

Taking Medicines

TAKING MEDICINES

If you have type 2 diabetes, you may need to add diabetes medicines to your treatment plan. There are several medicines available for the treatment of diabetes. These medicines work in different ways to:

- Help increase the amount of insulin coming from the pancreas.
- Decrease the amount of sugar released by the liver.
- Block sugar from being absorbed by the kidneys and remove excess sugar through urination.
- Reduce appetite and slow down how quickly food empties from the stomach.
- Help your body and cells use the insulin your body makes.

Non-Insulin Medicines

The following are medicines that may be prescribed by your provider. Medicines work in different parts of our body. The medicines in the table below are grouped by how they work in your body. If your medicine is not listed, ask your provider for more information.

BRAND NAME	GENERIC NAME	HOW IT WORKS	POSSIBLE SIDE EFFECTS
Actos [®]	Pioglitazone	Helps your body use the insulin you are producing	Fluid buildup
Avandia [®]	Rosiglitazone		
Januvia [®]	Sitagliptin	Increases the amount of insulin coming from the pancreas	Nausea, vomiting or diarrhea
Onglyza [®]	Saxagliptin		
Tradjenta [®]	Linagliptin	Decreases the amount of sugar released by the liver	Sore throat, stuffy nose, upper respiratory infection
Nesina [®]	Alopiptin		
Invokana [®]	Canaglifozin	Removes excess sugar through urination	Bladder, urinary tract and genital infections
Jardiance [®]	Empagliflozin		
Farxiga [®]	Dapagliflozin		
Steglatro [®]	Ertugliflozin		

BRAND NAME	GENERIC NAME	HOW IT WORKS	POSSIBLE SIDE EFFECTS
Glucophage [®] Riomet (liquid) [®]	Metformin	Decreases the amount of sugar released by the liver	Nausea, vomiting, or diarrhea that may last for 10-14 days
Glucophage XR [®] Fortamet [®] Glumetza [®]	Metformin XR	Helps your body use the insulin you are producing	
Amaryl [®]	Glimepiride	Helps increase the amount of insulin coming from the pancreas both right after a meal and over several hours	Low blood sugar
Glucotrol [®] Glucotrol XL [®]	Glipizide		
Glynase [®] DiaBeta [®] Micronase [®]	Glyburide		
*Byetta [®]	Exenatide	Lowers blood sugar after you eat	Nausea, vomiting, or diarrhea
*Victoza [®]	Liraglutide	Increases the amount of insulin coming from the pancreas	Headache
*Trulicity [®]	Dulaglutide	Decreases the amount of sugar released by the liver	
*Ozempic [®] Rybelsus [®]	Semaglutide Semaglutide	Helps you feel full after eating by slowing down digestion	
*Mounjaro [®]	Tirzepatide	Lowers blood sugar after you eat	Nausea, vomiting, or diarrhea
		Increases the amount of insulin coming from the pancreas	Headache
		Decreases the amount of sugar released by the liver	Weight loss
		Helps you feel full after eating by slowing down digestion	

