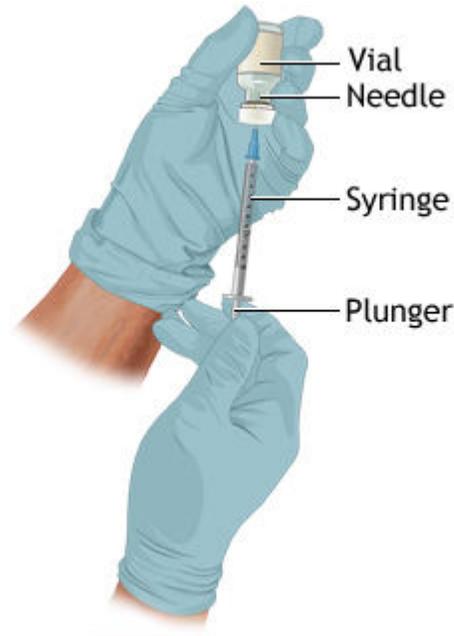


## Giving an insulin injection

### Description

To give an insulin injection, you need to fill the right syringe with the right amount of medicine, decide where to give the injection, and know how to give the injection.

Your health care provider or a certified diabetes educator (CDE) will teach you all of these steps, watch you practice, and answer your questions. You may take notes to remember the details. Use the information below as a reminder.



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### Getting Ready

Know the name and dose of each medicine to give. The type of insulin should match the type of syringe:

- Standard insulin contains 100 units in 1 mL. This is also called U-100 insulin. Most insulin syringes are marked for giving you U-100 insulin. Every small notch on a standard 1 mL insulin syringe is 1 unit of insulin.
- More concentrated insulins are available. These include U-500 and U-300. Because U-500 syringes may be difficult to find, your provider may give you instructions for using U-500 insulin with U-100 syringes. Insulin syringes or concentrated insulin are now widely available. Do not mix or dilute concentrated insulin with any other insulin.
- Some types of insulin can be mixed with each other in one syringe, but many cannot be mixed. Check with your provider or pharmacist about this. Some insulins will not work if mixed with other insulins.
- If you are having trouble seeing the markings on the syringe, talk to your provider or CDE. Magnifiers are available that clip to your syringe to make the markings easier to see.

Other general tips:

- Always try to use the same brands and types of supplies. Do not use expired insulin.
- Insulin should be given at room temperature. If you have stored it in the refrigerator or cooler bag, take it out 30 minutes before the injection. Once you have started using a vial of insulin, it can be kept at room temperature for 28 days.
- Gather your supplies: insulin, needles, syringes, alcohol wipes, and a container for used needles and syringes.

### Filling the Syringe - one Type of Insulin

To fill a syringe with one type of insulin:

- Check the insulin bottle label. Make sure it is the right insulin. Make sure it is not expired.
- The insulin should not have any clumps on the sides of the bottle. If it does, throw it out and get another bottle.
- Intermediate-acting insulin (N or NPH) is cloudy and must be rolled between your hands to mix it. Do not shake the bottle. This can make the insulin clump.
- Clear insulin does not need to be mixed.
- If the insulin vial has a plastic cover, take it off. Wipe the top of the bottle with an alcohol wipe. Let it dry. Do not blow on it.
- Know the dose of insulin you are going to use. Take the cap off the needle, being careful not to touch the needle to keep it sterile. Pull back the plunger of the syringe to put as much air in the syringe as the dose of medicine you want.
- Put the needle into and through the rubber top of the insulin bottle. Push the plunger so the air goes into the bottle.
- Keep the needle in the bottle and turn the bottle upside down.
- With the tip of the needle in the liquid, pull back on the plunger to get the right dose of insulin into the syringe.
- Check the syringe for air bubbles. If there are bubbles, hold both the bottle and syringe in one hand, and tap the syringe with your other hand. The bubbles will float to the top. Push the bubbles back into the insulin bottle, then pull back to get the right dose.
- When there are no bubbles, take the syringe out of the bottle. Put the syringe down carefully so the needle does not touch anything.

