

Supplementary material

Expert panel guidance and narrative review of treatment simplification of complex insulin regimens to improve outcomes in type 2 diabetes

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Profile 1:

This individual was initially treated with OADs for 4 years. His treatment was then changed to basal insulin, as his HbA_{1c} was not controlled sufficiently with OADs. Treatment was further intensified to twice daily premixed insulin 3 years later. He takes multiple medications due to comorbidities, which may negatively impact his adherence and lead to poor glycaemic control



Clinical characteristics:

- Age: 71 years
- T2D: for 9 years
- HbA_{1c}: 8.0%
- FPG: 266 mg/dL (14.8 mmol/L)
- BMI 31.9 kg/m²
- SBP: 145 mmHg
- DBP: 85 mmHg
- eGFR: 91.8 mL/min/1.73m²



Disease history/comorbidities:

- Periodically moderate hypoglycaemic episodes
- Diabetic retinopathy
- History of promyelocytic leukaemia (17 years prior)
- Myocardial infarction (6 years prior)
- Arterial hypertension
- Hypercholesterolaemia



Current medication:

- Premix insulin 30/70 30-0-26
- Empagliflozin 25 mg at lunch
- ACEi
- Atorvastatin



Recommendation:

Simplify treatment to an FRC. This will reduce the number of daily injections and the likelihood of hypoglycaemia, thereby decreasing the treatment burden

Profile 2:

This man was initially prescribed OADs, which were replaced with basal-bolus insulin after 4 years. He exhibits mild cognitive impairment, characterised by memory problems and difficulties planning. He has also been diagnosed with depression and generalised anxiety disorder. He struggles to keep to his recommended diet and cannot undertake exercise due to mobility issues. He experiences low self-esteem due to weight gain, poor glycaemic control and struggles with self-monitoring of blood glucose. He does not have any immediate family for support



Clinical characteristics:

- Age: 56 years
- T2D: for 14 years
- HbA_{1c}: 8.9%
- FPG: 225mg/dL (12.5 mmol/L)
- BMI: 34.2 kg/m²
- SBP: 149 mmHg
- DBP: 72 mmHg
- eGFR: 46.8 mL/min/1.73m²



Disease history/comorbidities:

- Obesity
- Hypertension
- Depression
- Generalised anxiety disorder
- Stage 3a renal disease



Current medication:

- Metformin (2 g/day)
- Insulin glargine (80 IU)
- Human insulin (20-20-20 IU)



Recommendation:

Stop prandial insulin, maintain metformin and an FRC. This may prevent further weight gain and potentially aid weight loss, as well as improve his emotional wellbeing and QoL. A second generation basal insulin analogue should be used since they offer an improved hypoglycaemia safety profile

Profile 3:

This woman has micro- and macrovascular complications, a history of falls and limited mobility. A nurse visits her daily to assist with her care. She has irregular food intake, putting her at risk of hypoglycaemia. Her comorbidities mean she has a limited life expectancy and is unlikely to reap the benefits of long-term intensive diabetes treatment



Clinical characteristics:

- Age: 83 years
- T2D: for 10 years
- HbA_{1c}: 7.2%
- FPG level: 180 mg/dL (10 mmol/L)
- BMI: 28 kg/m²
- SBP: 145 mmHg
- DBP: 70 mmHg
- eGFR: 50 mL/min/1.73m²



Disease history/comorbidities:

- Ischaemic stroke
- Metastatised melanoma
- Stage 3a renal disease
- CHD



Current medication:

- Premix insulin 30/70 15-0-0
- Premix insulin 50/50 0-10-10
- Dapagliflozin



Recommendation:

Switch from 3 daily premixed insulin injections to a single dose of basal insulin 20-0-0 IU, alongside continuation of dapagliflozin and initiation of low dose metformin. A reduced injection number will help improve QoL. Insulin administration and HbA_{1c} monitoring can be overseen during the daily nursing visit

Profile 4:

This supermarket worker, with a mostly sedentary role, has an inactive lifestyle. Initial treatment was metformin 1000 mg BID for 3 years, before the addition of glimepiride 4 mg. This was intensified further after 1 year to include sitagliptin 100 mg. During a viral infection with diarrhoea and vomiting 2 years later, basal-bolus insulin was added. Her current treatment plan impacts negatively on her daily life. She has experienced weight gain and hypoglycaemic episodes. In addition, she cannot always administer her injections conveniently during her working hours



Clinical characteristics:

- Age: 63 years
- T2D: for 13 years
- HbA_{1c}: 8.7%
- FPG: 84.6 mg/dL (4.7 mmol/L)
- BMI: 29.7 kg/m²
- SBP: 145 mmHg
- DBP: 85 mmHg
- eGFR: 78 mL/min/1.73m²



Current medication:

- Metformin 1000 mg BID
- Insulin aspart before main meals (25–30 IU)
- Glargine (24 IU) at bedtime



Disease history/comorbidities:

- Non-proliferative diabetic retinopathy
- Stage 2 renal disease
- Albuminuria
- Peripheral diabetic neuropathy



Recommendation:

Switch to metformin + a basal analogue with a SGLT-2i. Tablets can be taken in the morning and at dinner, with a daily injection at bedtime, making it easier for therapy to fit into her daily routine. Closely follow-up and provide additional support through patient support groups, teleconsultations and training and support from a nurse

SUPPLEMENTARY FIGURE 1: Profiles of individuals who may benefit from simplification

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ACEi, angiotensin converting enzyme inhibitor; BID, twice daily; BMI, body mass index; CHD, coronary heart disease; DBP, diastolic blood pressure; DPP4i, dipeptidyl peptidase-4 inhibitor; eGFR, estimated glomerular filtration rate; FPG, fasting plasma glucose; FRC, fixed ratio combination; GLP-1 RA, glucagon-like peptide-1 receptor agonist; HbA_{1c}, glycated haemoglobin; IU, insulin unit; OAD, oral anti-diabetic; QoL, quality of life; SBP, systolic blood pressure; SGLT-2i, sodium-glucose co-transporter-2 inhibitor; T2D, type 2 diabetes; TID, three times daily.