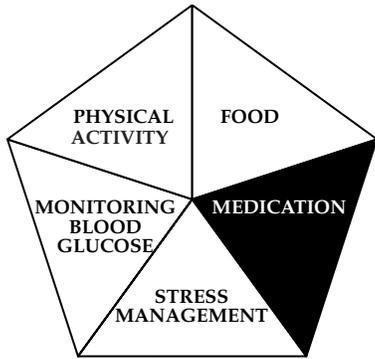


Chapter 9: Insulin and Other Injectables



Insulin is a hormone that is made by the pancreas. If your pancreas does not make any insulin or does not make enough insulin, your health care provider may want you to take injections (shots) of insulin.

Your health care provider or diabetes educator will decide what types of insulin you should take, when you should take them and how often. It is common to take more than one type of insulin. Have your health care provider or nurse write down this important information for you below.

Your Type of Insulin

Long-acting Insulin	Medium-acting Insulin	Short-acting Insulin	Rapid-acting Insulin	Mixed Insulin
<input type="checkbox"/> Lantus® <input type="checkbox"/> Basaglar® <input type="checkbox"/> Levemir® <input type="checkbox"/> Tresiba® <input type="checkbox"/> Toujeo®	<input type="checkbox"/> NPH	<input type="checkbox"/> Regular <input type="checkbox"/> Humulin® R U-500	<input type="checkbox"/> Humalog® (lispro) <input type="checkbox"/> NovoLog® (aspart) <input type="checkbox"/> Apidra® (glulisine) <input type="checkbox"/> Admelog® (lispro) <input type="checkbox"/> Fiasp® (aspart)	<input type="checkbox"/> 70/30 Novolin® <input type="checkbox"/> 50/50 Humalog® <input type="checkbox"/> 75/25 Humalog® <input type="checkbox"/> 70/30 NovoLog®

Other _____.

Your Times and Amounts

Record times and amounts:

before breakfast: _____

before lunch: _____

before evening meal: _____

before bed: _____

As a rule, take your insulin 30 minutes before your meal if you take Regular. If you take Humalog[®], NovoLog[®] or Apidra[®], take it right before your meal.

Things to Remember

Tip

Insulin can be used with a bottle and syringe or a pen device. Ask your diabetes educator to help you find the best technique for you.

- The timing of insulin injections and meals is important to controlling your blood glucose levels. Ask your health care provider or diabetes educator to review your individual plan with you.
- Take your insulin every day, even if you are feeling sick. If you cannot eat as you usually do because you are sick, follow sick day guidelines. See Chapter 12: Sick Days and Diabetes.
- Do not change the amount of insulin that you take without talking to your health care provider or diabetes educator (unless you have been trained to do so).
- See the end of this chapter for information about how to safely get rid of used sharps (needles, syringes and lancets).

Time-action of Different Insulins

Insulins	Starts Working	Peaks	Stops Working
Rapid Acting: Humalog® (lispro) NovoLog® (aspart) Apidra® (glulisine) Admelog® (lispro) Fiasp® (aspart)	5 to 15 minutes	1 to 2 hours	3 to 4 hours
Short Acting: Regular (R)	30 to 45 minutes	3 hours	4 to 8 hours
Intermediate Acting: NPH (N)	2 to 4 hours	4 to 8 hours	10 to 16 hours
Concentrated: Humulin® R U-500	30 minutes	2 to 4 hours	up to 24 hours
Pre-mix*: Intermediate-acting/rapid acting Humalog® Mix 75/25 Humalog® Mix 50/50 (lispro protamine/lispro) NovoLog® Mix 70/30 (aspart protamine/aspart) NPH and regular insulin Humulin® 70/30, Novolin® 70/30	5 to 15 minutes	1 to 2 hours/ some increase at 4 to 8 hours	10 to 16 hours
Basal**: Lantus® (glargine) Levemir® (detemir) Toujeo® (glargine U300) Basaglar® (glargine) Tresiba® (degludec U100 or U200) Note: Toujeo® (glargine U300) and Tresiba® (degludec U200) are concentrated basal insulins.	2 hours	No peak	24 to 48 hours
*The long-acting insulin may work the best between 4 and 8 hours. **Do not mix basal insulin in the same syringe with other types of insulin.			