## Filling the Syringe - two Types of Insulin

To fill a syringe with two types of insulin:

- Never mix two types of insulin in one syringe unless you are told to do this. You will also be told which insulin to draw up first. Always do it in that order.
- Your doctor will tell you how much of each insulin you will need. Add these two numbers together. This is the amount of insulin you should have in the syringe before injecting it.
- Wash your hands with soap and water. Dry them well.
- Check the insulin bottle label. Make sure it is the right insulin.
- The insulin should not have any clumps on the sides of the bottle. If it does, throw it out and get another bottle.
- Intermediate-acting insulin is cloudy and must be rolled between your hands to mix it. Do not shake the bottle. This can make the insulin clump.
- Clear insulin does not need to be mixed.
- If the vial has a plastic cover, take it off. Wipe the top of the bottle with an alcohol wipe. Let it dry. Do not blow on it.
- Know the dose of each insulin you are going to use. Take the cap off the needle, being careful not to touch the needle to keep it sterile. Pull back the plunger of the syringe to put as much air in the syringe as the dose of the longer-acting insulin.
- Put the needle into the rubber top of that insulin bottle. Push the plunger so the air goes into the bottle. Remove the needle from the bottle.
- Put the air in the short-acting insulin bottle the same way as the previous two steps above.
- Keep the needle in the short-acting bottle and turn the bottle upside down.
- With the tip of the needle in the liquid, pull back on the plunger to get the right dose of insulin into the syringe.

one hand, and tap the syringe with your other hand. The bubbles will float to the top. Push the bubbles back into the insulin bottle, then pull back to get the right dose.

- When there are no bubbles, take the syringe out of the bottle. Look at it again to make sure you have the right dose.
- Put the needle into the rubber top of the longer-acting insulin bottle.
- Turn the bottle upside down. With the tip of the needle in the liquid, slowly pull back on the plunger to exactly the right dose of long-acting insulin. Do not draw extra insulin in the syringe, since you should not push the mixed insulin back into the bottle.
- Check the syringe for air bubbles. If there are bubbles, hold both the bottle and syringe in one hand, and tap the syringe with your other hand. The bubbles will float to the top. Remove the needle from the bottle before you push out the air.
- Make sure you have the right total dose of insulin. Put the syringe down carefully so the needle does not touch anything.

## Giving the Injection

Choose where to give the injection. Keep a chart of places you have used, so you do not inject the insulin in the same place all the time. Ask your doctor for a chart.

- Keep your shots 1 inch (2.5 centimeters, cm) away from scars and 2 inches (5 cm) away from your navel.
- Do not put a shot in a spot that is bruised, swollen, or tender.
- Do not put a shot in a spot that is lumpy, firm, or numb (this is a very common cause of insulin not working the way it should).

The site you choose for the injection should be clean and dry. If your skin is visibly dirty, clean it with soap and water. Do not use an alcohol wipe on your injection site.

The insulin needs to go into the fat layer under the skin.

- Pinch the skin and put the needle in at a 45° angle.
- If your skin tissues are thicker, you may be able to inject straight up and down (90° angle). Check with your provider before doing this.
- Push the needle all the way into the skin. Let go of the pinched skin. Inject the insulin slowly and steadily until it is all in.
- Leave the syringe in place for 5 seconds after injecting.

Pull the needle out at the same angle it went in. Put the syringe down. There is no need to recap it. If insulin tends to leak from your injection site, press the injection site for a few seconds after the injection. If this happens often, check with your provider. You may change the site or the injection angle.

Place the needle and syringe in a safe hard container. Close the container, and keep it safely away from children and animals. Never reuse needles or syringes.

If you're injecting more than 50 to 90 units of insulin in one injection, your provider may tell you to split the doses either at different times or using different sites for the same injection. This is because bigger volumes of insulin may get weakened without being absorbed. Your provider may also talk to you about switching to a more concentrated type of insulin.

## Storing Your Insulin and Supplies

Ask your pharmacist how you should store your insulin so it doesn't go bad. Never put insulin in the freezer. Don't store it in your car on warm days.