Diabetes in older people and frailty

Facilitator Name & Title

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Learning objectives

- To recognise the complexities and challenges of the increasing prevalence of diabetes within the older population.
- To develop an awareness of the available frailty assessment tools.
- To understand the implications of a diagnosis of frailty.
- To explore the setting and implementation of individualised targets for the older person with frailty.

What age is old?

‘older people aged 70 years and over…… However, these definitions can be quite arbitrary and are compounded by the lack of correlation between chronological and biological age in many individuals’

‘Age thresholds for management, however, can be an ad hoc viewpoint and the clinician has the important responsibility to decide what clinical guideline is most appropriate for their older patients’

Joint British Diabetes Societies for Inpatient Care, JBDS-IP. Inpatient Care of the Frail Older Adult with Diabetes. October 2019. Available at: https://abcd.care/sites/abcd.care/files/resources/Inpatient_Care_of_the_Frail_Older_Adult.pdf [Accessed November 2020]

The ageing population with diabetes

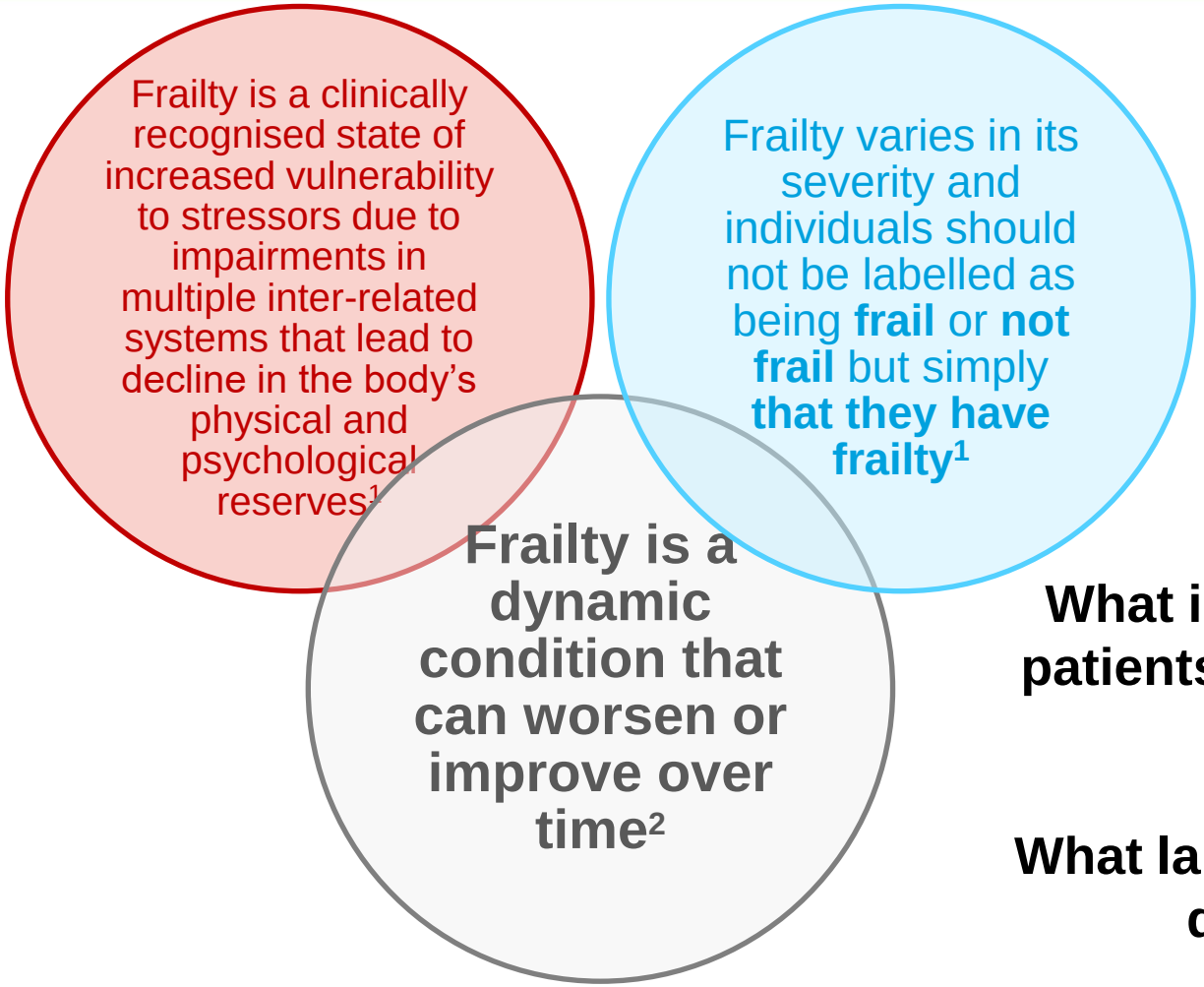
The Gov.UK 2015 data revealed that diabetes prevalence rises steeply with age in England

9% of people aged 45-54 years have diabetes

24% of people aged over 75 years have diabetes

GOV UK. 3.8 million people in England now have diabetes. September 2016. Available at: https://www.gov.uk/government/news/38-million-people-in-england-now-have-diabetes [Accessed November 2020].

What is frailty?



What is your experience of patients accepting they have frailty?

What language do you use to discuss frailty?

1. Bergman H, et al. J Gerontology A Biol Med Sci. 2007; 62(7):731-7.
2. Sinclair A, et al. Diabetic Medicine. 2019; 36(4):399-413

General Practice Contract requirements for frailty

The 2017/2018 General Practice Contract has set out requirements for frailty:

- Proactively identify older people (aged 65 & over) who have moderate or severe frailty, using an evidence-based tool e.g. electronic Frailty Index
- Those with moderate or severe frailty, should have the diagnosis recorded in their patient record, receive an annual medication review & annual falls risk identification
- eFI identifies people at risk of frailty, but cannot on its own make a diagnosis. The diagnosis of frailty requires the judgement of clinician, taking into account an individual's complete clinical picture

eFI: Electronic frailty index

NHS England. GMS Contract requirements for the identification and management of people with frailty - guidance on Batch-coding. 2017, updated June 2019. Available at: https://www.england.nhs.uk/wp-content/uploads/2017/04/gms-contract-batch-coding-statement.pdf [Accessed November 2020]

Assessing frailty

What frailty assessment tools are you familiar with or have used?

