

Understanding Your Diabetes Medicines

DRUG CLASS: Alpha-Glucosidase Inhibitors

<u>Brand NAME</u>	<u>Generic Name</u>
Precose	Acarbose
Glyset	Miglitol



HOW DOES IT WORK?

- Slows down the breakdown of carbohydrates in the intestines (gut)
- This helps slow down the rise in blood sugar after a meal.

WHEN DO YOU TAKE THIS MEDICINE?

- With the **FIRST BITE** of food at each main meal.

COMMON SIDE EFFECTS:

- Gas, bloating, belly pain, diarrhea
 - Sometimes a lower dose and increasing the dose slowly will help decrease gas.
 - These side effects may decrease over time.
- Does not cause low blood sugar if taken alone, if they are not used with other medications that can cause low blood sugar.

SPECIAL TIPS:

- Because they slow down the absorption of carbohydrates, if treating a low blood sugar, pure glucose like gel or tablets work best
- Taken medication with FIRST BITE of food for each main meal.
- Take with a full glass of water (Glyset).
- If you skip a meal, skip the medication.
- Low blood sugar must be treated with glucose tables, gel or milk.
- Not recommended for people with any kind of bowel problems like ulcerative colitis or diverticulitis or severe kidney problems.



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Understanding Your Diabetes Medicines

DRUG CLASS: Amylin Mimetic



BRAND NAME

Symlin

GENERIC NAME

Pramlintide

HOW DOES IT WORK?

Symlin works by slowing down food digestion. This helps the blood sugar rise more slowly after eating and decreases new sugar made by the liver. It decreases appetite and may also help you feel full faster. Using Symlin does not replace your daily insulin, but the insulin dose will need to be lowered.

WHEN DO YOU TAKE THIS MEDICINE?

Symlin is taken prior to meals containing at least 250 calories or 30 grams of carbohydrate.

POSSIBLE SIDE EFFECTS:

- Nausea
- Dizziness
- Weight loss
- Decreased appetite
- Hypoglycemia--Insulin working in the body may make the blood sugar go too low

SPECIAL TIPS:

- Special Warning: Severe hypoglycemic risk 3 hours after Symlin shot.
- Tell your doctor if you have stomach problems or if you cannot tell when your blood sugar is running low.
- Talk to your health care provider about other medicines you take and how Symlin may affect how they are absorbed in your body.
- Talk to your pharmacist or health care provider about the timing of other medicines you take.
- Never mix insulin and Symlin together in the same syringe.



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- Inject at least two inches away from insulin injection site before mealtime.
- Avoid alcohol.
- Symlin should only be used by people with type 1 or type 2 diabetes

who:

- Already use their insulin as prescribed, but still need to better manage blood sugar.
- Will follow their doctor's instruction exactly
- Will follow up with their doctor often
- Will test their blood sugar levels before and after every meal and at bedtime, especially when adjusting doses
- Do not use arms for injections, use stomach or upper thighs



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Understanding Your Diabetes Medicines

DRUG CLASS: Biguanides

BRAND NAME

Glucophage
Glucophage XR
Riomet (liquid)
Fortamet
Glumetza

Generic Name

Metformin



HOW DOES IT WORK?

- Helps lower blood sugar by decreasing the amount of glucose made by the liver.
- Helps make the cells in the body be more sensitive to insulin so the sugar can be absorbed.

WHEN DO YOU TAKE THIS MEDICINE?

- With meals to help decrease stomach upset, unless your health care provider tells you otherwise.



POSSIBLE SIDE EFFECTS:

- Nausea
- Diarrhea
- Stomach upset (Can lessen after a few weeks of taking medicine)
- Metallic taste in mouth.
- Rarely causes low blood sugar (hypoglycemia) when used alone.

SPECIAL TIPS:

- May cause a slight decrease in weight and blood lipids.
- If you are having medical test with dyes (contrast drugs) or having surgery, tell your health care provider you are on Metformin.
- Do not use if you drink alcohol.
- Do not take if you have liver or kidney problems.



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- Long-term use may result in Vitamin B12 deficiency. Ask your health care provider when your level needs to be checked.
- You may start on a lower dose and increase to higher dose to decrease possible side effects.
- There is a “black box warning” for a condition called lactic acidosis. This is very rare but can be dangerous. Symptoms are becoming weak, tired or have trouble breathing. If this occurs get medical help right away.



