NICE National Institute for Health and Care Excellence

Prescribing guide: individualising medicines use for people with type 2 diabetes

Implementation support

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Holistic care

This prescribing guide supports the implementation of NICE's guideline on type 2 diabetes in adults.

Type 2 diabetes is a complex cardiometabolic condition. There is good evidence that managing it should aim to improve a person's health holistically, rather than just focussing on the glycaemic benefits of medicines. This means that related cardiovascular and renal conditions, or risk factors for these, will also need managing.

NICE's updated guideline on type 2 diabetes in adults focuses on managing diabetes in the context of the comorbidities common in people with type 2 diabetes. It does not replace other, separate NICE guidelines on treating those comorbidities. NICE currently has separate guidelines on managing:

- acute coronary syndromes
- cardiovascular disease: risk assessment and reduction, including lipid modification
- chronic heart failure
- chronic kidney disease
- diabetic retinopathy
- hypertension
- overweight and obesity
- peripheral arterial disease
- stable angina.

Medicines used for managing type 2 diabetes may also be covered by NICE technology appraisal guidance about their use in diabetes or related conditions. This guidance may reflect former treatment pathways. This does make it challenging to find all the guidance that is relevant for a particular person. Work is ongoing to address this through 2 workstreams: bringing our guidance together by topic and NICE's whole life-cycle approach, as explained in NHS 10 year plan: empowering NICE to get better care to people, faster.

A person-centred approach

Recommendation 1.1.1 in NICE's guideline on type 2 diabetes in adults advocates for an individualised approach to diabetes care that takes account of the person's preferences, comorbidities and risks from polypharmacy, and their likelihood of benefiting from long-term interventions. As with all NICE guidelines, treatment recommendations do not override the responsibility to make decisions appropriate to the circumstances of the individual person, in consultation with them.

An approach to care that takes account of multimorbidity

The guideline should be read and implemented in the context of NICE's guideline on multimorbidity. This defines multimorbidity as the presence of 2 or more long-term health conditions (not limited to defined physical and mental health conditions) and has a section on the principles and delivery of an approach to care that takes account of multimorbidity, which expands on recommendation 1.1.1 in NICE's guideline on type 2 diabetes in adults.

Selecting and prioritising treatment pathways

Some people with type 2 diabetes have more than one related comorbidity. Recommendation 1.9.3 in NICE's guideline on type 2 diabetes in adults recommends making a shared decision with a person about which comorbidity to prioritise when choosing their medicines. This should take the person's needs and circumstances into account, as outlined in recommendation 1.1.1 and in NICE's guideline on multimorbidity. See NICE's guideline on shared decision making for guidance on how to do this effectively.

Involving people in medicine discussions

To support a personalised diabetes management plan, the potential benefits and possible harms of medicines should be discussed with the person (see recommendation 1.9.2 in NICE's guideline on type 2 diabetes in adults), alongside dietary advice and other aspects of healthy living, such as increasing physical activity. See the NHS Type 2 diabetes Path to Remission Programme and NHS Better Health website for more information on how to achieve this.

Medicines options

NICE's guideline on type 2 diabetes in adults makes recommendations on medicines for initial treatment and then for further treatment for people in different groups. These include people with type 2 diabetes and:

- no relevant comorbidity
- heart failure
- atherosclerotic cardiovascular disease
- early onset type 2 diabetes
- obesity
- chronic kidney disease
- frailty.

See the visual summary on medicines for type 2 diabetes for an overview of the recommendations by group. See also the summary of medicines recommendations for a comparison of when different medicines are recommended.

Modified-release metformin

NICE's guideline on type 2 diabetes in adults recommends starting metformin with a modified-release formulation. There was limited evidence comparing standard-release and modified-release metformin. However, it was agreed that there are benefits to recommending modified-release metformin first. Compared with standard-release metformin, it has similar clinical effectiveness on HbA1c and weight reduction and similar safety results for hypoglycaemia but is associated with reduced gastrointestinal adverse events. Though the price of modified-release metformin can fluctuate, in December 2025 it cost less than standard-release metformin.

Standard-release metformin tablets (which can be crushed and mixed with soft food) or metformin in liquid form may be preferable for people with swallowing difficulties. The guideline also recommends that people currently taking standard-release metformin can

continue on this, or switch to modified release if standard release is not tolerated or the person prefers.

See the section on initial medicines for people with type 2 diabetes and no relevant comorbidities in NICE's guideline on type 2 diabetes in adults.

SGLT-2 inhibitors

For most people with type 2 diabetes, the initial treatment recommended by NICE is modified-release metformin and an SGLT-2 inhibitor, or monotherapy with an SGLT-2 inhibitor if metformin is contraindicated or not tolerated. When frailty makes SGLT-2 inhibitors unsuitable because of their adverse effects, metformin alone is recommended.