Prisma 7 Questionnaire – Yes or No

A score of three or more suggests the need for further clinical review

1. Are you more than 85 years old?
2. Male?
3. In general do you have any health problems that require you to limit your activities?
4. Do you need someone to help you on a regular basis?
5. In general do you have any health problems that require you to stay at home?
6. In case of need can you count on someone close to you?
7. Do you regularly use a stick, walker or wheelchair to get about?

Raiche M, Hebert R & Dubois M. Archives of Gerontology & Geriatrics. 2008; 47(1):9-18.

The five-item **FRAIL** score

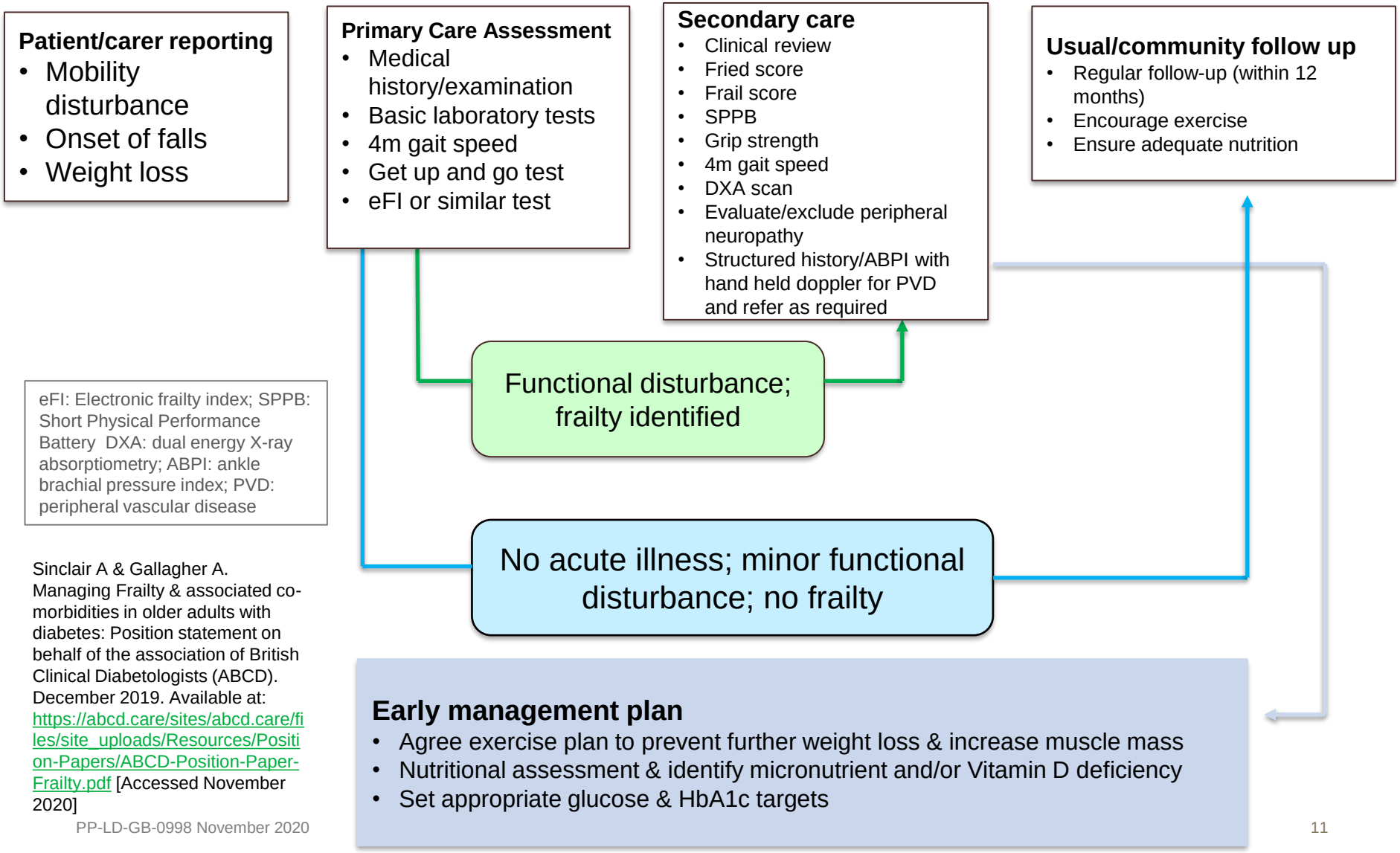
A questionnaire comprising of five components:

- **F_atigue**
- **R_esistance** (ability to climb 1 flight of stairs)
- **A_mbulation** (ability to walk 1 block)
- **I_llness** (greater than 5)
- **L_oss of weight** (>5%)

