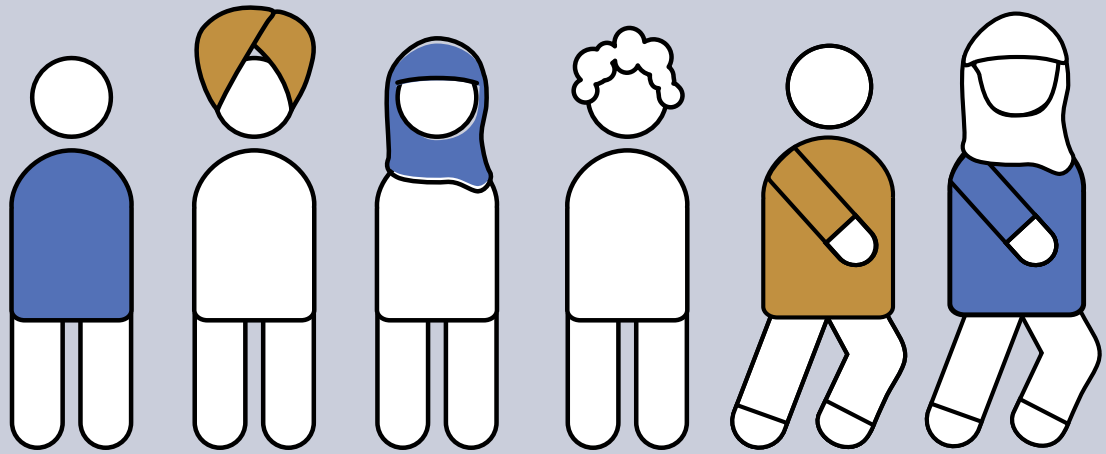
Diabetes
Multidisciplinary Working Group



DIABETES EDUCATION & INFORMATION RESOURCE

Updated August 2024

GIG CYMRU NHS WALES
Diabetes Gweithredu Grŵp
Diabetes Implementation Group

DIABETES UK
DEALL DIABETES. BRWYDRO DIABETES.
KNOW DIABETES. FIGHT DIABETES.
CYMRU

WAND Welsh Academy for Nursing in Diabetes

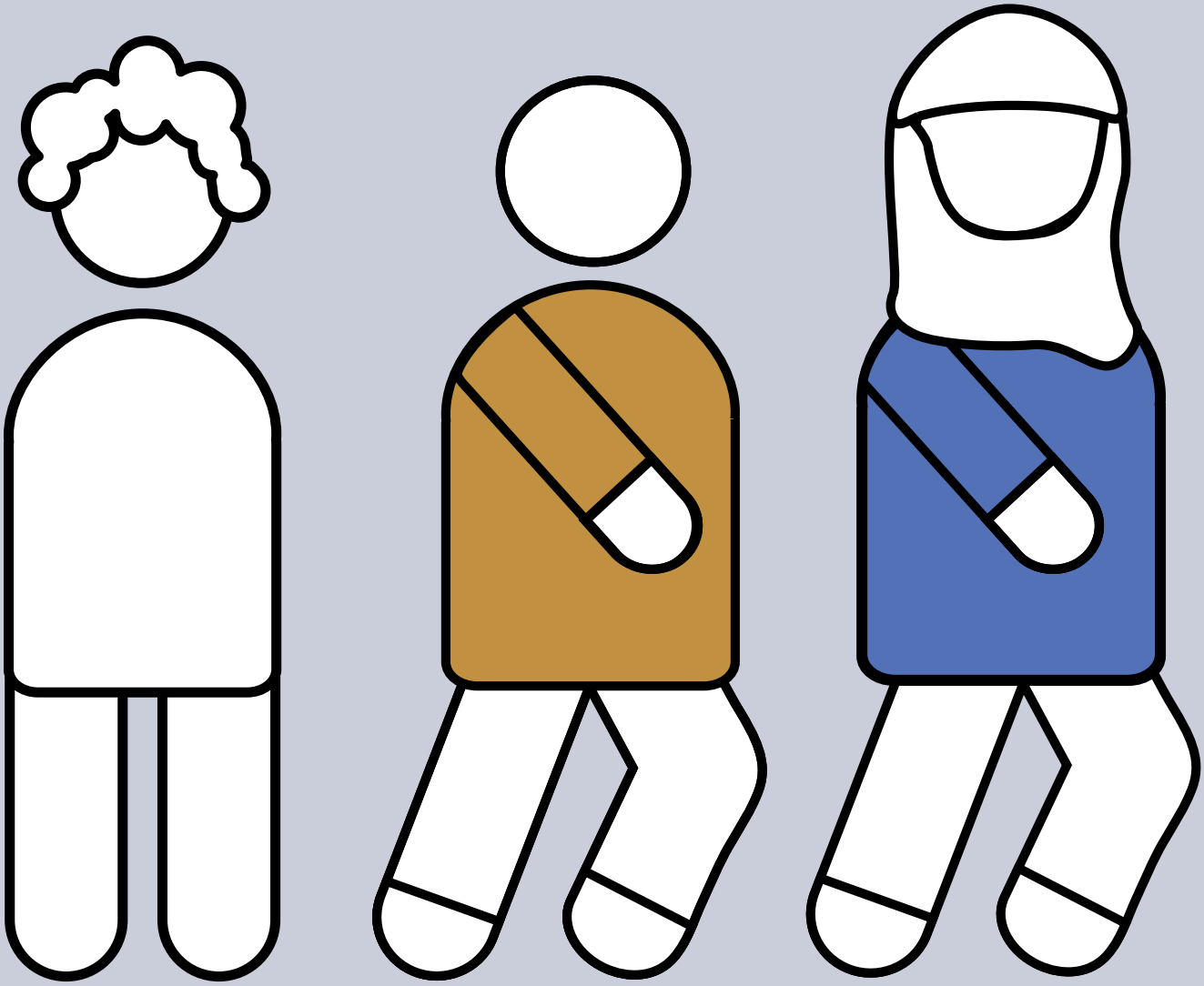
WEDS welsh endocrine and diabetes society

novo nordisk®

Disclaimer

This education and information resource has been designed to help enhance knowledge in diabetes. It also provides educational links and resources to further improve knowledge and skills to hopefully increase confidence in caring for people living with diabetes.

This is for information only. It does not give the reader scope to act outside of their local guidance or policies.



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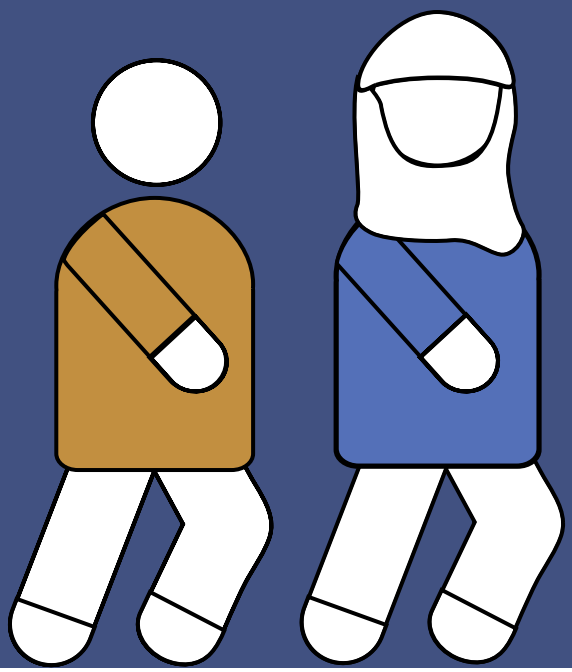
This diabetes education and information resource has been produced by an all Wales working group consisting of:

- Diabetes Specialist Nurses
- Dietitians
- Podiatrists
- Diabetic Eye Screening Service
- Psychologist
- Diabetes UK (Cymru)

The working group involved in this project include the following:

Chris Cottrell
Julie Moss
Sally Ann Jones
Carolyn Thelwell
Ellie Alcock
Ceri Jones
Anwen Mai Jones
Holly Jones
Helen Saunders
Catherine King
Claire Drake
Julie Cope
Josie Griffiths
Dr Rose Stewart
Scott Cawley
STANCE team Cardiff and Vale UHB
Diabetic foot Network Wales
Catherine Washbrook-Davies
All Wales Dietetic Network
Diabetic Eye Screening Service Wales
Leanne Jenkins (DUK)
David Williams (DUK)
David Thomas (Novo Nordisk)
Joanne Baker (Novo Nordisk)



Foreword

Diabetes is a uniquely challenging condition to live with. Throughout their lives, people living with diabetes will self-manage their condition in their own homes and workplaces. People monitor their own blood glucose levels, adjust their diet and lifestyle, administer their own insulin, and must remain alert to the potential development of diabetes complications.

This is a burden many people struggle with, and it takes its toll on people's wellbeing, often leading to psychological distress and burnout. But perhaps just as frightening as the responsibility of managing their own health condition, is becoming dependant on someone else for all or part of their care of this complex and personal condition. Someone they may not know and who may not know them. Someone who may not be an expert in diabetes. This is the position in which an increasing number of people find themselves.

Trusting the management of their diabetes to carers and healthcare staff can be difficult for a person living with diabetes. This is true whether a person has type 1 or type 2 diabetes. It is vital that we meet people's trust with the care they are entitled to and ensure that they receive an equal level of care, whatever the setting.

Diabetes is not only a uniquely challenging condition to live with but is also a uniquely challenging condition to care for. Despite its prevalence it is often not fully understood and caring for older people with diabetes requires specific considerations. Frailty affects how we treat diabetes, and the condition and its complications can present differently in older people, making it hard to identify.

It is therefore essential that we support our healthcare staff to feel they are equipped with the knowledge and understanding to care confidently and appropriately for those living with diabetes.

The education contained in this resource, compiled from a huge range of experts, is tailored to be specifically about what diabetes care looks like for those who can no longer care for themselves. It is for anyone and everyone who cares for an older person who has diabetes, including those in a residential or care home setting. It offers information about how to identify and understand diabetes, and guidance on what good care looks like and how to manage specific aspects of care, including the impact of frailty.

This guide is not only valuable, but vital. Diabetes UK Cymru is proud to be able to support this resource and we hope it is shared widely, embedded in education within care settings, and becomes a key part of the training given to our nation's carers and healthcare staff.

Rachel Burr

National Director, Diabetes UK

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Foreword

I am delighted to recommend this education resource which has been developed by Chris Cottrell and her colleagues.

A significant proportion of people living with diabetes in Wales live in care homes or are receiving care at home. This number will rise as we live longer. Many cared-for people live with diabetes; some having lived with diabetes for decades and for some it will be a more recent diagnosis.

For all who live with diabetes, whatever the type or duration, it will be a relief and a reassurance to know that those who care for them have access to appropriate knowledge and information. For those who care for people living with diabetes it will be immeasurably helpful to have this resource. It will support them to deliver the best care, to help cared-for people with diabetes to live safely and to know when to call for help.

I am extremely grateful to Chris Cottrell who has shown such dedication and tireless work to lead the development of this resource and to all her colleagues who have contributed so enthusiastically and with such skill. The final resource is excellent and one that all involved may be truly proud of.

Dr Julia Platts

National Clinical Lead for Diabetes in Wales

GIG CYMRU NHS WALES
Diabetes Gweithredu Grŵp
Diabetes Implementation Group

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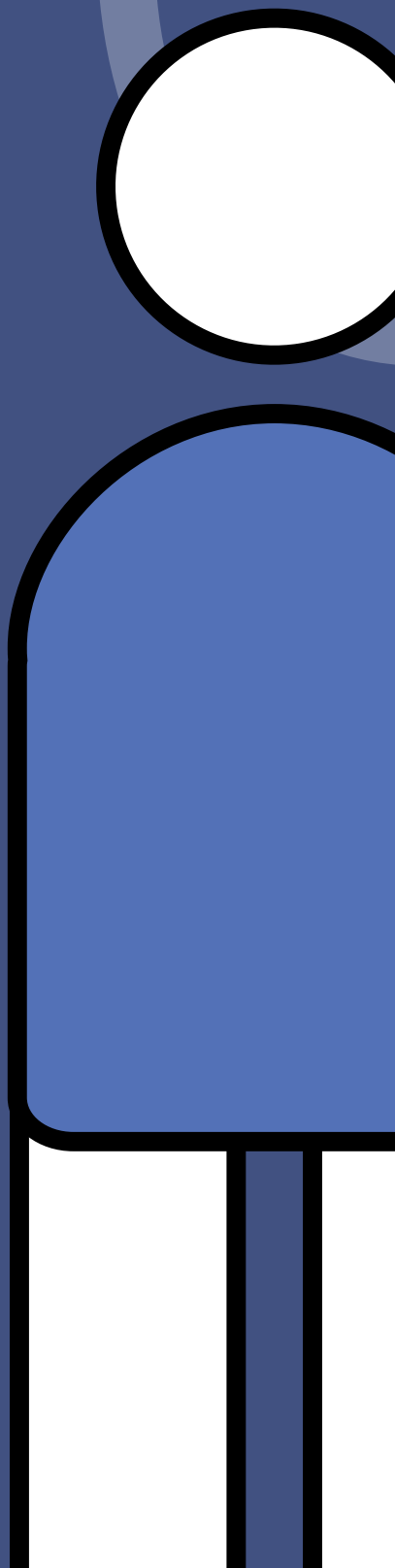


Introduction

As the UK's population lives longer, more people are living in care homes or being cared for in their own homes.

It is estimated that in the UK the current residential and nursing care home population of 450,000 will increase to 1,130,000 in the next 50 years[1].

It is estimated that approximately 1 in 4 care home residents may have diabetes but there are many within care homes that have undiagnosed diabetes[2].

The Good Clinical Practice Guidelines for Care Home residents with diabetes (2010) suggest:

- Care home residents should be screened for diabetes on admission and this should be repeated every two years
- All care home managers should put in place appropriate diabetes-specific training for all staff caring for residents with diabetes
- People living with diabetes being cared for in whatever setting have a high prevalence of vascular complications, are more susceptible to infections, and are more likely to be hospitalised compared to people with diabetes who are still able to live independently.

The aim of this resource is:

- To provide basic education and information about diabetes
- To ensure equity of care for all people living with diabetes who are being cared for
- To support those providing care within the home setting through practical guidance and advice.

[1] Diabetes UK (2010). Good Clinical Practice Guidelines for Care Home Residents with Diabetes; 5
[2] Diabetes UK (2010). Good Clinical Practice Guidelines for Care Home Residents with Diabetes; 5

What is Diabetes?

Diabetes[3] is a condition where the amount of glucose (sugar) in the blood is too high and the body is not able to use glucose for energy effectively. When we eat carbohydrates, this breaks down into glucose. We need glucose for energy.

