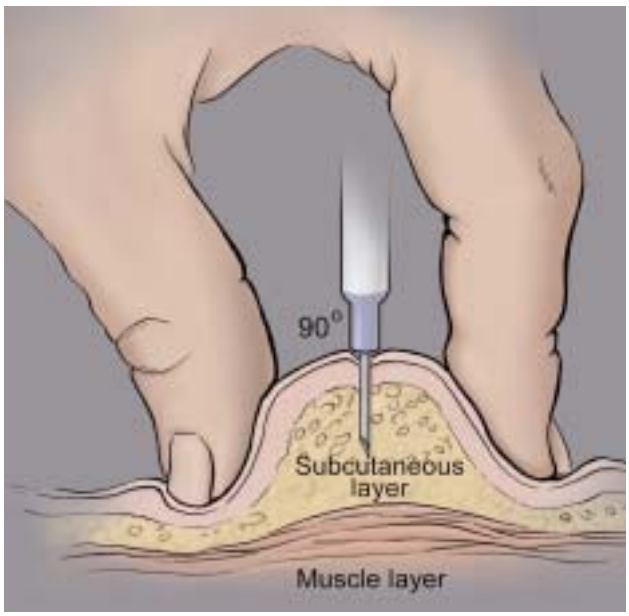
Patient Information Publications
Warren Grant Magnuson Clinical Center
National Institutes of Health

Giving a Subcutaneous Injection

What is a subcutaneous injection?

A subcutaneous injection is given in the fatty layer of tissue just under the skin.



A subcutaneous injection into the fatty layer of tissue (pinched up to give the injection) under the skin.

Why are subcutaneous injections given?

These injections are given because there is little blood flow to fatty tissue, and the injected medication is generally absorbed more slowly, sometimes over 24 hours. Some medications that can be injected subcutaneously are growth hormone, insulin, epinephrine, and other substances.

Preparing to give medication

Subcutaneous injections are not given if the skin is burned, hardened,inflamed, swollen, or damaged by a previous injection.

l. Wash your hands thoroughly. This is the best way to prevent infection.

2. Assemble your equipment:

medication

- May be a multidose vial of liquid or may be a vial with powder that requires "reconstitution." Follow the manufacturer's instructions as to what and how much diluent to use. The diluent is usually saline (a mixture of salt water) or sterile water.

syringe and needle:

Depending on the amount of medication to be given and the size of the child or adult:

- 0.5 cc,1.0 cc, or 2 cc with 27-gauge needle (5/8 of an inch long)
- 3 cc luer lock syringe—used when solution is more than 1 cc
- 25-gauge needle (5/8 of an inch long or 27-gauge needle (5/8 of an inch long)
- 0.3 mL insulin syringes with 28-gauge needles (1/2 inch long) are available for those who are visually impaired or for those who need very small doses of medication.
- medication log
- container for syringe disposal
- sterile 2 x 2 -inch gauze pad
- alcohol pads

Drawing up medication

1. Check the label for correct medication.
2. Remove the soft metal or plastic cap protecting the rubber stopper of the vial.
3. If the medication vial can be used for more than one dose, record the date and time on the label.
4. Clean the exposed rubber stopper using an alcohol swab.
5. Remove the syringe from the plastic or paper cover. If necessary, attach the needle securely.
6. Pull back and forth on the plunger by grasping the plunger handle. Grasping the handle end will pre-vent contamination of the plunger shaft (which is sterile) and help check for easy movement.
7. With the needle capped, pull back the plunger, filling the syringe with air equal to the amount of medication to be administered.
8. Remove the cap covering the needle and set it on its side to prevent contamination. Be careful not to touch the needle. The inside of the cap and needle is sterile, and the needle will be covered again with this cap.
9. With the vial in an up-right position, push the needle through the cleansed rubber stopper on the vial. Push the needle in at a 90 degree angle, being careful not to bend the needle.
10. Inject the air in the syringe into the vial. Air is injected into a multi-dose vial to prevent a vacuum from forming. If too little or no air is injected, withdrawing the medication may be difficult. If too much air is injected, the plunger may be forced out of the barrel causing the medication to spill.
11. Turn the vial upside down, with the needle remaining in the vial. The needle will be pointing upward.
12. Make sure that the tip of the needle is completely covered by the medication. This will make it easier to withdraw the solution (and not air).
13. Pull back on the plunger to fill the syringe with the correct dose of medication.
14. Keep the vial upside down, with the needle in the vial pointed upward. Tap the syringe, or “flick” it with your fingertips. This helps move bubbles to the top of the syringe.
15. Once the bubbles are at the top of the syringe, gently push on the plunger to force the bubbles out of the syringe and back into the vial.

