PROCEDURE

Giving insulin shots to adults

An insulin shot delivers prescribed insulin into the fatty tissue under your skin.

PURPOSE
Lower blood glucose by replacing or adding insulin

PROCEDURE TYPE
Therapeutic, minimally invasive subcutaneous injection

WHERE IT IS DONE
At home, outpatient clinic, or bedside

ANAESTHESIA
None

HOW LONG IT TAKES
Usually one to three minutes

PREPARATION
Confirm insulin, dose, timing, and supplies

RECOVERY
Immediate; driving is unsafe during low blood glucose

MAIN RISKS
Low glucose, dosing errors, skin changes, allergic reaction

RESULTS
Within minutes to hours, based on insulin type

Overview

An insulin shot places insulin into the fatty tissue just under your skin. From there, insulin enters your bloodstream and helps glucose move from the blood into your cells.

Insulin may come in a prefilled pen, a reusable pen with a cartridge, or a vial used with a syringe. Pens and syringes use small, short needles. Insulin is not injected into a vein or muscle during routine home treatment.

Different insulins begin working and remain active for different lengths of time. Some cover meals, while others provide background insulin over many hours. Your prescription should state the insulin, dose, and timing. Do not substitute one insulin for another unless your healthcare team has confirmed the change.

Why the procedure is performed

Insulin shots are used when your body makes little or no insulin, or when the insulin it makes does not control blood glucose well enough.

People with type 1 diabetes need insulin to live. Adults with type 2 diabetes may need it temporarily or long term. It may also be used during pregnancy, a serious illness, surgery, steroid treatment, or periods of very high blood glucose.

The goal is to keep glucose within the target range set with your healthcare team. This can reduce symptoms of high glucose and lower the risk of long-term damage to the eyes, kidneys, nerves, heart, and blood vessels.

Who should and should not have it

Insulin is appropriate when it has been prescribed for your type of diabetes and current health needs. Before giving your first shot, you should receive training on the device, dose, timing, glucose monitoring, and treatment of low blood glucose.

Insulin is not the right treatment for everyone with high glucose. Some people with type 2 diabetes can use lifestyle changes or other medicines instead.

Do not give a shot until you have clarified the plan if:

Avoid injecting into skin that is infected, bruised, scarred, painful, or unusually hard or lumpy. Choose another suitable site. If injections are repeatedly causing lumps or skin changes, arrange a routine review of your technique and injection sites.

- The label does not match your prescribed insulin
- The dose or timing is unclear
- The insulin looks different from its expected appearance
- The pen, cartridge, or vial is damaged or expired
- Your glucose is low and you do not know how to adjust your plan
- You have previously had an allergic reaction to that insulin

How to prepare

Follow the instructions from your treating facility, diabetes team, and insulin device. Their instructions take priority because insulin products and injection devices are not all used in the

same way.

Gather your insulin, a new needle or syringe, your glucose meter if needed, and an approved sharps container. Wash and dry your hands.

Check the insulin name, strength, prescribed dose, expiration date, and appearance. Some insulin is normally clear, while some is cloudy. Do not use insulin that has unexpected clumps, particles, frosting, or discoloration. Follow the product instructions for storage and for gently mixing cloudy insulin. Do not shake it unless specifically directed.

If you use a pen, attach a new needle and perform the manufacturer's safety or priming check. This confirms that insulin can flow through the needle. Dial the prescribed dose only after priming.

If you use a vial and syringe, make sure the syringe matches the insulin strength. Mixing two insulins in one syringe is appropriate only when your healthcare team has specifically taught you which products can be mixed and in what order.

Choose an injection area, such as the abdomen, outer thigh, upper buttock, or back of the upper arm. Rotate spots within the same general area. This helps prevent thickened fatty tissue that can make insulin absorption unpredictable.

Use clean, dry skin. If you use an alcohol wipe, allow the skin to dry before injecting.

What happens during the procedure

Remove the needle cap without touching the needle. Depending on your needle length and body shape, you may be taught to gently pinch a fold of skin.

Insert the needle into the fatty layer under the skin, usually at a 90-degree angle. Press the pen button fully or push the syringe plunger until the dose is delivered.

Keep the needle under the skin for the time stated in the pen instructions. Removing it too quickly may allow insulin to leak out. Withdraw the needle straight out. Do not rub or massage the area.

Remove the needle from a pen after every injection. Place used needles and syringes directly into an approved sharps container. Never reuse or share needles. Never share an insulin pen, even if the needle has been changed, because blood can enter the device.

Record the dose if your care plan or device does not track it automatically.

Recovery and what to expect afterward

Most injections cause little or no pain. Brief stinging, a tiny blood spot, or mild tenderness can occur. Press gently with clean gauze if needed, but do not massage the site.

Eat according to the timing instructions for your insulin. Some mealtime insulins need to be closely coordinated with food. If a meal is delayed, follow your personal low-glucose prevention plan rather than guessing at a dose.

Normal activity can usually continue immediately. Exercise can change how quickly your body uses glucose, so follow your plan for glucose checks, food, and insulin around activity.