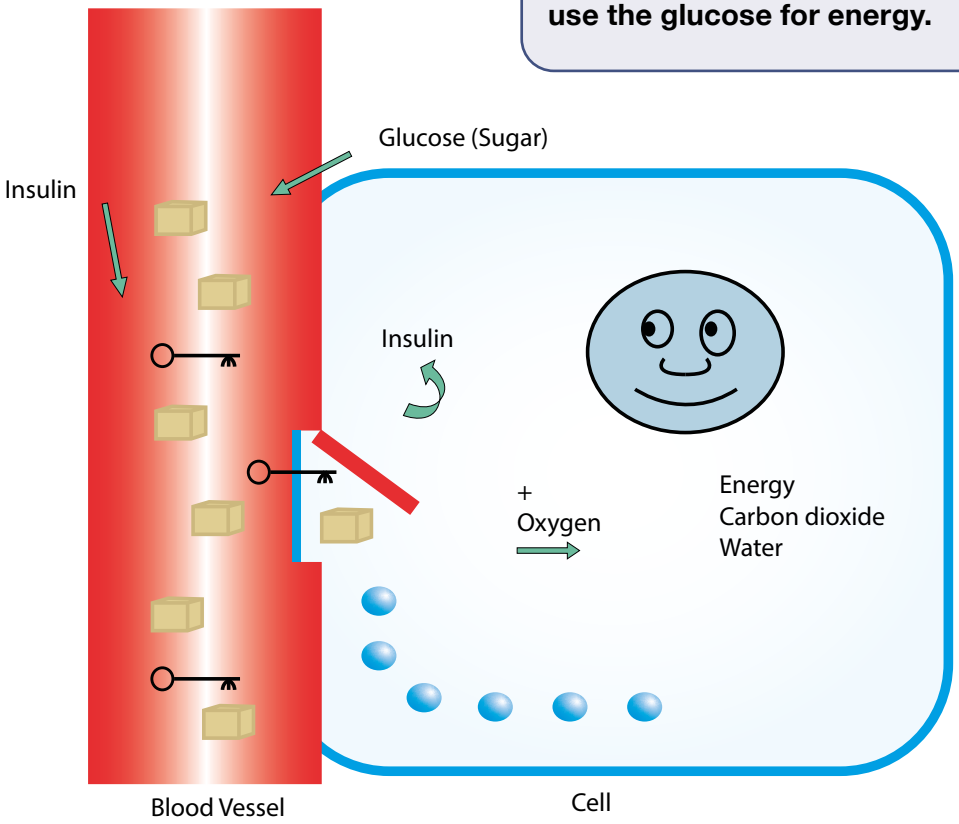
Diabetes is when the body is no longer able to produce insulin (type 1) **or** not enough insulin is being produced and the insulin does not work properly (type 2) and this is known as insulin resistance.

Insulin is a hormone produced by the beta cells in an organ in the body called the pancreas. Insulin allows glucose in the blood stream to enter the cells and the muscles, where it is used as fuel for energy.

Insulin acts as a key that unlocks the cells to allow glucose to enter so that we can use the glucose for energy.

What is diabetes?
Access Diabetes UK's film describing what diabetes is:
https://vimeo.com/303232498/842b47151b

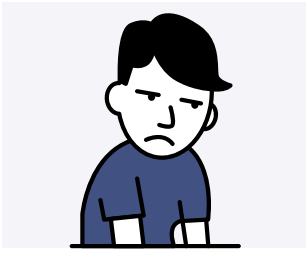
Insulin acts as a key that unlocks the cells to allow glucose to enter so that we can use the glucose for energy.



Novo Nordisk (2008)

[3] Diabetes - NHS (www.nhs.uk)

Symptoms of Diabetes

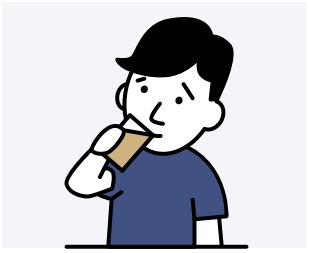


Tired

Glucose is not able to enter the cells to be turned into energy and tiredness and lethargy can be one of the first symptoms that someone might complain of.

Toilet

The body tries to get rid of excess glucose in the blood by sending it to the kidneys and to the bladder and this makes them go to the toilet a lot particularly during the night.



Thirsty

Because the body is losing fluid as urine this may lead to dehydration and they will drink more to compensate.

Thinner

Weight loss is because the body may start breaking down its own body fats for energy and when you lose glucose in the urine that can lead to a loss of calories and therefore weight loss[4].

Symptoms can be quite dramatic in someone newly diagnosed with type 1 diabetes and subtle in someone with type 2 diabetes because it is a slower onset. A person with undiagnosed type 1 diabetes may produce toxins called ketones. These are formed when the body breaks down its own body fats for energy. Ketones make the body acidic and can lead to a condition called diabetes ketoacidosis (DKA) which is discussed under complications of diabetes (see section 10).

Symptoms of diabetes
Access the following link to the Diabetes UK film 'Symptoms of diabetes':
https://www.youtube.com/watch?v=bIhy-Rb2xp4&feature=youtu.be

[4] Diabetes UK (DUK 2022) What are the Signs & Symptoms of Diabetes? https://diabetes.org.uk/diabetes-the-basics/diabetes-symptoms

In the older population be aware of symptoms such as:

- Tiredness or feeling sleepier than usual
- Going to the toilet more frequently or recurring urine infections or thrush
- Incontinence may be associated with age but it could be due to high glucose levels
- Weight loss may be associated with poor appetite particularly in new residents
- Change to their usual routine for someone who is being cared for
- Increase in infections e.g. chest infections requiring frequent antibiotics could be due to high glucose levels
- Poor wound healing
- Mental health, cognitive issues e.g. dementia – they may have a change in behaviour and they may not be able to communicate their symptoms e.g. they may become less settled, exhibit behaviour that can appear challenging
- Confusion could be associated with their mental health status but it may be because they have become dehydrated due to raised glucose levels
- Dry mouth, dry skin – because the body is trying to get rid of excess glucose in the urine which leads to dehydration.

In an elderly and/or frail person symptoms may often be associated with the aging process, frailty or both and they may not be able to express themselves e.g. they may be living with dementia, confused, agitated. They may have dry skin and/or a dry mouth because they have become dehydrated; become incontinent; have frequent infections or poor healing of any wounds and so it may be down to you as their carer to look out for these signs and report them to their health care professional[5].

[5] Hambling C.E.; Khunti K; Cos X; Wens J; Martinez L; Topsever P; Del Prato S; Sinclair A; Schernthaner G; Rutten G; Seidu S. (2018) Original research. Factors influencing safe glucose-lowering in older adults with type 2 diabetes: A PeRsOn-centred ApproaCh To IndiVidualisEd (PROACTIVE) Glycemic Goals for older people. A position statement of Primary Care Diabetes Europe. Elsevier Ltd on behalf of Primary Care Diabetes.13 (2019), 330-352: https://www.sciencedirect.com/journal/primary-care-diabetes

Common types of Diabetes

- **Type 1**
  Develops when the body is unable to produce any insulin. People living with type 1 diabetes will need insulin injections for life. They are insulin dependent. Symptoms of this type of diabetes are usually sudden onset over a period of days, weeks and in some cases (rarely) months[6]
- **Type 2**
  Develops when the body still makes insulin but it doesn't make enough and it doesn't work properly. Symptoms may not be associated with diabetes and so may go undiagnosed for many years[7]. Type 2 diabetes is usually treated with lifestyle changes; tablets; injectable medication which is not insulin and/or insulin. If someone diagnosed with type 2 diabetes needs insulin therapy they are still classed as having type 2 diabetes but they are insulin requiring[8]

Other types of diabetes include:

Latent Autoimmune Diabetes in Adults (LADA)
Latent autoimmune diabetes in adults is a slow-progressing form of autoimmune type 1 diabetes. However, unlike type 1 diabetes, they may not need insulin for several months, up to a few years after diagnosis. Initially, people with LADA are often misdiagnosed with type 2 diabetes, because the pancreas still produces some insulin. Signs to look out for if suspecting someone with LADA are: a diagnosis of type 2 diabetes slim build.

Maturity Onset Diabetes in the Young (MODY)
This is caused by a mutation in a single gene. The key features of MODY are being diagnosed with diabetes under the age of 25. Having a parent with diabetes, with diabetes in two or more generations. They don't always need insulin. MODY is rare compared with type 1 and type 2 diabetes.

Other causes of diabetes include:

Steroid Induced Diabetes
This medication can raise blood glucose levels, which can lead to diabetes. People who require steroids long term may go on to develop type 2 diabetes.

Think of people who are on steroid therapy but have not been diagnosed with diabetes (chronic disease i.e. Asthma, COPD, Polymyalgia rheumatica, palliative care or people who may require chemotherapy treatments) because they are at increased risk of developing type 2 diabetes.

Anti-psychotic drugs i.e. risperidone, aripiprazole, and olanzapine type drugs
These drugs may lead to weight gain and insulin resistance, which increases the risk of developing type 2 diabetes.

Other causes of diabetes
Conditions e.g. cystic fibrosis; pancreatitis; total or partial pancreatectomy; haemochromatosis (too much iron in the body) can lead to diabetes because of damage to the pancreas[9].

[6] Diabetes NHS (2022) accessible from: https://www.nhs.uk/conditions/diabetes [7] NHS Inform (2022) accessible from https://www.nhsinform.scot/illnesses-and-conditions/diabetes/type-2-diabetes#symptoms-of-type-2-diabetes [8] Diabetes NHS (2022) accessible from: https://www.nhs.uk/conditions/diabetes
[9] Diabetes UK (2021) accessible from: Other types of diabetes Diabetes UK

Diagnosing Diabetes

If you suspect someone may have diabetes based on their symptoms, you should contact the GP who is likely to make an assessment and perform blood tests to confirm the diagnosis.

The Good Practice Clinical Guidelines for diabetes (2010) suggests that all residents in care homes should be screened for diabetes on admission and then screened every two years. This can be done by the GP.

We know the risk of developing type 2 diabetes increases with age particularly where they may have other risk factors i.e. ethnicity, sedentary lifestyles, increasing weight and/or obesity and poor diet e.g. high fat and/or high carbohydrate diet. We also know that socio economic factors contribute to risk factors e.g. poor home conditions, limited financial resources and certain medications e.g. steroids; antipsychotic medications that can increase the risk of developing type 2 diabetes.

Ethnicity and Diabetes

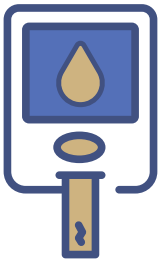
It is not clear how ethnicity increases the risk of diabetes, but evidence suggest that people from Black African, African Caribbean and South Asian backgrounds are at risk of developing type 2 diabetes from the age of 25 as opposed to a white population where the risk increases from the age of 40. It is also known that in the Asian population they are more predisposed to becoming insulin resistant (the insulin does not work efficiently) at a younger age[10].

It is important to understand what the symptoms of diabetes are because they can be missed.

Knowing the symptoms of diabetes and how it is diagnosed is really important when managing people in care homes and within their own homes, because they may not be able to tell you. **If diabetes is suspected report symptoms to the GP or health care provider.**

Information on blood tests used to diagnose diabetes you can click the following link:

Diagnose diabetes
Please access the link below for information on blood tests used to diagnose diabetes:
https://www.diabetes.org.uk/diabetes-the-basics/test-for-diabetes



It is important to understand what the symptoms of diabetes are because they can be missed.

[10] Diabetes UK (DUK) accessible from: https://www.diabetes.org.uk/preventing-type-2-diabetes/diabetes-ethnicity

Glucose Monitoring

Glucose monitoring guidance

This is recommended guidance based on good practice. This guidance should not replace local guidance or policies. Glucose monitoring should only be conducted by those who have been assessed as competent to do so. Equipment to glucose monitor should be as per recommended meters used in line with all Wales recommended meters and equipment. Equipment should always be quality assured and used as per manufacturers guidance.

The main purpose of glucose monitoring is to:

- keep the person with diabetes safe
- monitor and prevent hypoglycaemia and/or hyperglycaemia
- maintain glucose levels to agreed individualised targets
- ensure treatment is effective
- improve overall diabetes management to prevent complications or further deterioration of existing complications.

Glucose testing should not be performed unless individuals have been educated and trained to do so. If you are employed as a carer you should only be performing this procedure as per your local guidance.

Routine monitoring of glucose is recommended in the following circumstances (NICE 2020)[11]:

- the person is on insulin
- there is evidence of hypoglycaemic episodes
- the person is on oral medication that may increase their risk of hypoglycaemia
- the person is on steroids.

If a person living with diabetes is self-monitoring blood glucose levels, an annual assessment should be carried out as a minimum, to assess:

- the person's self-monitoring skills
- the quality and frequency of testing
- check the person knows how to interpret glucose results and what action to take
- the impact on the person's quality of life
- the continued benefit to the person
- the equipment used (including sharps bin, glucometer, lancet device)[12].

[11] National Institute for Health and Care Excellence (NICE) (2020) Managing blood glucose in adults with type 2 diabetes. Chapter 4 NICE Pathways. London: National Institute for Health and Care Excellence.

[12] National Institute for Health and Care Excellence (NICE) (2020) Managing blood glucose in adults with type 2 diabetes. Chapter 4 NICE Pathways. London: National Institute for Health and Care Excellence.

Frequency of testing recommendations

Person with diabetes	Frequency of monitoring
All people admitted to care/nursing homes	Test on admission to care/nursing home
Once daily insulin	Monitor pre insulin injection (once in 24 hours)
Twice per day insulin	Monitor pre insulin injections (2 tests minimum in 24 hours)
Four times per day insulin	Monitor pre insulin injections (4 tests minimum in 24 hours)
Oral medication with risk of hypoglycaemia e.g. Gliclazide; Glibenclamide; Glimepiride; Glipizide; Nateglinide	Monitor at least once per day at any pre meal time (1 test minimum in 24 hours)
Unwell	Increase monitoring (minimum of 4 tests per day, include pre meal and pre bed and overnight testing if needed)
Hypoglycaemia (less than 4mmol/L)	Treat as per local or recommended national guidance; monitor every 10 – 15 minutes until level is to agreed individualised target
Changes in diabetes treatment with risk of hypo's e.g. Insulin; Gliclazide etc.	Monitor pre meals and pre bed (four tests per day for minimum of 3 days) until glucose levels are stable and then follow recommendations or local health professionals instructions

Adapted from Medicines and Healthcare products Regulatory Agency (MHRA), 2013.
https://www.magonlinelibrary.com/doi/full/10.12968/bjon.2019.28.7.434#B18

Glucose Targets and Testing

Glucose levels are an important part of managing diabetes. Targets should be agreed by the person and or carer and health care professional. The purpose of agreeing targets is to provide a marker to help inform us of whether the person's glucose levels are running too high, too low or within recommended targets. This is important to ensure the person is receiving a reasonable level of diabetes care to ensure they are safe and to avoid short and long term complications.

The aim of diabetes management of frail and older people living with diabetes is to avoid hypoglycaemia (low blood glucose) and hyperglycaemia (high blood glucose), which could lead to an increase in hospital admissions, and exacerbate other conditions that may affect their quality of life. There is guidance available stating recommended targets but these should be individualised and agreed by their GP and should be part of an individualised care plan.

Recommended glucose levels are difficult to define in the older age group and should be individualised according to their ability to function; other chronic conditions; frailty and cognitive ability[13,14].

Hypoglycaemia is less than **4.0** mmol/l

Aim for glucose target of **6 – 12** mmol/L

Last days of life aim above **8.0** mmol/L

It is known that severe hypoglycaemia can lead to further cognitive decline and accelerate the aging process[15].

Likewise hyperglycaemia can lead to infections, delay healing and increases the risk of cardiovascular complications and deterioration in other conditions and aspects of their lives.

Guidelines for older adults living with diabetes recommend maintaining glucose levels within a range of 6 – 12 mmol/L.

The End of Life Diabetes Guidance recommend maintaining a glucose level above 8.0 mmol/L[16] **(see section on end of life care)**.

Targets should ideally be individualised, agreed and documented as part of their care plan.