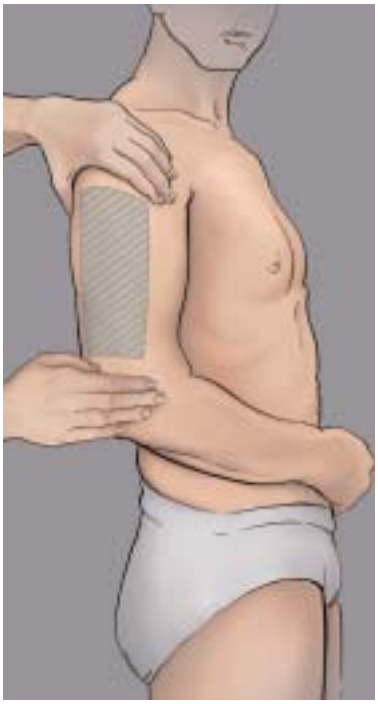
    Or, you may push all the medication solution back into the vial, withdraw again slowly, and repeat steps 14 and 15.

    Note: It is important to eliminate large air bubbles because they take up space needed for the medication, and they may cause pain or discomfort when injected.
16. After removing the bubbles, check the dose of medication in the syringe to be sure you have drawn up the correct amount.
17. After the medication is correctly drawn up, carefully replace the needle cap to prevent contamination.

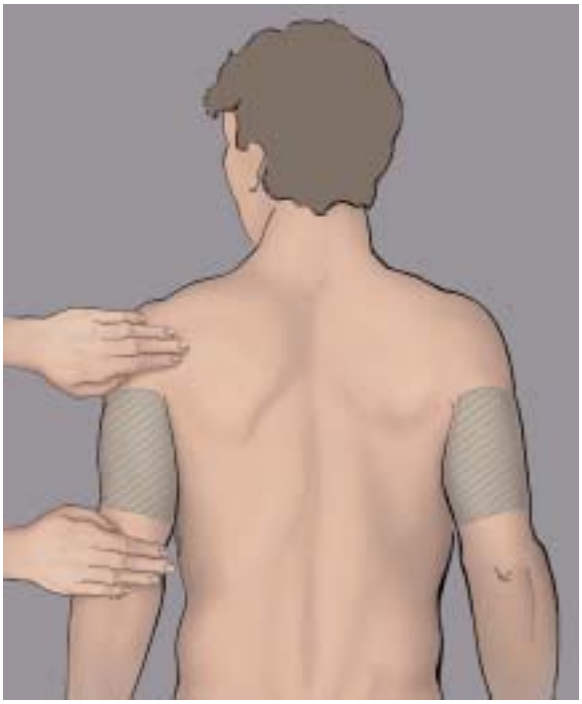
Locating injection sites

Subcutaneous injections can be given in the arms, legs, or abdomen. Your nurse or doctor will help you select the best sites to administer your medication.

1. To locate injection sites on the arms, fold one arm across the chest. Place your hand on the shoulder and draw an imaginary line below your hand. Place another hand on the elbow. Draw an imaginary line down the outer side of the arm and down the center front of the arm, starting at the elbow. The area inside these imaginary lines is where injections are given. (If you are injecting yourself, imagine the hand placement.)



Injection sites on the side of the arm.

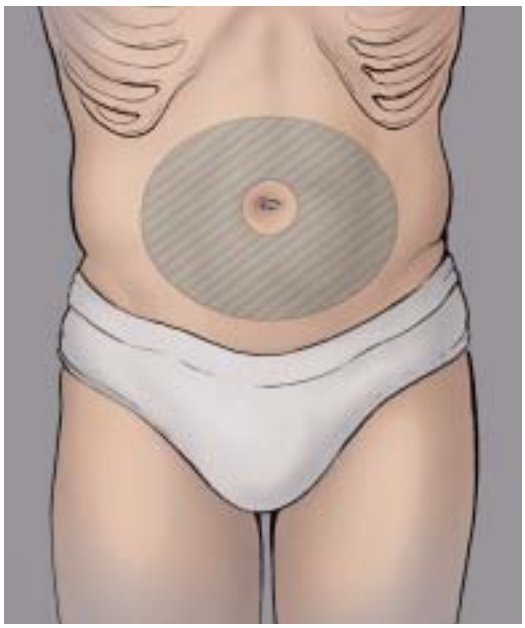


Injection sites on the back of the arm.

