

DIABETES AND FRAILITY: guidance on the management of patients with Type 2 diabetes

Background

Elderly and frail individuals with diabetes are at marked increased risk of adverse effects from treatments for diabetes, including admissions to hospital, and are less likely to benefit from the long-term protective effects of good glycaemia control. NICE guidance ([NG28](#)) supports this, stipulating the following: *Consider relaxing the target HbA1c level (see recommendations 1.6.7 and 1.6.8) on a case-by-case basis, with particular consideration for people who are older or frail, for adults with type 2 diabetes.* Once established, apart from age and gender, frailty is the single biggest predictor of mortality in older adults.¹ There is a need for local guidance to allow a balance between the benefits of tight glycaemic control (reduced incidence of complications, avoidance of osmotic symptoms and reduced symptomatic hyperglycaemia) and the risks associated with treatment in the frail, older person (increased likelihood of hypoglycaemia; due to lack of sensory awareness and increased vulnerability to its consequences - including falls, fractures and hospitalisation); and co-morbidities such as CKD (Chronic Kidney Disease) which may require dose adjustment².

Assessment of frailty

Frailty is a dynamic process and a patient's frailty categorisation may change³. Frailty should therefore be re-evaluated, as a minimum, at the annual diabetes review but earlier if there has been changes in health status and three months after any escalation or de-escalation of treatment. As frailty category changes so, targets may also need to be re-evaluated and individualised based on the development and diagnosis of co-existing comorbidities and complications, cognitive function, and functional status.

[Rockwood Clinical Frailty scale](#) can be used to assess for frailty and the frailty categorisation should be coded on the patient record. See also [Top Tips to help you use the Clinical Frailty Score](#).

Individualised treatment targets

Whilst frailty can be used to guide the setting of treatment targets it is important to remember that there are multiple comorbidities that may affect the accuracy of HbA1c in older adults. (see Table 1)

Table 1: Known modifiers of HbA1c in older adults²

Artificially increases HbA1c (higher risk of hypoglycaemia if aggressive targets established)	Artificially reduces HbA1c (higher risk of complications of hyperglycaemia and hyperosmolarity)
Iron deficiency	Bleeding conditions (e.g. peptic ulcer disease)
B12 deficiency	Haemolytic conditions (e.g. valvular cardiac disease)
Anaemia of chronic disease	Haemoglobinopathies (e.g. thalassaemia, sickle cell)
Chronic opioid use	Chronic liver disease

Table 2 – Target setting, recommended interventions, and treatment goals according to frailty.

The below table contains recommendations for HbA1c, fasting glucose levels and BP. Target HbA1c and glucose levels should be coded in the patient record to facilitate the review of blood test results and support decisions regarding ongoing management during the diabetes review. It is however important that all targets are individualised to the patient and reflect not only the level of frailty but their functional status (changes in dexterity, vision, and the need for third-party assistance with medicines' administration), co-morbidities, cognitive function and life expectancy.