Overall, combining metformin with an SGLT-2 inhibitor was found to be more clinically effective than metformin alone or any other combination of metformin and another medicine at reducing:

- HbA1c
- weight
- cardiovascular events (including deaths from cardiovascular disease, myocardial infarction, stroke and hospitalisation for heart failure).

Some SGLT-2 inhibitors also reduce the risk of end-stage renal failure.

Weighing these cardiovascular and renal benefits against the risk of adverse effects with SGLT-2 inhibitors (such as volume depletion and genital mycotic infections), it was agreed that, for most people, the benefits would outweigh the risks. However, whether or not to take an SGLT-2 inhibitor alongside metformin should be a shared decision made with each person before treatment, taking into account the person's individual needs and circumstances.

The evidence of benefit from SGLT-2 inhibitors was identified in a diverse group of people. Some had multiple cardiovascular risk factors or existing atherosclerotic cardiovascular disease, heart failure, or chronic kidney disease. Others are likely to have had a lower cardiovascular risk. None of the evidence came solely from a group of people with type 2 diabetes but no comorbidities or other cardiovascular risk factors, who would all be at a relatively lower cardiovascular risk (including those who would otherwise be identified to

have a QRISK score below 10%). However, all people with type 2 diabetes have an inherent increased lifetime risk of cardiovascular disease compared with people without type 2 diabetes. So, metformin with an SGLT-2 inhibitor is recommended to reduce this risk for all people with type 2 diabetes.

None of the evidence came from a group including only people with early onset type 2 diabetes. However, these people have a high lifetime risk of cardiovascular and renal complications, and are more likely to be living with obesity, so early intensive treatment can provide benefits.

SGLT-2 inhibitors were cost effective in people with type 2 diabetes and heart failure, chronic kidney disease, atherosclerotic cardiovascular disease, or living with obesity. Based on the clinical evidence, cost-effectiveness evidence and the health inequalities report, SGLT-2 inhibitors and metformin are recommended for all groups covered in the guideline, apart from those for whom they would not be clinically appropriate (that is, people with a level of frailty that would place them at risk of adverse events from SGLT-2 inhibitors).

When more than 1 medicine from the same drug class are equally suitable for the person, the guideline recommends using the least expensive one. Though dapagliflozin is not specifically recommended, NICE is aware of the large reduction in price of generic dapagliflozin and supports its use while it is the least expensive of the SGLT-2 inhibitors that may be suitable.

For details, see the sections on:

- initial medicines for people with type 2 diabetes and no relevant comorbidities in NICE's guideline on type 2 diabetes in adults
- initial medicines for people with early onset type 2 diabetes in NICE's guideline on type 2 diabetes in adults and
- cost effectiveness of SGLT-2 inhibitors in the committee discussion for details.

GLP-1 receptor agonists or tirzepatide

Initial treatment with a GLP-1 receptor agonist or tirzepatide, added to metformin and an SGLT-2 inhibitor, is recommended by NICE for some groups at higher cardiovascular risk.

Subcutaneous semaglutide (Ozempic), up to 1 mg once a week, is recommended for people with type 2 diabetes and atherosclerotic cardiovascular disease. Any GLP-1 receptor agonist or tirzepatide can be considered for people with early onset type 2 diabetes.

In a group of people with type 2 diabetes that included a large proportion of people with atherosclerotic cardiovascular disease, subcutaneous semaglutide was the most cost-effective and clinically effective GLP-1 receptor agonist, leading to reductions in HbA1c, weight and cardiovascular events. Evidence was identified only for doses of up to 1 mg of subcutaneous semaglutide once a week. Evidence was not available to NICE to evaluate tirzepatide for this population at this time.

None of the evidence came from a group solely including people with early onset type 2 diabetes. However, it was agreed that evidence of a reduction in risk of cardiovascular and renal events in a group of people with type 2 diabetes that did not have an early onset could be extrapolated to people with early onset type 2 diabetes. It was also agreed that these benefits could be increased with long-term use. The health economic evidence for this group was highly uncertain. However, it was agreed that GLP-1 receptor agonists or tirzepatide should be considered in addition to metformin and an SGLT-2 inhibitor, given the relatively small size of this group, the health inequalities that this group would face if they did not receive treatment early, and challenges in identifying appropriate data.

The recommendation for people with early onset diabetes is to consider any GLP-1 receptor agonist or tirzepatide. However, a shared decision should be made about this with the person ahead of treatment, taking into account each person's:

- individual needs and circumstances, including precautions in people of child-bearing potential
- treatment priorities (cardiovascular, renal or glycaemic benefits) and
- the potential for serious side effects and misuse.