[13] C.E. Hambling a,b,*, K. Khunti b, X. Cosc, J. Wens d, L. Martineze, P. Topsever f, S. Del Prato g, A. Sinclair h, G. Schernthaner i, G. Ruttenj, S. Seidu (2018) Original research. Factors influencing safe glucose-lowering in older adults with type 2 diabetes: a person-centred approach to individualised (proactive) glycemic goals for older people a position statement of primary care diabetes europe. Elsevier ltd on behalf of primary care diabetes europe.

[14] Sinclair A (2019) Key learning points: diabetes in older people with frailty accessed from: Key learning points: diabetes in older people with frailty | Key learning points | Guidelines in Practice 29/09/2021.

[15] Bruce DG; Davis WA; Casey GP; Clarnette RM; Brown SGA; Jacobs IG; Almeida OP; Davis TME (2009) Severe hypoglycaemia and cognitive impairment in older patients with diabetes: the Fremantle Diabetes Study.

[16] Diabetes UK END OF LIFE DIABETES CARE Clinical Care Recommendations 3rd Edition March 2018 https://diabetes-resources-production.s3.eu-west-1.amazonaws.com/resources-s3/public/2021-11/EoL_TREND_FINAL2_0.pdf

Day to day glucose monitoring tests

The aim of monitoring glucose levels is to keep people:

- safe
- avoid symptoms
- promote quality of life

Glucose tests should only be performed by those competent to do so and in accordance with local guidance. This may be done using a finger prick test or using technology such as 'flash' monitoring e.g. Libre monitoring systems.

Monitoring frequency should be advised by the health care professional **(see section for advice on glucose and ketone monitoring)**.

Glucose tests should only be performed by those competent to do so and in accordance with local guidance.

Intermittent (Flash) or Continuous Glucose Monitoring

This is available for people with diabetes who are on insulin; who may be having frequent or severe hypo's; may be unable to finger prick or they need to glucose test eight or more times per day (NICE 2022).[17]

A small disc called a sensor, can be sited on various parts of the body. The sensor monitors glucose levels in the fluid (not in the blood). Results can be seen on a meter (known as a reader) and needs to be scanned or 'flashed' across the sensor at least every eight hours. Glucose readings can be viewed on a mobile (smart) phone or device continuously.

If glucose levels are low or high, the advice is to test blood glucose levels for accuracy at these times. Therefore people using this technology should still be prescribed blood glucose monitoring equipment and test strips.

Health Technology Wales
Statement on prescribing Freestyle Libre flash glucose monitoring system for type 1 and type 2 diabetes: **https://www.a-c-d-c.org/wp-content/uploads/2012/08/HTW-Statement-FreeStyle-Libre-glucose-monitoring-v1.1.pdf**

[17] NICE (2022b) Type 1 diabetes in adults: diagnosis and management. NG17. NICE, London. Available at: **https://www.nice.org.uk/guidance/ng17**; NICE (2022c); Type 2 diabetes in adults: management. NG28. NICE, London. Available at: **https://www.nice.org.uk/guidance/ng28** (accessed 22/07/24). Quality statement 4: Continuous glucose monitoring for adults who use insulin and need help monitoring their blood glucose | Type 2 diabetes in adults | Quality standards | NICE (accessed 22/07/2024).

HbA1c test

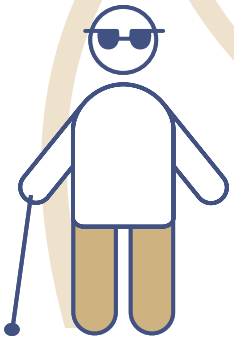
This is a blood test taken from a vein in the arm. It can be taken at any time of day. It is used to measure the amount of glucose in the blood over a period of 2 – 3 months and this is measured in mmol/mol. This blood test indicates how well managed a person's diabetes is.

The table below recommends the HbA1c range based on the person's frailty. So for example, in a fit older adult with diabetes we should aim to achieve a HbA1c of between 53 – 58 mmol/l[18].

The view is that very few people aged 70 years or over with diabetes benefit from having strict glucose levels with a HbA1c of less than 53 mmol/L[19].

Electronic Frailty Index Score[20]	Lower Threshold	Upper Threshold
The fit older adult with diabetes	HbA1c 53 mmol/mol	HbA1c 58 mmol/mol
Moderate — severe frailty	HbA1c 58 mmol/mol	HbA1c 64 mmol/mol
Very severe frailty	HbA1c 64 mmol/mol	HbA1c 70 mmol/mol

Clegg et al & De Blase 2016



People with diabetes who are aged 65 years and over should be assessed for frailty including severity of frailty. Frailty should be assessed by GP and/or health care provider.

[18] Strain W, Hope S, Green A, Kar P, Valabhji J, Sinclair A. 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. Diabet Med 2018; 35 (7): 838–845.
[19] Clegg A, Bates C, Young J et al. Development and validation of an eletronic frailty index using routine primary care electronic health record data. Age Ageing 2016; 45: 353-360.
[20] De Blase S. The Electronic Frailty Index Guidance Notes. Yorkshire and Humber Academic Health Science Network Improvement Academy. Available at: https://www.improvementacademy.org

A clinical frailty scale produced by the National Institute for Health and Clinical Excellence[21] provides some explanation to define frailty (for those in a critical care situation) but advises using this with caution in individuals under the age of 65 years.

An older adult who is assessed as having moderate frailty	According to the UK Frailty score this means they need help with all outside activities, housework including needing some assistance with personal care such as bathing and dressing. They may have difficulty with stairs.
The severely frail older adult	Completely dependent for personal care, whether it be due to physical or cognitive reasons. The scale states they may appear stable and not at high risk of dying within 6 months.
The very severely frail adult	Completely dependent and approaching end of life. They are unlikely to recover even from a minor illness.

Adapted from Strain S et al (2018) cited in Sinclair A (2019)

Frailty and Glucose Targets

People within the moderate to severe and very severe frailty group would be at a greater risk of hypoglycaemia (low glucose level) and its complications. Therefore, a realistic target for glucose levels and HbA1c would be set towards a higher level. This would be a safer approach to reducing risks of hypoglycaemia without causing symptoms of hyperglycaemia (high glucose levels) that may affect quality of life.

- People with diabetes who are aged 65 years and over should be assessed for frailty including severity of frailty
- Glucose targets should be sensible, safe, and appropriate
- The aim is to avoid hypoglycaemia and hyperglycaemia, which could lead to an increase in hospital admissions, and exacerbate other conditions that may affect their quality of life
- All older adults with diabetes and frailty should have their medications checked and reviewed by their health care professional at least annually, as part of their diabetes review[22].

Further reading
Specialised Clinical Frailty Network
https://www.scfn.org.uk

Clinical Frailty Scale
https://www.scfn.org.uk/clinical-frailty-scale

[21] NICE guideline [NG159] (updated 2021) COVID-19 rapid guideline: critical care in adults.
[22] Sinclair A (2019) Key learning points: diabetes in older people with frailty accessed from: Key learning points: diabetes in older people with frailty | Key learning points | Guidelines in Practice 29/09/2021.

Ketone Testing

Who is at risk of developing ketones?

- People with type 1 diabetes
- People with type 2 diabetes who may be on medications that end in 'flozin' e.g. Empagliflozin, Dapagliflozin, Canagliflozin, Ertugliflozin

Glucose levels do not have to be raised to develop ketones. If a person with diabetes is vomiting, dehydrated, is acutely unwell, or has intercurrent illness they are at risk of developing ketones. This may lead to a serious complication called diabetic ketoacidosis (DKA). Blood ketone monitoring is a more accurate measure than those found in urine.

If ketone monitoring is performed and a blood ketone level is above 0.6 mmol/L or a urine ketone of 1 + or more should be reported to the GP or out of hours if appropriate.

Consent

Due to the invasive nature of ketone monitoring, informed consent should be obtained from the person prior to the procedure in line with the Nursing & Midwifery Council Code of Conduct (2021) and the mental Capacity Act (2020)[23,24].

Ketone testing should not be performed unless individuals have been educated and trained do so. If you are employed as a carer you should only be performing this procedure as per your local guidance[25,26].

[23] Nursing and Midwifery Council (NMC) (2015) The Code: Professional standards of practice and behaviour for nurses, midwives and nursing associates accessible from https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-code.pdf

[24] Mental Capacity Act (2020) Mental Capacity Act - Health Research Authority www.hra.nhs.uk

[25] Nursing and Midwifery Council (NMC) (2015) The Code: Professional standards of practice and behaviour for nurses, midwives and nursing associates accessible from https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/nmc-code.pdf

[26] Mental Capacity Act (2020) Mental Capacity Act - Health Research Authority www.hra.nhs.uk

Point of Care Testing (POCT)

This section provides information for employed carers who undertake blood glucose and/or ketone testing in accordance with their local guidance and policy[27].

What is POCT?
Point of Care Testing (POCT) is defined as any pathology test performed by a healthcare professional outside a conventional pathology setting close to the patient.

Other terms commonly used to describe POCT include:

- Near patient testing (NPT)
- Bedside testing
- Extra-laboratory testing
- With patient testing

Types of POCT

- Blood glucose testing
- Blood ketone testing
- Urine testing

Why do we need POCT?
POCT used properly and appropriately can have significant advantages providing a result close to the patient allowing for rapid clinical decision making. However, if used inappropriately incorrect results can be produced and acted upon that may lead to harm.

Before using any POCT equipment, the user needs to be trained by an approved trainer/coordinator.

What is Quality Assurance?
Quality Assurance is a system that monitors the accuracy of the results obtained by checking the meter, strips and user technique. There are internal quality control (IQC) and external quality assurance (EQA). External quality assurance may not be available in your area.

IQC – Internal Quality Controls
These are tests taken daily or weekly depending on the use of the meter and are control solutions with a known range of values. The solutions are applied to the strip and the results checked for accuracy. Results are recorded along with the date time batch number of strip and user details. A protocol should be in place and all users trained in IQC.

EQA – External Quality Assurance
This is when samples with unknown values are sent regularly (monthly, 2 monthly or 3 monthly) tested by the user and results are returned to the external provider. Results are checked for accuracy and if there are significant deficits in the results the user/site is contacted.

The Laboratory POCT team can either organise a local scheme or recommend appropriate accredited External Quality Assessment Schemes.

[27] NICE (2020) Managing blood glucose in adults with type 2 diabetes. Chapter 4 NICE Pathways. London: National Institute for Health and Care Excellence Routine monitoring of glucose is recommended in the following circumstances (NICE 2020).

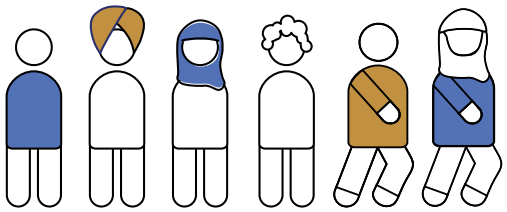
Complications and management of diabetes

In this section we are going to describe and discuss the complications of diabetes. We will then discuss and describe how diabetes can be managed to help prevent complications and avoid or prevent further deterioration.

Lifestyle management is a key component in managing diabetes and should be considered as part of a care assessment and as part of a diabetes annual review.

A diabetes care assessment should be based on the care processes recommended by NICE and should include the following as part of an overall assessment:

- psychological and cognitive issues
- diet and nutrition review
- medications used in managing diabetes
- glucose/ketone monitoring
- activity levels
- alcohol intake



Diabetes UK Cymru estimates that 209,015 people are now living with diabetes in Wales.

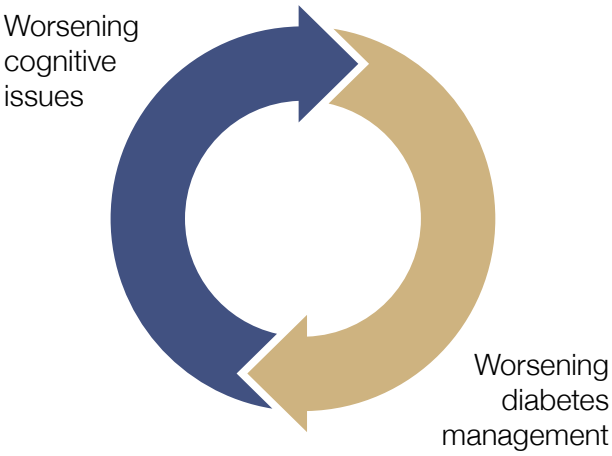
1 in 4 people in care homes have diabetes[28].

[28] Diabetes UK (2021) accessible from: Other types of diabetes Diabetes UK
https://www.diabetes.org.uk/professionals/resources/shared-practice/diabetes-care-in-care-homes

Psychological and cognitive issues in older people living with diabetes

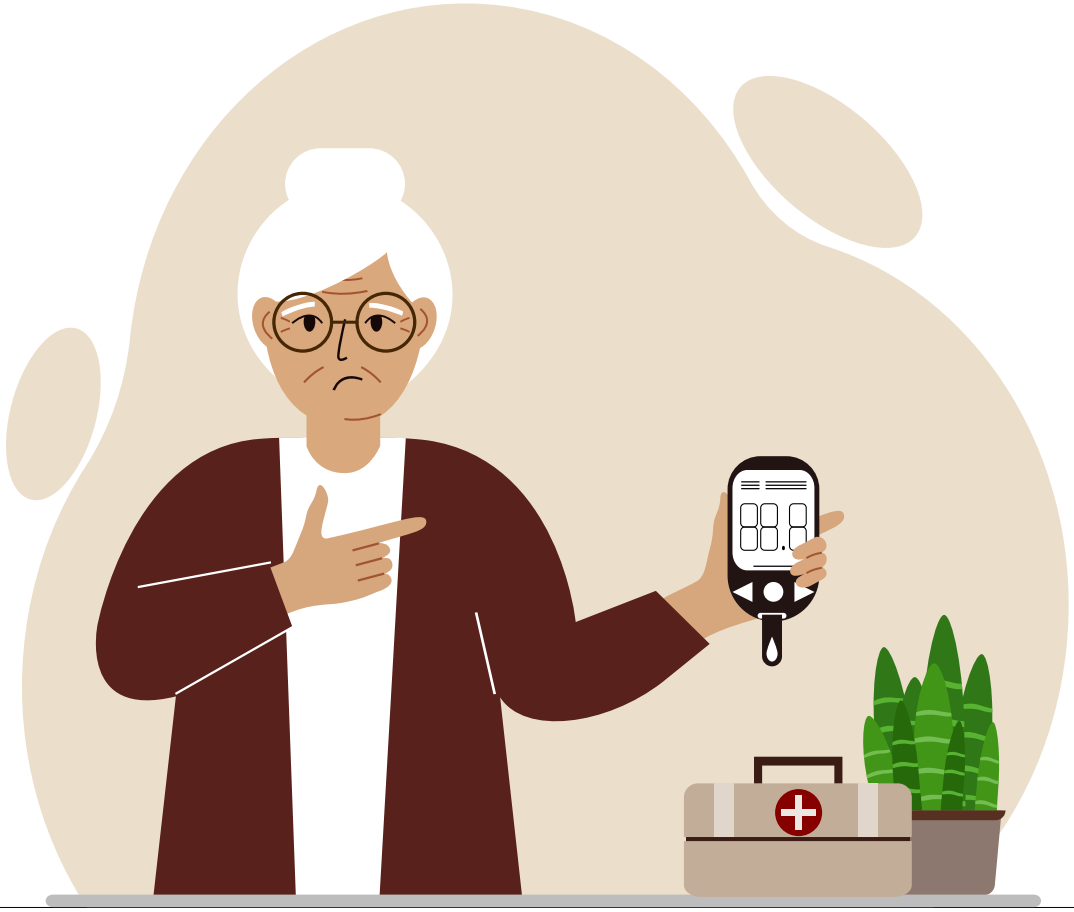
Psychological issues in older people living with diabetes

- People living with diabetes are more likely to experience common psychological issues like depression and anxiety, and have an increased risk of suicide. It is important to regularly assess and monitor a person's mood for any potential issues and/or signs of decline
- These psychological issues could go undiagnosed in someone living with dementia and instead be thought of as a "psychological symptom of dementia"
- The presence of untreated psychological issues makes it harder for a person to manage their diabetes, which in turn increases a person's psychological distress
- Where there are concerns about the psychological health of a person who is self-managing their diabetes medication, it is important to closely monitor their medication administration and have plans in place to provide further support and/or take over medication administration should risks be identified.



