Type 2 Diabetes Medications That Induce Weight Loss

Our easy-to-read fact sheets provide clinicians with reliable information to share with patients and their caregivers.

A predominant risk factor for type 2 diabetes is being overweight or obese, so weight loss goals while maintaining normal blood sugar levels are very important for some patients. In addition to lifestyle modifications, medications for type 2 diabetes may aid in losing weight.1,2

Obesity
Obesity is defined as a body mass index (BMI) of 30 kg/m² or higher and is associated with many major health issues including cardiovascular disease, osteoarthritis, and type 2 diabetes. A weight loss of 5% to 15% can improve obesity-related complications.1,2

There are approved medications to help treat obesity, including phentermine (Lomaira®), orlistat (Alli®), topiramate (Trokendi XR®), and naltrexone/bupropion (Contrave®). However, these are not indicated to treat type 2 diabetes.3

Type 2 Diabetes
Type 2 diabetes is a chronic disease due to a progressive loss of insulin secretion and/or increased insulin resistance. As a result, the body's naturally produced insulin becomes less effective in reducing the amount of sugar in your blood. Excess weight or excess percentage of body fat can cause some degree of insulin resistance. Most, but not all, patients with type 2 diabetes have overweight or obesity.

Different antidiabetic medications work through different mechanisms to help lower blood sugar. Some of these medications also provide additional benefits for patients, including weight loss. The medications with weight loss benefits include metformin, sodium-glucose cotransporter-2 (SGLT2) inhibitors, and glucagon-like peptide-1 (GLP-1) receptor agonists.2

Type 2 Diabetes Medications That Induce Weight Loss
The following is a list of FDA-approved medications for the management of type 2 diabetes that may also result in weight loss. It is important to note that the amount of weight loss can vary depending on the medication, dose, duration of therapy, and lifestyle changes. Speak with your provider to know additional information.
<table>
<thead>
<tr>
<th>Drug Class</th>
<th>How It Works</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biguanide</strong></td>
<td>Decreases glucose production by the liver and improves insulin sensitivity⁴</td>
<td>Nausea, Vomiting, Diarrhea, Constipation, Stomach pain, Stomach pain, Stomach pain, Stomach pain, Bloating, Altered taste⁷,⁸</td>
</tr>
<tr>
<td>Metformin</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SGLT2 Inhibitors</strong></td>
<td>Reduces reabsorption of filtered sugar and increases urinary glucose excretion⁹</td>
<td>Increased urination, Urinary tract infection (UTI), Female genital infection¹³</td>
</tr>
<tr>
<td>Canagliflozin (Invokana®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dapagliflozin (Farxiga®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empagliflozin (Jardiance®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GLP-1 Receptor Agonists</strong></td>
<td>Simulates GLP-1 receptors to increase insulin secretion and decrease glucagon secretion¹⁶</td>
<td>Nausea, Vomiting, Diarrhea, Acute kidney injury, Injection site reactions²⁴</td>
</tr>
<tr>
<td>Dulaglutide (Trulicity®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exenatide (Byetta®; BYDUREON BCise®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liraglutide (Victoza®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semaglutide (Rybelsus®; Ozempic®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tirzepatide (Mounjaro®)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Weight Loss Differences

Biguanides
In a long-term study, patients who took metformin maintained an average weight loss of 6.2% between 6 and 15 years of treatment. Patients who experienced greater long-term weight loss were those who (1) lost more weight during their first year of treatment, and (2) were older in age.5,6

SGLT2 Inhibitors
Various studies demonstrate long-term weight loss effects among patients taking SGLT2 inhibitors. In an analysis of multiple studies, patients had an average weight loss of between 1.5 kg and 2 kg after 4 years of treatment. These effects increased with increasing doses of these medications. Other studies have revealed average weight loss percentages between 2.2% and 3.3% of patients' starting weight.5, 10-12

Other studies show improved weight loss among patients combining SGLT2 inhibitors with other drugs, such as metformin or GLP-1 receptor agonists. SGLT2 inhibitors may therefore be the drug of choice for patients also with heart and kidney disease.22,23 However, low blood sugar is more likely to occur when they are used as add-ons rather than used alone.30

GLP-1 Receptor Agonists
Studies report a wide range of weight loss effects associated with GLP-1 receptor agonists, from 1 kg to 15 kg depending on the medication.15-21 Weight loss effects depend on dose and treatment durations.5

Like SGLT2 inhibitors, GLP-1 receptor agonists can be used as add-on therapies for patients with heart and kidney disease, but low blood sugar is more likely to occur. 22, 23, 30

Frequently Asked Questions

Can I eat anything I want while on these medications?
No, food choices still play a significant role in diabetes management.

Different types of diets for patients with diabetes include Mediterranean, low-fat, low-carb, vegetarian, and vegan diets. Additionally, the Dietary Approaches to Stop Hypertension (DASH) approach could prevent more serious complications such as heart or kidney disease among those who have or are at risk for high blood pressure and high cholesterol.22,23
Diet modifications can also enhance natural GLP-1 and insulin production/sensitivity and prevent escalation of antidiabetic therapies while satisfying nutritional needs.\textsuperscript{24}

**Do I still have to exercise while on these medications?**
Yes, it is recommended to engage in physical activity regularly, even if on medications that can result in weight loss, to prevent development and progression of heart- and kidney-related complications.

Patients with type 2 diabetes are advised to do 150 minutes per week of moderate to vigorous exercise or 75 minutes per week of high intensity exercise over a course of 3 or more days per week.\textsuperscript{25} Studies report that physical activity can contribute to increased effectiveness of certain medications, including GLP-1 receptor agonists and metformin.\textsuperscript{25-27}

**How can I prevent side effects such as nausea, vomiting, diarrhea, bloating, and constipation?**
Metformin can cause an upset stomach on initial treatment so it should be taken with food. Note that these side effects should go away over time, so do not skip doses or stop taking metformin without speaking with your provider.\textsuperscript{7,8}

The initial dose of a GLP-1 receptor agonist or SGLT2 inhibitor is typically low to prevent stomach issues but not high enough to help manage your blood sugar. For this reason, your provider may start you on a higher dose, but you should let them know if the stomach side effects become unmanageable for you.\textsuperscript{28,29}

**Can I be on multiple of these medications at the same time?**
Yes, GLP-1 receptor agonists and/or SGLT2 inhibitors are preferred over other drug classes as add-on treatments to metformin, especially for patients at risk for heart or kidney disease, according to the American Association of Clinical Endocrinology and American Diabetes Association guidelines.

Before adding these medications, your doctor may consider factors such as heart and kidney disease, potential weight loss, and potential adverse effects.\textsuperscript{22,23} The use of GLP-1 receptor agonists with metformin may also exacerbate diarrhea.\textsuperscript{29}