Important information

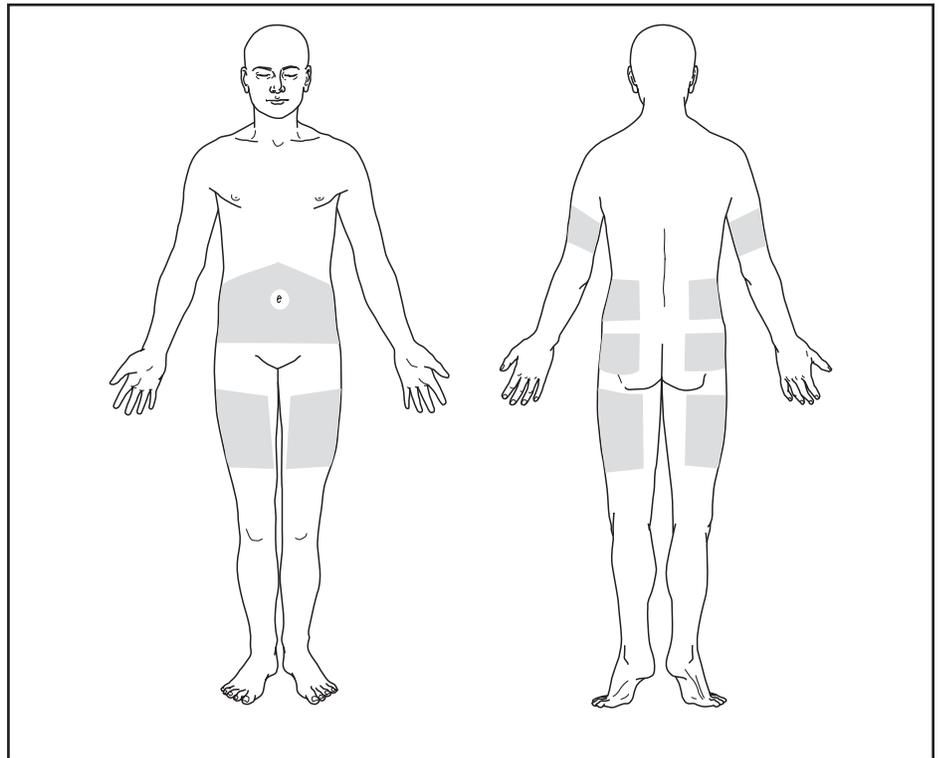
- Give rapid-acting insulin 15 minutes before a meal.
- Give Regular 30 minutes before a meal.
- Do not mix basal insulin in the same syringe with other types of insulin.

Other Injectables

Injectable	Starts Working	Peaks	Stops Working
<p>GLP-1 Injections:</p> <p>*Byetta® *Victoza® *Bydureon® *Ozempic® *Trulicity™</p> <p>Actions:</p> <ul style="list-style-type: none"> ■ regulates the amount of insulin released after eating ■ decreases the release of glucose by the liver ■ reduces appetite (can increase weight loss) ■ slows the rate of food that is absorbed 	<p>Byetta®: within 60 minutes</p> <p>Bydureon®: can take 2 to 3 weeks for full effect</p>	<p>2 hours</p> <p>—</p>	<p>6 to 10 hours</p> <p>—</p>
<p>Pramlintide Acetate Injection:</p> <p>**Symlin®</p> <p>Actions:</p> <ul style="list-style-type: none"> ■ regulates glucose levels after eating ■ decreases the release of glucose by the liver ■ reduces appetite (can increase weight loss) ■ slows the rate of food that is absorbed 	<p>15 minutes</p>	<p>48 minutes</p>	<p>3 hours</p>
<p>Insulin/GLP-1 Combination:</p> <p>*Xultophy *Soliqua</p>	<p>1 to 2 hours</p>	<p>No peak</p>	<p>24 hours</p>
<p>* Used with sulfonylureas, metformin or TZD. ** Used with insulin.</p>			

Where to Give Injections (Shots)

- Choose an area in your abdomen, upper or outer thigh, the back of your upper arms or your buttocks.
- Stay 2 inches away from previous insulin injections or other shots.
- Stay 2 inches away from your belly button or from any scar.
- Do not use sites that are bruised, tender or swollen.
- Inject the insulin in different areas to prevent scars. The insulin will also absorb into your bloodstream better.

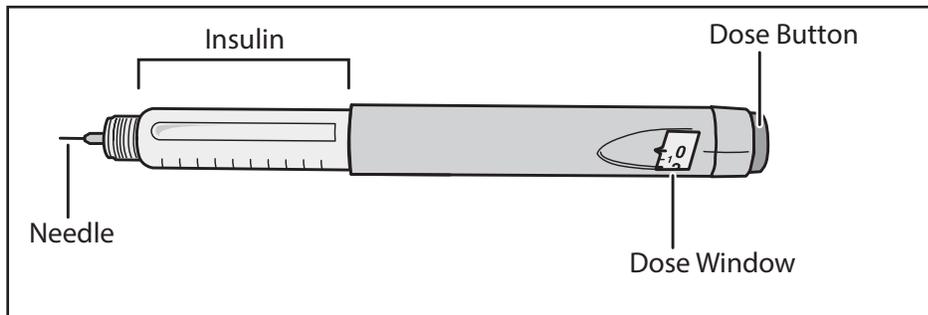


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The areas in gray are where to give injections.