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Understanding Your Diabetes Medicines

DRUG CLASS: Bile Acid Sequestrants

BRAND NAME

Welchol

GENERIC NAME

Colesevelam



HOW DOES IT WORK?

Works in the intestines (gut). It is not yet known exactly how it helps to lower blood sugar, only that it works in the intestines.

WHEN DO YOU TAKE THIS MEDICINE?

Take this medicine with a meal and a full glass of water. The amount to take is determined by the healthcare provider. It can be up to 6 tablets at a time. The medicine is taken once or twice a day. When to take it will be determined by the healthcare provider.

POSSIBLE SIDE EFFECTS:

- Constipation
- Nausea, upset stomach, gas, indigestion
- Feeling weak or tired
- Muscle weakness
- Runny nose, sore throat



SPECIAL TIPS:

- Avoid foods high in fat or cholesterol.
- Do not take other medications 4 hours before or 4 hours after taking this medication.
- Stop the medication if you have severe constipation or stomach pain.
- Tell your healthcare provider if you have trouble swallowing, medication can be given in liquid form.



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Understanding Your Diabetes Medicines

DRUG CLASS: Dopamine Agonist

BRAND NAME

Cycloset

GENERIC NAME

Bromocriptine Mesylate



HOW DOES IT WORK?

- Helps with metabolism (processes in the body needed to maintain life, how quickly calories and fat are burned).
- Improves insulin sensitivity (how well the body uses the insulin it makes).

WHEN DO YOU TAKE THIS MEDICINE?

Take once daily, needs to be taken first thing in the morning, within 2 hours of waking. Take medication with food to decrease side effects.

POSSIBLE SIDE EFFECTS:

- Low blood pressure, low blood sugar
- Nausea, vomiting, constipation
- Headache, fatigue, weakness
- Seasonal allergy-like symptoms
- May interfere with mental health medications



SPECIAL TIPS:

- Slowly increase dose to decrease side effects.
- Tell your doctor if you have migraine headaches or take medicines for migraines.
- Tell your doctor if you have or have had a mental health condition, especially a mood disorder, or if you are on medication for this.
- Use cautiously with impulse control diseases.
- Tell your health care provider if plan to become pregnant.
- Use cautiously if you have heart disease.
- Only small decrease in A1C levels.



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Understanding Your Diabetes Medicines

DRUG CLASS: Dipeptyl Peptidase-4 (DPP-4) Inhibitors

BRAND NAME

Januvia
Onglyza
Tradjenta
Nesina

GENERIC NAME

Sitagliptin
Saxagliptin
Linagliptin
Alogliptin



HOW DOES IT WORK?

- Increases insulin release in response to increases in blood sugar.
- Decreases the amount of new sugar made by the liver.

WHEN DO YOU TAKE THIS MEDICINE?

Once daily oral medication. Do not have to take at meal time. Usually well tolerated.

POSSIBLE SIDE EFFECTS:

- Cough
- Runny nose, sore throat, cold symptoms
- Headache
- Swelling of arms and legs
- Increased triglyceride levels (Tradjenta (linagliptin) only)
- Arthritis like pain, back pain (Tradjenta (linagliptin) only)
- Diarrhea, constipation or nausea

SPECIAL TIPS:

- If taking Sitagliptin or Saxagliptin, adjustments of dose may be needed if you have a history of kidney or liver disease.
- Does not cause low blood sugar when used alone. Blood sugar can go low if using with another medicine that causes low blood sugar.
- Cases of pancreatitis have been observed.
- Saxagliptin (Onglyza) and Alogliptin (Nesina) can increase risk of heart failure. Contact your health care provider for shortness of breath, edema or weakness.
- Do not take with a GLP-1 Receptor Agonist



Understanding Your Diabetes Medicines

DRUG CLASS: Incretin Mimetics (GLP-1 Receptor agonists and GLP-1/GIP combination)

BRAND NAME

Byetta
Adlyxin
Bydureon
Victoza
Trulicity
Ozempic
Rybelsus
Mounjaro

GENERIC NAME

Exenatide
Lixisenatide
Exenatide XR
Liraglutide
Dulaglutide
Semaglutide
Semaglutide (Pill taken by mouth)
Tirzepatide (GLP-1/GIP combination)



HOW DOES IT WORK?

