

# Insulin

In type 1 diabetes, **insulin** needs to be administered via injections or insulin pump therapy to replace the insulin that is not being produced by the pancreas. Insulin acts to reduce the level of glucose in the blood.

## Types of Insulin

There are various brands and types of insulin available. Below is a table of insulin commonly used at Monash Children's Hospital.

Insulin Type	Name	Onset of Action	Peak of Action	Duration of Action
Fast Acting	Humalog Novorapid	15 mins	1-2 hours	4-4.5 hours
Ultra-Fast Acting	Fiasp	0-5 mins	1 hour	4 hours
Long Acting	Optisulin	2-4 hours	No peak	24 hours
	Levemir	1 hour	3-14 hours	Up to 24 hours

## Injection Sites and Rotation

Insulin is injected through the skin into the fatty tissue known as the subcutaneous layer where it is absorbed into the blood stream.

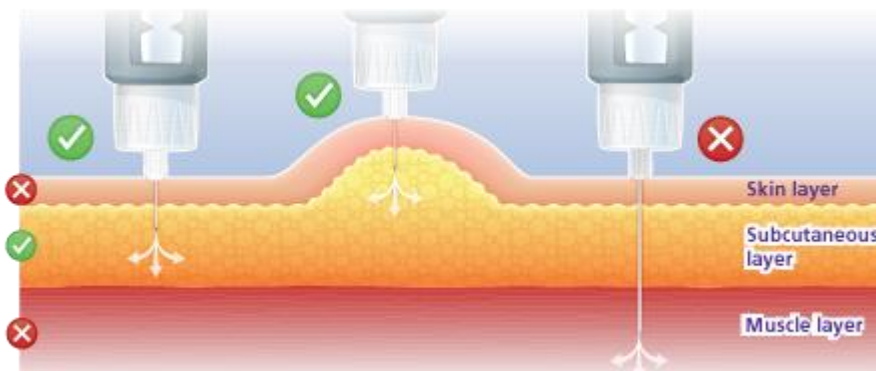


Figure 1

## Information for patients, families and carers

We recommend that your child/adolescent rotate their injection sites daily as advised by their Doctor or Diabetes Educator. The 4 main injection sites used in children are abdomen, arms, thighs, and buttocks. See diagram below.

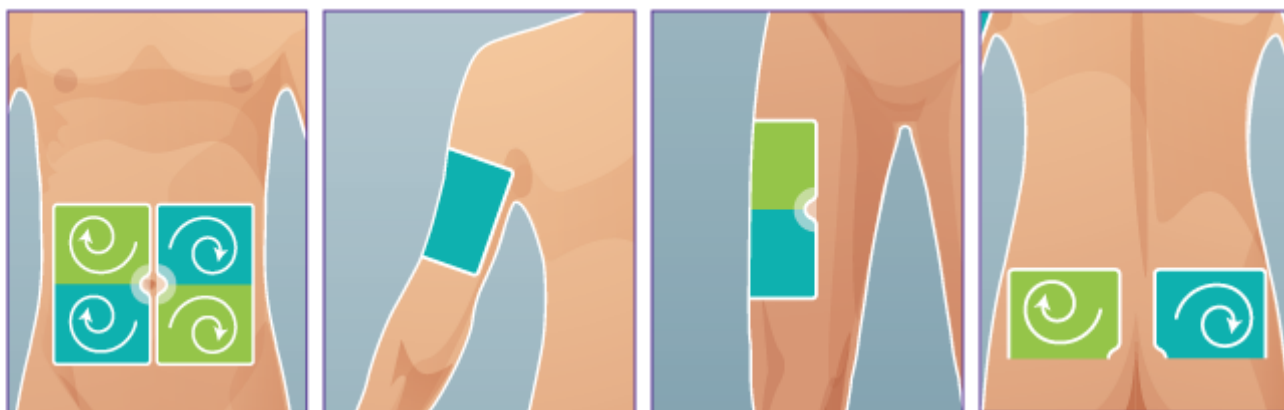


Figure 2

### Abdomen

### Arms

### Thighs

### Buttocks

If you notice any lumps (lipohypertrophy), hardness, depression (lipoatrophy), redness, skin irritation, bruising or any other changes at your injection sites, please stop using that site and discuss with your Doctor or Diabetes Educator.

## Insulin Pens

### Disposable

- Disposable pens are pre-filled with insulin and the whole pen can be disposed of when the insulin is completed or after 1 month.



### Non-disposable

- A non-disposable pen requires you to **insert the insulin** penfill cartridge into the pen. The penfill cartridge is removed and disposed of once empty.
- Non disposable pens are used more commonly at diagnosis or in younger children. They are suitable for children in the honeymoon phase or those requiring 0.5u per dose



## Information for patients, families and carers

### Insulin Pen Instructions

1. Check BGL.
2. Check insulin pen expiry date and make sure there is enough insulin in the pen.
3. **Reusable pen only** - load insulin cartridge into pen (this is only done once per month or when your insulin is finished).
4. If using a cloudy **insulin**, mix insulin by rolling and tipping the pen up and down gently 10 times
5. Attach needle. Make sure a new needle is used with **each injection**.
6. Dial up 2 units (prime dose).
7. Expel insulin into the air holding pen upright. (If insulin comes out go to the next step. If not, repeat this procedure until you see drops of insulin.
8. Dial up actual dose.
9. Pinch up skin and inject at a 90 degree angle.



Figure 3

10. Wait 10 seconds.
11. Release the skin and remove needle and dispose into sharps container.

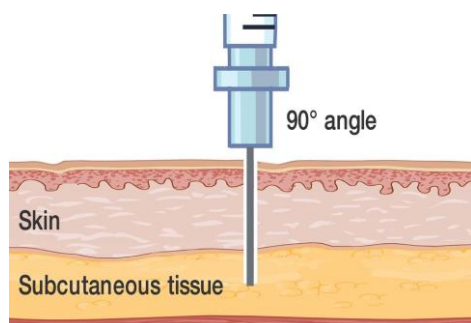


Figure 4

## Information for patients, families and carers

### Insulin Storage

Insulin that is **in use** should be stored in a cool, dark cupboard out of reach of small children. Please date each insulin vial/cartridge when you open it as it is valid for 1 month once opened. If your child is on larger doses you may need to change pens more frequently.

Insulin that is **not in use or spare** should be kept refrigerator and stored between 2°C and 8°C.

### Insulin should never be;

- Frozen
- Shaken vigorously
- Exposed to direct heat
- Exposed to direct sunlight
- Clear insulin should never appear cloudy

### Local Council Contact Details for Sharps Disposal

All sharps, including pen needles, syringes and lancets should be disposed of in an Australian Safety Standards-approved sharps container. These are yellow in colour and are available through your local council/pharmacy. We encourage you to obtain a sharps container prior to discharge from hospital.



### For information



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