Cognitive issues in older people living with diabetes

- Older people living with type 2 diabetes have a much higher risk of developing dementia than older people without diabetes
- The increased dementia risk is for both vascular and neurodegenerative type dementia (Alzheimer's)
- It's important to regularly monitor older people living with diabetes for signs of cognitive issues and cognitive decline. Any concerns should be relayed back to the person's GP and a memory assessment may be required.
- People with diabetes and prolonged high blood glucose levels are at the highest risk of dementia. The incidence of severe hypoglycaemia (low blood sugar) also increases the risk of dementia
- People with cognitive issues like dementia find it harder to manage their diabetes. This then leads to a vicious cycle of unstable blood glucose leading to worsening cognitive issues
- Where there are concerns about the cognitive health of a person who is self-managing their diabetes medication, it is important to closely monitor their medication administration. Ensure plans are in place to provide further support and/or take over medication administration should risks be identified.



Short Term Complications of diabetes

Hypoglycaemia (hypo – low glucose levels)

This is a blood glucose level of less than 4.0 mmol/l and should always be treated with fast acting glucose to prevent complications such as a fall; worsening of other conditions; fitting or collapse **(see section on treatment of hypo's page 30)**.

Why is this important?

Your brain needs glucose to function. If the glucose level drops it will affect behaviour. People may not always be able to explain their symptoms and tell you they are having a 'hypo' so they may need to have their glucose target set at a higher range to reduce their risk of having a hypo.

Hypoglycaemia may lead to:

- falls
- arrhythmias or angina/chest pain,
- fitting and coma if not managed quickly and appropriately

A change in behaviour or in how they 'look' should alert you that their glucose levels may be dropping. The priority is to ensure the person with diabetes is safe, and the target glucose range should be individualised and documented as part of their care plan.

What does a hypo feel like?
Access Diabetes UK's film describing what a hypo feels like:
https://www.facebook.com/diabetesuk/videos/143063024685056/

Who is at risk of having a hypo?

People with diabetes on insulin therapy and/or tablets e.g. gliclazide:

- who may have lost their hypo awareness signs
- who have had recent changes in medications
- who have a poor appetite or change in diet/feeding regime (may be a new resident who is having difficulty in settling and those refusing to eat or unable to eat)
- who are currently unwell
- who have kidney disease
- who have heart disease
- who have liver disease
- of advancing age or mental health issues (who may be unable to communicate they are having symptoms).

Managing Hypos
Please access the following PocketMedic film on managing hypos:
https://vimeo.com/manage/videos/303236002/9e81eda8b7

Anyone needing insulin or certain glucose-lowering tablets called Sulphonylureas (e.g.)

- gliclazide
- glimepiride
- glibenclamide
- glipizide or glinides (e.g. repaglinide).

have a higher risk of hypoglycaemia particularly if their usual meal pattern is altered through acute illness or nausea. It is important to be aware of who may be at risk of having a 'hypo' so that you can try to prevent it from happening.

It can be quite alarming for a person having a hypoglycaemic event and it can also be scary witnessing a hypoglycaemic episode. Therefore, knowing the signs and symptoms and being able to identify who is at risk can help to prevent them in the first place.

Hypo Unawareness

Some people may have no symptoms or they may not be able to tell you they have symptoms and so it may be down to you as their carer to be observant.

If you suspect that someone you care for may be unaware they have symptoms, inform the GP or usual health care professional.

What are the causes of hypoglycaemia?

People with diabetes on insulin therapy and/or tablets e.g. gliclazide:

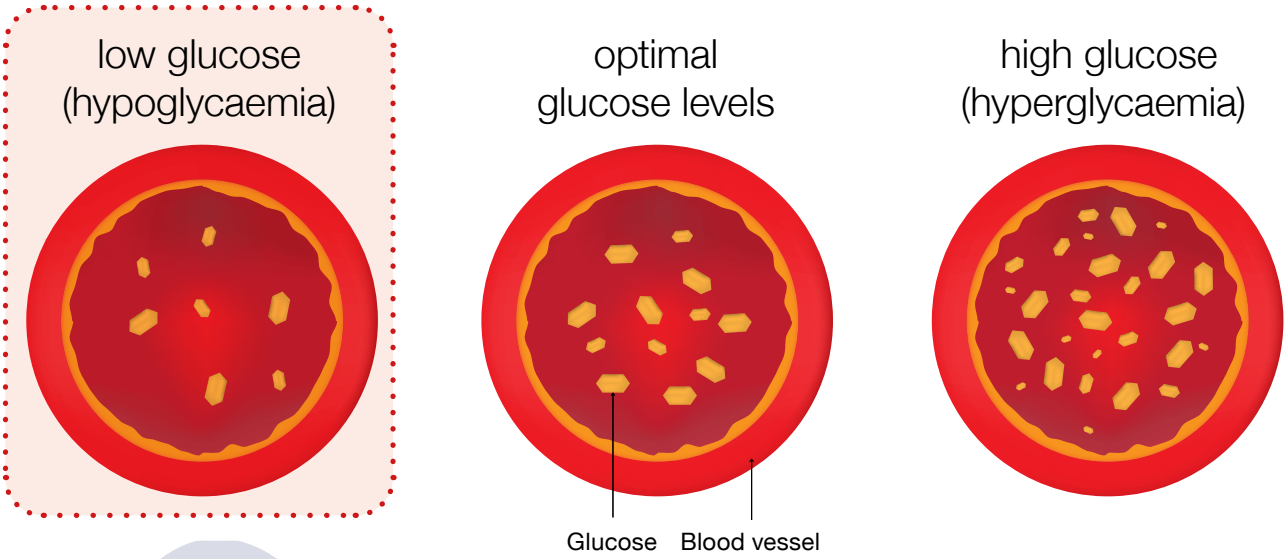
- missed or a delayed meal or snack
- poor appetite, feeling unwell
- not taken enough carbohydrate at the previous meal
- too much insulin (or diabetes tablets such as Gliclazide)
- more activity than usual (without having extra carbohydrate)
- too much or taken alcohol on an empty stomach
- very hot weather which can increase the speed of absorption of insulin.

If someone is having a hypoglycaemic event, the priority is to treat it. Once it is treated and the person is safe, you need to think about what may have caused it so that you can prevent it from happening again.

What are the Symptoms of hypoglycaemia?

- tiredness/lethargy/sleepy
- tingling of the lips
- pale or change in colour
- feeling unusually hungry
- change in mood/behaviour/confusion
- sweating
- palpitations
- slurring of speech
- not responding to questions/commands
- poor coordination and/or unsteady on feet
- feeling light headed/dizzy.

Hypoglycaemia may lead to falls, arrhythmias or angina/chest pain and coma if not managed quickly and appropriately.



Management of hypoglycaemia (low blood sugar, less than 4 mmol/L)

MILD Conscious and able to swallow	MODERATE Conscious and able to swallow, but in need of assistance	SEVERE Unconscious and unable to swallow May be fitting
Step 1		
Administer 20g of fast-acting glucose **Choose 1 of the recommended treatments below:** • 6 x dextrose tablets* • 5 large jelly babies • 200mls smooth pure orange juice (small carton) • 60mls Lift juice *can be dissolved in small amount of cold water.	**Administer 20g of fast-acting glucose in the form of:** • 2 tubes glucose gel (10g glucose per tube) ***How to administer*** Squeeze the gel into the mouth between the teeth and gums on the lower inner cheeks.	**Ask for help, check airway & Call 999** **Administer 1mg of Glucagon intramuscular injection only if trained and competent to do so and if prescribed** *If unable to administer glucagon, or the resident unresponsive to treatment* • Place resident in recovery position until emergency services arrive
Step 2		
• Wait 15 minutes before re-checking glucose levels • If glucose remains less than 4.0 mmols/L, or no physical improvement; REPEAT STEP 1 • STEP 1 can be done up to 3 times, **BUT if no improvement, or condition deteriorates, CALL 999 for emergency assistance**		• Blood glucose levels can be re-checked after 10 minutes following glucagon
Step 3		
When the HYPO has been treated successfully, ALWAYS follow-up with a slower-acting starchy carbohydrate such as: sandwich, medium banana, 2 biscuits, 200mls glass of milk, or meal, if due. When hypo event is resolved document actions. **ALWAYS INVESTIGATE THE CAUSE OF HYPO**. If no obvious cause, or there has been two or more episodes, contact the GP or, if appropriate, the Community Diabetes Team to review medication.		

Adapted with permission from the Diabetes Monitoring Plans for Nursing Homes devised by Nicola Hewer CDSN Education Practitioner C&V UHB 2021, Adapted from A Covid-19 Response Action – Diabetes Management in Care Homes. A National Stakeholders Covid-19 Response Group Interim Guidance. Covid-19 and Diabetes: Interim Care Home Guidance (28th April 2020) National Stakeholders Writing Group and Contributors Professor Alan Sinclair (Co-Chair), Professor Ketan Dhatariya (Co-Chair), Olivia Burr, Dr Dinesh Nagi, Professor Partha Kar, David Jones, Dr Philip Newland-Jones, Dr Kath Higgins, Dr Mayank Patel, Dr Ahmed Abdelhafiz, Dr David Hopkins, Dan Howarth, Catherine Gooday accessible from: Covid-19-and-Diabetes-Care-Home-Guidance-28042020.pdf (abcd. care)

Remember if the person with diabetes is not improving, you should contact the GP or out of hours' service if appropriate, or ring 999 for help.

If you are worried that a person with diabetes you are caring for may be at increased risk of hypoglycaemia, you should contact the GP or usual health care professional to review treatment to reduce the risk of hypoglycaemic events.

Managing Hypos
Please access the following PocketMedic film managing hypos:
https://vimeo.com/manage/videos/303236002/9e81eda8b7

Hyperglycaemia – (high glucose levels)

Hyperglycaemia is the medical term used for high glucose levels. This occurs when the body doesn't have enough circulating insulin, or the body is resistant to insulin, glucose remains in the blood and cannot enter the cells where it is needed to be used as energy[29].

Why is this important?

- High glucose levels can increase the risk of infections and delay the healing process e.g. people will be predisposed to recurring infections despite treatment and if they have a skin condition or a wound this would take much longer to heal and may deteriorate further. Hyperglycaemia can also lead to dry skin and dehydration, which may lead to confusion, delirium or falls
- Persistently raised levels of glucose can lead to many serious life-threatening complications. Therefore, to prevent potential complications it is essential blood glucose levels are managed appropriately[30].

To prevent potential complications of the disease it is essential blood glucose levels are managed appropriately.

If you are caring for someone with diabetes and they have raised glucose levels that are not responding to treatment, you must contact the GP or usual health care professional.

[29] American Diabetes Association (2020) Approach to individualised glycaemic targets. Arlington County, Virginia, United States: American Diabetes Association.
[30] Mouri M; Badireddy M (2021) Hyperglycaemia. NVBI Bookshelf. A service of the National Library of Medicine, National Institutes of Health https://www.ncbi.nlm.nih.gov/books/NBK430900

Who is at risk of having hyperglycaemia?

- people with diabetes that are currently unwell particularly if they have a fever or infection
- stress can increase glucose levels
- any changes with their medication
- those who have not had a medication review in some time
- people on steroid therapy
- those with other chronic conditions
- people who are obese, overweight or have had a sudden weight increase
- those who are taking antipsychotic medications e.g. Risperidone, Olanzapine etc.
- those with swallowing difficulties or who may not be able to tolerate their medication
- people who may have poor absorption of insulin due to hard or soft lumps at the injection sites known as lipotrophy
- any changes in their diet and/or activity levels.

It is likely that a person with diabetes will experience hyperglycaemia at some point in their life. Therefore, it is vital you are able to recognise and report the symtoms to their health care provider.

An occasional episode of hyperglycaemia should not be a cause of great concern and will often return to normal levels over a course of a few hours with or without treatment.

A client with high blood glucose levels over an extended period needs to be reviewed.

If you are worried, you need to contact the GP in the first instance or their usual health care professional. Alternatively, it may be appropriate to contact the Out of Hours Service.

Cause and Prevention of Hyperglycaemia

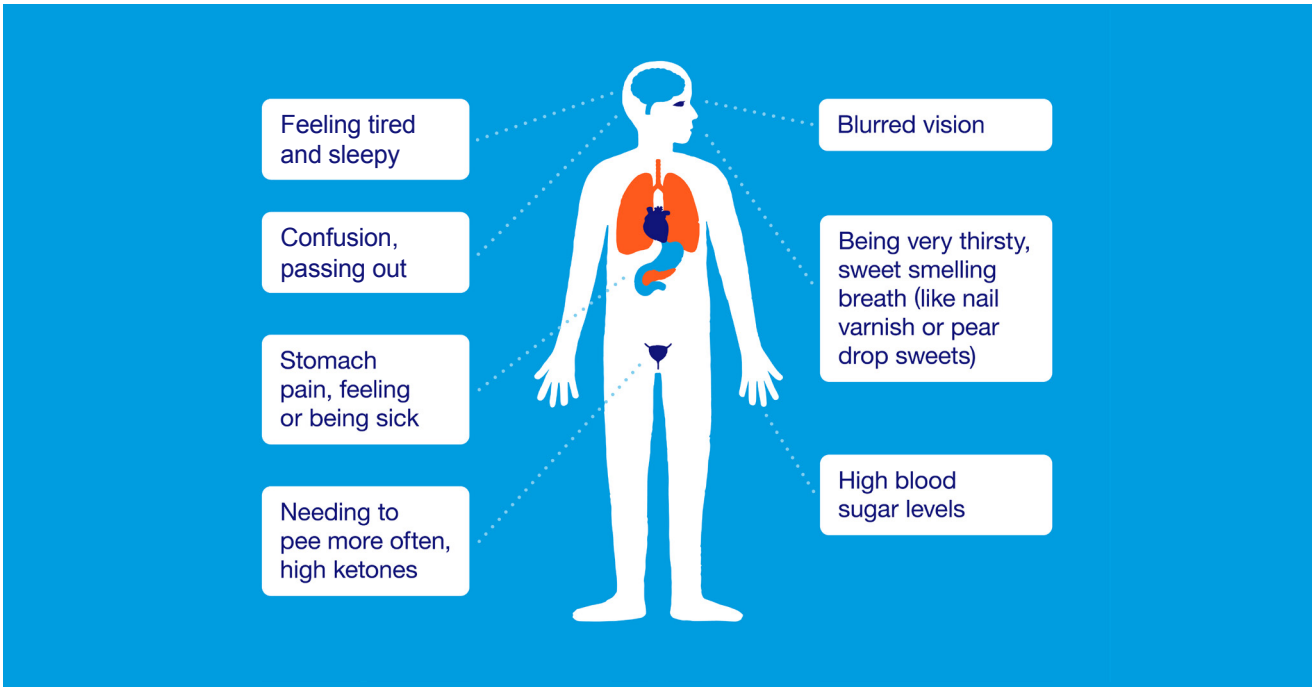
Knowing what causes hyperglycaemia will help you to assess someone who may be at an increased risk of developing high glucose levels so that you can try to prevent it in the first place[31]. Think about the following:

- the amount and type of carbohydrate portions eaten – too large may lead to hyperglycaemia
- Encourage appropriate daily activity (discuss with health care professional if unsure)
- Remember diabetes medication should be taken as prescribed and at the right time
- Over treating a hypoglycaemic event (hypo – low blood glucose) could lead to high glucose levels

Diabetes UK (DUK) (2020) Hyperglycaemia (Hyper's) accessible from: https://www.diabetes.org.uk/guide-to-diabetes/complications/hypers

- Medication reviews are important to ensure they are on the right treatment, making changes where necessary
- Monitor blood glucose levels more frequently unwell
- Encourage sugar free fluids to prevent dehydration.

