis and death.
Neuropathy	Damage to the nerves particularly in the legs and feet. Can cause numbness, weakness or pain.
Nephropathy	Damage to the kidneys.

References

1. Alan Sinclair, Trisha Dunning, Leocadio Rodriguez-Manas (2015) Diabetes in older people: new insights and remaining challenges. *The Lancet Diabetes & Endocrinology* Volume 3, No. 4 p275-285.
2. National Institute for Health and Care Excellence Type 2 Management in Adults. www.nice.org.uk/guidance/ng28. Accessed May 2018
3. Social Care Institute for Excellence (2014, reviewed 2017) Mental Capacity Act (MCA) and care planning <https://www.scie.org.uk/mca/practice/care-planning>
4. Han Cho, N, Colagiuti, S, Distiller, L et al (2013) International Diabetes Federation global guideline for managing older people with type 2 diabetes. International Diabetes Federation, Brussels.
5. Diabetes UK (2010). Good clinical practice guidelines for care home residents with diabetes.
6. Screening for Type 2 Diabetes Report of a World Health Organization and International Diabetes Federation meeting. (2003). World Health Organization
7. Public Health England, (2016). The Eatwell Guide. Online at: <https://www.gov.uk/government/publications/the-eatwell-guide>, accessed 20 December 2016
8. National Institute for Health and Clinical Excellence, 2014. Managing medicines in care homes. SC1. London: National Institute for Health and Clinical Excellence.
9. NMC Standards. Online at: <https://www.nmc.org.uk/standards/additional-standards/standards-for-medicines-management/>, accessed 20 December 2016.
10. Lippincott Nursing Center , (2011) <https://www.nursingcenter.com/ncblog/may-2011/8-rights-of-medication-administration> accessed June 2018
11. Surrey Prescribing Advisory Database pad.res360.net/PAD
12. The Forum for Injection Technique (FIT, 2016). The UK Injection Technique Recommendations, 4th Edition.
13. Alan Sinclair, John E. Morley, Leo Rodriguez-Manas et al (2012) Diabetes Mellitus in Older People: Position Statement on behalf of the International Association of Gerontology and Geriatrics (IAGG), the European Diabetes Working Party (EDWPOP), and the International Task Force of Experts in Diabetes. *JAMDA* vol.13, issue 6, 497-502
14. W. D. Strain, S.V Hope, A. Green et al (2018) Type 2 diabetes mellitus in older people: a brief statement of key principles of modern day management including the assessment of frailty. A national collaborative stakeholder initiative. *Diabetic Medicine* Vol. 35, issue 7, 838-845.
15. Health Protection Agency, 2013 Prevention and control of infection in care homes- an information resource. Department of Health
16. JBDS-IP Joint British Societies for In-patient care (Revised February 2018). The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus. 3rd edition.
17. Diabetes UK. Hypers <https://www.diabetes.org.uk/guide-to-diabetes/complications/hypers> accessed February 2019.
18. Diabetes and Dementia Guidance on Practical Management, TREND UK https://trend-uk.org/wp-content/uploads/2018/10/HCP_Dementia_TREND_FINAL.pdf accessed 20th November 2018
19. International Dysphagia Diet Standardisation Initiative Framework (2016) The International Dysphagia Diet Standardisation Initiative online at <http://iddsi.org/framework>
20. White R, Bradnam, V (2015). Handbook of Drug Administration via Enteral Feeding Tubes, Third Edition. (Pharmaceutical Press) Online at: <https://kampoeng2013.files.wordpress.com/2016/05/handbook-of-drug-administration-via-enteral-feeding-tubes-2015.pdf>
21. End of Life Diabetes Care, Clinical Care Recommendations Diabetes UK 3rd Edition March 2018. https://www.diabetes.org.uk/resources-s3/2018-03/EoL_Guidance_2018_Final.pdf accessed 20th November 2018

Acknowledgements

- Lyndsey Richie; Podiatry Lead, Diabetes and Wound Care, Central Surrey Health
- Portsmouth Diabetes Team for their glucose monitoring diaries
- Colleagues and patient representatives who read and commented on the document.

Authors

- Samantha Cudby; Care Home Pharmacist, North West Surrey Clinical Commissioning Group
- Perminder Oberai; Lead Diabetes Optimisation Pharmacist, North West Surrey Clinical Commissioning Group
- Louise Gebhard; Lead Diabetes Nurse, North West Surrey Clinical Commissioning Group
- Janet Ridout: Diabetes Specialist Nurse, Kingston Hospital
- Julie Fleming: Specialist Diabetes Dietitian
- Jo Butler: Diabetes Clinical Education Lead, Surrey Heartlands.

Quiz Answers

Introduction to Diabetes

Q. If a person has diabetes are they at a higher or lower risk of a stroke or heart attack?

A. People with diabetes are at a higher risk of a stroke or heart attack.

Q. List some common symptoms of diabetes

A. Common symptoms are: increased passing of urine especially at night, increased thirst or very dry mouth/lips, urine infections, increasingly tired/lethargic, poor healing of wounds, thrush infections, weight loss.