***These medicines are given by injection.**

Combination Medicines

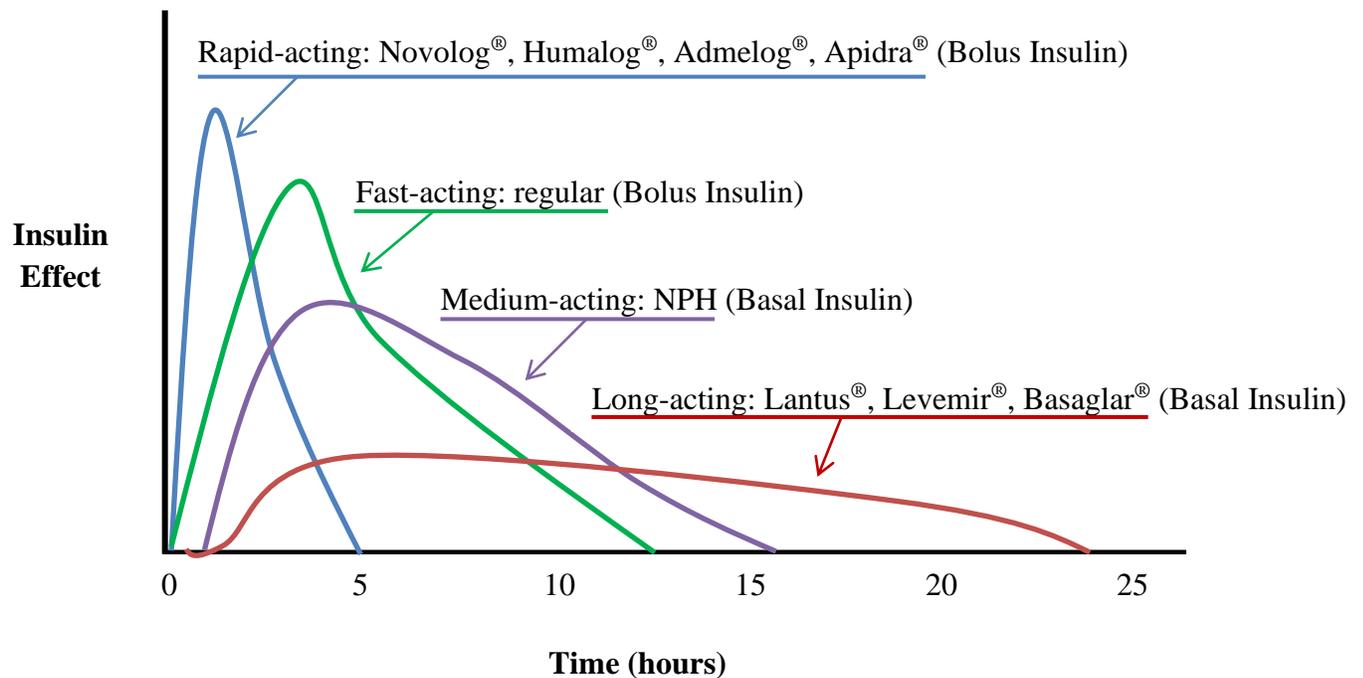
When two different diabetes medicines are combined into one pill they are called a combination medicine. These medicines work the same way. They have the same side effects as taking each medicine separately, but are combined into one pill instead of two.

Insulin

You may need to inject insulin if your body is not making enough insulin or if the insulin that your body makes is not working the way it should. Insulin lowers your blood sugar by moving sugar from your bloodstream into your cells. There are two main types of insulin: basal insulin and bolus insulin. Work with your provider to find out what insulin and how much is right for you.

Basal Insulin: This type of insulin works in the background. In people without diabetes the pancreas releases small amounts of insulin all of the time to control blood sugars between meals and overnight. When you have diabetes and your pancreas is not making insulin, or is not making enough insulin, you will have high blood sugars. Basal insulin is an injection of insulin that works for a longer period of time. It is important that you try to take this insulin at the same time each day. Providers may prescribe *medium-acting or long-acting* insulin to bring these blood sugar levels down.

Bolus Insulin: This type of insulin works when your blood sugar rises quickly. In people without diabetes, when there is a quick rise in blood sugar from food or the liver, the pancreas releases insulin quickly to keep blood sugar at normal levels. When you have diabetes and your pancreas is not making insulin, or is not making enough insulin, you will have high blood sugars. Bolus insulin is an injection of insulin that works very quickly and for a short period of time. It is typically taken just before a meal. Providers may prescribe *rapid-acting or fast-acting* insulin to be used for this purpose.



Types of Insulin

Insulin works in different ways. Different types of insulin vary by:

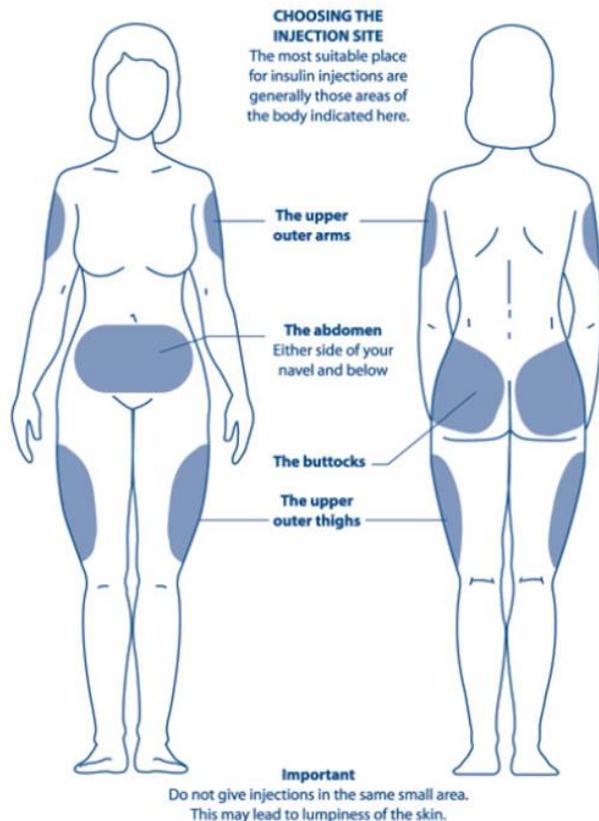
- *onset* - how soon it begins to work
- *peak* - when it works the hardest
- *duration* - how long it works in the body

TYPE	BRAND NAME	GENERIC NAME	ONSET	PEAK	DURATION
Rapid-Acting	Apidra [®] Humalog [®] /Admelog [®] Humalog [®] U200 Novolog [®] Lyumjev [®] U100 Lyumjev [®] U200 Fiasp [®]	Glulisine Lispro Lispro Aspart Lispro-aabc Lispro-aabc Aspart + Vit. B3	~3-15 min.	~1-2 hrs.	~2-4 hrs.
Rapid-Acting Inhaled	Afrezza [®]	Human	~15 min.	~1 hr	~2-4 hrs.
Fast- Acting	Humulin [®] R Novolin [®] R Humulin [®] R U500	Regular Regular U500	~30-60 min.	~2-4 hrs.	~5-10 hrs.
Medium-Acting	Novolin [®] N Humulin [®] N	NPH	~1-1.5 hrs.	~6-10 hrs.	~14-16 hrs.
Long-Acting	Lantus [®] Basaglar [®] Toujeo [®] U300 Levemir [®] Semglee	Glargine Glargine Glargine Detemir Glargine	~1-2 hrs.	None	~21-36 hrs.
Ultra-Long-Acting	Tresiba [®] Tresiba [®] U200	Degludec Degludec	~1-2 hrs.	None	~42 hrs.
Premixed: Insulin and Insulin Combination	Humulin [®] 70/30 Novolin [®] 70/30 Humalog [®] 50/50 Humalog [®] 75/25 Novolog [®] 70/30	NPH/ Regular NPH/ Regular NPH/ Lispro NPH/ Lispro NPH/ Aspart	~30 min.	~1-6 hrs.	~10-16 hrs.
Insulin and Non-insulin Combination	Soliqua [®] Xultophy [®]	Insulin Glargine & Lixisenatide Insulin Degludec & Liraglutide	~1-2 hrs.	None	~21-42 hrs.

Insulin is typically injected, although one type is inhaled. Most insulins are considered *U100*, meaning that they contain 100 units of insulin in each milliliter or cc. Some insulin has been made to be more concentrated such as those listed as *U200*, *U300*, or *U500*. It is important to know what insulin you are taking, and to take it as your provider has instructed.

Injecting Insulin

For insulin to be absorbed properly, it must be injected into the fatty tissue just under your skin. The best places to inject are your belly, upper buttocks, hips, upper arm and outer thigh.



Giving insulin injections in the same spot can cause sores, lumps or thick skin. This can make it harder for the insulin to be absorbed.

Be sure to change your sites with each injection. Injections should be at least 1 inch away from the last one. Do not inject into moles, tattoos or scars.

Make sure that your skin is clean before giving an injection.

Insulin can be injected with either the use of a vial and syringe or by an insulin pen device.

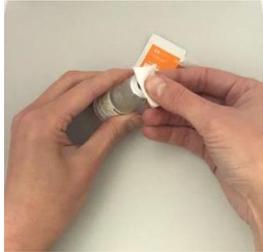
Used with permission from the Diabetes Association of Western Australia

Disposal: Insulin pen needles and/or syringes must be disposed of according to your county's health department in a puncture proof container. Insulin vials and pens can be thrown in the trash.