These are not insulin, but most are injected. Triggers insulin to be released in response to glucose in the blood stream after eating. Decreases the amount of new glucose made by the liver and slows stomach emptying making you feel fuller.

Injected Incretin Mimetics:

- Byetta (Exenatide) is injected 2 times a day, any time within 60 minutes (1 hour) before your morning and evening meals (or before your 2 main meals of the day), 6 or more hours apart. Do not take after a meal.
- Adlyxin (Lixisenatide) is injected 1 time a day within 60 minutes (1 hour) before the first meal of the day and at the same time each day. If a dose is missed, take within 1 hour before your next meal.
- Victoza (Liraglutide) is given any time, once a day, with or without food.
- Bydureon BCise (Exenatide XR), Trulicity (Dulaglutide) injected weekly, with or without food. Ask for training from a pharmacist or diabetes educator on how to take.
- Mounjaro (Tirzepatide) is injected once weekly at any time of day, with or without meals.

POSSIBLE SIDE EFFECTS

- Nausea, vomiting, diarrhea
- Headache



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- Injection site reactions or hard lumps under skin
- Weight loss

Rybelsus:

- Taken by mouth
- Use with caution if history of pancreatitis, diabetic retinopathy, acute kidney injury
- Increased risk of hypoglycemia when used in combination with sulfonylureas or insulin

SPECIAL TIPS:

- Ask your pharmacist for help with how to take your medication correctly, guidelines for storing it, and how it affects other medicines.
- Take oral antibiotics and contraceptives one hour prior to Byetta.
- If using Tirzepatide, use a non-oral method of birth control (IUD, ring) for back-up for 4 weeks after starting medication or increasing the dose.
- Consult with your doctor if you have a history of thyroid cancer, pancreatitis or gastroparesis (slow digestion from neuropathy).
- May improve how well insulin works.
- Monitor for kidney function when taking this drug.
- Byetta (Exenatide) may increase bleeding if on Coumadin (Warfarin). Need to monitor.
- Injection sites: ONLY in upper arm, thigh or abdomen.
- Can store at room temperature for up to 4 weeks.
- Change needle with each dose.
- If on other diabetes medications, your risk for low glucose may increase.
- **Black Box:** Thyroid C-cell tumor warning for Liraglutide, Exenatide XR, Dulaglutide, Tirzepatide and Rybelsus (avoid if family history of medullary thyroid cancer, notify MD of hoarseness, throat lump).



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DRUG CLASS: Insulins

Rapid Acting

Aspart (Novolog)
Lispro (Humalog, Admelog)
Glulisine (Apidra)

Very Rapid Acting

Aspart (Fiasp)
Lispro-aabc (Lyumjev)

Short Acting

Regular (R)
Humulin R
Novolin R

Intermediate

NPH (N)
Humulin N
Novolin N

Long Acting

Detemir (Levemir)
Glargine (Lantus/Basaglar,
Toujeo)
Degludec (Tresiba)
Glargine-yfgn (Semglee)

Pre-Mixed Insulins Intermediate + Short Combo of NPH + R

70/30=70% NPH+30% R
50/50= 50% NPH+50% R
**Long-Acting and Rapid
Acting**
Ryzedog-70/30=70%
Decgludec +30% Insulin
Aspart

Intermediate + Rapid

Novolog® Mix 70/30
Humalog® Mix 75/25
Humalog® Mix 50/50

Rapid Acting Inhaled Insulin

Afrezza
(Lung function must be
assessed)

Concentrated Insulins

Humulin Regular U-500 500 units insulin/ml
Humalog Kwik Pen U-200, 200 units insulin/ml
Lyumjev KwikPen U-200, 200 units insulin/mL
Toujeo and Tojeo Max Solostar Pen U-300, 300
units insulin/ml
Tresiba Flex Touch Pen U-200, 200 units
insulin/ml

*These insulins are often used for persons who
are on more than 200 units of insulin/day.