The Insulin Pen

Your insulin pen has a dial which you set to give the right amount of insulin. You can see the right amount through the dose window.

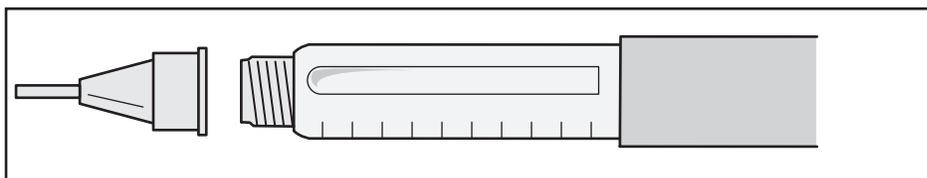


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The labeled parts of the insulin pen.

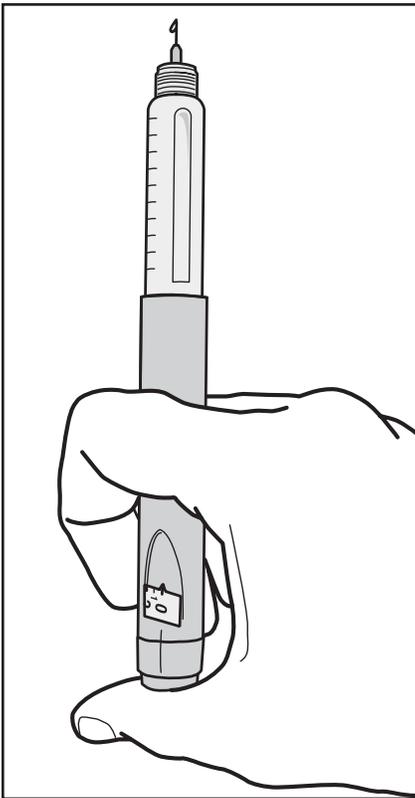
How to Give Shots with an Insulin Pen

1. Collect all of your supplies.
2. Wash your hands.
3. Clean your skin with an alcohol pad.
Let the area air dry.
4. Take the cover off the pen. The insulin is already in the pen.
5. If you are using cloudy insulin, gently roll the pen between your hands to mix the insulin.
6. Wipe off the end of the pen with where the needle will screw on with an alcohol pad.
7. Peel off the paper cover on the pen needle.
Screw the needle onto the pen.



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The needle will need to screw into the end of the pen.

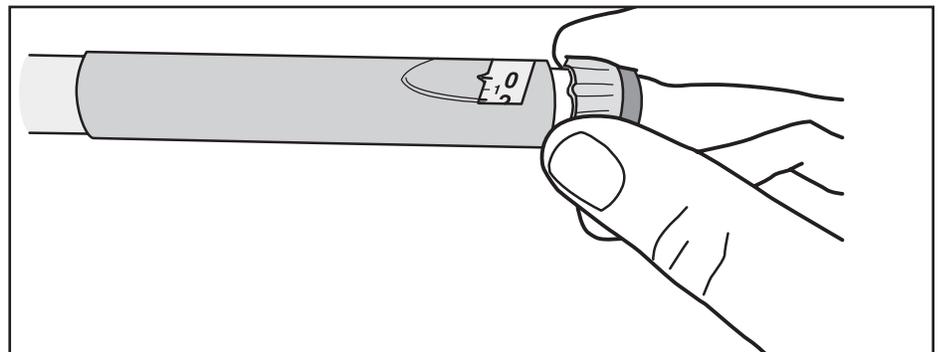


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Be sure you see a drop of insulin at the tip of the needle.

8. Remove the **two** covers from the needle.
9. Turn the dose dial to 2 (units).
10. Hold the pen so the needle is pointing up.
11. Push in the dose button at the end of the pen to clear the air out of the pen. (See drawing at left.) You should see a drop of insulin at the tip of the needle. You may need to repeat steps 9 through 11 until you see the drop of insulin.

12. Turn the dose dial to the number of units of insulin you will inject.



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Turn the dose dial to the number of units of insulin.

When to Call Your Health Care Provider

Call your health care provider if you have questions about how to use the insulin pen. You may also call the toll-free phone number on the insulin pen box.

13. Pinch and hold your skin at the site you will be giving your shot. Push the needle straight in. The needle should be all the way into your skin.
14. Using your thumb, push the dose button in all the way. **Count to 10.**
15. Let go of the pinch of skin.
16. Pull out the needle.
17. Unscrew the needle from the pen. Throw it into a container for needles. Be sure to put the lid on the container.
18. Put the cover back on the pen.