Symptoms of Hyperglycaemia



[31] Diabetes UK (DUK) (2020) Hyperglycaemia (Hyper's) accessible from https://www.diabetes.org.uk/guide-to-diabetes/complications/hypers

Other symptoms may include:

- Incontinence (can often be associated with age) or urgency in trying to go to the toilet
- Dry mouth, dry skin
- Falls particularly if they have poor mobility and are needing to make frequent toilet trips
- Recurrent infections e.g. urine infections; thrush; chest/wound infections; poor healing
- Confusion or in some cases delirium or worsening of dementia and or mental health.

If you are worried, you need to contact the GP in the first instance or their usual health care professional. Alternatively, it may be appropriate to contact the Out of Hours Service.

Type 1 diabetes
What to do when you are unwell
https://vimeo.com/299847913/c28ef6a876

Type 2 diabetes
What to do when you are unwell
https://vimeo.com/299848081/36023dd031

Medication reviews are important to ensure they are on the right treatment making changes where necessary.

Acute Complications of Hyperglycaemia

Diabetic Keto-Acidosis (DKA)
When the body doesn't have enough insulin to allow glucose to enter the cells for energy, the body turns to an alternative source for energy and starts to break down fats.

This produces ketones. Ketones make the blood acidic, this can be extremely dangerous and life threatening.

DKA can happen to anyone with diabetes, but it is more common in type 1 diabetes. Hyperglycaemia is not always present when they develop ketones, but they will be unwell. Therefore, if you are concerned about someone who is unwell you should contact their health care professional.

Diabetes medications e.g. Dapagliflozin, Empagliflozin and Canagliflozin increase the risk of DKA in people with type 2 diabetes. During times of illness these may need to be temporarily stopped. DKA is usually caused by an acute event or underlying infection. Again, if you are concerned about someone with diabetes who is unwell and you suspect they may have DKA, contact their health care professional immediately for advice.

Hyperosmolar Hyperglycaemic State (HHS)
This can occur in a person (adult) with diagnosed or undiagnosed Type 2 diabetes. They may present with severe dehydration and marked hyperglycaemia (30 mmol/L or more) they will be very unwell. HHS is a medical emergency that requires urgent medical attention[32]. It is usually caused by an acute event e.g. heart attack or acute kidney problem but commonly it is due to an underlying infection.

What to do if the person with diabetes is unwell and you suspect DKA or HHS?

There are resources available that provide information on sick day rules – but you should contact the GP or out of hours' service immediately for advice.

TREND are an excellent resource for guidance on managing diabetes during intercurrent illness: **https://trenddiabetes.online/wp-content/uploads/2017/02/TREND-consensus.pdf**

[32] Joint British Diabetes Societies for Inpatient Care Group Diabetes at the front door. A guideline for dealing with glucose related emergencies at the time of acute hospital admission. February 2020 (internet publication). https://abcd.care/sites/abcd.care/files/site_uploads/JBDS_Guidelines_Current/JBDS_16_Diabetes_at_the%20Front_Door_updated_September_2021.pdf

80% of NHS spending on diabetes is spent on managing complications.

Long Term Complications of diabetes

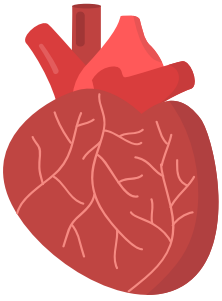
Permanent damage can occur in the body as a direct result of persistently raised blood glucose levels[33]. This is why it is important to try to maintain glucose levels between 6 – 12 mmol/l. Too much glucose in the blood can be very irritant to the blood vessels and can lead to a build-up of fatty deposits in the blood that can damage the blood vessel walls. This can lead to the following complications, or if complications already exist it can accelerate them:

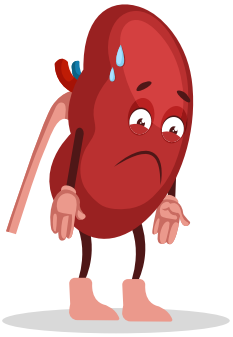
Heart attack, stroke and poor circulation to the big vessels in the legs (peripheral vascular disease)

High glucose levels over a period of time damages blood vessels and this can lead to high blood pressure and poor blood flow. Raised glucose levels in the blood can lead to the development of fatty plaques and these can rupture and form clots. This can sometimes lead to heart attacks, strokes and/or peripheral vascular disease.

Kidney problems (nephropathy)

Diabetes can cause damage to the kidneys over a long period of time making it harder to clear extra fluid and waste from the body. This is caused by high blood glucose levels and high blood pressure. It is known as diabetic nephropathy or kidney disease.





[33] NICE (2020) Managing blood glucose in adults with type 2 diabetes. Chapter 4 NICE Pathways. London: National Institute for Health and Care Excellence.

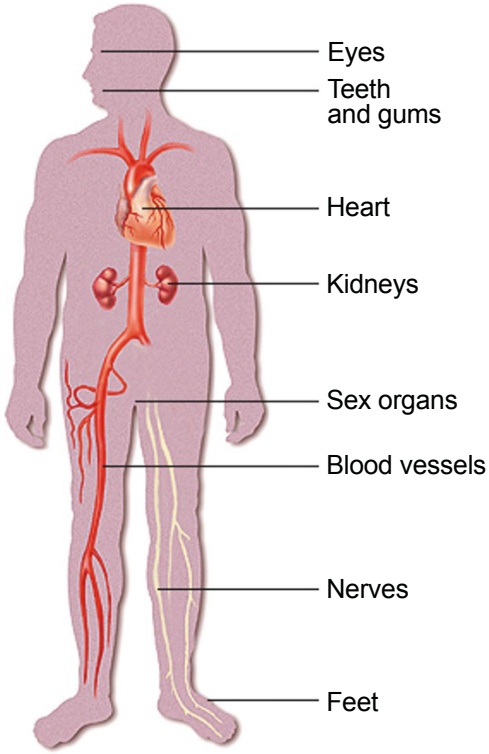
Nerve damage (neuropathy)
High blood glucose levels may lead to nerve damage. This can make it harder for the nerves to carry messages between the brain and every part of the body so it can affect how we see, hear, feel, move and touch.

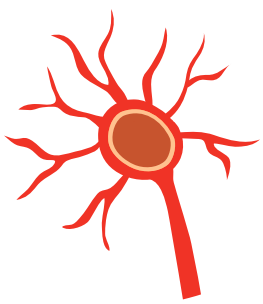
Eye problems (retinopathy)
Some people with diabetes develop an eye disease called diabetic retinopathy which can affect their eyesight. If retinopathy is picked up – usually from an eye screening test – it can be treated and sight loss prevented (see section on eye screening).

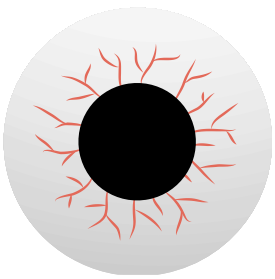
Foot problems
Having diabetes means people are more at risk of serious foot problems which can lead to ulceration and potential amputation if untreated. Nerve damage can affect the feeling in the feet. Raised blood glucose levels reduces circulation which can lead to poor healing wounds. **It is essential to tell the GP if you notice any change in the person's feet.**

Gum disease and other mouth problems
High glucose levels can lead to bacteria in the mouth which can increase the risk of infection in the teeth and gums. The blood vessels in gums can also become damaged, making gums more likely to get infected.

The higher a HbA1c level (glucose level in the blood), the greater risk of developing complications or exacerbating existing complications which may affect quality of life.







Diabetes annual review

People living with diabetes are entitled to have a diabetes annual review. These may have been delayed as a result of COVID but will be rescheduled. The appointments may not always be in person and may be offered as a video or telephone call instead. People with more urgent needs will be prioritised. Advice to prepare for the appointment is available using the following link: **https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/preparing-remote-appointments**

What can you do to help?

The following care processes should be checked at least annually. This can be done as part of their annual diabetes review. If the person with diabetes is not able to attend for these checks, either in their GP surgery or in their hospital diabetes clinic, then you need to contact their GP and they may be able to arrange to have these checks in the community.

What are the guidelines?

The NICE Clinical Guidelines outline the healthcare checks or care treatment targets for people with diabaetes. According to these guidelines, every person over 12 years old with diabetes should receive the following nine healthcare checks at least once a year.

1 **HbA1c** test to measure overall blood glucose levels over the past 8 to 12 weeks	2 **Blood pressure** measurement	3 **Cholesterol** test to check for levels of harmful fats in the blood
4 **Eye screening** (retinal screening) using a special, digital camera to look for any changes to the back of the eye (retina)	5 **Foot examination** - to check the skin, circulation and nerve supply of legs and feet	6 **Kidney function** (blood cretinine) - a blood test to measure how well the kidneys are working
7 **Urinary albumin** - a urine test to check for protein, which may be a sign of kidney problems	8 **BMI** (body mass index) measurement, to see if you are a healthy weight	9 **Smoking review**, including advice and support if you are a smoker

All people living with diabetes should continue to have a diabetes annual review wherever they reside and arrangements can be made with their local health provider to have these checks done if they are unable to access services outside of their home environment.

Elderly people living with diabetes may already have complications of diabetes. However, with good care and managment of risk factors, complications may be prevented altogether, or prevented from getting worse. These are some of the health care essentials that should be reviewed regularly to manage diabetes.

- blood pressure
- fat levels in the blood (lipids e.g. cholesterol levels)
- glucose levels (HbA1c)
- healthy diet
- monitoring weight
- keeping active
- stopping smoking
- care of the feet
- retinal screening
- reducing stress and maintaining emotional health
- medication reviews
- monitoring kidney function
- flu/Pneumonia Covid/Shingle vaccinations
- having annual diabetes review.

Complications can in some cases, be prevented, or existing complications may be prevented from getting worse.

Contact the GP if you suspect the person with diabetes may be at risk of any of these complications or if you feel any existing conditions are getting worse.

Resources

Diabetes UK (2020) have many resources that provides advice on the 15 care essentials that people with diabetes **should** be receiving to help maintain their health. Accessible at: **https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/care-to-expect**

Coronavirus (COVID) and Diabetes

People with diabetes who live in care/nursing homes or may be being cared for within their own homes are more vulnerable to the effects of the coronavirus. Due to the level of frailty in this group of people this has resulted in many deaths (Covid-19 and Diabetes: Interim Care Home Guidance 12th May 2020). Poorly managed diabetes can increase a person's risk of contracting Covid-19 and impact their recovery if they do contract it.

Resources

There are many resources and guidance is available to help carers support people living with diabetes and these can be accessed from:

https://www.diabetes.org.uk/about_us/news/coronavirus

https://www.diabetes.org.uk/about_us/news/coronavirus-vaccines

COVID-19
Evidence tells us that people with diabetes who contract Covid-19 may be at an increased risk of developing more severe symptoms. It is important that people with diabetes have their diabetes management reviewed.

People living with diabetes are strongly encouraged to have the coronavirus vaccinations.

Food and nutrition for older people living with diabetes

Older people may have a range of dietary needs. People with diabetes who are well and have a good appetite can enjoy a balanced healthy diet (refer to section on Eatwell Guide). Many older people living with diabetes are more likely to have support needs and/or health conditions that impact on their food and drink intake e.g. weight loss, swallowing problems which may require texture modified diets, low mood, depression and dementia. This makes it more important to ensure that food and drink provided is enjoyable, nutritious and accessible, in order to maintain their health and wellbeing.

- Regular meals, drinks and snacks (if needed) provide a structure to the day
- Making sure they are hydrated is essential. Provide and encourage regular fluid intake throughout the day e.g. water, tea, coffee, low calorie /no added sugar squash cordials and soft drinks e.g. diet/zero etc.

Foods are no longer able to be labelled as diabetic or suitable for diabetics, they may be labelled as 'reduced sugar' or 'No added sugar' which can be used as part of a balanced diet, (see section on food labelling).

Balancing nutritional requirements throughout the day

Eating healthily can be enjoyed by everyone. Healthy eating when someone has diabetes is the same as healthy eating for people without diabetes. Food and nutrition, alongside medication when required and activity, is the cornerstone to diabetes management. People with diabetes should be able to continue to enjoy a wide variety of foods.

The Eatwell Guide is used across the UK to help everyone understand what the ideal balance of foods is for a healthy diet and is aimed at children over the age of 5, adolescents, adults and older people in good health. It promotes a healthy balanced diet with lots of fruit and vegetables, high fibre cereals and grains, lower fat, sugar and salt in order to help prevent many conditions that are linked to a poor diet.

How much and what types of food to have during the day

For those with a good appetite the Eatwell Guide encourages us to choose a variety of foods from the 5 food groups to help us get the wide range of nutrients our bodies need to stay healthy.

Those with a poor appetite may find smaller, more frequent meals and snacks easier to manage. It may be necessary to have a different balance of these food groups, including more of the high calorie foods. Please refer to the section below for MUST screening and managing the risk of undernutrition. If you need further support, please contact the local Nutrition & Dietetic service.