Insulin/Injectable Combos

Glargine (Lantus) + Lixisenatide (Adlyxin) = IGLarLixi (Soliqua)
Degludec (IDegor Tresiba) = Liraglutide (Victoza) = IDegLira (Xultophy)

HOW DOES IT WORK? Insulin is a hormone released by the pancreas that lowers and helps keep the level of sugar in the blood steady. When your body does not make enough, you may need to take insulin. Needing to take insulin does not mean you have failed, but often insulin is needed to help you reach your target A1C range! There are different ways to take insulin, but most often it is by injection using a syringe or an insulin pen.



WHEN DO YOU TAKE THIS MEDICINE? Your health care provider should tell you when you need to take your insulin. Your plan for when to take your insulin will depend on your daily routine and the type of insulin you take. **Be sure to talk with your health care provider on what to do if you miss taking a dose of your insulin.**



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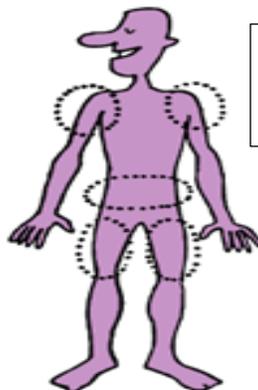
COMMON SIDE EFFECTS:

- Low blood sugar (hypoglycemia).
- Weight gain (may be due to more efficient use of calories during insulin therapy).
- Possible discomfort at injection site (may be due to technique or using cold insulin).

SPECIAL TIPS:

- Work with your health care provider to make a plan for when to monitor your blood sugar.
- If blood sugar levels are staying higher or lower than your goal, let your health care provider know.
- If on very large doses of insulin you may be prescribed a concentrated insulin. This allows you to give a smaller volume of insulin and may lead to less discomfort and fewer injections.
- Check with your pharmacist on how to store your insulin.
- Insulin must be stored in the refrigerator until it is used.
- The insulin you are using should be kept at room temperature following the first use. Do not use insulin that has expired. Most insulin (vial or pen) lasts for 30 days once it is opened.
- Check with your pharmacist/health care provider for correct way to use insulin pens.
- Insulin can be given in several different areas of your body. Talk with your pharmacist/health care provider/diabetes educator for the best place to give your insulin.
- Put your used insulin needles in a hard plastic container and dispose of them according to your city/county guidelines.

Places you can give your insulin



Use the outside of the upper arm in the fatty area.

Understanding Your Diabetes Medicines

DRUG CLASS: Meglitinides



BRAND Name

Prandin
Starlix

GENERIC NAME

Repaglinide
Nateglinide

HOW DOES IT WORK?

Helps your pancreas release more insulin right at THE START OF A MEAL. Helps lower blood sugar at meal times.

WHEN DO YOU TAKE THIS MEDICINE?

Take no more than 30 minutes BEFORE main meals.

POSSIBLE SIDE EFFECTS

- Low blood sugar
- May cause headaches and mild stomach side effects during first weeks of therapy.



SPECIAL TIPS:

- **Must use glucose tabs or gel to treat low blood sugar.**
- If you skip a meal, skip the medication.
- Do not take if you have liver problems.
- Do not take in combination with sulfonylureas.
- Avoid alcohol.
- This medicine works quickly, and it doesn't last very long in your body. This allows for more flexibility in the time you eat and eliminates the need for a snack between meals to prevent a low blood sugar.



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Understanding Your Diabetes Medicines

DRUG CLASS: Sodium-Glucose Co-Transporter 2 Inhibitors (SGLT2)

<u>BRAND NAME</u> <u>NAME</u>	<u>GENERIC</u>
Invokana	Canagliflozin
Farxiga	Dapagliflozin
Jardiance	Empagliflozin
Steglatro	Ertugliflozin



HOW DOES IT WORK?

It works by decreasing reabsorption of sugar by the kidneys and getting rid of sugar through your urine. For persons with heart or kidney disease, it can make a second heart attack less likely and can help keep the kidney disease from worsening.

WHEN DO YOU TAKE THIS MEDICINE?

Take once a day. Best to take before the first meal of the day.

POSSIBLE SIDE EFFECTS

- Frequent need to urinate
- Dehydration
 - Can cause a drop in blood pressure and can make you feel dizzy, faint, light-headed or weak. Drink plenty of fluids.
- Urinary tract infections
 - Burning when passing urine, a need to urinate often and right away, pain in lower part of stomach or pelvis, blood in urine.
- Increased risk of bone fractures
- Yeast infection
 - Women: vaginal odor, itching or a white or yellowish discharge.
 - Men: redness, itching, rash or swelling of the penis, foul smelling discharge from penis, pain in the skin around the penis.