	Status	Treatment goals	Recommended targets	Recommended interventions
<p>Healthy/ pre frail/ mild frailty</p> <p>Rockwood CFS 1-4</p>	<p>Functional and independent</p> <p>Life expectancy of >10 years</p>	<p>Prevent or delay macro/microvascular complications</p>	<p>HbA1c 48 - <58 mmol/mol</p> <p>FGL 5.0–7.2 mmol/l</p> <p>BP <140/90 mm Hg</p>	<p>Tight glycaemic control however if HbA1c <53mmol/mol reduce/stop sulfonylurea and/or insulin.</p> <p>Choice of blood glucose lowering drug should be based on benefits of treatment versus risks associated with treatment particularly the risk of hypoglycaemia.</p> <p>Resistance exercise and nutritional interventions</p> <p>Statin unless contraindicated/not tolerated</p>
<p>Moderate frailty</p> <p>Rockwood CFS 5-6</p>	<p>2 comorbidities</p> <p>Some impairment in activities of daily living</p> <p>Reduced life expectancy</p>	<p>Limit the progression of microvascular complications</p> <p>Control of symptoms and avoid metabolic emergencies such as hypoglycaemia</p>	<p>HbA1c 58 - 64 mmol/mol</p> <p>FGL 5.0–8.3 mmol/l but up to 11.5mmol/l may be acceptable</p> <p>BP <140/90mm Hg and no postural drop</p>	<p>Caution with metformin if eGFR 30-45ml/min. Stop if eGFR <30ml/min. <i>NB eGFR is known to over-estimate renal function in frail elderly patients, use Cockcroft-Gault equation to estimate CrCl</i></p> <p>If HbA1c <53mmol/mol reduce/stop sulfonylurea and/or insulin.</p> <p>Do not use third line agents unless to control symptoms</p> <p>Do not restrict diet if low weight or losing weight</p> <p>Statin unless contraindicated/not tolerated</p>
<p>Severe frailty</p> <p>Rockwood CFS 7-9</p>	<p>Significant comorbidity and functional deficits, and limited independence</p> <p>Markedly reduced life expectancy</p>	<p>Symptom control</p> <p>Avoid hypos</p> <p>Avoid hospital admission</p> <p>Introduce timely end-of-life care. For support with managing patients at end of life please see Trend Diabetes - End of Life Guidance for diabetes care</p>	<p>HbA1c 58 - 70 mmol/mol, but up to 75mmol/mol is acceptable</p> <p>FGL 6–12.0 mmol/l but up to 13 mmol/l may be acceptable</p> <p>BP <150/90 mm Hg and no postural drop</p>	<p>Less aggressive glycaemic targets but avoid hypoglycaemia and be aware that hyperglycaemia can increase risk of infections and cause urinary incontinence, thirst, and dehydration.</p> <p>Stop metformin if eGFR <30 or adversely affecting appetite</p> <p>Consider stopping sulfonylurea and whether insulin can be reduced, switched to once daily regime or stopped</p> <p>Lifestyle intervention based on optimising QoL. Do not restrict diet if low weight or losing weight</p> <p>Consider whether statin therapy is beneficial</p>

CFS = Clinical Frailty Scale BP=blood pressure; FGL=fasting/pre-meal glucose levels; HbA1c =glycated haemoglobin; QoL=quality of life.

Treatment simplification/de-escalation guidance in the glycaemic management of older adults with diabetes

As a person with diabetes gets older, regimen simplification, switching or de-escalation (either lowering doses or discontinuing treatments) may be necessary, depending on their level of frailty and HbA1c levels.

Aims of deprescribing in diabetes -

To reduce overtreatment, treatment burden and risk of harm as part of a supervised process which requires careful language and discussion with patient +/- family/carers and may involve³:

- Stopping a medication or reducing the dose – glucose lowering, BP or lipid lowering
- Switching to an alternative glucose-lowering class with a more favourable risk–benefit ratio or lower risk of hypoglycaemia.
- Simplifying a medication regimen.
- Reduction in self-monitoring of blood glucose or the frequency of diabetes-specific assessment

Situations in diabetes where deprescribing may be considered³ –

- HbA1c falls below target
- New onset of clinical conditions that lead to contraindications (e.g. pioglitazone use in heart failure)
- New/worsened onset of chronic kidney disease
- Hypoglycaemia (especially in the frail/elderly)
- Treatment failure
- Preference for a less intensive regimen due to adherence or tolerability issues or medication burden
- Frailty and those who have low levels of support at home or require support from a third party for medication administration
- Low cognitive function
- Short life expectancy

Considerations when deprescribing in diabetes –

- Individualised HbA1c target
- Stop or reduce medications that can cause hypoglycaemia (sulfonylureas/insulin)
- Other co-morbidities - SGLT2 inhibitors may be prescribed for cardiovascular or renal protection and will have minimal impact on glucose levels if eGFR <45ml/min
- Drug choices should consider the potential side-effects i.e. polydipsia, weight loss and candidiasis in addition to the hypoglycaemia risk and doses should be reviewed to ensure they are appropriate due to declining renal function. (Consider using Creatine Clearance)
- For further information about the prescribing considerations when choosing blood glucose lowering therapies in patients with frailty in Type 2 diabetes, please see [BNSSG Blood Glucose Management in Type 2 Diabetes](#) guidelines.