The five food groups are:

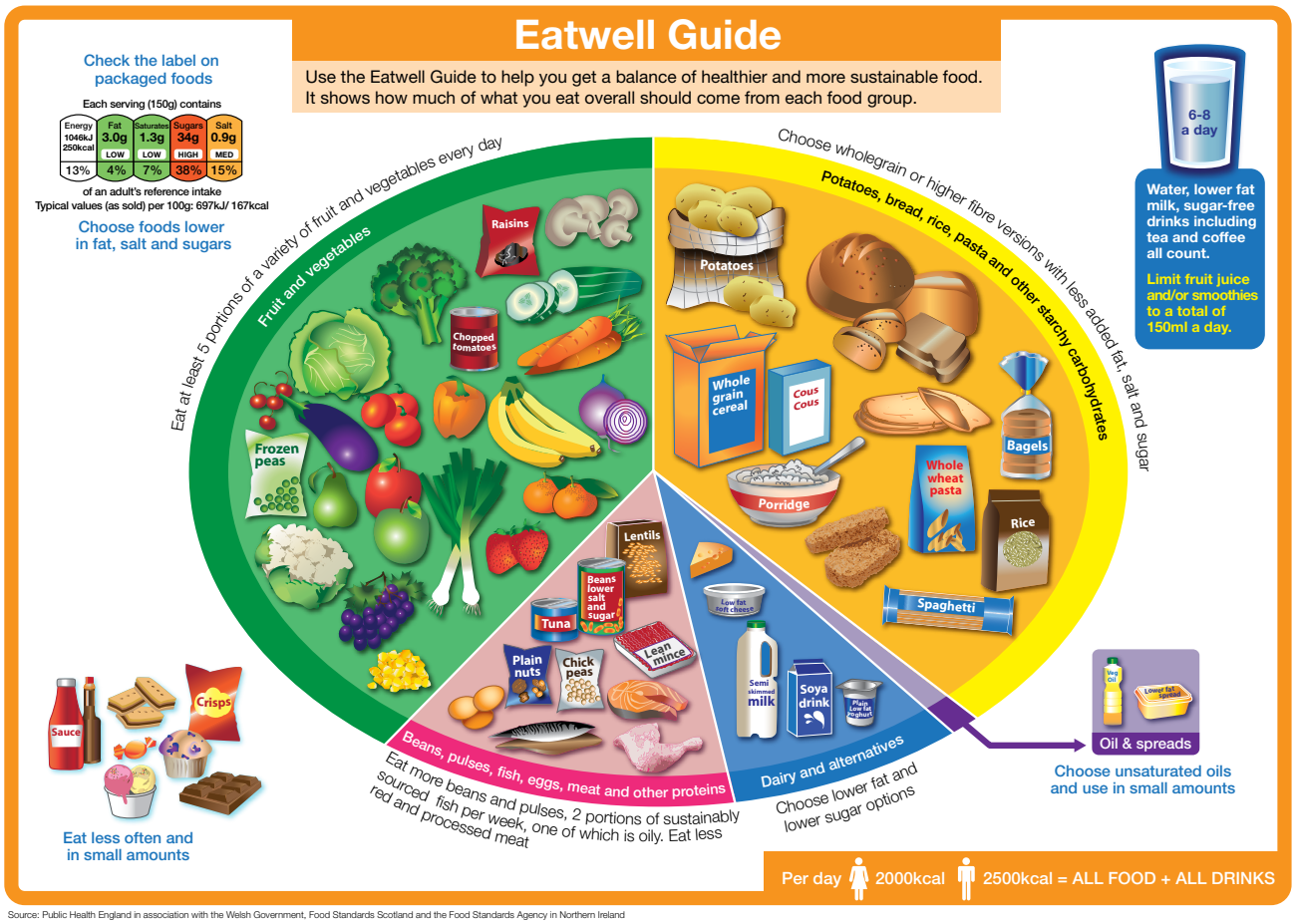
- Potatoes, bread, rice, pasta and other starchy foods
- Fruit and vegetables
- Beans, pulses, fish, eggs, meat and other proteins
- Dairy and alternatives
- Oils and spreads

If you work in a care home there is lots of useful information about nutrition and hydration needs and how to plan meals for residents including those with diabetes – Please refer to the Welsh Government's Food and Nutrition in Care Homes for older people – Best Practice Guidance, available on the link: **https://www.gov.wales/food-and-nutrition-guidance-older-people-care-homes**

Please access the **PocketMedic films**, subjects include:

- Healthy Eating? Healthy Shopping!
- Carb Counting
- What can I eat?
- Healthy Eating
- Cooking Healthy and Tasty Family Food

https://medic.video/c-type2



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

Fruit and vegetables

They are packed with vitamins, minerals and fibre. Aim to offer at least 5 portions daily. A portion is 2-3 tablespoons of vegetables or 1 piece of fruit e.g. 1 apple/pear/orange/handful of grapes/level tablespoon of dried fruit/small glass of fruit juice.

All fruits are allowed, and all contain slow releasing natural sugars.

PocketMedic films
Please access the PocketMedic films here:
https://medic.video/c-type2

Bread, rice, potatoes, pasta and other starchy foods (contain starchy carbohydrates)

1-2 portions per meal – depending on body weight and physical activity. Try to include wholegrain versions when possible.

A portion is equal to 2-3 tablespoons of breakfast cereal; 1 slice of bread; 2-3 tablespoons cooked rice, pasta, mashed potatoes; 2 new potatoes; 2-3 crackers/crisp breads; 5-8 chips.

Milk and dairy foods

This group is important for bone health, and apart from cheese contains natural sugars which are slow releasing. Aim for 3 portions every day.

A portion is: 1/3-pint milk; Small pot of yoghurt/ fromage frais; 2 tablespoons cottage cheese; 1½ oz (30g) cheese (small matchbox size); small portion of custard (150mls).

Meat, fish, eggs, beans and other non-dairy sources of protein

They are important for the repair of the body's muscles and can help to maintain muscle mass and so reduce the risk of frailty. **Aim for 2-3 portions daily.**

A portion is: 2-3oz (50-80g) red meat, chicken; 4-5oz (120-150g) fish; 2 eggs; small tin of beans/3 tablespoons of pulses/lentils.
Oils & Spreads: A portion is 1-2 teaspoons oil/ margarine/butter.

Foods and drinks high in fat and/or sugar

This includes products such as chocolate, cakes, biscuits, full-sugar soft drinks, butter and ice-cream. These foods are not needed in the diet and so, if included, should only be done infrequently and in small amounts. Food and drinks high in fat and sugar contain lots of energy, particularly when eaten as large servings. These maybe included if the resident has been identified at risk of malnutrition (refer to nutrition care plan).

A portion is 1-2 teaspoons mayonnaise/salad dressing; 1 scoop ice cream/1 tablespoon cream; 1 mini chocolate bar/chocolate biscuit; Small packet of crisps; 2 teaspoons sugar/ jam/honey.

Which foods affect blood glucose levels?

All carbohydrate foods break down into glucose, which in turn affect blood glucose levels. These include the starchy carbohydrates (the bread, potato, rice group); the 'added' sugars from the fats and sugars group; and the natural sugars from milk and fruit. Having a healthy, balanced diet helps with both weight management and blood glucose control.

Practical note:

- Starchy foods should, make up about a third of the daily diet
- Provide 1-2 portions of foods from the starchy food group at every meal and some as snacks (when appropriate)
- Include wholegrain and high fibre options
- If blood glucose levels are high, consider overall portions and quantity of carbohydrate foods & drinks NOT just high sugar foods.

Nutritional care for people with diabetes who are at risk of malnutrition

All Care Home residents and older adults cared for at home should be screened on a monthly basis to identify their risk of malnutrition and to ensure appropriate care plans are in place. MUST is the validated screening tool for screening across Wales.

For those identified as medium or high risk – a 'food first" approach should be taken and if high risk consider referral to the dietitian.

Strategies to follow:

Malnutrition Universal Screening Tool (MUST)

MUST score 0 – Low Risk

Low risk nutrition care plan
Refer to the low risk nutrition care plan here:
https://www.malnutritionpathway.co.uk/library/low_risk.pdf

Practical note: Obesity
It can be very difficult for people to lose weight in a care home setting especially if less mobile. Empathy and understanding are key, raising the issue sensitively and explaining the benefits of some weight loss can help. Regular physical activity (dependant on ability) combined with modest reduction in calories can help to either maintain weight or achieve small weight loss.

Offer low sugar/no added sugar drinks, this is an easy way to reduce overall carbohydrate intake.

MUST Score 1 – Medium Risk

Medium risk nutrition care plan
Refer to the medium risk nutrition care plan here:
https://www.malnutritionpathway.co.uk/library/medium_risk.pdf

- Oral health risk assessment
- Provide/implement Good Food First advice
- Provide snacks between meals and homemade nutritious drinks
- Ensure any assistance required for eating and drinking is provided

- Ensure any recommendations regarding food and fluid texture modification are followed and any specific advice for eating or drinking is followed i.e. position when eating for swallow
- Weigh weekly (if unable to weigh use MUAC – Mid Upper Arm Circumference).
- Use food and fluid charts to record food and drink intake for 3 days. In residential settings use the All Wales Food and Daily and weekly intake and output charts.

Repeat screening after one month:

1. If score improved, continue regime for a further month, then gradually reduce food fortification
2. If no change or deterioration, consider specialist treatment below
3. If deterioration, follow HIGH RISK nutrition care plan.

MUST Score 2 or more – HIGH RISK

High risk nutrition care plan
Refer to the high risk nutrition care plan here:
www.malnutritionpathway.co.uk/library/high_risk.pdf

If no improvement, consider below:
Refer to your local dietetic department for more detailed assessment and advice.
Follow local guidance or request prescription of oral nutritional supplements (ONS), e.g. 2 per day for 4-12 weeks*.

**Please note these supplements will not be suitable for patients with chronic kidney disease (CKD) stages 4 & 5).*

Practical Tips to support people with diabetes & risk of malnutrition:

- Plan for three regular meals a day. Try to help avoid skipping meals and space breakfast, lunch and evening meal over the day. This will not only help control appetite but also help in controlling blood glucose levels
- Include starchy carbohydrate at each meal: the amount eaten is important to manage glucose levels
- Offer high protein snacks such as cheese & biscuits and/or nourishing drinks e.g. milk
- If glucose levels are raised DO NOT STOP oral nutritional supplements, if prescribed
- Speak to the GP or Dietitian.

Frequently Asked Questions

What should I do if an older person with diabetes is not eating well and losing weight?

Undertaking regular MUST screening will identify individuals at risk of malnutrition. There are a number of measures in place for those identified as medium risk. Please consider asking the GP to refer to the local dietetics department for assessment and advice if an individual is at higher risk. If able, monitor blood glucose levels to avoid hypoglycaemia, especially in those taking medications such as gliclazide and insulin. Request a review by the community diabetes nurses or GP if blood glucose levels become low or very high.

What should I do if the person with diabetes is having swallowing problems?

Request advice from the GP who may refer to speech and language therapy for a swallow assessment. A texture modified diet and or thickened fluids may be required for people having swallowing difficulties. This will help them manage food and drinks safely. Care/ Nursing Homes should refer to the IDDSI description for modified texture – refer to Food and nutrition guidance for older people in care homes I GOV.WALES. **https://gov.wales/food-and-nutrition-guidance-older-people-care-homes**

What should I do if the person with diabetes refuses to take their diabetes medication, such as their insulin?

If you are a carer, escalate to the nurse in charge (if in a care/nursing home) first. Request an urgent review by the community diabetes nurses or GP.

What should I do if a person living with diabetes is refusing to take their prescribed nutritional supplements?

Some individuals may experience taste fatigue if prescribed nutritional supplements for a long period of time. There are a range of nutritional supplements available and ways in which you can provide a variety of suitable nutritious drinks or snacks. If they are under the care of the community dietitian, request a review and further advice, otherwise speak to the GP

Should older people with diabetes eat little and often?

Healthy older people with diabetes who are not at risk of malnutrition do not always require additional snacks and can often enjoy a healthy balanced diet containing regular meals. Smaller more frequent meals or additional snacks/ supper may be required for some individuals, such as those who have a reduced appetite or intake, and those at risk of malnutrition or are taking certain medications.

Can a person living with diabetes have sugar in their diet?

Yes, a healthy diet can include some sugar and is not considered a sugar free diet. There are natural sugars found in fruit and dairy products and these foods provide vitamins, minerals and fibre too. Limit added sugars from foods such as cakes, biscuits, chocolate and sugary drinks. These foods can increase glucose levels and may cause unnecessary weight gain if eaten in larger amounts. If the person living with diabetes has been identified at risk of malnutrition, foods higher in sugar may be included as part of their nutritional care plan.

How much fruit should a person with diabetes consume each day?

A good balance of a variety of both fruit and vegetables can be included each day. However, eating large amounts of fruit in one sitting may cause high blood glucose levels. To avoid higher glucose levels, for the person living with diabetes they should be encouraged to eat one portion of fruit at a time and spread other portions eaten across the day.

Should people with diabetes have reduced sugar or no added sugar varieties of products such as chocolate or jam?

Foods are no longer able to labelled as diabetic or suitable for diabetics, they may be labelled as 'No added sugar' which can be used as part of a balanced diet (see section on food labelling). A smaller amount of regular chocolate or jam can be used. If the person with diabetes has been identified at risk of malnutrition, foods higher in sugar may be included as part of their nutritional care plan.

Should people with diabetes use sweeteners instead of sugar?

Sweeteners don't affect blood glucose levels and are often used as an alternative to sugar. They can be included if residents prefer to use them.

Should people with diabetes be offered puddings or deserts after meals?

Puddings or deserts provide additional carbohydrate to a meal which may be required if a patient has a small appetite or is at risk of malnutrition. If a person with diabetes is eating well and not at risk of malnutrition, puddings or deserts may increase blood glucose levels and cause unnecessary weight gain. Encourage them to make healthier pudding choices or offer smaller portions less often. It is not necessary to make separate puddings made with sweeteners for people living with diabetes.

What should I do if the family/visitors of the person being cared for are bringing in high sugar drinks/snacks and it's causing high blood glucose levels?

It can sometimes be difficult to approach visitors who like to bring their relatives additional food and drinks. Many visitors are often unaware that certain foods or drinks can affect diabetes and cause high glucose levels. If able, speak to the family/visitors and offer some ideas for alternatives or perhaps ideas for non-food and drink items that would be enjoyed, such as a magazine or some flowers.

How can I help those with diabetes be more active?

Any activity that encourages able people with diabetes to move around more and spend less time sitting is of benefit. Encourage able people to walk to the dining or recreational areas for meals and activities, or outside to spend time in garden area (if available).

Healthy Me: **My Healthy Feet**

1 Checking your feet

Checking your feet daily helps to promote good foot health. If you are unable to do this yourself get someone to check them for you.

2 Annual foot check

You should have a foot check at your GP surgery every year. You will be given advice on how to look after your diabetes and feet through information prescriptions and use of the Pocket Medic films.

3 Nail Care

Age Connect in some areas across Wales are able to offer a nail cutting service for which there is a charge. Routine nail cutting is not available on NHS podiatry. **https://www.ageconnectswales.org.uk/our-nail-cutting-service**

4 Podiatry Consultation

Poor foot health can mean that you may be referred to an NHS podiatry service who can help you understand how to look after your feet.

5 Foot Attack

If you notice any redness, heat, swelling or break to your skin – It could be a Foot Attack. Seek advice **TODAY** at your local Podiatry clinic or GP surgery. If this is during the weekend ring your GP out of hours or go to your nearest A&E. **DONT DELAY - ACT TODAY!**

6 Meet the team

If you get an ulcer on your foot you may see other specialists to help in your care who can also advise on how to manage your diabetes.

7 Healthy feet

Always take care of your feet so you can live life to the full. Check your feet daily. **Healthy Feet – Happy Feet.**

Further advice is available by watching Pocket Medic films on your computer or Mobile phone.

LOCAL PODIATRY TEL NO HERE

GIG CYMRU NHS WALES

STANCE ©

Foot care guidelines

Co-operative Working

Aim

To improve knowledge and awareness in essential foot care for people living with Diabetes.

Objectives:

To enable the carer to:

- recognise foot problems which require referral to other agencies
- demonstrate foot care to the person with diabetes (in order that they can carry out their own personal social care) if they are able to
- educate them in foot care to enable them to carry out their own personal social care where appropriate
- provide advice on hosiery and footwear
- recognise foot problems which require referral to a GP and/or a Health Professional Council (HCPC) Registered Podiatrist – Private or NHS.