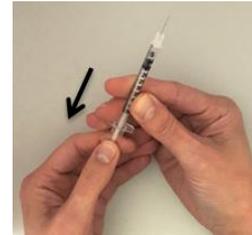
Vial and Syringe

First wash your hands, and make sure that you are injecting the correct type of insulin. If the insulin is cloudy, gently roll the vial in your hands to mix the insulin.

1. Wipe the top of the vial with an alcohol swab.



2. Fill your empty syringe with air- the same as the amount of insulin you are using.



3. Push the syringe needle into the vial and push in the air.



4. Keeping the needle in the vial, turn the vial over. Pull the plunger back until you have the right amount of insulin.



5. Be sure to look at the syringe, if you see air bubbles, push the insulin back into the bottle and slowly draw it up again.



6. Gently pinch up an area of skin. Position the needle at a 90 degree angle and insert entire needle into skin.



7. Push the plunger all of the way in. Once injected, count to five and pull syringe out.



Insulin Pen

First wash your hands, and make sure that you are injecting the correct type of insulin. *If the insulin is cloudy, gently roll the pen in your hands to mix the insulin.* Remove the cap.

1. Wipe the rubber stopper with an alcohol swab.



2. Remove the protective seal from the pen needle and screw it onto the pen.



3. Pull off the outer and inner shield of the pen needle.



4. Prime the needle. Do this by turning the dose dial to 2 units. Hold the pen pointing up, and push out the 2 units of insulin.



5. Once priming is complete, turn the dose dial to the number of units of insulin you need to inject.



6. Choose the injection site, and inject needle into the skin at a 90 degree angle.



7. Push the pen button all of the way down and keep the needle in the skin for 5 seconds.



Care of Insulin

Insulin needs to be cared for in a certain way. It is sensitive to temperature. If it gets too hot or too cold, it can be damaged. Damaged insulin does not change color or smell. Damaged insulin will not work right.

Unused insulin should be kept in the refrigerator. Insulin that you have started to use or that has been opened can stay at room temperature (66-86 degrees F). Keep your insulin with you. Do not leave it in a hot or cold car. An insulated container can be used to protect insulin from getting too hot or cold. When traveling, make sure to keep your insulin with you in your carry-on bag. Do not put it away in your checked luggage.

You should always check the expiration date on your insulin before you use it. Once you start using a vial or pen it is only good for a certain number of days.

Type of Insulin	Use After Opening
Vials, Pens, Cartridges (Clear Insulin)	28 days
Vials, Pens, Cartridges (Cloudy Insulin)	10-14 days
Levemir [®] , Toujeo [®] U300	42 days
Tresiba [®]	56 days

Insulin Pumps

An insulin pump is a device that delivers insulin based on pre-programmed individual needs throughout the day and night. Your provider will tell you your pre-programmed insulin amounts. Insulin pumps replace the use of multiple daily injections.

Programming

Insulin pumps release insulin in two ways: basal and bolus.

- **Basal:** Insulin pumps deliver insulin in small amounts over 24 hours. This helps keep blood sugars in range between meals and while you sleep. This is referred to as a *basal rate*. This takes the place of your *long-acting* insulin injection.
- **Bolus:** The insulin pump also delivers insulin when you eat meals or snacks. The pump delivers insulin based on your blood sugar level and the carbohydrates that you are eating. This is known as giving a *bolus*. This takes the place of your *rapid-acting* insulin injections.

Medicine Tips

It is important to know what medicines you are taking. Keep a list of medicines including all over-the-counter medicines, herbs and supplements with you.

Important things to know:

- What is the name of my diabetes medicine?
- How does this medicine work in my body?
- What is the dose of my medicine?
- What are the side effects? What do I do if I have side effects?
- Should my medicine be taken at a certain time of day?
- Am I supposed to take my medicine with food?
- What should I do if I miss a dose of my medicine?
- When should I call my provider?

Call your provider right away if you are having side effects to find out what you should do next.

If any new medicine has been prescribed, ask your provider if it is replacing an old medicine or is being added to the medicines that you are already taking. Ask your provider about the cost of the medicine. Are there other medicines that would work and cost less?

New insulins and diabetes medicines are being produced all the time. If you do not see your medicine listed here talk to your provider.