>3 = frail, 1-2 = pre-frail, 0 = robust

Gadsby R et al. Diabetes & Primary Care. 2017; 19(1):18-22

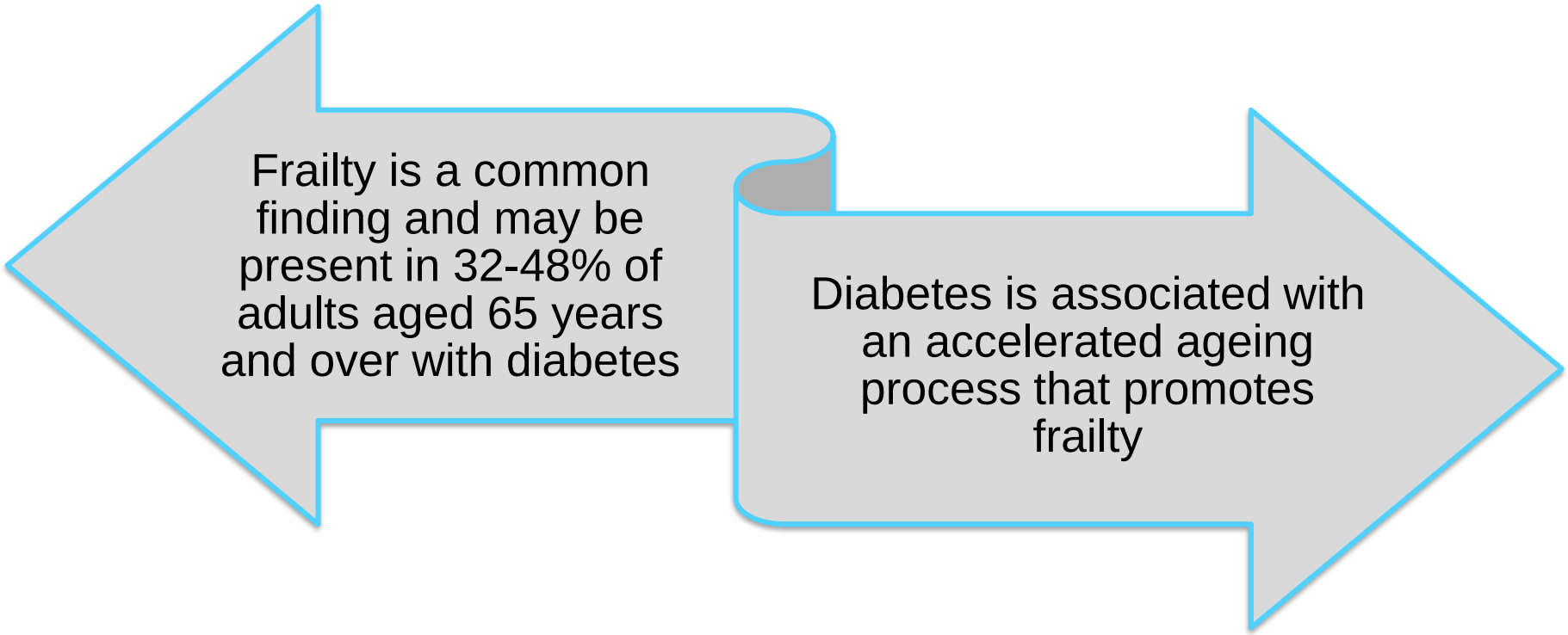
ABCD Frailty Assessment Pathway in Diabetes



eFI: Electronic frailty index; SPPB: Short Physical Performance Battery DXA: dual energy X-ray absorptiometry; ABPI: ankle brachial pressure index; PVD: peripheral vascular disease

Sinclair A & Gallagher A. Managing Frailty & associated co-morbidities in older adults with diabetes: Position statement on behalf of the association of British Clinical Diabetologists (ABCD). December 2019. Available at: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/Position-Papers/ABCD-Position-Paper-Frailty.pdf [Accessed November 2020]

Why is frailty important in diabetes?



Sinclair A & Gallagher A. Managing Frailty & associated co-morbidities in older adults with diabetes: Position statement on behalf of the association of British Clinical Diabetologists (ABCD). December 2019. Available at: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/Position-Papers/ABCD-Position-Paper-Frailty.pdf [Accessed November 2020]

Frailty and Sarcopenia

What do you know about Sarcopenia?

Frailty and Sarcopenia

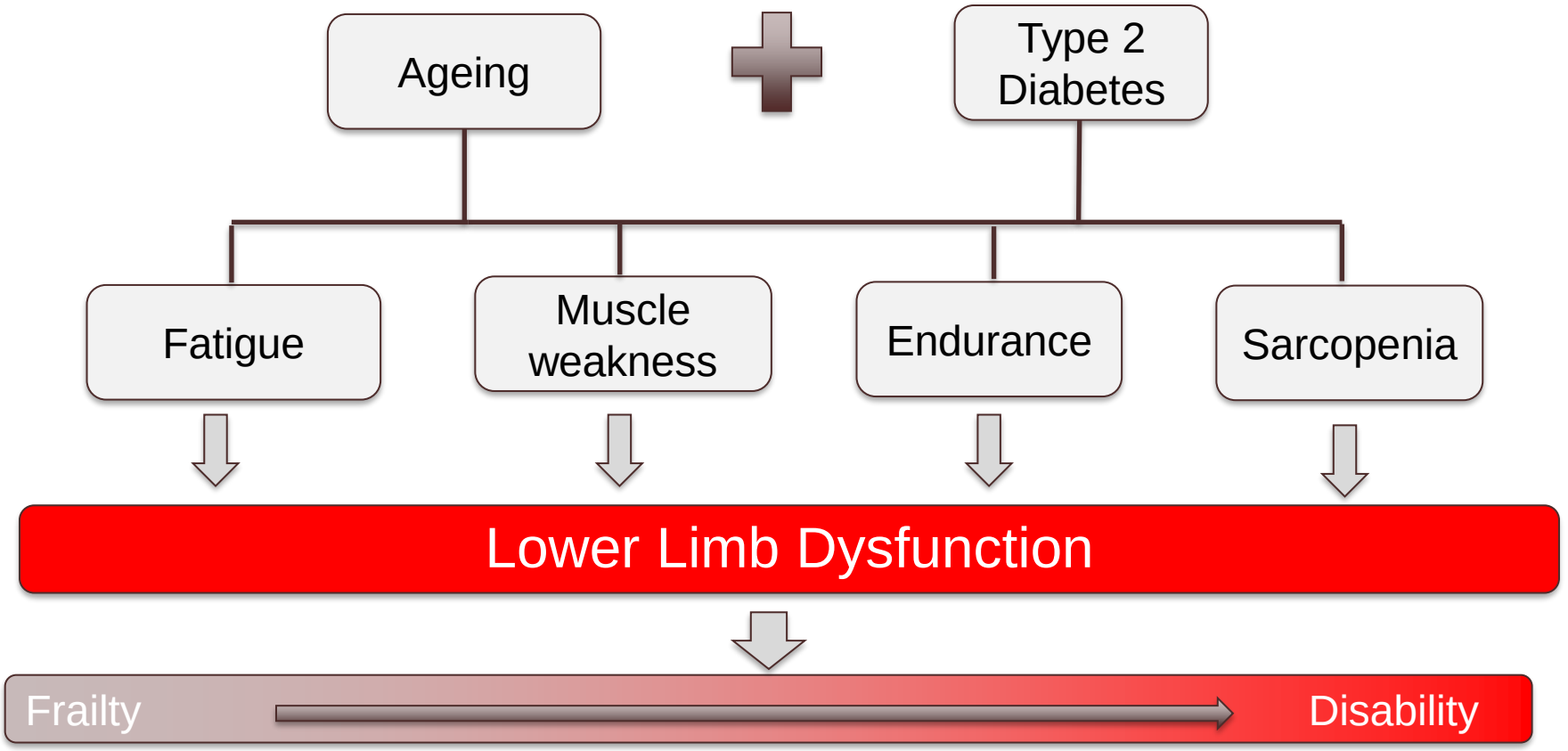
Sarcopenia is a progressive decline of muscle mass, leading to low and impaired strength and functioning