Bathing

- Feet should be washed daily, this helps to keep them clean and prevent and identify any changes or problems
- Use mild soap and luke warm water (check water temperature). Some people may have loss of sensation in their feet and may not be able to tell whether the water is too hot, only realising the water is too hot when the skin is burnt or touches an area that has sensation
- Rinse feet thoroughly
- Do not soak feet for longer than 5 minutes. Soaking feet for longer than 5 minutes can cause the skin to become soggy and fragile (Figure 1)
- Dry carefully especially between toes.

Figure 1
Make sure between the toes are dried after washing and don't apply cream between the toes as it can make the skin macerated and peel and more prone to fungal infections.

Dry skin

Dry skin can be fragile and more likely to be damaged. Looking after foot skin can help prevent problems, including breaks in the skin.

- A moisturising/emollient cream should be applied daily
- Do not apply the cream between toes (figure 1)
- A foot cream containing Urea, will help to moisturise dry hard skin or **cracked heels (figure 2)**.

Figure 2
Dry cracked heels can be managed by using a foot cream containing Urea daily. Some people like to put it on at night and a pair of cotton socks over to help it soak in.

- Alternatively, foot moisturiser can be purchased in local pharmacies/supermarkets
- Corn plasters and safety blades should be avoided. They are likely to cause harm.

Moist skin

Sweaty skin can become fragile and more likely to be damaged. Keeping feet dry and clean can help prevent problems, including breaks in the skin (Figure 1).

- Sweaty feet may be dabbed with cotton wool moistened with surgical spirit
- Talc can be applied sparingly on sweaty skin for those who use these powders. Although, try and avoid it clogging between the toes
- If using talc, the feet must be washed and dried daily especially between the toes.

Nail care

Nails can become thick and hard as we get older or if they have been damaged. Attempting to cut the nails can cause trauma to the skin and should be avoided (figure 3).

- Filing the nails weekly is a safe way to manage the nails without causing trauma to the skin
- Using an emery board weekly and filing the nails while they are dry can keep the nails short and manageable
- If the person with diabetes can reach their feet safely, they should be encouraged to file their nails weekly or perhaps a family member can help them
- Alternatively, a HCPC registered Podiatrist can provide further advice.

Figure 3

PocketMedic films

Please access the following PocketMedic films here:

- Looking after your feet **https://vimeo.com/325459576/00ad304113**
- Understanding feet **https://vimeo.com/325443665/f4243f3a1f**
- Care of the high risk foot **https://vimeo.com/303235501/aee34473dd**

Podiatrists working in the NHS are registered with their governing body the HCPC (Health & Care Professions Council) ensuring they meet National Standards. They are then able to use these initials to indicate the level of training they have achieved.

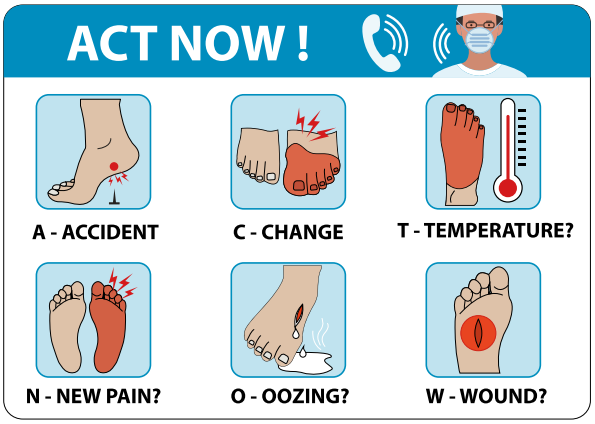
Nail tufts

Nail tufts are small protrusions of the nail bed found on the underside of the nail which are rich in blood vessels

- It is preferable to use a nail file to avoid causing trauma to the nail tuft
- Should this occur the toe must be dressed as for any wound or abrasion and monitored.

Wounds and abrasions

- Blisters, splits, cracks or fissures, cuts and grazes and other minor skin breaks should gently and carefully be cleaned with tap water only and a clean dry wound dressing applied
- All breaks in the skin must be kept dry, monitored every 1-2 days and must not be neglected. Small superficial grazes or cuts should be expected to heal in a few days
- Any cuts, grazes, ulcers, infected areas or wounds that are slow to heal must be referred to a District Nurse, the client's GP or a HCPC registered Podiatrist (Figure 4).



iDEAL Diabetes
ACT NOW
https://idealdiabetes.com/act-now-education-resources/

Figure 4
These are wounds on the big toes; they may have started with a small cut or blister but have not healed. If a small cut is taking more than a couple of days to heal please follow the advice above, seek medical advice from a HCPC registered Podiatrist, GP or district nurse.

Danger/Warning signs

Should any of the following signs or symptoms present then the nurse/carer needs to consider referral to a senior member of staff (if in care home) GP, HCPC Registered Podiatrist or District Nurse team.

Areas of:

- Pain, itching, throbbing, swelling, discolouration
- Changes in colour or temperature of the foot or leg
- Redness, heat, shininess or very white and cold areas
- Breaks in the skin (see notes on skin abrasions)
- Discharges of pus, blood or weeping
- Numbness or loss of sensation or function
- Corns, callouses or other skin lesions
- Thickened or misshaped nails
- In-growing toenails.

Prevention of cross infection

Single use/or single person use to minimise cross infection risks:

- Items used for a single individual need only routine disinfection between use, i.e. nail files. These can be purchased and disposed of after each use
- Metal files (Diamond deb file) can be purchased and disinfected after each use
- Comprehensive hand washing is best practice to reduce cross infection risks for both carer and person being cared for.

Hosiery – (socks and stockings)

- Socks, tights and stockings need to be changed and washed daily
- There should be enough room so that feet and toes are not cramped
- Tightly fitting socks and stocking tops restrict the circulation and are best avoided especially in the elderly or for anyone with poor circulation, poor sensation, swelling or poor tissue viability (fragile skin)
- Cotton and wool mixtures are often warmer than synthetic materials and do not cause problems with excessively sweaty feet. Elastic stockings/support hose ideally should be put on first thing in the morning before the client gets out of bed if used to reduce swelling and must be correctly fitting. Socks should be worn with all footwear including slippers.

Footwear – advice on fitting (shoes, sandals and slippers)

All footwear should fit correctly

- Shoes are best bought in the morning or early afternoon since many feet swell up during the day. Shoes should be tried and fitted with the person standing (if able) and sitting. They should walk around the shop to allow the foot to rest in its natural position
- Feet need to be measured by a trained shoe fitter to ensure a proper fit as feet change shape and size over the years. Not all people with diabetes can feel their feet, so it's hard to tell if the shoe is too small or too big
- Shoes must fit well, be broad fitting, have a deep and rounded toe area and have a fastening. Heel cup should fit securely but not too tight or loosely
- Shoes with laces or adjustable straps (Velcro or buckle) hold the shoe to the foot and stop the foot sliding forward inside the shoe (elastic laces are available for those unable to bend or tie them up).

- New shoes should not need to be 'broken in' but it is better to wear them for short periods at first and gradually increase the time the shoe is worn. Checking for any redness or signs of rubbing. If there are signs of the shoe rubbing, they should be discarded
- Shoes provide protection and support so look for firm non slip cushioned soles and soft supple uppers of leather or fabric.

Footwear – general advice

- Where possible avoid wearing the same shoes for too long at a time and air them well between use to dry them out
- It is advisable to have two pairs of shoes and wear them on alternative days. Closed-in footwear of manmade material can often cause excessive sweating (e.g. trainers/some slippers/ wellingtons) and should be changed and aired frequently.

For further advice on footwear go to: **https://www.healthy-footwear-guide.com/**

Exercise and wellbeing

Where possible people with diabetes should be encouraged to exercise including their feet as this can assist in maintaining core stability and mobility. The below website (Dewis Cymru) can give further information on exercise classes in your area as well as advice and information on your wellbeing. **www.dewis.wales**

Dewis Cymru
Have choice and take control

Wellbeing

Dewis Cymru is THE place to go if you want information or advice about your wellbeing – or want to know how you can help somebody else.

When we talk about your well-being, we don't just mean your health. We mean things like where you live, how safe and secure you feel, getting out and about, and keeping in touch with family and friends.

No two people are the same and wellbeing means different things to different people. So Dewis Cymru is here to help you find out more about what matters to you. You can access this information at **www.dewis.wales**

We've got information that can help you think about what matters to you, and we've also got information about people and services in your area that can help you with the things that matter to you.

Co-operative working

The NHS Podiatry staff are happy to provide advice, guidance and support wherever this is required.

The Podiatry Service works closely with carers and people with diabetes to promote co-production to enhance good foot health in the population.

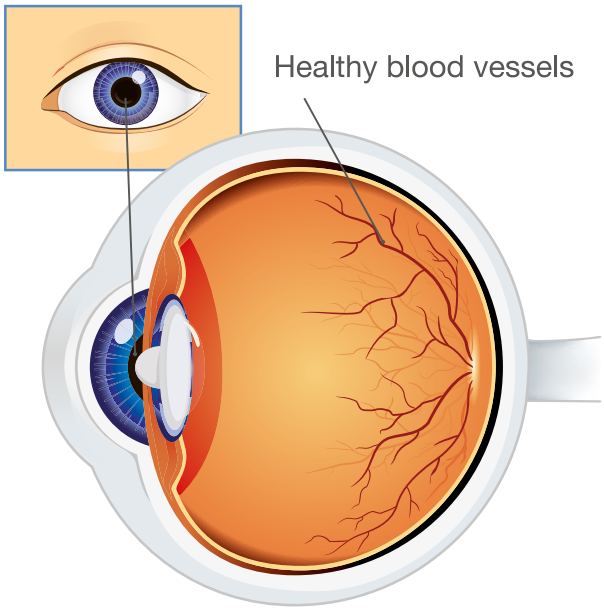
Diabetic Retinopathy and Diabetic Eye Screening

What is Diabetic Retinopathy?

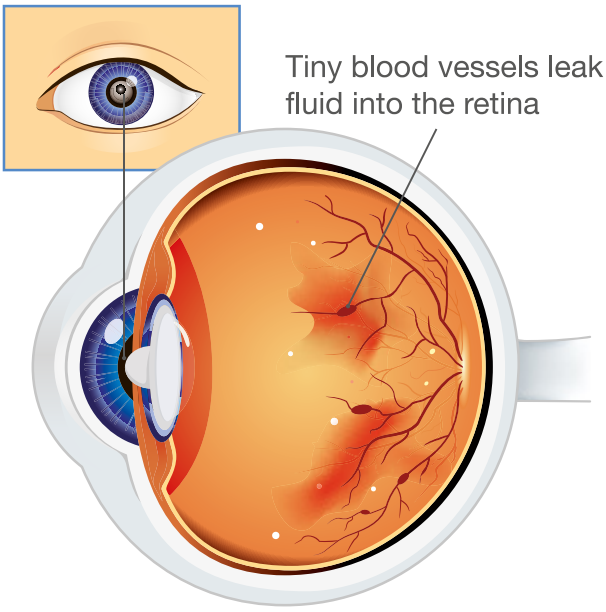
- Diabetic Retinopathy (DR) is a complication of diabetes which affects small blood vessels in the back of the eye (the retina). High blood glucose levels can cause the tiny blood vessels in the retina to become blocked. When this happens, the eye compensates for the reduced blood supply by growing new blood vessels which are fragile and can leak. The retina is the seeing part of the eye, if it is damaged it can affect vision. If left untreated, this can cause irreversible sight loss or blindness.

Prevention and Treatment

- This is a progressive condition, but early eye damage can be paused or 'reversed'
- The main preventative measures are to monitor and manage blood glucose levels, blood pressure and cholesterol. They may be on medications to help reduce their risks and eating a balanced diet and keeping as active as they can will also help.



Normal Eye



Eye with Retinopathy

solar22 via Shutterstock license

Screening for Diabetic Retinopathy

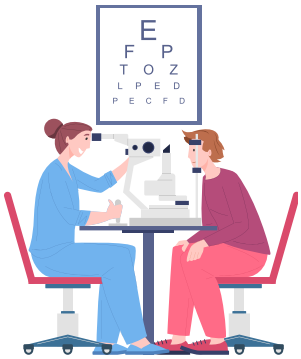
- People with diabetes should access regular retinopathy eye screening appointments as well as routine eye tests with an optician. Any visual problems should be investigated by an optician or optometrist rather than waiting for an eye screening appointment
- Diabetic eye screening involves photographs being taken of the back of the eye using a special camera, after eye drops have been given to make the pupils dilate. The eye drops can feel uncomfortable and will cause blurred vision for around 4–6 hours[34]
- The full screening appointment takes between 40 minutes and an hour. It takes around 5-10 minutes for the eye images to be captured. The person being screened will need to remain in a seated position at the camera, keeping their head still and moving their eyes as instructed for clear photographs to be captured

Advice should be sought from the DESW nursing team before attending clinic, by calling the DESW helpline on the appointment letter and on 03000 030 500. Alternatively, you can email them via diabetic-eye-screening@wales.nhs.uk or visit https://phw.nhs.wales/services-and-teams/screening/diabetic-eye-screening-wales/ for further information.

Retinal Screening Film
Access 'The Importance of Retinal Screening' video here:
https://vimeo.com/manage/videos/325409228/90ebf9584f

- The eye images are then assessed for the signs of Diabetic Retinopathy (DR). Most people are recalled for routine screening every 1–2 years, but around 1 in 50 people that have the test will be referred to an eye specialist for investigation or treatment of their retinopathy
- Screening does not prevent retinopathy, but can identify it at an early stage when treatment is more effective
- Attending screening is a choice. Some people choose not to, or cannot attend screening appointments. They will still be invited to eye screening again as long as they are:
  - not completely blind in both eyes
  - have not opted out of the service
  - have not been assessed as unable to receive screening
- People who cannot attend a community based clinic are unable to receive screening e.g.
  - those who cannot remain still
  - who cannot lean forward
  - and/or who are unable to follow instructions may be unable to receive screening.

Retinopathy can be treated. It is essential to have regular eye screening.



[34] People with diabetes who drive to appointments and the use of eye drops Guidance (updated March 2024) **https://www.gov.uk/government/publications/diabetic-eye-screening-patients-who-drive-to-appointments/diabetic-eye-screening-patients-who-drive-to-appointments** (accessed 22/07/2024).

Other Eye Conditions

People with diabetes may also be at increased risk from cataracts and glaucoma. The risk of these conditions increases with age, and for people with diabetes.

Cataracts
Cataracts are caused when the lens in the eye develops cloudy patches.
This causes:

- Clouded or blurred vision
- Double vision
- Difficulty in seeing when light levels are low
- Sensitivity to light and glare.

Glaucoma
Glaucoma is caused by increased pressure inside the eye and can damage the optic nerve.
Warning signs are:

- Loss of peripheral or side vision
- Seeing halos around lights
- Blurred vision.