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LIFE THREATENING SIDE EFFECTS

- Ketoacidosis
 - Call your health care provider or go to the emergency department if you have nausea, vomiting, stomach-area pain, tiredness, trouble breathing.
- Necrotizing fasciitis
 - This is a rare but serious bacterial infection that causes damage to the skin around your anus and genitals. If you have fever and are feeling very weak, tired, or uncomfortable and develop pain, tenderness, swelling and redness of skin around your anus and genitals call your health care provider right away.

SPECIAL TIPS:

- For people with type 2 diabetes. Not approved for use in people with type 1 or with increased ketones in their blood or urine.
- Not approved for use in children, nursing mothers or pregnancy.
- Does not cause hypoglycemia (low blood sugar reaction) if taken alone. If taking another diabetes pill or insulin, this may increase risk of a low blood sugar reaction
- Drink plenty of fluids to prevent dehydration.
- Not recommended for people with severe kidney problems.
- High levels of sugar will be expected in urine tests during a physical.
- Increased risk of ketoacidosis without elevated glucose in surgery.
- If having surgery, stop taking this medicine three (3) days before.



Understanding Your Diabetes Medicines

DRUG CLASS: Sulfonylureas



BRAND Name

Amaryl
DiaBeta, Micronase
Glucotrol
Glucotrol XL
Glynase PresTabs

GENERIC NAME

Glimepiride
Glyburide
Glipizide
Glipizide XL
Glyburide (micronized)

HOW DOES IT WORK?

Helps your pancreas release more insulin. Increases insulin levels for several hours.

WHEN DO YOU TAKE THIS MEDICINE?

Take once or twice a day, 30 minutes **before** a meal.

EXCEPTION: Glucotrol XL needs to be taken with a meal, preferably breakfast.

POSSIBLE SIDE EFFECTS:

- Low blood sugar
- Weight gain
- Sun sensitivity
- Upset stomach

SPECIAL TIPS:

- Carry an emergency food with you and use the Rule of 15 to treat a low.
- Do not skip or delay meals. If you skip the meal, skip the medicine.
- Do not take if you have liver or kidney problems.
- If you have a sulfa allergy, talk with your health care provider. Depending on your prior reaction or the sulfa medication you reacted to, you may still be able to take one of the drugs in the sulfonylurea drug class if needed.
- Avoid alcohol.
- Glyburide most likely to cause a low blood sugar reaction.
- Glimeperide and Glyburide should be used with caution especially in the elderly because of risk of hypoglycemia. Glipizide is usually the preferred medication in this class of drugs.



Understanding Your Diabetes Medicines

DRUG CLASS: Thiazolidinedione's (TZD'S)

BRAND NAME

Avandia
Actos

GENERIC NAME

Rosiglitazone
Pioglitazone



HOW DOES IT WORK?

Works in the body's cells and decreases insulin resistance so the body's own insulin can work better. Generally, takes 4 weeks or more to become effective.

WHEN DO YOU TAKE THIS MEDICINE?

Take once or twice a day with or without meals.

POSSIBLE SIDE EFFECTS:

- Can make your birth control pills **less effective** in preventing pregnancy
- Back or muscle pain
- Weight gain
- Fluid retention (swelling). This is more common if you are also taking insulin
- Can make congestive heart failure worse
- May be more likely to break a bone (older men and women after menopause)
- Increased cholesterol (Rosiglitazone)

LIFE THREATENING

- Chest pain and shortness of breath even with mild exertion
- Nausea, upper stomach pain, itching, loss of appetite, dark urine, clay-colored stools, jaundice (yellowing of the skin or eyes)

SPECIAL TIPS:

- Use with caution in people with liver and heart disease, extreme caution with heart failure



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- Rarely causes low blood sugar
- Liver test should be done before starting the medicine and periodically.
- **Black Box Warning:** May cause or worsen congestive heart failure. Monitor for fluid retention.
- **Special Warning:** Actos may increase the risk of bladder cancer coming back in those who have had bladder cancer before. If you have had bladder cancer watch for blood in your urine.



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