- Weight loss is a characteristic feature of frailty alongside Sarcopenia - the age-related progressive loss of muscle mass and strength. Diet should not be restricted if a patient has a low BMI or is losing weight, dose adjustment of medications should also be considered as weight loss occurs. Therapies that promote weight loss i.e. GLP-1 agonists and SGLT-2 inhibitors may exacerbate sarcopenia (muscle wasting) whilst Sulfonylureas will have an increased potency following weight loss (as insulin sensitivity is improved) which may further increase hypoglycaemia risk
- Sick day rules – be aware of sick day guidelines in those with poor hydration/oral intake and/or reduced renal function and the ability of the patient +/- carer support to adhere to these to allow the continued use of these medications safely. [Trend UK Type 2 diabetes what to do when you are ill](#)
- Monitoring requirements and ability to adhere to these - regular testing of blood glucose is required for any patient where hypoglycaemia is a potential risk and will be needed following alteration to insulin and or sulfonylurea treatment.
- Follow-up and safety netting –
 - Patients should be reviewed after each change in regimen (i.e. a repeat HbA1c 3-month after every withdrawal/adjustment) to check that glycaemic control (and other risk factor management) is appropriate for the patient's frailty category, and to check whether frailty status has changed.
 - Advise patients/carers to monitor for symptoms of hyperglycaemia (excessive thirst or urination, fatigue) and to contact their healthcare professional if they have any concerns.

See also [Diabetes and Frailty: An Expert Consensus Statement on the Management of Older Adults with Type 2 Diabetes](#) for further information about treatment escalation and simplification/de-escalation plans for older adults living with type 2 diabetes and with no or mild frailty, moderate frailty or severe frailty

Insulin –

In a small proportion of individuals, stopping insulin suddenly can precipitate diabetic ketoacidosis, so insulin should be withdrawn slowly and the response to each dose adjustment should be monitored, with monitoring of glucose levels and repeat HbA1c in 3 months.

It may not be safe to stop insulin in some people with T2DM. If you are thinking of stopping insulin, please consider the following points:

- *Has the person had confirmed diabetic ketoacidosis (DKA) in the past*
- *Does the patient have damage to the pancreas (Ca pancreas, pancreatitis, Cystic fibrosis, Type 3C diabetes - diabetes caused by disease, damage, surgery or removal of the pancreas)*
- *Is the person on high dose steroids*
- *Is the person on mixed or more than one type of insulin, could the insulin be switched to a once daily regimen*
- *Is the person requiring high doses of insulin, have we considered titration down in doses in the 1st instance.*
- *Consider duration of diagnosis and length of time treated with insulin therapy or quick progression to insulin treatment (<3yrs from diagnosis).*

If the person has any of the above points they may be at risk of ketosis/DKA if insulin stopped. Please consider discussion with diabetes clinician/medic before stopping.

References

- 1 Clegg A, Bates C, Young J, et al. Development and validation of an electronic frailty index using routine primary care electronic health record data. *Age Ageing* 2016; **45**: 353–360.
- 2 Abd Ghafar MZA, O'Donovan M, Sezgin D, Moloney E, Rodríguez-Laso Á, Liew A, O'Caoimh R. Frailty and diabetes in older adults: Overview of current controversies and challenges in clinical practice. *Front Clin Diabetes Healthc*. 2022 Aug 19;3:895313. doi: 10.3389/fcdhc.2022.895313. PMID: 36992729; PMCID: PMC10012063.
3. Diabetes and frailty: guidance on the management of older adults with type 2 diabetes Strain, Down, Brown, Puttanna, and Sinclair [Diabetes Ther](#). 2021 May; 12(5): 1227–1247.
3. Aubert CE, Lega IC, Bourron O et al (2021) When and how to deintensify type 2 diabetes care. *BMJ* 375: e066061