PROCEDURE

Giving insulin shots to a child

An insulin shot delivers a prescribed dose under a child's skin to control blood glucose.

PURPOSE
Keep blood glucose in the child's prescribed range

PROCEDURE TYPE
Therapeutic - minimally invasive injection under the skin

WHERE IT IS DONE
Home, school, outpatient clinic, or bedside

ANAESTHESIA
None

HOW LONG IT TAKES
Usually one to two minutes

PREPARATION
Check glucose, insulin, dose, device, and injection site

RECOVERY
Immediate; no driving restriction unless glucose is low

MAIN RISKS
Low glucose, dosing errors, skin reactions, fatty lumps

RESULTS
Glucose response follows the prescribed insulin's action time

Overview

An insulin shot places insulin into the fatty layer just under your child's skin. This is called a subcutaneous injection. Insulin may be given with a disposable pen, a reusable pen with a cartridge, or a syringe and vial.

Insulin helps glucose move from the blood into the body's cells, where it can be used for energy. Different insulins start working and remain active for different lengths of time. Your child's diabetes team will provide an individual plan covering insulin type, dose, timing, blood glucose checks, meals, exercise, illness, and low glucose.

Children often become more involved in their injections as they grow. Even when a child gives their own shot, an adult may still need to check the insulin and dose.

Why the procedure is performed

Insulin shots replace insulin that the body does not make or cannot use well enough. They may be used to:

Children with type 1 diabetes need insulin every day. Missing insulin, especially long-acting or "basal" insulin, can lead to diabetic ketoacidosis. This is a serious buildup of acids called ketones.

- Manage type 1 diabetes
- Manage some cases of type 2 diabetes
- Correct high blood glucose according to a prescribed plan
- Cover carbohydrate eaten at meals or snacks
- Manage glucose during illness or treatment with certain medicines

Who should and should not have it

A child should receive insulin only when it has been prescribed for them. The insulin type, dose, and timing should follow their personal diabetes plan.

Do not give the injection until you have checked with the diabetes team if the label, dose, or instructions are unclear. Do not use insulin that belongs to another person, even if it has the same name.

A particular dose may need to be changed or delayed when your child has low glucose, is vomiting, cannot eat as planned, or has had unexpected exercise. Follow the child's written plan rather than making an unplanned change. Do not stop basal insulin in a child with type 1 diabetes unless the treating team specifically directs this.

Do not inject into skin that is infected, bruised, scarred, painful, or lumpy. Choose another recommended site. A specific insulin should also be avoided if your child has had a serious allergic reaction to that product or one of its ingredients.

If you think you have the wrong insulin or dose, pause before injecting and contact the diabetes team or pharmacist.

How to prepare

The treating facility's own instructions take priority over general information in this article.

Follow the training and written plan provided for your child and the instructions supplied with the pen, syringe, or insulin.

Gather the insulin, a new needle or syringe, the prescribed glucose-monitoring equipment, and an approved sharps container. Make sure glucagon and a fast-acting source of glucose are available as directed in the child's low-glucose plan.

Before each shot:

Some cloudy insulins must be gently mixed before use, while clear insulins should remain clear. Follow the product instructions. Do not shake insulin unless those instructions specifically say to do so.

Common injection areas include the abdomen, outer thigh, upper buttock, and back of the upper arm. Rotate between points within an area to protect the skin. Insulin can be absorbed at different speeds from different areas, so follow the team's advice about site choice.

- Wash and dry your hands
- Confirm the child's identity, insulin name, dose, and timing
- Check the expiry date and appearance of the insulin
- Check glucose or sensor information when the plan requires it
- Use a new needle or syringe
- Select a recommended site and inspect the skin

What happens during the procedure

Explain what you are doing in words your child can understand. Offering a limited choice, such as which approved site to use, can help them feel more involved.

Attach a new pen needle or prepare the syringe exactly as taught. If using a pen, perform any safety or flow check required by that device. Dial or measure the prescribed dose and check it again. Another trained adult should check when the child's care plan or facility policy requires this.

Clean skin is usually sufficient. If you use an alcohol wipe, let the area dry before injecting because wet alcohol can sting.

Hold the pen or syringe as trained. Some children need a gently lifted skin fold to keep the injection in the fatty layer. Insert the needle at the angle recommended for the needle length and the child's body type.

Press the pen button fully or push the syringe plunger down. Keep the needle in place for the

time stated in the device instructions so the complete dose can enter. Remove it straight out.

Do not rub the site. A tiny drop of blood can be covered with light pressure. Remove the needle from the pen and place it, or the entire syringe, directly into a sharps container. Never leave a needle attached to a stored pen.

Record the dose if it is not recorded automatically.

Recovery and what to expect afterward

Pain: A brief pinch, pressure, or mild stinging is common. Ongoing pain is not expected. Changing sites and using a new needle can make injections more comfortable.