Q. What are the risk factors for developing diabetes?

A. The risk factors are people over the age of 65, family history, obesity and lifestyle, smoking.

Q. Why is it important to prevent or delay the onset of type 2 diabetes in residents at risk?

A. Uncontrolled blood glucose can damage eye, kidneys, nerves and circulation. This reduces quality of life and increases risk of falling

Healthy Eating

Q List four foods that are high in carbohydrates and refined sugars.

A. Cakes, chocolate biscuits, cola/lemonade. Sugar coated cereal e.g. Frosties

Q. Why are regular meals important for a resident with diabetes?

A. Regular meals are important for 2 reasons. 1. To ensure a steady, moderate amount of carbohydrate is ingested to keep blood glucose levels steady. 2. To ensure blood glucose lowering medication is given in conjunction with food to avoid hypoglycaemia or hyperglycaemia.

Q. List the principles of a healthy balanced diet.

A. To include foods from all food groups in the right proportions in the individual.

Q. Explain the importance of weight control in a resident with diabetes.

A. A healthy body weight will help optimise blood

glucose control if a person is overweight. Also to avoid health related problems with malnourishment and low body weight.

Medicines to Manage Diabetes.

Q. Which medicines used to treat diabetes are associated with hypoglycaemia?

A. Sulphonylureas i.e. Gliclazide and insulin

Q. Should short-acting insulins be given with or without food?

A. They should be given with a proper meal, usually before but sometime after.

Q. Can insulin therapy be used in patients with Type 2 diabetes?

A. Yes, residents with type 2 diabetes can be on insulin alone or insulin and oral medication for diabetes.

Q. If an insulin or GLP-1 device is currently in use, can it be stored at room temperature?

A. Yes if the device is in use then this can be stored at room temperature. Any devices not in use should be kept in the refrigerator

Injection Technique

Q. Why is it important to rotate injection sites for patients using injectable therapies?

A. It is important to rotate injections sites as over time to prevent lipohypertrophy. This is when fat breaks down or builds up under the skin, causing lumps or indentations that interfere with insulin absorption.

Q. How often should the needle of an insulin pen be changed?

A. At every injection.

Q. Why should a resident be encouraged to self-administer their own insulin?

A. It is important for people living in care homes to maintain their independence and they have as much involvement in taking their medicines as they wish and are safely able to do so.

Hypoglycaemia

Q. At what blood glucose level is hypoglycaemia?

A. Hypoglycaemia is a blood glucose level of below 4 mmol/l. To reduce the risk of hypoglycaemia a resident who is taking medicine for diabetes should not have a fasting glucose less than 6 mmol/l. Blood glucose levels less than 5 mmol/l should be strictly avoided.

Q. What are the signs and symptoms of hypoglycaemia?

A. Dizziness, shaky, slurred speech, weak, tired, blurred vision, hungry.

Q. How often is the hypo box checked?

A. Daily.

Q. After treating hypoglycaemia with quick acting glucose what should you do next?

A. After 10-15 minutes check the blood glucose level to make sure it is above 4 mmol/l. If not, give 15-20g of fast acting glucose again. If still below 4mmol/l after 3 cycles, call a doctor immediately. Once the blood glucose level is above 4mmol/l give long acting carbohydrate considering dietary requirements such as a slice of bread or a slice of toast or two biscuits or next meal if due.

Blood glucose monitoring

Q. Give an example of when blood glucose monitoring should be used.

A. If the resident is unwell. If hypoglycaemia or hyperglycaemia is suspected. Hypo-unawareness. If the resident is taking medication that can cause a rise in blood glucose levels i.e. steroids.

Q. Why should only single-use lancets be used?

A. Infection control.

Q. When should a Blood Glucose Meter be calibrated?

A. Daily.

Q. What are the symptoms of hyperglycaemia?

A. Thirst, passing urine frequently, dry mouth, sleepy, blurred vision infections or injuries that heal more slowly than usual.

Q. What should you do if you suspect a resident is suffering from DKA or HSS?

A. Check blood glucose. Check blood or urine ketones and if present call GP, Diabetes Specialist Nurse or 111 or if a residents shows any of the following symptoms, frequent urination, increased thirst, nausea or vomiting, dry skin, drowsiness or loss of consciousness they should immediately be sent to hospital.

Complications

Q. Which common illnesses could upset the control of diabetes?

A. Urinary tract infection, chest infection, cuts or wounds that will not heal or are red and inflamed, flu.

Q. Name four complications of having diabetes.

A. Heart disease, stroke, blindness, nerve damage (neuropathy) causing loss of feeling in the feet.

Q. Why is retinal screening important?

A. To prevent loss of sight.

Q. What would be the signs of poor foot care?

A. Fungal infection between the toes, dry or cracked heels, corns and callous, toenails need filing, cuts or breaks in the skin.

End of Life Care

Q. List three strategies that can help maximise dietary intake for patients with dementia.

A. Serving one course at a time to reduce confusion. Allowing grazing so the resident can return to their meal. Prompting and encouragement.

Q. Is it important to make sure a resident with diabetes has good glucose control if they are the end of their life?

A. Good control may be detrimental to quality of life. Ensure the resident does not have very high or low blood glucose levels so they are not symptomatic which can cause distress.

Q. What are the aims of diabetes care in the final days?

A. To ensure the resident is as comfortable as possible, not in distress and dies with dignity.

Notes





Surrey Heartlands

HEALTH AND CARE PARTNERSHIP