Age	Annual decline in muscle mass
Over 30 years of age	1%-2%
Over 60 years of age	1.5%-3%

After 75 years of age this becomes even greater

Jang HC. Diabetes Metab. 2016; 40(3):182-9.

Combined effects of ageing, diabetes and sarcopenia on lower limb dysfunction: moving towards frailty



Morbidity, falls, hospitalisation, decreased quality of life and mortality

Morley JE et al. J Am Med Dir Assoc. 2014; 15(12):853-9.

Frailty and Sarcopenia

It is now acknowledged that frailty and sarcopenia (muscle loss) are important new complications of diabetes, and are major risk factors for disability[1]

Their importance lies in the observation that they are ‘pre-disabling’ conditions capable of **therapeutic interventions**

Interventions like exercise which improves strength and balance and addressing nutritional deficiencies can help reduce the severity of frailty. Once recognised, the best management strategy for frailty is comprehensive geriatric assessment[2]

1. Sinclair AJ et al. J Diabetes Complications. 2017; 31(9):1465-1473
2. Sinclair A & Gallagher A. Managing Frailty & associated co-morbidities in older adults with diabetes: Position statement on behalf of the association of British Clinical Diabetologists (ABCD). December 2019. Available at: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/Position-Papers/ABCD-Position-Paper-Frailty.pdf [Accessed November 2020]

Obesity and frailty in type 2 diabetes

This vicious circle potentially leads to 'sarcopenic obesity' a major risk factor of physical disability

- Increased body fat mass is associated with increased insulin resistance
- With high fat mass and lower muscle mass, physical activity becomes progressively more difficult
- Which promotes more muscle mass loss

Sinclair AJ, Rodriguez-Manas L. Can J Diabetes. 2016; 40(1):77-83.

Functional categories and glycaemic targets

Category	Definition	HbA1c target
1: Functionally independent	People living independently with diabetes, have no impairment with ADL's	7.0 - 7.5% (53 - 58 mmol/mol)
2: Functionally dependent	Have impairments of ADL such as bathing and personal care. Particular risk of admission to nursing homes and hospital	7.5 – 8.0% (58 – 64 mmol/mol)
2(a): Frail	Increased risk of falls, weight loss, restriction in mobility, increased risk of institutionalisation	Up to 8.5% (70 mmol/mol)
2(b): Dementia	Cognitive impairment that has led to significant memory loss, unable to self-care. Many will be physically well	Up to 8.5% (70 mmol/mol)
3: End of life	Life expectancy less than 1 year	Avoid symptomatic hyperglycaemia

IDF Global Guideline for Managing Older People with Type 2 Diabetes. 2013, updated May 2017. https://www.idf.org/e-library/guidelines/78-global-guideline-for-managing-older-people-with-type-2-diabetes.html [Accessed November 2020].

ADL: activities of daily living

Glycaemic targets

- Older adults inevitably have less years of life expectancy and may not benefit to the same degree as younger adults from aggressive treatment
- The **ACCORD*** (Action to Control Risk in Diabetes) study demonstrated that too low HbA1c levels, below 42mmol/mol (6%) increased mortality rates by 22%, rather than as expecting to reduce death rates

  - **Are targets individualised and clearly set in your clinical practice?**
  - **How often are targets reviewed or amended, to reflect the patients individual circumstances?**

*10,251 patients with Type 2 diabetes

ACCORD Study Group. N Engl J Med. 2008; 358(1):2545-59.

Quality and Outcomes Framework (QoF) new diabetes indicators 2019/20 for patients with frailty

