Diabetes: Drawing Up and Giving Insulin

To give yourself insulin shots you will need to learn:

- What kind or kinds of insulin you will be using
- What dosage of insulin you need
- When you should give yourself shots
- What kind of syringe to use
- How to use the syringe
- Where to inject the insulin
- How to inject the insulin
- How to store the insulin
- What to do with used needles and syringes

Your healthcare provider will tell you what kind of insulin to use, the dosage, and when you should give yourself a shot.

What kind of syringe should I use?

There are several brands of disposable insulin syringes with different needle widths and lengths. Insulin syringes should have thin, short, sharp needles so they are easy to insert.

The amount of insulin a syringe can hold also varies. Insulin is measured in units. Syringes have markings on the side that measure the units. If you have questions about your needles or syringes, ask a pharmacist who is familiar with your type of insulin and dosage.

How do I draw up the insulin into the syringe?

Your healthcare team will show you how to draw the insulin into the syringe. These are the steps:

1. Get your supplies (syringe, insulin, alcohol) and wash your hands.
2. Push the plunger of the disposable syringe up and down before drawing up the insulin. This will help soften the rubber at the end of the plunger and smooth the plunger action.
3. Wipe the top of all the insulin bottles you are going to use with alcohol and allow to air dry.
4. Add air to the bottles (unless you are venting the bottles once a week). Use the syringe to push the same amount of air into the bottle as insulin you are planning to use. For example, if you are going to use 20 units of insulin, inject 20 units of air into the bottle. If you are giving or taking more than 1 type of insulin, add air to the intermediate-acting insulin bottle first and then to the rapid-acting insulin bottle. After adding air to the rapid-acting insulin bottle, leave the needle in the bottle.
5. Turn the rapid-acting insulin bottle (with the needle inserted) upside down. To remove any air bubbles, draw out about 5 units of insulin and then push the

bubble and the 5 units back into the bottle. This can be repeated several times as needed until air bubbles are cleared. "Flicking" the syringe barrel with the finger is not recommended as it can cause the needle to bend.

6. After the air bubbles are gone, adjust the top edge of the rubber plunger to be in line with the exact number of units needed.
7. Remove the syringe from the bottle and hold it in your hand.

   Continue with steps 8 and 9 if you need to add intermediate-acting insulin to the same syringe. If you want to have both hands free, you can leave the syringe stuck in the rapid-acting insulin bottle until you have mixed the intermediate-acting insulin.
8. Mix the intermediate-acting insulin by turning the bottle back and forth or rolling it between the palms of your hands 20 times. Avoid touching the rubber top that you cleaned with alcohol.
9. Turn the bottle upside down and then insert the syringe into the bottle. (Turning the bottle upside-down keeps air from the bottle out of the syringe.) Slowly draw the number of units of the intermediate-acting insulin needed. The total number of units in the syringe will be the sum of the rapid-acting units plus the intermediate-acting units.

One problem with insulin bottles is that a vacuum can develop that will draw the insulin in the syringe back into the bottle. To avoid this problem, you can do one of two things:

- Inject air into the insulin bottle before each dose as described above.
- Or vent the bottles once a week. To vent the bottles:
  1. Remove the plunger from a syringe barrel.
  2. With the insulin vial sitting upright on the table, insert the needle into the rubber stopper and allow the air to equalize in the insulin bottle. This will quickly remove any vacuum that may be inside the bottle.

  Pick one day of the week--for example, Sunday--to vent the bottles.

Where should I inject the insulin?

Insulin is injected into the fat layer beneath the skin. The best places to give insulin are the belly, upper arms, thighs, and buttocks. You should change where you give the shots each time. There are different sites where you can give the shots and different places in each site for shots. For example, the thigh is one site and there might be 6 different places on the thigh that you can use. This way you can have a shot in over 50 different spots before having to have a shot in the same place again. This is called rotating the shots. Rotating injection sites helps prevent swelling.