2. To locate injection sites on the thighs, sit down, place your hand above the knee, and draw an imaginary line above it. Place your hand at the uppermost part of the thigh and draw an imaginary line below your hand. Draw an imaginary line down the outer side of the leg and down the center front of the leg. The area within these imaginary lines is where injections may be given.

Injection sites on the thighs.

3. To locate injection sites on the abdomen, place your hands on the lower ribs and draw an imaginary line below them. Use this area below your hands for injections, as far around as you can pinch up fatty tissue. Do not use a 1-inch area around the navel.



Injection sites on the abdomen

Rotating injection sites

It is extremely important to rotate sites to keep the skin healthy. Repeated injections in the same spot can cause scarring and hardening of fatty tissue that will interfere with absorption of medication. Each injection should be about 1 inch apart. Each injection site can be measured with a small dot Band-Aid, providing the patient is not sensitive to the adhesive. Start injections at the highest point of the area and continue down toward the point farthest away from the body (for example, upper arm down toward elbow). It is preferable to use all sites available on one body part (arm or leg) before moving on to another. However, some parents find that children are more accepting of injections if they are rotated from one body part to another (arm, leg, arm, leg). Avoid giving injections in areas that are burned, reddened, inflamed, swollen, or damaged by prior injections.

Preparing the skin

Since the skin is the body's first defense against infection, it must be cleansed thoroughly before a needle is inserted.

Cleanse the skin in a circular motion using an alcohol swab. Begin at the center of the site and progress outward. This motion moves bacteria away from the injection site. Allow the alcohol to dry completely either by air or by using sterile 2x2 gauze.

Giving the injection

1. Take the cover off the needle. Be careful not to contaminate the needle. Place the cover on its side.
2. Hold the syringe in one hand like a pencil or a dart.
3. Grasp the skin between the thumb and index finger.
4. Quickly thrust the needle all the way into the skin. Do not "push" the needle into the skin slowly or thrust the needle into the skin with great force. Do not press down on the top of the plunger while piercing the skin.
5. Insert the needle at a 90-degree (right) angle. This angle is important to ensure that the medications will be injected into the fatty tissue. However, for small children, and persons with little subcutaneous fat on thin skin, you may be taught to use a 45-degree angle.

6. After the needle is completely inserted into the skin, release the skin that you are grasping.
7. With your free hand, grasp the syringe near its base to stabilize it.
8. Gently pull back on the plunger and check for the appearance of blood in the syringe.

   Note: Not all injections require you to check for blood. Before you are discharged, your nurse will let you know if you need to do this. If you do not, then skip down to step 10.
9. If blood appears, remove the needle, discard it, and start over. Blood in the syringe means that you may be in a blood vessel, so discard the syringe with medication.

   Do not inject medication into a blood vessel: the medication is absorbed too rapidly if it is injected there.
10. If no blood appears, inject the medication at a slow, steady rate. Medication should be injected within 5 seconds.
11. As the needle is pulled out of the skin, gently press a 2x2 gauze onto the needle insertion site. Pressure over the site while removing the needle prevents skin from pulling back, which may be uncomfortable. The gauze also helps seal the punctured tissue and prevents leakage.
12. If instructed to do so, press or rub the site for a few seconds.
13. It is not serious if you notice blood at the site after the needle is removed. You may have nicked a surface blood vessel when you injected, and blood is following the needle track out to the surface. Simply press the site with a 2 x 2 gauze pad. Also, a small amount of clear fluid may appear at the site. This may be medication that is following the needle track to the surface. Again, apply pressure using a 2 x 2 gauze pad.

Safe needle disposal

Please refer to the Clinical Center pamphlet "Handling Sharp Objects Safely at Home."

Medication

Dose

Schedule

Primary Nurse

Phone

Physician

Phone

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National Institutes of Health
Warren Grant Magnuson Clinical Center
Bethesda, MD 20892

Questions about the Clinical Center?
OCCC@cc.nih.gov