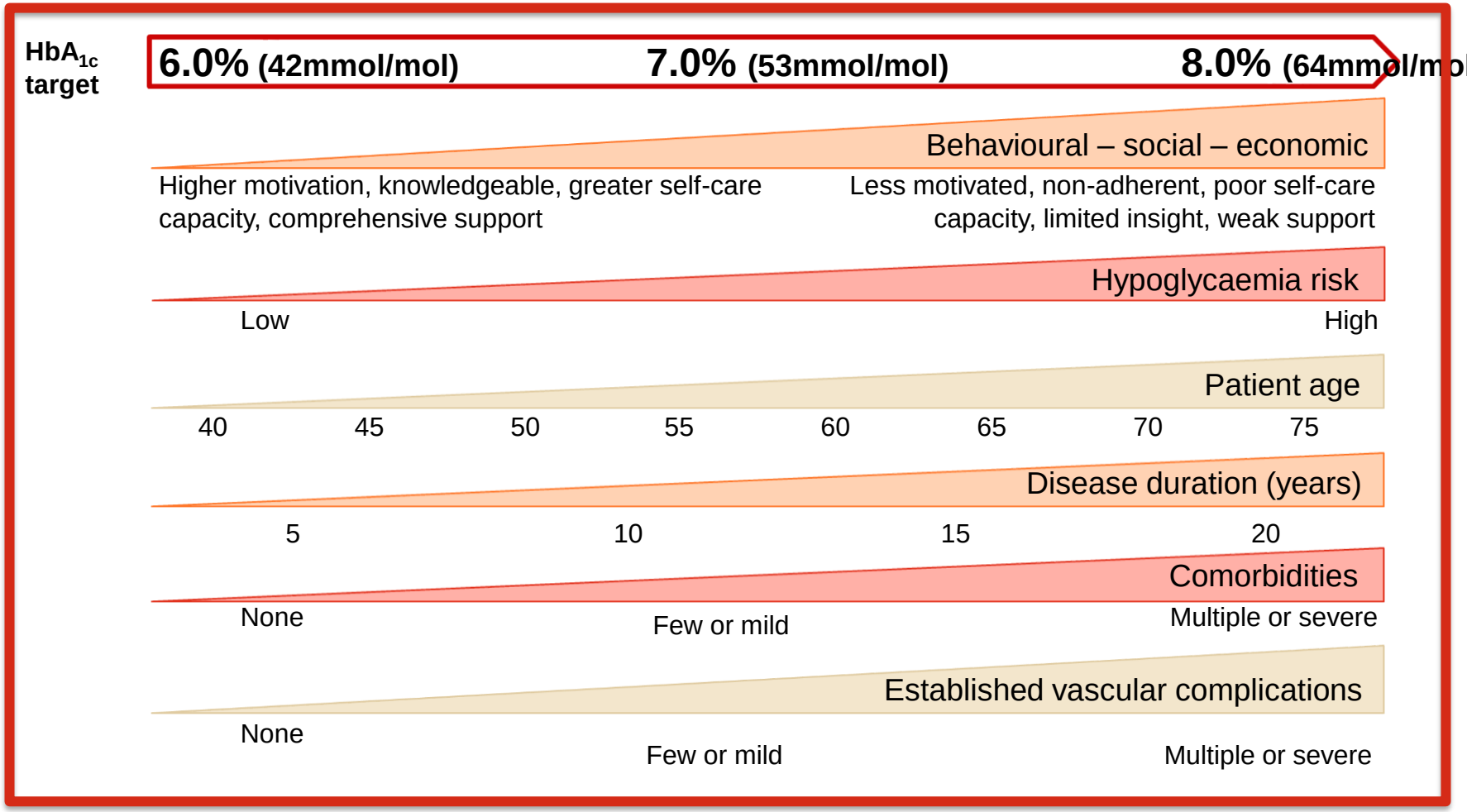
DM021 (NM158) – % of patients with diabetes with moderate or severe frailty, on register, in whom the last IFCC-HbA1c is 75mmol/mol or less in the preceding 12 months[1]

Blood pressure target for those with moderate to severe frailty removed to avoid over treatment[2]

Less aggressive targets may help reduce the financial pressure on general practice to 'treat-to-target' and demonstrate a greater focus on safety and personalised care[2]

1. NHS England. 2019/20 General Medical Services (GMS) contract Quality and Outcomes Framework (QOF). BMA & NHS England. May 2019. Available at: https://www.england.nhs.uk/publication/2019-20-general-medical-services-gms-contract-quality-and-outcomes-framework-qof/ [Accessed November 2020]
2. Brown P. Diabetes & Primary Care. 2019; 21(3):99-100.