The shot itself does not prevent driving. However, low glucose can impair judgment and reaction time. Do not drive if your glucose is low or if you have symptoms such as shaking, sweating, weakness, confusion, or blurred vision. Check and treat your glucose according to your diabetes plan before driving.

Most people can return to work immediately. Extra planning may be needed if your work involves driving, heavy machinery, missed meals, strenuous activity, or limited access to glucose monitoring and food.

Risks and possible complications

Low blood glucose, called hypoglycaemia or hypoglycemia, is the main immediate risk. It can happen after too much insulin, too little food, unexpected exercise, alcohol, or changes in illness or kidney function. Symptoms may include sweating, shaking, hunger, a fast heartbeat, dizziness, irritability, or confusion.

Giving the wrong insulin or dose can cause low or high glucose. Reading the label each time and keeping different insulin products clearly separated can reduce this risk.

Repeated injections into the same spot can cause fatty lumps or dents. This is called lipodystrophy. Insulin may absorb unevenly from these areas.

Minor bruising, bleeding, soreness, or redness may occur. Skin infection is uncommon but requires assessment if redness, warmth, swelling, or pain is spreading.

Serious allergic reactions are uncommon. Warning signs include widespread hives, facial or throat swelling, wheezing, or difficulty breathing.

Results and follow up

You will not usually feel insulin working. The effect is assessed with a finger-stick glucose meter or continuous glucose monitor. When the effect begins and how long it lasts are based

on the type of insulin, dose, injection site, food, activity, and your body's response.

Keep a record of glucose readings, insulin doses, meals, exercise, and low-glucose episodes when asked. Your healthcare team may use this information to adjust the plan. Do not make large dose changes without an agreed adjustment plan.

Routine follow-up may include reviewing your glucose patterns, injection technique, injection sites, storage practices, and supplies. An A1C blood test shows your average glucose over roughly the previous two to three months.

Alternatives

For type 1 diabetes, there is no non-insulin medicine that replaces insulin. Alternatives concern how insulin is delivered.

An insulin pump gives insulin continuously through a small tube or patch. It can allow flexible dose changes but requires training, regular monitoring, device wear, and a plan for pump failure.

For selected adults, inhaled rapid-acting insulin may replace some mealtime injections. It does not replace background insulin in type 1 diabetes and requires lung assessment. Availability and cost may limit its use.

For type 2 diabetes, alternatives may include nutrition and activity changes, tablets, or non-insulin injectable medicines. These may avoid daily insulin shots and some have additional heart, kidney, or weight benefits. They may not lower glucose enough when insulin production is limited or glucose is very high.

A pen and a vial with syringe deliver insulin in similar ways. Pens are often easier to carry and measure, while vials and syringes may cost less in some settings.

When to call your healthcare team

Arrange routine contact if you have repeated low readings, frequent unexplained high readings, leaking injections, painful or lumpy sites, or difficulty seeing or operating your device. Contact the team if illness, fasting, travel, shift work, or pregnancy changes your usual schedule.

Seek urgent medical advice for persistent vomiting, rising glucose that is not responding to your plan, or moderate to high ketones. Follow your sick-day plan while arranging help.

Call emergency services for:

A person who is unconscious should not be given food or drink. If glucagon has been prescribed and someone has been trained to use it, they should follow its instructions while emergency help is called.

- Severe confusion, a seizure, or loss of consciousness
- Low glucose that cannot be treated safely by mouth
- Trouble breathing or swelling of the face, tongue, or throat
- Signs of diabetic ketoacidosis, such as vomiting, deep breathing, and marked drowsiness

Common questions

Will I be asleep?

No. Insulin shots do not require anaesthesia or sedation. You remain awake and can usually give the injection yourself after training.

Can I drive after an insulin shot?

Usually, but not if your glucose is low or you have low-glucose symptoms. Follow your glucose-checking plan before and during longer drives.

How painful is it?

Most people feel a brief pinch or mild sting. Using a new needle, allowing alcohol to dry, and changing injection spots may reduce discomfort.

When will I know it is working?

Your glucose readings show the effect. Some insulin begins working around meals, while background insulin acts more gradually. Use the timing information supplied with your specific insulin.

What if I forget a dose?

Do not automatically double the next dose. Check your glucose and follow your missed-dose plan. If you do not have one, contact your healthcare team or pharmacist promptly for instructions specific to your insulin.

Can I reuse or share a needle or pen?

No. Use a new needle for each shot. Never share needles, syringes, cartridges, or insulin pens, even with family members.

Sources

- Centers for Disease Control and Prevention. Considerations for Blood Glucose Monitoring and Insulin Administration
- U.S. Food and Drug Administration. Insulin Pens and Pen Needles: Safe Use
- U.S. Food and Drug Administration. Best Way to Get Rid of Used Needles and Other Sharps
- National Institute of Diabetes and Digestive and Kidney Diseases. Insulin, Medicines, and Other Diabetes Treatments
- Frid AH, Kreugel G, Grassi G, et al. New Insulin Delivery Recommendations. Mayo Clinic Proceedings . 2016;91(9):1231-1255.
- American Diabetes Association. Standards of Care in Diabetes-2024: Pharmacologic Approaches to Glycemic Treatment