Tips

- Do not give a shot into an area that is swollen or where there is a rash or sore.
- Insulin is absorbed more quickly from the belly than from the arm and more quickly from the arm than from the thigh or buttock. This difference is not noticeable for most people. If you do notice a difference, you may want to use one site for morning shots and another site for dinner shots. For example, the

belly or arm might be used in the morning, and the thigh or buttock might be used in the evening.

- Insulin is absorbed more quickly if it is given in an area that is then exercised. Giving insulin into an arm or leg which will be used during exercise may result in low blood sugars during exercise. For example, if you are going to play tennis, don't give a shot into the arm that will be used to swing the racquet.
- Insulin should NOT be injected just before a bath, shower, or hot tub. The warm water will draw more blood to the skin, causing the insulin to be absorbed quickly. This can cause a serious low blood sugar reaction.

How do I inject the insulin?

It is important to learn the proper technique for giving an insulin shot.

- If you don't give the shot deeply enough, it can cause a lump, pain, or red spot.
- If you give the shot too deep into the muscle it may be more painful and cause the insulin to be absorbed too quickly.
- You need to avoid injecting insulin into a large vein or artery. This is very unlikely if you are giving shots in the recommended sites. If you do inject insulin into a large vein or artery, the effect of the insulin will last just minutes instead of hours.
- Don't worry about accidentally injecting a bubble of air. It will not harm you.

To inject the insulin:

1. Clean the area with soap and water. Limit your use of alcohol wipes to times when you don't have water nearby. Alcohol dries and toughens the skin and should not be used every day to clean the area where you are giving the shot.
2. Lift up the skin with a gentle pinch.
3. Touch the needle to the skin and gently push it through the skin. Use a 45° angle for a 1/2 or 5/8-inch needle or a 90° angle for a 5/16-inch (short) needle.
4. With the plunger, push the insulin in SLOWLY and steadily.
5. After all the insulin has been given, wait 5 to 10 seconds before removing the needle. This will help keep insulin from leaking from the injection site. Leaking of insulin is a common reason for variations in blood sugar levels.
6. Put a finger or dry cotton ball over the site as you pull the needle out. This helps close the track left by the needle.

How do I store the insulin?

Ideally, insulin should be stored in the refrigerator and warmed to room temperature before you use it. You can warm it up by holding a filled syringe between your hands for a minute or two. If you warm the insulin to room temperature, it's less likely to sting or cause red spots on the skin.

Research has shown that insulin stored at room temperature loses a small percentage of its potency every month. For most people, this small change will not make a difference. Insulin will spoil if it gets above 90°F (32.2°C) or if it freezes.

Insulin bottles and pens should not be left in a car in the summer or winter. Ask your pharmacist how your insulin should be stored.

Watch your blood sugar levels carefully when the insulin bottle is almost empty. If your blood sugar starts to be unusually high or low, the last bit of insulin should be thrown out. Also throw insulin away if:

- Clumps of intermediate-acting insulin are sticking to the side of the bottle.
- Clear, rapid-acting insulin becomes cloudy.
- The insulin is past the expiration date.
- The bottle has been stored at room temperature and has been open for over 30 days.
- The bottle has been stored in the refrigerator and has been open for 3 or more months.