Individualising Glycaemic Targets



Inzucchi SE, et al. Diabetes Care. 2015; 38(1):140-149

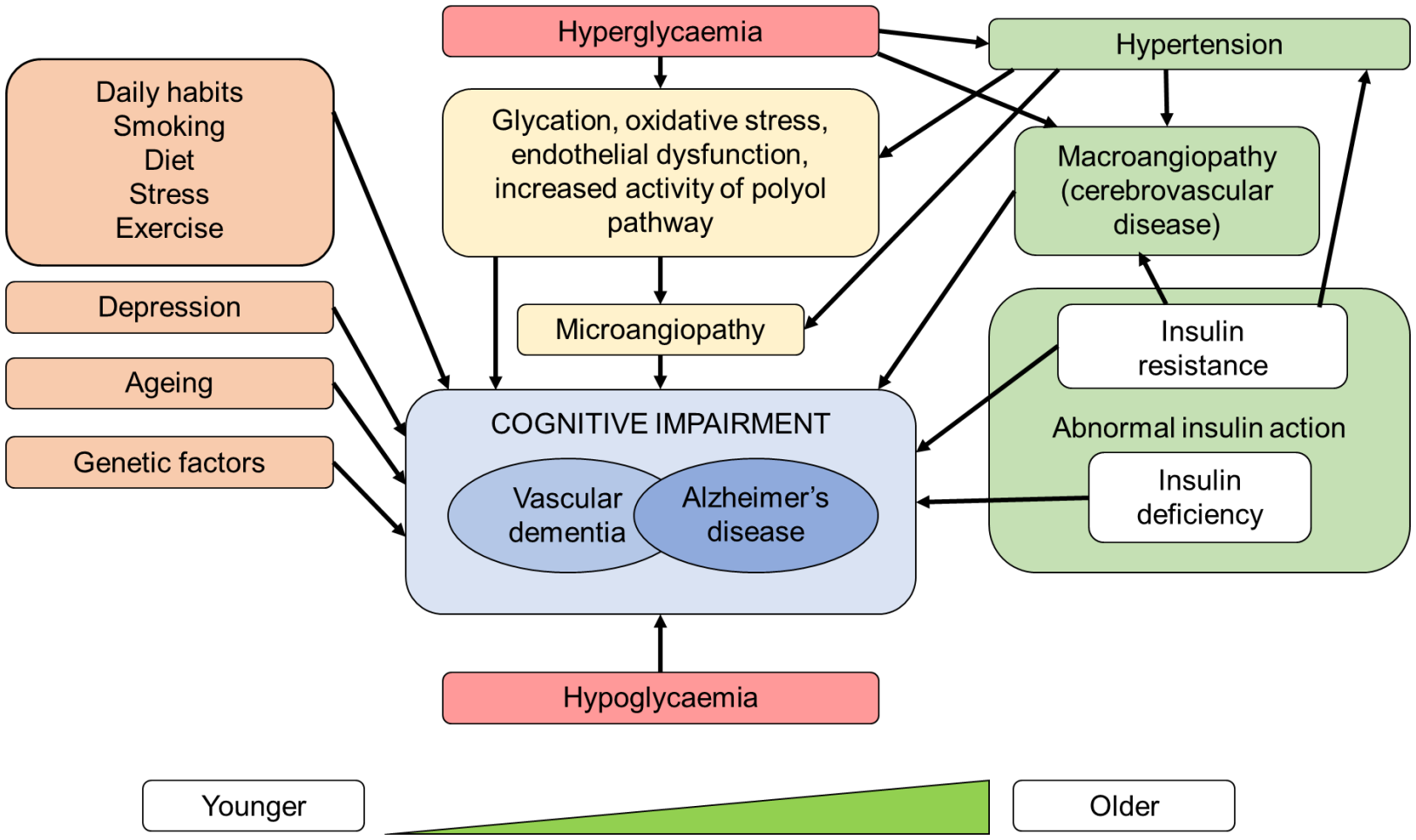
Group work: Case study - Hilda

- 84 year old
- Type 2 diabetes for 16 years
- Metformin 1g BD
- HbA1c 75mmol/mol (9.0%)
- Mild dementia and lives alone, reports feeling tired
- Daughter assists with house work and social cares

What would be an acceptable HbA1c target for Hilda?
Discuss your reasons and next steps

This case is fictitious and is only used for teaching purposes.

Diabetes and cognitive impairment



Mastro A, Caputo J & Vagula M. US Pharmacist. 2014; 39(10):33-37

The balancing act of glycaemia

7 STEPS TO APPROPRIATE POLYPHARMACY

Image taken from Scottish Government Polypharmacy Model of Care Group, 2018.

Scottish Government Polypharmacy Model of Care Group. Polypharmacy Guidance, Realistic Prescribing. 3rd edition, 2018. Available at: https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-Guidance-2018.pdf [Accessed November 2020]

Hypoglycaemia in the older person

- Hypoglycaemia can be difficult to recognise in older people, many have reduced awareness of initial symptoms (i.e. tremor, shaking, sweating). Therefore less time before the later symptoms of neuroglycopenia occur, such as confusion and decreased conscious level[1]
- Symptoms such as slurred speech and unsteadiness can be misattributed to other presentations such as:
  - Parkinson's disease
  - Stroke
  - Dementia[1]
- Older people with cognitive impairment are particularly vulnerable to hypoglycaemia, as they struggle to communicate their symptoms[2]

1. Gadsby R et al. Diabetes & Primary Care. 2017; 19(1):18-22.
2. Yates R, Menon J. J Diabetes Nurs. 2015; 19(4):143-47.

Management of hypoglycaemia

Awake and able to drink safely

- Give 15-20g of fast-acting carbohydrates such as 60ml of Gluco juice, 200ml of pure fruit juice or 5-6 dextrose (glucose) tablets
- Wait 10-15 minutes, re-check capillary blood glucose (BG)
- Repeat treatment until BG > 4mmol/L
- Then give 20g long-acting carbohydrate, such as 2 biscuits or a slice of bread
- Review medications, discuss de-escalation of glucose-lowering treatments with team

Awake, able to drink safely but confused or agitated

If uncooperative:

- Squeeze half a tube of glucogel into the inside of the cheek and massage
- Wait 10-15 minutes, re-check BG
- Repeat treatment until BG > 4mmol/L
- Then give 20g of long-acting carbohydrate, such as biscuits or a slice of bread
- Review medications, discuss de-escalation of glucose-lowering treatment with team responsible for diabetes

Unconscious, may be fitting

- Ask for help and **dial 999**
- Place patient in recovery position
- Stop any scheduled insulin
- If trained to do so, give 1mg glucagon IM once only if possible
- If becomes awake, give 20g of long-acting carbohydrate such as 2 biscuits or a slice of bread
- Liaise with paramedics on arrival for further management

A National Stakeholders Covid-19 Response Group Interim Guidance. A Covid-19 Response Action – Diabetes Management in Care Homes. April 2020. Available at: https://www.diabetes.org.uk/resources-s3/public/2020-04/Covid-19%20and%20Diabetes%20-Care%20Home%20Guidance%20-%20Final%20Document%20-%2029.04.2020.pdf [Accessed November 2020]

Glucose regulation & treatment considerations

Prescribed glucose-lowering medications should:

- have a low risk of hypoglycaemia
- have a minor side effects profile
- be cost-effective

'Start low & go slow' when dosing & titrating medications in frail, older adults

What other factors would you consider when choosing next step therapies?

To view a summary of glucose-lowering therapies in managing frail older adults with diabetes - click here and see page 8.

Sinclair A & Gallagher A. Managing Frailty & associated co-morbidities in older adults with diabetes: Position statement on behalf of the Association of British Clinical Diabetologists (ABCD). December 2019. Available at: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/Position-Papers/ABCD-Position-Paper-Frailty.pdf [Accessed November 2020]

Hyperglycaemia; urgent areas of concern

Patient generally unwell, very thirsty, looks dehydrated with deep breathing, & blood glucose >11mmol/L, may have **diabetic ketoacidosis (DKA)*** – check for raised ketones

Patient very dehydrated, confused or more drowsy than usual, & with blood glucose >30mmol/L, may have **hyperosmolar hyperglycaemic state (HHS)***

**Immediate medical assessment, treatment guidance & arrangements for hospital admission required*

A National Stakeholders Covid-19 Response Group Interim Guidance. A Covid-19 Response Action – Diabetes Management in Care Homes. April 2020. Available at: https://www.diabetes.org.uk/resources-s3/public/2020-04/Covid-19%20and%20Diabetes%20-Care%20Home%20Guidance%20-%20Final%20Document%20-%2029.04.2020.pdf [Accessed November 2020]

