

## Table 1: Frailty and Type 2 Diabetes – suggested changes in approach to treatment

Remember, patients can be excluded from QOF if they are on maximal tolerated treatment.

	Level of frailty	Therapeutic targets	Suggested actions and therapeutic options
0-1	Life expectancy likely to be over 10 years  <b>and</b> Edmonton frail scale: up to 'mild frailty' Rockwood: up to 'mild frailty'	<ul style="list-style-type: none"> <li>HbA1c 53- 58 mmol/mol</li> <li>Avoid low levels of HbA1c &lt;53 if on insulin or SU (no evidence of benefit and increased risk of hypo)</li> <li>BP 140/80 if tolerated</li> </ul>	<ol style="list-style-type: none"> <li>Metformin remains the first-line treatment</li> <li>Avoid starting SU in elderly</li> <li>Appropriate to use third-line agents, Insulin, DPP4, GLP-1, Pioglitazone or SGLT-2 blockers (gliflozins) if HbA1c above target or symptoms of hyperglycaemia</li> <li><b>Reassess/reduce</b> if worsening frailty or hypos</li> </ol>
2	Life expectancy likely to be less than 10 years  <b>and</b> Edmonton frail scale - 'moderate frailty' Rockwood - 'moderate frailty'	<p>The aim is to control symptoms and avoid hypos</p> <p>HbA1c 75 mmol/mol or less</p> <p>Avoid low levels of HbA1c of &lt;59 if on insulin or SU</p>	<ol style="list-style-type: none"> <li>Caution with metformin (and other drugs) if eGFR 30-60. <b>Reduce or stop drugs</b> (eGFR is known to over-estimate renal function in frail elderly patients)</li> <li>Do not use other 'third line agents' unless to control symptoms or to avoid insulin (Linagliptin may be useful here)</li> <li>Consider insulin treatment to control severe hyperglycaemia with symptoms (Isophane or Analogue once daily)</li> <li><b>Do not restrict diet if low or losing weight</b></li> </ol>
3	Reduced life expectancy  <b>and</b> Edmonton frail scale: 'very frail' Rockwood: 'severely frail' or 'very severely frail' Especially: <ul style="list-style-type: none"> <li>Multiple co-morbidities</li> <li>'Moderately frail' patients requiring paramedic for hypo management or admitted to hospital with hyper or hypoglycaemia.</li> </ul>	<ul style="list-style-type: none"> <li>Symptom control</li> <li>Avoidance of hypoglycaemia</li> <li>HbA1C 75mmol/l or less</li> </ul> <p>'Target' HbA1c may not be necessary except as a means of assessing the risk of hypoglycaemia or severe metabolic decompensation</p> <p>Avoid low levels of HbA1c &lt;59 (7.5%) if on insulin or SU</p> <p>No need to measure alb/creat ratio</p>	<p><b>De-escalate treatment – Reduce drugs</b></p> <ol style="list-style-type: none"> <li>Consider whether possible to stop insulin (seek advice) and/or SU</li> <li>Stop metformin (and caution with other drugs) if eGFR is deteriorating, or below 30 or adversely impacting on appetite.</li> <li><b>Do not</b> use other 'third line agents' (GLP-1, Pioglitazone, SGLT-2blockers)</li> <li>Stop lipid-lowering drugs</li> <li>Stop/reduce other drugs likely to cause adverse effects, especially beta-blockers</li> </ol>

**Table 2: targets for capillary blood glucose levels in frail patients (including inpatients)**

	Frailty category (see table 1)	Intermediate risk of hypoglycaemia Patients on insulin and/or sulphonylurea therapy	High risk of hypoglycaemia or recurrent hypos in spite of optimisation of insulin and/or oral hypoglycaemic therapy (seek advice)
0-1	Edmonton frail scale: up to 'mild frailty' Rockwood: up to 'mild frailty'	cbg (pre-meal) 6-11mmol/l	cbg (pre-meal) 8-15 mmol/l
2	Edmonton frail scale: 'moderate frailty' Rockwood: 'moderate frailty'	cbg (pre-meal) 8-15 mmol/l	cbg (pre-meal) 10-20 mmol/l
3	Edmonton frail scale: 'severe frailty' Rockwood: 'severe' or 'very severe frailty'	cbg (pre-meal) 8-15 mmol/l	cbg (pre-meal) 10-25 mmol/l  In the very frail it may be appropriate to accept higher cbg than this but care is needed to avoid decompensation and DKA/HHS