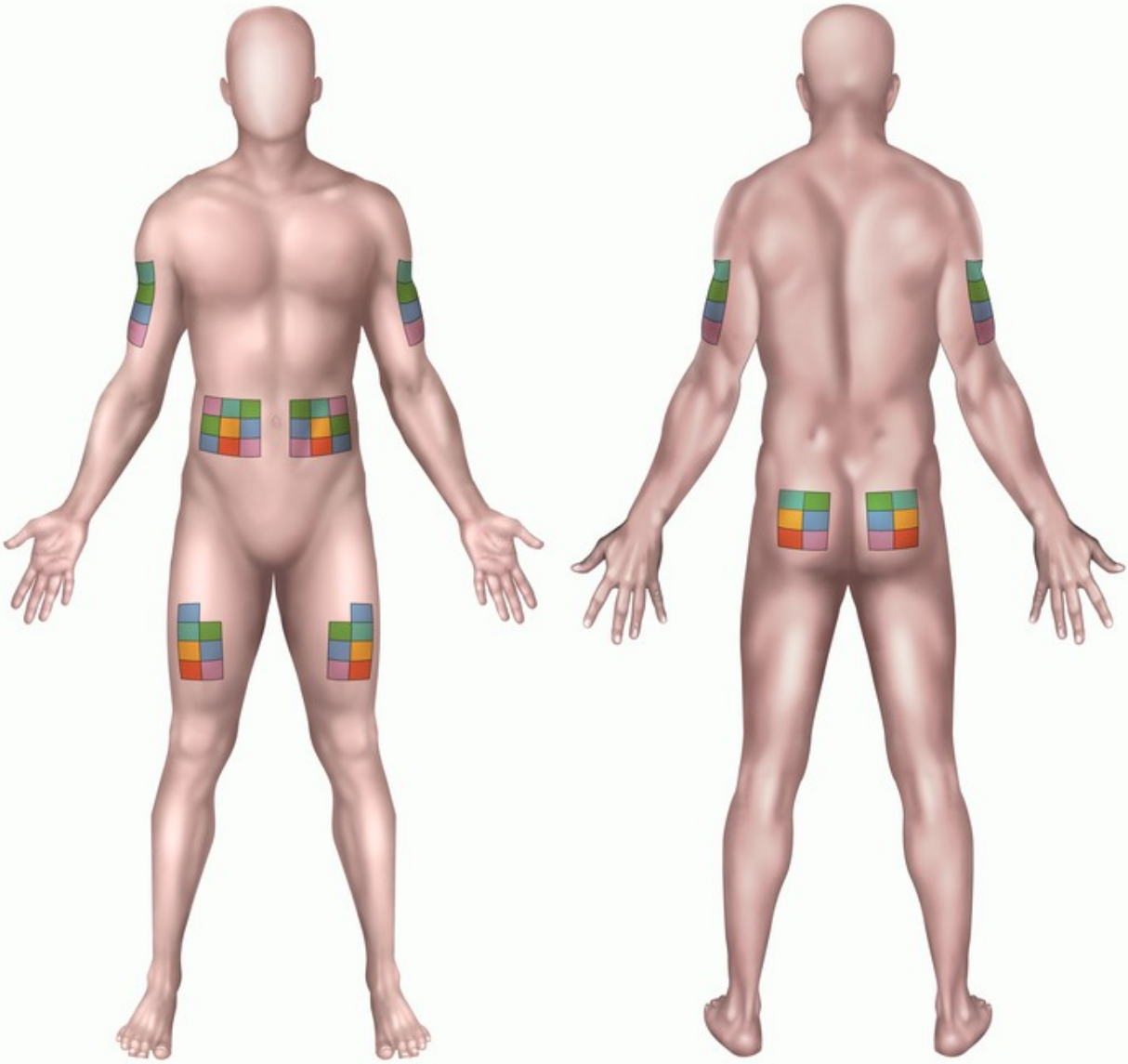
Can I reuse syringes?

Plastic syringes are recommended for one-time use only. If for some reason you need to reuse a syringe, after giving a shot, push the plunger up and down to get rid of any insulin left in the needle. Wipe the needle off with an alcohol swab. Put the cap over the needle and store the syringe and needle in the refrigerator until the next time you need to use it.

Needles of syringes that are reused several times may get dull from going through the rubber stopper on the insulin bottle over and over. A dull needle may cause more damage to your skin and tissues. There is also a possibility of infection if you reuse syringes.

Developed by RelayHealth.

Diabetes: Injection Rotation Chart



How to Give a Subcutaneous Shot

1. Use an alcohol swab to clean the skin where you will give the shot.

2. Gently pinch the skin and insert the needle into the skin at a 45-degree or 90-degree angle. Follow your provider's instructions.

3. After you insert the needle completely, release your grasp on the skin.

4. Inject all of the solution by gently and steadily pushing down the plunger.

5. Withdraw the needle and syringe and press an alcohol swab gently on the spot where the shot was given.

Ask your healthcare provider or pharmacist if you should wear gloves when you give a shot.