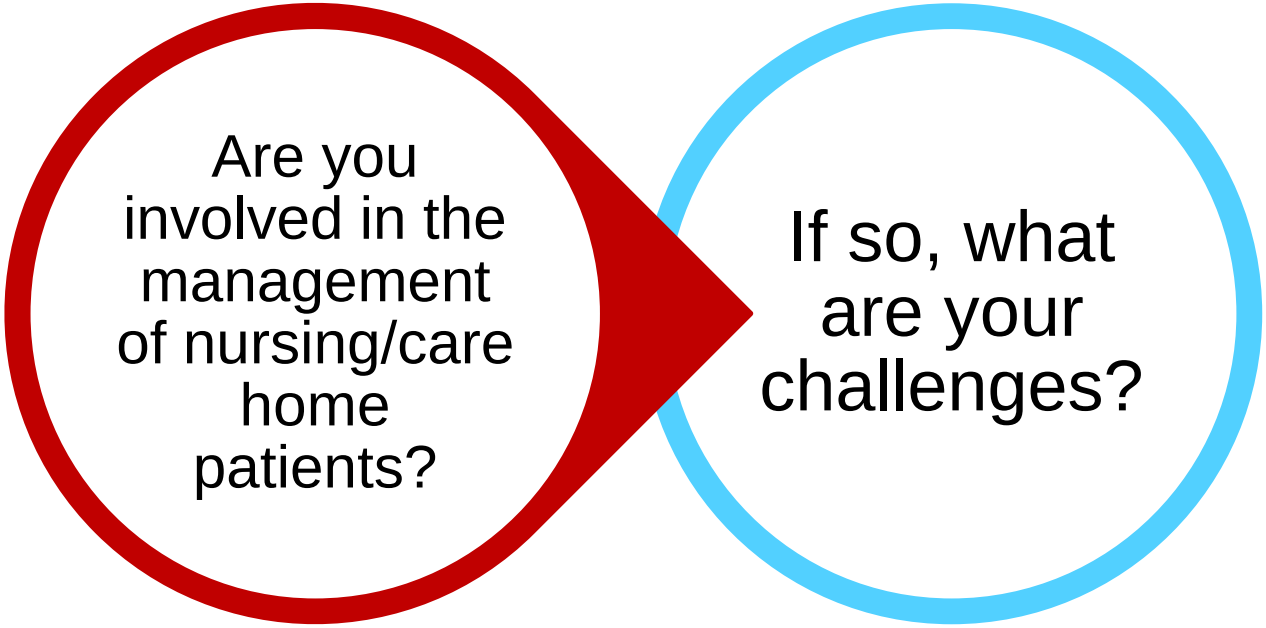
Discussion point: Frailty and Type 1 diabetes

Because of advancements in the management of Type 1 diabetes, individuals are living well into the decades of later life

What specific challenges have you encountered?

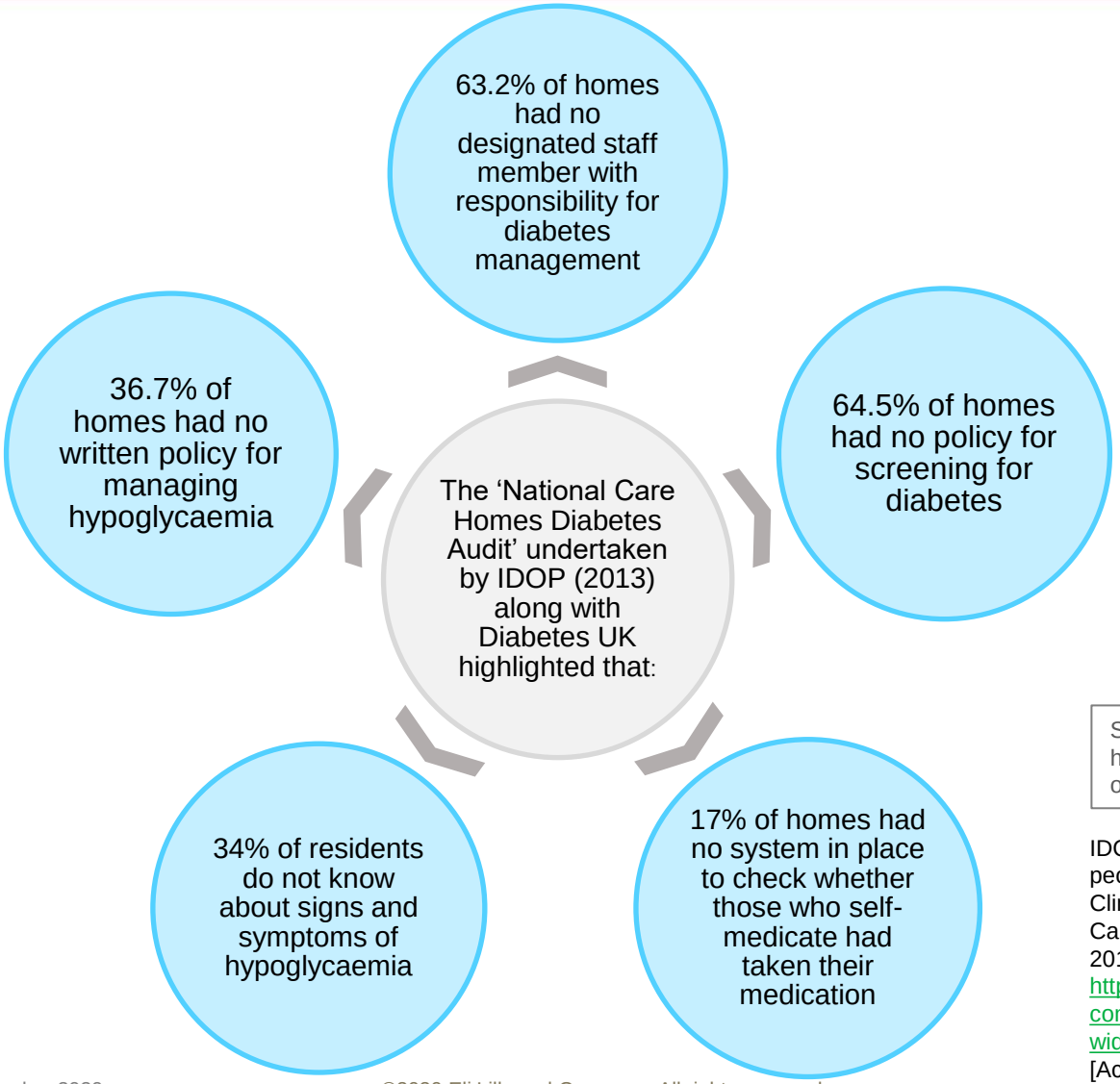
Diabetes in nursing and care homes

In the UK, it is estimated that up to 27% of residents in older people care homes have diabetes



Diabetes UK. Good clinical practice guidelines for care home residents with diabetes: A revision document prepared by a Task and Finish Group of Diabetes UK. January 2010. Available at: https://www.diabetes.org.uk/resources-s3/2017-09/Care-homes-0110_0.pdf [Accessed November 2020]

Diabetes in nursing/care homes



Survey based on 2043 care homes for elderly residents operating in England.