## ABCD Position Statement

**Table 1 Summary of glucose-lowering therapies in managing frail older adults with diabetes. Each class of agent can be used in frail people with diabetes but cautions are present. Numerous factors must be taken into account in prescribing a safe but effective glucose-lowering agent.**

	HbA <sub>1c</sub> reduction	Advantages	Disadvantages	Vignette in frail population
Metformin	1% (11 mmol/mol)	Low hypoglycaemia risk Low cost Well tolerated generally	Many contraindications in population with high comorbidity burden. May cause weight loss, GI upset in frail patients	Can be used until eGFR <30 mL/min Use with caution if previous episode of acute kidney injury Extended release formulation has lower complexity and fewer GI side effects Assess and replace vitamin B12
Sulfonylureas	1% (11 mmol/mol)	Low cost Established glucose-lowering medication Can be used in moderate to severe renal impairment	High risk of hypoglycaemia Avoid glibenclamide (glyburide)	Avoid in patients with inconsistent eating pattern such as in advanced dementia and malignancy High risk of hypoglycaemia during acute illness or weight loss Consider discontinuing if already receiving substantial amount of insulin (approximately >40 units/day) Have a high threshold for use with insulin in frail older adults
Meglitinides	0.4–0.9% (4.4–9.9 mmol/mol)	Shorter duration of action compared with sulfonylurea	Higher cost than sulfonylurea Increased regimen complexity due to multiple daily doses with meals	Can be withheld if patient refuses to eat any particular meal
TZDs, Pioglitazone	1% (11 mmol/mol)	Low hypoglycaemia risk Low cost Once a day dosing Can be used in moderate to severe renal impairment	Many contraindications in population with high comorbidity burden such as CHF, leg oedema, anaemia, fractures Use with caution in combination with insulin	Good efficacy in older patients with high insulin resistance
DPP-4 inhibitors	0.5–0.8% (6–9 mmol/mol)	Low hypoglycaemia risk Once a day oral medication Well tolerated Can be used in renal impairment but dose adjustment required (except linagliptin)	Medium/high cost HbA <sub>1c</sub> reduction modest compared with other agents Potential risk of heart failure in at-risk individuals	Can be combined with basal insulin for a low complexity regimen
SGLT-2 inhibitors	0.8–1.0% (9–11 mmol/mol)	Low hypoglycaemia risk Reasonable efficacy Risk of other adverse effects moderate Diuretic, blood pressure-lowering effect	High cost Limited experience in older population but evidence increasing Low risk of diabetic ketoacidosis which may be euglycaemic and unrecognised	In frail adults, watch for increased urinary frequency, incontinence, lower BP, genital infections, dehydration; do not initiate if eGFR is <60 mL/min; dose reduction required in the presence of renal impairment Withhold SGLT-2 inhibitors at times of acute illness or major surgery
GLP-1 receptor agonists	0.8–1.0% (9–11 mmol/mol)	Low hypoglycaemia risk Once a day and once a week formulation New formulations available in combination with basal insulin	High cost Injectable GI side effects	Monitor for anorexia, weight loss; do not use in severe renal impairment (eGFR <30 mL/min); dose reduction needed in moderate impairment (except for liraglutide and dulaglutide) Once-weekly formulations may be helpful if carer support is necessary to deliver injectable therapy
Insulin	>1% (>11 mmol/mol)	No ceiling effect Many different types including high concentrated forms have variable serum half-life and can be used to target hyperglycaemia at different times of the day; can be used in renal impairment	High risk of hypoglycaemia Need for matching carbohydrate content in patients with variable appetite when using prandial insulin Carer education and training needed if involved in administration Blood glucose testing necessary adding to cost	Use of basal insulin with other agents to lower post-prandial glucose can lower complexity of management and reduce the risk of hypoglycaemia

HbA<sub>1c</sub>, glycosylated haemoglobin; eGFR, estimated glomerular filtration rate; GI, gastrointestinal; TZDs, thiazolidinediones; DPP-4, dipeptidyl peptidase-4; SGLT-2, sodium-glucose cotransporter 2; GLP-1, glucagon-like peptide-1.