Medications used to Manage Diabetes

	BIGUANIDES – METFORMIN GLUCOPHAGE SUKKARTO	SGLT2 inhibitors- DAPGLIFLOZIN CANAGLIFLOZIN EMPAGLIFLOZIN ERTUGLIFLOZIN	DPP4 inhibitors – LINAGLIPTIN SITAGLIPTIN SAXAGLIPTIN ALOGLIPTIN VILDAGLIPTIN	SULPHONYLUREAS- GLICLAZIDE GLIMEPERIDE	THIAZOLIDINEDIONES- PIOGLITAZONE	GLP-1 RECEPTOR AGONIST DULAGLUTIDE SEMAGLUTIDE LIRAGLUTIDE RYBELSUS TIRZEPATIDE
MODE OF ACTION	Decreases glucose production in the liver. Reduces insulin resistance.	Prevent glucose reabsorption in the kidneys.	Increases incretin hormone levels by blocking DPP4 enzyme that inactivates it.	Stimulates insulin secretion from the pancreas.	Reduces insulin resistance.	Stimulates insulin secretion from the pancreas. Delays gastric emptying, may suppress appetite.
ADMINISTRATION	Can be once or twice per day – MUST be given with food – usually breakfast & evening meal.	Once daily, in the morning.	Once daily, in the morning.	Once or twice daily- MUST be given with food. Needs glucose monitoring.	Once daily, in the morning.	Injection – Dulaglutide (Trulicity), Semaglutide (Ozempic), Tirzepatide (Mounjaro) – once weekly. Liraglutide (Victoza) – once daily. Semaglutide (Rybelsus) – once daily TABLET.
ADVERSE REACTIONS	Loose stool is the most common side effect, usually when new to the medication – withhold during any periods of illness.	Genital thrush, urinary frequency. Weight loss is to be expected. Withhold during periods of illness.	Usually well tolerated.	HYPO risk.	Fluid retention, may cause breathlessness and will need medical review. Stop if any haematuria (blood in urine).	Nausea and lack of appetite are the most common side effects. Weight loss is to be expected.

There are combination therapies of oral medications and these are often prescribed to reduce the burden of several medications which can be difficult for people to take. Some oral therapies can be prescribed in liquid form – if the person with diabetes is having difficulty taking their medications speak to the pharmacist or GP.
Injectable combination medications e.g. Xultophy or Suliqua (combinations of insulin and GLP-1 receptor agonists may be prescribed for some people with diabetes who may be prescribed for some people with diabetes who may need both a GLP1 and insulin therapy. If you are unsure of any medications that are being administered to someone with diabetes that you may be caring for, speak with the pharmacist or GP.

PocketMedic films
Please access the following PocketMedic films here:
https://vimeo.com/412283898/4c67cba826
https://vimeo.com/412677936/cbfa519409

Medications should be given as prescribed and in a timely manner. People living with diabetes may develop side effects or may become intolerant to medications at any time, not just when starting therapies. If you have any concerns speak to your GP or usual health care professional.

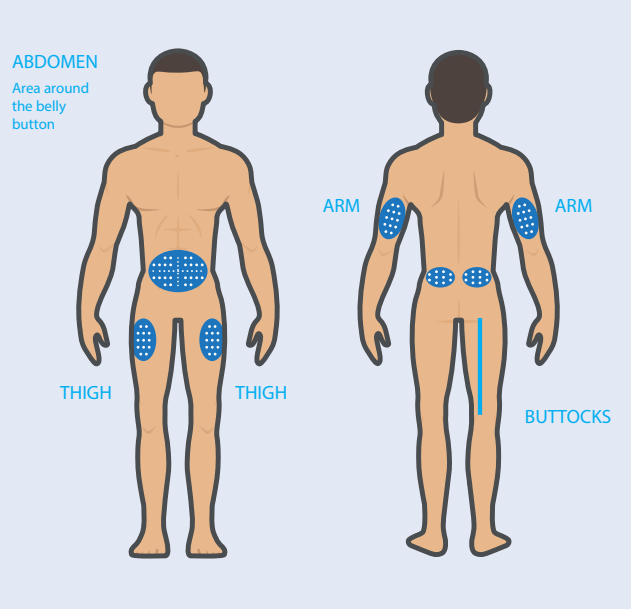
- All older adults with diabetes and frailty should have their medications reviewed regularly[35]
- If adults with diabetes in your care have lost their appetite; lost weight; may be having difficulty eating and/or swallowing or have lost the ability to feed themselves; or have become frail or their frailty is increasing, then they are at more risk of hypoglycaemia. They should be reviewed quickly
- Medications such as SGLT-2 inhibitors and thiazolidinediones (pioglitazone) may lead to side effects which include weight loss, dehydration, and possible toe amputations (SGLT-2 inhibitors)[36], as well as the risk of heart failure, fractures, and bladder cancer[37]
- GLP-1 receptor agonists can also cause weight loss and anorexia
- If you are concerned about any of these issues, contact the GP or health care provider to review.

ULTRA LONG ACTING INSULIN (BASAL)	LONG ACTING INSULIN (BASAL)	RAPID ACTING INSULIN (BOLUS)	BIPHASIC MIXED ANALOGUE INSULIN	INTERMEDIATE ACTING INSULIN	SHORT ACTING INSULIN	BIPHASIC MIXED HUMAN INSULIN
TOUJEO TRESIBA	LANTUS ABASAGLAR LEVEMIR SEMGLEE	NOVORAPID HUMALOG APIDRA FIASP LYUMJEV INSULIN LISPRO TRURAPI ADMELOG	NOVOMIX 30 HUMALOG MIX 25 HUMALOG MIX 50	INSULATARD HUMULIN I	HUMULIN S ACTRAPID (HOSPITAL USE ONLY)	HUMULIN M3
Once daily, can be administered at any time. Insuman range of insulin (by Sanofi) will no longer be available (from June 2023). If you require further advice, please contact your health care provider.	Lantus/abasaglar – once (in some instances) twice daily, to be adminstered at same time(s) every day. Levemir – once or twice daily, morning &/or evening at similar time.	Once/twice or three times daily with main meals. Administered approx. 15 Mins prior to meals.	Usually twice daily- 15 Mins before breakfast & evening meal, can sometimes be given at lunchtime also. (Cloudy insulin –needs to be re-suspended by tipping & rolling the pen 10 times before injecting).	Once or twice daily – morning &/or evening. (Cloudy insulin –needs to be re-suspended by tipping & rolling the pen 10 times before injecting).	Once/twice or three times daily with main meals, administered approx. 30 Mins prior to meals.	Usually twice daily- 30 Mins before breakfast & evening meal, can sometimes be given at lunchtime also. (Cloudy insulin –needs to be re-suspended by tipping & rolling the pen 10 times before injecting).

[35] Sinclair A (2019) Key learning points: diabetes in older people with frailty accessed from: Key learning points: diabetes in older people with frailty | Key learning points | Guidelines in Practice 29/09/2021.
[36] NICE. Type 2 diabetes in adults: management. Evidence reviews for SGLT-2 inhibitors and GLP-1 mimetics. NICE Guideline 28. NICE, 2018. Available at: www.nice.org.uk/guidance/ng28/evidence/sglt2-inhibitors-and-glp1-mimetics-pdf-10958149117 [37] Turner R, Kwok C, Chen-Turner C et al. Thiazolidinediones and associated risk of bladder cancer: a systematic review and meta-analysis. Br J Clin Pharmacol 2014; 78 (2): 258–273.

Most insulin injections are prescribed in concentrations of 100 units/ml, but there are insulins now available in a higher strength e.g. 200 units/ml or 300 units/ml. Always check the prescription and if you are unsure contact your Health Care Provider.

Recommended injection sites



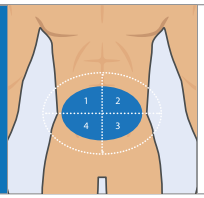
Insulin pen device(s) in-use should be stored at room temperature (avoid direct sunlight or heat e.g. radiator) – they usually expire at 28 days at this temperature **EXCEPT** Toujeo which expires after 6 weeks. All other insulin pen devices to be stored in the fridge (not near the freezer section) until needed.

- New needles should be used **EVERY** time
- Injection sites should be rotated – see chart. Using the arms is not recommended unless the person administering insulin has been trained to do so due to the risk of injecting into the muscle rather than into the subcutaneous layer under the skin. Access link to injection sites here: **https://trenddiabetes.online/wp-content/uploads/2021/03/Guideline_ITM_2021_FINAL_v2.pdf**
- Inspect injection sites regularly for lipotrophy (fatty or hard lumps under the skin), avoid injecting into any areas that may have them because this can affect how insulin is absorbed and lead to erratic glucose readings ranging from too low or too high. **https://clinicathome.swan.ac.uk/**
- If administered by a health care professional, then safety needles should always be used
- Sharps box should be available for immediate disposal of used sharps.

INJECTION ROTATION

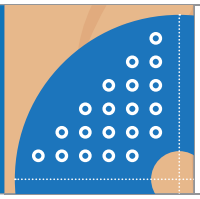
Always follow correct injection rotation.
Correct injection site rotation principles:

1



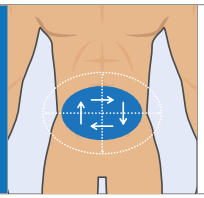
- Inject into one area no more frequently than every 4 weeks

2



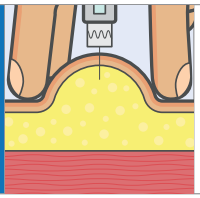
- Each new injection should be given at least 1cm or one finger's width away from the last

3



- Use an injection area for approximately one week then move to the next

4



- Never inject into areas affected by lipos
- Use a lifted skin fold in children and slim adults to avoid an intramuscular injection

Rationale: 98% of patients with lipohypertrophy did not rotate injection sites or rotated incorrectly in a study by Smith M. Clapham L. and Strauss K, (2017)
https://daneshyari.com/en/article/5587110

Images given with kind permission from Trend Diabetes For healthcare Professional: Correct Injection Technique in Diabetes Care. Best Practice Guideline (2nd ed) March 2021: https://trenddiabetes.online/wp-content/uploads/2021/03/Guideline_ITM_2021_FINAL_v2.pdf

Risk of hypoglycaemia with insulins – doses MUST be reviewed by the health care professional.

Diabetes Treatments:
https://www.diabetes.org.uk/diabetes-the-basics/diabetes-treatments

Watch a useful film that explains about lumps under the skin due to poor injection technique:
https://clinicathome.swan.ac.uk/

CHECKLIST – People requiring injectable therapies

INJECTION NAME: _____
DOSAGE: _____
TIME: _____
PEN DEVICE: _____ **NEEDLES:** _____ **SHARPS BOX:** _____

TASK	DATE	SUPERVISED BY	PATIENT COMPLETED UNAIDED	COMMENTS: i.e. needs prompting/help etc.
BLOOD GLUCOSE/KETONE MONITORING				
Washes hands				
Check date and time are correct				
Can insert strip				
Can use lancet device				
Reads result correctly				
Safe disposal of sharps				
Understands hypoglycaemia				
Correct treatment of hypo				
Understands hyperglycaemia				
Correct treatment of hyperglycaemia				
Blood glucose strip				
Ketostix/blood ketone strip				
INJECTABLE ADMINISTRATION				
Correct storage – Room temp for in use Fridge for unused 28 day rule				
Correct timing				
Cloudy insulin needs to be mixed appropriately				
Attaches needle correctly				
Air shot performed AT START OF EACH DOSE/PEN				
Dials up correct dose				
Correct administration of dose				
Rotation of sites				
Check for bruising/bleeding/ wetness at site				
Safe disposal of sharps				
Sick day rules				
Insulin passport				

High quality end of life care for those with diabetes includes:

- Early discussions with specialist diabetes team to assist with monitoring and care planning
- Avoid hypoglycaemia- glucose levels below 6 mmol/L treatment needs reviewing so contact GP
- In the last days of life glucose levels should not be lower than 8 mmol/L. Treatment may need reviewing – contact GP
- Avoiding symptomatic hyperglycaemia- glucose levels regularly above 15 mmol/L treatment
- Observe for dehydration
- Ensure respect and dignity, discuss and listen to the individual.

End of Life Diabetes Care
Access this useful resource from TREND here:
https://diabetes-resources-production.s3.eu-west-1.amazonaws.com/resources-s3/public/2021-11/EoL_TREND_FINAL2_0.pdf

In the last stages of life:

- Insulin should not be stopped in people with type 1 diabetes but they could be switched to a simpler basal insulin regime – speak to the GP, district nurse or diabetes team for advice
- Diabetes medication may be stopped in type 2 diabetes – in these circumstances the aim is to ensure symptom control – speak to the GP, district nurse or diabetes team for advice
- Keep blood glucose tests to a minimum. Some testing may be required to reduce risk of low or high glucose levels
- If concerned any symptom could be diabetes related, check glucose level and inform registered nurse, GP, district nurse or diabetes specialist team if outside of target glucose range
- Testing urine (if locally available) for glucose can sometimes help if you suspect symptoms are diabetes related
- If a person with type 2 diabetes has their insulin stopped, observe closely for developing symptoms, speak to the GP, diabetes team
- If finger prick testing is becoming frequent, the diabetes specialist nurse may be able to offer flash glucose monitoring.

Minimise interventions and monitoring where possible, keep the person comfortable without compromising safety.

Diabetes management requirements can change quickly at the end of someone's life, the diabetes team and the individuals GP and local district nurses are there to offer support and guidance.

Diabetes Educational Websites

Cambridge Diabetes Education Programme (CDEP) – **http://www.cdep.org.uk**

Diabetes Essentials – an interactive online CPD resource for registered nurses On the left-hand side of this page, click on 'Further Learning'. This takes you to an Open University site with sections on Diabetes Care, Diabetes Complications and Living with Diabetes

Diabetes UK accessible from **www.diabetes.org.uk** **https://diabetesonthenet.com**

Diabetes UK (DUK) (2018) End of Life Diabetes Care accessible from **https://diabetes.org/healthy-living/seniors/planning-your-later-years**

Diabetes UK – **www.diabetes.org.uk** – Once in the home page click on Type 2 Diabetes & Me – an interactive programme with the basic information on diabetes

Diabetes UK – **Learning Zone** **https://learningzone.diabetes.org.uk/**

Diabetes UK – Meds and Kit Guide Electronic Copy **www.diabetes.org.uk**

Fit 4 Safety-Injection safety in UK and Ireland accessible from – **http://www.fit4diabetes.com**

FRAME – Foot Risk Awareness and Management Education **www.diabetesframe.org** – an online training module for foot care

Joint British Diabetes Societies Inpatient Care Group (2012) The management of the hyperosmolar hyperglycaemic state (HSS) in adults with diabetes: The management of the hyperosmolar hyperglycaemic state (HHS) in adults with diabetes (**https://abcd.care/**) accessed on 28/10/2021

Management of Hyperglycaemia and steroid (Glucocorticoid Therapy) (2014) accessible from **www.diabetes.org.uk**

Pocket medic films **https://vimeo.com/353566838/1df5ad3754** Safe use of insulin in the community

TREND Diabetes accessible from: **https://trenddiabetes.online**

Bibliography

American Diabetes Association. (2020) Approach to individualised glycaemic targets. Arlington County, Virginia, United States: American Diabetes Association

Brackney DE. (2018) Enhanced self-monitoring blood glucose in non-insulin-requiring type 2 diabetes: a qualitative study in primary care. Journal of Clinical Nursing. Volume 27(9). Pp.2120–2131

Delves-Yates C. (ed). (2018) Essential clinical skills for nurses: step by step. 2nd edition. London: Sage

Diabetes UK. (2019) 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. Accessed from: **https://www.guidelines.co.uk/diabetes/type-2-diabetes-frailty-in-older-people/454600.article on 11th November 2020**

Dougherty Lister S. (eds). (2015) The Royal Marsden manual of clinical nursing procedures. Professional edition. 9th edition. Chichester: Wiley Blackwell

Hortensius J. Slingerland RJ. Kleefstra N et al. (2011) Self-monitoring of blood glucose: the use of the first or the second drop of blood. Diabetes Care. Volume 34(3). Pp.556–560