For people with type 2 diabetes living with obesity, any GLP-1 receptor agonist or tirzepatide can be considered as additional treatment if the person has been taking initial therapy for at least 3 months and further medicines are needed to reach their individualised glycaemic targets.

If weight reduction is the primary aim of treatment, healthcare professionals should follow

NICE's guideline on overweight and obesity management instead of the guideline on type 2 diabetes in adults.

See also the following sections in NICE's guideline on type 2 diabetes:

- initial medicines for people with atherosclerotic cardiovascular disease
- initial medicines for people with early onset type 2 diabetes and
- further medication for people living with obesity.

Other medicines for further treatment

For most people with type 2 diabetes who need further medicines to reach their individualised glycaemic targets, NICE recommends adding a DPP-4 inhibitor to the person's current treatment. If this is not suitable or not effective, it recommends adding a sulfonylurea, pioglitazone or an insulin-based treatment, as appropriate to the individual person's circumstances.

Combining a GLP-1 receptor agonist or tirzepatide with a DPP-4 inhibitor is not recommended to treat type 2 diabetes. This is because they have similar mechanisms of action, so combining them is unlikely to provide any additional benefit.

Medicines safety

When choosing and reviewing medicines, their safety profiles and adverse effects are important considerations, particularly when people may be taking multiple medicines for multiple comorbidities. When NICE recommends medicines, healthcare professionals are expected to take note of the contraindications, warnings, safety recommendations and any monitoring requirements for the medicine. These are explained in the summaries of product characteristics for the medicine and the BNF.

The MHRA also covers safety advice in drug safety updates (DSUs). For recent DSUs about diabetes medicines, see:

Metformin

- Metformin and reduced vitamin B12 levels: new advice for monitoring patients at risk (20 June 2022)
- Metformin in pregnancy: study shows no safety concerns (15 March 2022)

SGLT2 inhibitors

- SGLT2 inhibitors: monitor ketones in blood during treatment interruption for surgical procedures or acute serious medical illness (18 March 2020)
- SGLT2 inhibitors: reports of Fournier's gangrene (necrotising fasciitis of the genitalia or perineum) (18 February 2019)
- SGLT2 inhibitors: updated advice on the risk of diabetic ketoacidosis (18 April 2016)

GLP-1 receptor agonists and dual GLP-1/GIP receptor agonists

- Semaglutide (Wegovy, Ozempic and Rybelsus): risk of Non-arteritic Anterior Ischemic Optic Neuropathy (NAION) (5 February 2026)
- GLP-1 receptor agonists and dual GLP-1/GIP receptor agonists: strengthened warnings

on acute pancreatitis, including necrotising and fatal cases (29 January 2026)

- GLP-1 and dual GIP/GLP-1 receptor agonists: potential risk of pulmonary aspiration during general anaesthesia or deep sedation (28 January 2025)
- GLP-1 receptor agonists: reminder of the potential side effects and to be aware of the potential for misuse (24 October 2024)
- GLP-1 receptor agonists: reports of diabetic ketoacidosis when concomitant insulin was rapidly reduced or discontinued (19 June 2019)

Reviewing medicines

NICE's guideline on type 2 diabetes in adults recommends reassessing the person's needs and circumstances at each review and thinking about whether to stop any medicines that are not effective. Before changing treatments, current treatment should be optimised, taking into account adherence, adverse effects, dosage, formulations and non-pharmacological aspects of care. Decisions about any changes to treatment should be made in collaboration with the person.

If the person has reached their individualised glycaemic target and weight target, continuing any medicines that have contributed to this should be considered. In addition, it may be appropriate to continue SGLT-2 inhibitors for their cardiovascular or renal benefits, even if they do not help the person reach their individualised glycaemic targets. GLP-1 receptor agonists or tirzepatide should be stopped if they do not help the person reach their individualised glycaemic targets and are not being taken for their cardiovascular benefits. They should also be stopped if the person becomes underweight (BMI under 18.5 kg/m^2).

Resource impact

A resource impact summary report and resource impact template have been published alongside NICE's guideline on type 2 diabetes in adults. These cover the resource implications of recommendations that represent a change to current practice. The summary report includes a table that shows the treatment costs and savings (from a reduction in events) for every additional 10,000 people treated over a 3-year period with the following medicines in the following groups:

- SGLT-2 inhibitors in people with type 2 diabetes
- Semaglutide (subcutaneous) in people with type 2 diabetes and atherosclerotic cardiovascular disease
- GLP-1 receptor agonists or tirzepatide in people with early onset type 2 diabetes.

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