How to Care for Your Insulin Pens

- Insulin pens come with 5 in a box. Store the pens you are not using in the refrigerator.
- The pen you are using can be kept at room temperature.
- Do not let the pen you are using either freeze or get warmer than 88 F.
- Keep the pen you are using out of direct sunlight.
- Your _____ insulin pen can be used for _____ days after you take it out of the refrigerator.
- Check the expiration date on the box of insulin before you use it. Throw away any insulin that is older than the expiration date.
- Do not use insulin that is lumpy, sticks to the edges of the pen or is a color that doesn't look right.
- Throw the pen away after the insulin is gone.
- When you travel, keep your insulin with you. Do not leave it in a car or other vehicle. It is a good idea to travel with extra supplies (insulin, syringes and test strips).

Tip

Keep your medicines and supplies in your carry-on luggage.

- Regulations for airline travel may apply. Check with the airline before you fly.
 - Keep all medicines in their original containers with the pharmacy labels on.
 - Talk with your diabetes educator for more travel suggestions.

How to Measure and Inject a Single Type of Insulin Using an Insulin Bottle and Syringe

1. Wash your hands.
2. Roll the bottle of cloudy insulin between your hands and turn it upside down to mix.
3. Remove the cover from the needle.
4. Draw air into the syringe equal to your prescribed dose of _____ units.
5. Put the needle into the top of the insulin bottle and shoot air in.
6. Turn the bottle and syringe upside down.
7. Pull down and push up on the plunger 2 or 3 times — slowly — to get rid of air bubbles. Look carefully to make sure that all bubbles are gone.
8. Draw out your prescribed amount of insulin: _____ units _____ type.
9. Pull the needle out of the bottle.
10. Clean the skin at the injection site, if needed.
11. Gently pinch skin and inject insulin. Your diabetes educator or health care provider will tell you where to inject your insulin (usually the abdomen).

How to Measure and Inject Two Types of Insulin Using Insulin Bottles and Syringes

Important

Do not mix Lantus[®] or Levemir[®] with any other insulin.

1. Wash your hands.
2. Roll the cloudy bottle of insulin between your hands and turn it upside down to mix.
3. Remove the cover from the needle.
4. Draw air into the syringe equal to your prescribed dose _____ (number of units) of cloudy _____ (name) insulin.
5. Put the needle into the top of the cloudy bottle and shoot air in. Remove the needle. **Do not draw out the insulin yet.** Set the bottle aside.
6. Draw air into the syringe equal to your prescribed dose of _____ (number of units) of clear _____ (name) insulin.
7. Put the needle into the top of the clear bottle and shoot air in. **Do not remove the needle.**
8. Turn the clear bottle and syringe upside down.
9. Pull down and push up on the plunger 2 to 3 times — slowly — to get rid of air bubbles. Look to make sure all bubbles are gone.
10. Draw out your prescribed amount of clear insulin _____ (number of units).
11. Pull the needle out of the clear bottle.
12. Put the needle into the cloudy bottle. **Do not push the plunger in.**
13. Draw out the total insulin units prescribed. Clear dose _____ + cloudy dose _____ = total dose (_____). Make sure the amount of insulin in your syringe does not exceed the total units prescribed.

14. Pull the needle out of the bottle. Clean the injection site if needed.
15. Gently pinch your skin and inject the insulin. Your diabetes educator or health care provider will tell you where to inject your insulin (usually the abdomen).

How to Get Rid of Your Sharps (Needles, Syringes and Lancets) Safely



Source: Minnesota Pollution Control Agency

Many pharmacies sell sharps containers.

Important

Never throw loose sharps in the trash.

You can throw sharps in the trash only if you do **all** of the following:

- Make your own sharps disposal container at home. (An empty laundry detergent bottle labeled “sharps” works great for this!)
- Once it is three-fourths full, screw on the lid and seal it with tape.
- Throw the sealed container in the trash.

How to store your sharps at home

You will need to have a special container to store your used sharps at home. You can:

- buy a sharps disposal container from your pharmacy.
- make your own container. Visit fda.gov and type “sharps disposal container” into the search box for instructions.

When storing sharps at home, it is important to remember the following.

- Always keep your sharps storage container in a place where children and pets cannot reach it.
- Follow any directions from your county drop-off site or mail-back programs.

How to get rid of your sharps

When the container is three-fourths full:

- return the sharps to your county drop-off site
or
- send them to a mail-back program.
You will have to pay for this.

Allina Health hospitals and clinics do not accept sharps. Please do not bring them to your hospital or clinic.

Whom to call with questions

Please call your city or county government’s household trash and recycling service with questions. You can also visit the following websites for more information.

- If you live in Minnesota, visit pca.state.mn.us.
- If you live in Wisconsin, visit dnr.wi.gov.