

Medications for Type 2 Diabetes

For some people with type 2 diabetes, dietary changes and exercise aren't enough to keep blood glucose levels in check. Prescription medication – oral medications, insulin, or other injectable drugs – may be required to maintain good diabetes control. This fact sheet outlines the major classes of type 2 oral medications and several new injectable drug options.

There are five main classes of oral medications for the treatment of type 2 diabetes:

- 1. Alpha-glucosidase inhibitors** (AL-fa gloo-KOS-ih-dayss in-HIB-it-ers), or AGIs, are known as “starch blockers.” They help control blood glucose levels by slowing the digestion of carbohydrates in the small intestine. Usually taken with the first bite of each meal.
Note: Hypoglycemia needs to be treated with pure glucose only (e.g., glucose tablets, glucose gel), as this medication slows the breakdown of many other carbohydrates.
Side Effects and Warnings: May cause hypoglycemia, gastrointestinal disturbances.
Drug Names [Brand (generic)]: Precose (acarbose), Glyset (miglitol)
- 2. Biguanides** (by-GWAN-ides) decrease the amount of glucose made by your liver. It does not cause the body to produce more insulin; therefore, it rarely causes hypoglycemia when used alone. Biguanides also have the benefit of not causing weight gain. It may also improve lower triglyceride levels and improve lipid profiles. Usually taken with or after meals.
Side Effects and Warnings: May cause gastrointestinal disturbances. Sometimes stomach upset can be lessened by taking with food or by titrating the dose (i.e., starting at a low dose and gradually increasing) under a doctor's direction. Biguanides can cause a rare but dangerous condition known as lactic acidosis in people with kidney or respiratory disease. They are also not recommended for those with liver or heart disease. Lactic acidosis can also occur in patients on the drug who undergo any medical testing or surgery involving contrast medium (i.e., dye), such as angioplasty or a CT scan.
Drug Names [Brand (generic)]: Glucophage (metformin), Glucophage XR (metformin extended release), Riomet (liquid metformin)
- 3. Meglitinides** (meh-GLIT-in-ides) enhance insulin release from the pancreas over a short period of time, only when the glucose level is high. Usually taken right before meals.
Side Effects and Warnings: May cause hypoglycemia. Should never be taken if a meal is skipped.
Drug Names [Brand (generic)]: Starlix (nateglinide), Prandin (repaglinide)
- 4. Sulfonylureas** (SUL-fah-nil-YOO-ree-ahs) stimulate the pancreas to produce more insulin and allows for the cells to use insulin more effectively. These are sometimes used in conjunction with insulin injections. Usually taken 30 minutes before a meal.
Side Effects and Warnings: May cause hypoglycemia, weight gain, sun sensitivity. Some drugs in this class should be prescribed with caution in the elderly and in those with kidney disease.
Drug Names [Brand (generic)]: Amaryl (glimepiride), Diabinese (chlorpropamide), Micronase (glyburide), DiaBeta (glyburide), Glucotrol (glipizide), Glucotrol XR (glipizide extended release), Glynase PresTab (micronized glyburide), acetohexamide (generic only), tolazamide (generic only), tolbutamide (generic only)

5. **Thiazolidinediones** (THIGH-ah-ZO-li-deen-DYE-owns), or TZDs, make you more sensitive to insulin. These drugs help muscle cells respond to insulin and use glucose more effectively. Usually taken once a day or in two divided doses.

Side Effects and Warnings: May cause fluid retention. Can lessen the effectiveness of oral contraceptives. Not recommended for those with heart failure or impaired liver function. Should be used with caution in those with existing diabetic eye disease. If you are prescribed a TZD drug, your doctor may periodically check your liver function and/or vision.

Drug Names [Brand (generic)]: Avandia (rosiglitazone maleate), Actos (pioglitazone)

Combination oral medicines combine drugs from different classes into a single pill:

Side Effects and Warnings: See cautions for each drug in the combination, above.

Drug Names [Brand (generic)]: Glucovance (metformin + glyburide), Avandamet (metformin + rosiglitazone), Metaglip (metformin + glipizide)

There are also several injectable diabetes medications available for use by type 2 patients. These include:

- **Byetta** (BYE-etta) enhances insulin secretion when blood glucose levels are high. The drug is taken before meals to improve blood sugar control in adults with type 2 diabetes. Byetta is used with metformin or a sulfonylurea drug. It may also be used with a combination of metformin and a sulfonylurea.

Side Effects and Warnings: May cause hypoglycemia, nausea, gastrointestinal disturbances

Drug Names [Brand (generic)]: Byetta (exenatide)

- **Symlin** (SIM-Lynn) slows the movement of food through the stomach and increases satiety (or the feeling of fullness). The drug is taken before meals to control blood sugar in adults with type 2 taking insulin, and in those with type 1 diabetes who aren't achieving good control with insulin alone.

Side Effects and Warnings: May cause hypoglycemia, nausea, vomiting, gastrointestinal disturbances, headache, fatigue, dizziness

Drug Names [Brand (generic)]: Symlin (pramlintide)

NOTE: This information is for educational purposes only. Always consult your medical team when making changes to your diabetes management. The drugs listed above may have additional indications, side effects, and contraindications. Refer to the manufacturer's prescribing information and directions for use for additional details.