Eating: Follow the timing in your child's insulin and meal plan. Some mealtime insulins are given before food, while others may be given at a different time. Do not assume all insulin works the same way.

Activity: Most children can return to normal activity immediately. Exercise can lower glucose during and for some time afterward, so use the child's exercise plan and monitoring instructions.

Driving: The injection itself does not prevent driving. A teenager who drives, or an adult driving the child home, should not drive if experiencing low-glucose symptoms or if glucose is below the safe level in their plan.

School or work: A child can usually return to school or daily activities right away. School staff should have access to the child's diabetes care plan, insulin, monitoring equipment, fast-acting glucose, and emergency glucagon.

Risks and possible complications

The most important risk is hypoglycaemia, meaning blood glucose that is too low. It may cause shakiness, sweating, hunger, headache, mood or behaviour changes, confusion, or unusual sleepiness. Young children may not be able to describe how they feel.

Other possible problems include:

Repeated injections into lumpy areas can make insulin absorption less predictable. Avoid these areas and show them to the diabetes team during routine follow-up.

Sharing pens, needles, or syringes can spread infection. An insulin pen must never be shared, even when the needle is changed.

- Giving the wrong insulin or dose
- Bleeding, bruising, pain, or redness at the site
- Insulin leaking out after the shot
- Fatty lumps or dents from repeatedly using the same area
- A blocked, damaged, or incorrectly attached pen needle
- Rare allergic reactions

Results and follow up

Insulin does not produce an immediate test result. Its effect appears over the action time of the specific insulin. A glucose meter or continuous glucose monitor can show how glucose responds.

Follow the child's plan for checking glucose after meals, correction doses, exercise, or low-glucose treatment. Do not give another correction early unless the plan directs it, because active doses can overlap and cause low glucose.

Record repeated highs, lows, missed doses, and concerns about meals or activity. Routine diabetes visits may review glucose patterns, injection technique, skin sites, growth, insulin needs, and the child's confidence with care.

Alternatives

The realistic alternatives depend on why insulin is needed.

Needle-free choices are not suitable for every child. Ask what each option would mean for daily care, cost, monitoring, training, and backup plans.

- Insulin pump: Delivers insulin through a small tube or patch instead of repeated daily shots. It can offer flexible dosing but requires continuous device wear, site changes, training, and prompt action if delivery stops.
- Automated insulin-delivery system: Links a pump with a continuous glucose monitor and adjusts some insulin automatically. It reduces some daily calculations but does not remove the need for meal information, monitoring, and backup injections.
- Inhaled insulin: Available only for selected older patients in some countries. It does not replace long-acting insulin and requires lung-related safety assessment.

- Non-insulin medicines: May be options for some children with type 2 diabetes. They do not replace insulin for a child with type 1 diabetes and may not control glucose quickly enough in some situations.

When to call your healthcare team

Contact the diabetes team promptly for repeated high or low readings, frequent painful injections, new skin lumps, insulin leaking often, uncertainty about a dose, or difficulty giving injections. These are generally routine or same-day concerns rather than emergencies.

Follow the child's sick-day and ketone plan. Seek urgent advice if your child is vomiting, has moderate or high ketones, cannot keep fluids down, or has glucose that remains high despite the prescribed correction plan.

Use glucagon as trained and call emergency services if your child with suspected low glucose has a seizure, becomes unconscious, cannot safely swallow, or does not recover as expected.

Call emergency services for trouble breathing, swelling of the face or throat, or a widespread allergic reaction. Get urgent help after a major insulin dosing error or suspected overdose, even if your child initially seems well.

Common questions

Will my child be asleep for an insulin shot?

No. Anaesthesia or sedation is not needed. The needle is small, and the injection usually takes less than a minute.

How painful is it?

Most children feel a quick pinch or mild sting. Persistent or severe pain may mean the site, needle, or technique needs review.

Can my child eat right after the shot?

Follow the timing for the prescribed insulin. Some mealtime insulin needs to be coordinated closely with food.

Can we leave home after giving insulin?

Usually, yes. Bring glucose supplies, monitoring equipment, insulin if another dose may be needed, and glucagon when prescribed.

What if some insulin leaks out?

Do not automatically repeat the dose because you cannot know how much entered. Monitor as directed and contact the diabetes team if you are concerned.

When will I know whether it worked?

Glucose readings will change according to the insulin's action time, food, activity, illness, and other active insulin. Follow the monitoring schedule in your child's plan.

Sources

- International Society for Pediatric and Adolescent Diabetes: Clinical Practice Consensus Guidelines 2022-Insulin treatment in children and adolescents with diabetes
- American Diabetes Association: Standards of Care in Diabetes-Children and Adolescents
- Royal Children's Hospital Melbourne: Giving insulin injections
- Centers for Disease Control and Prevention: Treatment of Low Blood Sugar
- NHS: How and when to take long-acting insulin