Adapted with permission of ABCD: Managing frailty and associated comorbidities in older adults with diabetes: Position Statement on behalf of the Association of British Clinical Diabetologists (ABCD). Alan Sinclair and Allison Gallagher.  
<https://abcd.care/resource/managing-frailty-and-associated-comorbidities-older-adults-diabetes-position-statement>.

Table 2 Antihypertensive medications - Indications and cautions in frail older adults with diabetes			
Drug class	Indication	Caution	Vignette in frail population
ACE-inhibitor	Recommended first-line treatment in older people with diabetes and hypertension, particularly if co-existent cardiac failure or diabetic nephropathy	Hyperkalaemia: avoid concurrent use with potassium-sparing diuretics <sup>10</sup> Hypotension Dry cough Angioedema (rare)	Orthostatic hypotension can increase risk of falls Withhold during intercurrent illness or acute kidney injury
Angiotensin-receptor blocker (ARB)	Use as first-line treatment if intolerance to ACE-inhibitor	Hyperkalaemia: avoid concurrent use with potassium-sparing diuretics Hypotension ACE-inhibitor and ARB combination should be avoided <sup>10</sup>	See ACE-inhibitor section
Diuretic	Use added on to ACE-inhibitor or ARB to achieve BP target, particularly if fluid retention present Use thiazide-like diuretic such as chlorthalidone or indapamide; avoid bendroflumethiazide		May precipitate fluid depletion and falls Withhold during intercurrent illness with risk of acute kidney injury Administer in morning to avoid inconvenient and nocturnal micturition
Dihydropyridine calcium channel blocker	Use added on to ACE-inhibitor or ARB to achieve BP target		May cause peripheral oedema and constipation
Beta-blockers	Can be considered particularly if co-existing ischaemic heart disease, cardiac failure or tachycardia	Avoid if hypoglycaemic awareness impaired Use with caution in the presence of bronchospasm	
Alpha-blockers	Can be considered particularly in men with symptoms of benign prostatic hyperplasia		Can precipitate orthostatic hypotension

References:

10. GOV.UK. Combination use of medicines from different classes of renin- angiotensin system blocking agents: risk of hyperkalaemia, hypotension, and impaired renal function—new warnings. Drug Safety Update 2014. Available at: <https://www.gov.uk/drug-safety-update/combo-use-of-medicines-from-different-classes-of-renin-angiotensin-system-blocking-agents-risk-of-hyperkalaemia-hypotension-and-impaired-renal-function-new-warnings>

Table 3 Lipid-lowering agents - Indications and cautions in frail older adults with diabetes			
Drug class	Indication	Caution	Vignette in frail population
Statin	All older adults with diabetes are considered at increased cardiovascular risk and statin therapy should be considered provided clinically appropriate Risk reduction in recurrent ischaemic stroke	Risk of myalgia, myositis and rhabdomyolysis (rare) Maximum simvastatin dose 20 mg when administered with amlodipine <sup>10</sup> Avoid using in primary haemorrhagic stroke <sup>6</sup>	Increased risk of statin myopathy in older adults due to reduced muscle mass in addition to decreased renal and liver function. Low dose statin therapy advised
Fibrate	Hypertriglyceridaemia		Use with caution in chronic kidney disease and in combination with statin therapy due to increased risk of myopathy, particularly if sarcopenia present

References:

6. Amarenco P, Bogousslavsky J, Callahan A III, et al. High-dose atorvastatin after stroke or transient ischemic attack. *N Engl J Med* 2006;355:549–59. <https://doi.org/10.1056/NEJMoa061894>  
10. MHRA. Simvastatin: updated advice on drug interactions - updated contraindications. Drug Safety Update August 2012, Vol 6, Issue 1, page S1. <https://www.gov.uk/drug-safety-update/simvastatin-updated-advice-on-drug-interactions>

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