IDOP (Institute of diabetes & older people) & ABCD (Association of British Clinical Diabetologists). England-wide Care Home Diabetes Audit. Spring 2014. Available at: http://diabetesfrail.org/wp-content/uploads/2014/10/England-wide-Care-Home-Diabetes-Audit.pdf [Accessed November 2020]

Recommendations for nursing and care homes

In 2010 Diabetes UK published 'Good clinical practice for care home residents with diabetes' which sets out standard recommendations, that each nursing/care home should have in place:

- A policy for managing hypoglycaemia, with trained staff and a hypo treatment kit available
- Make foot assessment part of daily routine, development of foot ulceration should be seen as a medical emergency
- Monitor ability of residents to self medicate at regular intervals
- Screening for diabetes on admission
- Annual reviews – which include a nutritional assessment and dietary plan
- Have a designated staff member with responsibility for diabetes management

Diabetes UK. Good clinical practice guidelines for care home residents with diabetes: A revision document prepared by a Task and Finish Group of Diabetes UK. January 2010. Available at: https://www.diabetes.org.uk/resources-s3/2017-09/Care-homes-0110_0.pdf [Accessed November 2020]

Case study 1 – Helena

- 82 years old, type 2 diabetes (13 years)
- Retired teacher, lives in residential care, takes medications independently from a dosette
- HbA1c 40mmol/mol (5.8%), no blood glucose monitoring
- BMI 22.4 kg/m^2
- eGFR 35 mL/min/1.73 m^2
- Previous CVA – speech and swallow affected
- Walks with a stick, is independent of most activities of daily living
- Recently had a fall in the shower, is becoming increasingly unsteady. Staff concerned Helena is getting tearful, frustrated & often appearing confused
- Medication: Sulphonylurea 80mgs bd and DPP-4 inhibitor od

Discuss your initial concerns including frailty and a suitable glycaemic target. What would be your next management steps?

This case is fictitious and is only used for teaching purposes.

Case study 2 - Sri

- 76 years old, type 2 diabetes (22 years)
- Lives alone, homecare once a day for dressing
- Meals on wheels and daily visit from daughter
- COPD – often requires steroids and antibiotics. Breathless, tired and thirsty
- eGFR 58mL/min/1.73 m^2
- HbA1c 80mmol/mol (9.5%)
- BMI 28 kg/m^2
- Walks short distances indoors with a frame. Refuses to leave house, only for hospital appointments
- Daughter concerned Sri is low in mood, has no interest in life
- Diabetes medication: Metformin 1g bd & GLP-1 RA weekly

Discuss your initial concerns including frailty and a suitable glycaemic target. What would be your next management steps?

COPD: Chronic obstructive pulmonary disease

This case is fictitious and is only used for teaching purposes.

Case study 3 - Joseph

- 69 years old, type 2 diabetes
- Retired engineer lives alone
- BMI 36 kg/m^2
- eGFR 60 mL/min/1.73 m^2
- HbA1c 75mmol/mol (9.0%)
- PMH: IHD, Hypertension, COPD
- Diabetes medication: Metformin, SGLT2i, basal insulin
- Daughter has concerns about Joseph's memory deteriorating, this is being investigated

Discuss your initial concerns including frailty and a suitable glycaemic target. What would be your next management steps?

IHD: ischemic heart disease

This case is fictitious and is only used for teaching purposes.

Acute change - Joseph

- Joseph’s daughter called GP with concerns;

- Shortness of breath
- Dry cough
- No appetite
- Lethargy
- Sweating
- Confusion
- General deterioration in health

Discuss your concerns around these signs & symptoms, how will therapeutic management change?

This case is fictitious and is only used for teaching purposes.

Case study 4 – Michael

- 67 years old, type 1 diabetes
- BMI 26 kg/m^2
- HbA1c 75 mmol/mol (9.0%)
- Retired steel worker, wife died 18 months ago. Lives alone in his bungalow. Michael previously used to care for his grandchildren after school, on numerous occasions he forgot to collect them, and no longer feels safe to care for them. Daughter concerned he has dementia, is worried that he may not be taking insulin and is forgetting to eat. Michael has been found wandering the village confused on several occasions and has been brought home by neighbours
- Diabetes medication: Basal analogue insulin 22units nocte and rapid-acting analogue insulin 6units with each meal
- District nurses were asked to administer insulin injections but Joseph was routinely out when they visited

Discuss your initial concerns including frailty and a suitable glycaemic target. What would be your next management steps?

This case is fictitious and is only used for teaching purposes.

Summary

- **Individualise goals of care and take into account:**
  - Functional status
  - Complexity of illness (including comorbidities)
  - Life expectancy
- **Base where possible all therapeutic decisions on a detailed geriatric assessment and risk stratification process:**
  - Hypos
  - Falls
  - Adverse events
- **Recognise frailty early to help prevent hospital admission and planning for maintenance of independence and quality of life**

Sinclair A, J Diabetes Nurs. 2020; 24(1):111

Useful resources & links

- **TREND resources via: https://trend-uk.org/resources/**
- Diabetes and dementia: Guidance on practical management (September 2018)
- Hypoglycaemia in adults in the community: recognition, management and prevention (September 2018)
- 65+ year old: keeping well with your type 2 diabetes (January 2020)
- Living with diabetes and dementia (August 2018)
- **Diabetes UK: https://www.diabetes.org.uk/**
- Good clinical practice guidelines for care home residents with diabetes (January 2010)
- Position statement on Diabetes care for older people resident in care homes (June 2014)
- **ABCD resources via: https://abcd.care/**
- Inpatient Care of the Frail Older Adult with Diabetes (2019)
- Managing frailty and associated comorbidities in older adults with diabetes (January 2020)
- **diabetesFRAIL: http://diabetesfrail.org/**