

Frequently asked question by patients who are prescribed Insulin:

1. Why do I need Insulin? I was able to manage my diabetes well with tablets so far, will they not suffice?

Diabetes is manifested when someone's body does not make enough insulin or whatever insulin that is produced is not able to perform its action (Insulin resistance). Type 2 diabetes is a progressive disease and over time the capacity of pancreas to make insulin deteriorates¹ due to beta cell depletion. Hence most individuals with diabetes need insulin added to their treatment to keep their sugars under control and therefore to prevent or delay vascular complications in the long term².



2. I am afraid of taking Insulin injection. It would be difficult to carry vial and syringe everywhere I go. Is there any way I can avoid this situation?

Yes, Insulin pens with thin needles not only offer comfort and accuracy but also convenience since they combine the insulin container and the syringe into a single unit. You just need to dial the dose, insert the needle and push the button. You can easily carry it in your pocket or purse. Needles used in some of the Insulin devices these days tend to be painless as they quite short and thin. Also, the needle does not have to go through a rubber stopper, as in an insulin vial, before injection, so it remains sharp.



3. Is any age specified beyond which a person with diabetes requires insulin?

Insulin requirement of a person with diabetes is not dependent upon age, but on the blood glucose control and quantity of insulin secreted by the beta cells of pancreas. People with type 1 diabetes require insulin from the beginning³ but people with type 2 diabetes also eventually require insulin at some stage of life. External insulin replaces what body is not making naturally to help manage blood sugar levels.

4. Is insulin prescribed by doctor same as that produced naturally in human body?

People with diabetes use bio engineered insulin to replace what their bodies used to make naturally. Human insulin is produced by recombinant DNA technology⁴. Thanks to biotechnology, scientists can mass produce human insulin.



Currently we have various insulin analogues which are superior to human insulin in for the management of diabetes. Insulin analogues are more physiological in their action, have a more flexible dosing regimen and cause lesser hypoglycaemia compared to human insulins⁵.

5. What is the difference in insulin present in a pen or a vial?

If the brand name and strength of insulin is same, there is no difference in the insulin component in both pens and vials. But pens offer better comfort, accuracy and convenience than a vial & syringe, since they combine the insulin container and the syringe into a single unit.



There are basically two types of pens:

- Penfill (durable pen): It is a reusable insulin pen with an insulin cartridge. When the cartridge is empty, it can be disposed off and a new one inserted in the pen. For patients, reusable pen allows greater flexibility in terms of being able to use the same device for different insulins. It may be more economical than prefilled pens. With good care, a pen-fill can be used for several years.
- Prefilled pen (disposable pen): The pen comes pre-filled with insulin, and when the insulin cartridge or reservoir is empty, the entire unit is to be discarded. Disposable pens are generally more convenient than reusable pens because one does not need to load any cartridges.

6. Doesn't insulin causes weight gain?

Some people find that they do put on a 1-2 kg when they begin taking insulin. But following a meal plan and exercise program usually helps. Also, the benefit of optimizing blood glucose levels with insulin usually outweighs the risk of some weight gain.

Both the UKPDS (United Kingdom Prospective Diabetes Study) and the DCCT (Diabetes Control & Complications Trial) have shown that the benefit of glucose management with insulin far outweighs the risk of weight gain.

7. Doesn't insulin increase the risk of hypoglycaemia?

In people with diabetes who are taking Insulin, hypoglycaemia mostly happens if they: In people with diabetes who are taking Insulin, hypoglycaemia mostly happens if they:

- take too much insulin or wrong insulin
- eat less
- exercise too much after taking insulin

If a person takes necessary precautions like regular monitoring of blood glucose levels and Insulin dose adjustments most of the hypoglycaemias can be avoided. Also, good news is that most of the newer insulin analogues reduce the risk of hypoglycaemia to a great extent.

8. What is the ideal time to take insulin?

Various insulin regimens need to be taken at different times as per their profiles (short /intermediate/long acting). Your doctor or diabetes educator will let you know when you need to take insulin.

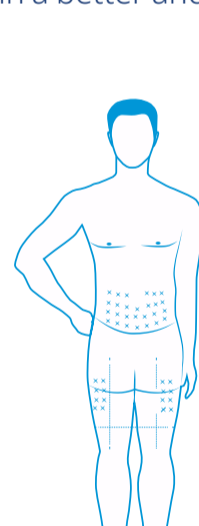


For example: If you are prescribed regular human insulin, it typically needs to be taken 30 minutes before a meal. Rapid-acting insulin analogues containing modern insulin can be taken 5 to 10 minutes before a meal, so it is very important not to delay the meal after you've given yourself an injection. Ultra-fast acting insulin are also available now which can be taken immediately before or even after taking food.

Paying attention to timing of insulin administration can help you manage your diabetes in a better and easier fashion.

9. How and where to take insulin?

The traditional and most predictable method for taking insulin is by subcutaneous injections, in the layer of fat between the skin and the muscle. Most of the people with diabetes self-administer insulin. You should pinch up a fold of skin and insert the needle at an angle between 45° and 90°. If you use a 4 to 6-millimetre pen needle to inject, you do not have to pinch up the skin when injecting at a 90° angle. One can take insulin in the abdomen, thighs or back of the upper arm. For taking injection in upper arm you may require assistance. Few points to note are



- Insulin is absorbed most rapidly from the abdomen, secondly from arm. It is absorbed most slowly from the thighs
- It is best to use the same part of the body for each of your daily injections as insulin is absorbed at different speeds from different parts of the body. For example you can inject the abdomen for morning dose, arm for afternoon and thigh for your evening injections. Do not inject your morning dose in the abdomen on Sunday and in the thigh on Monday
- While injecting in abdomen area, stay at least 2 inches away from navel area
- To prevent formation of hard lumps it is good to rotate within each injection site. Keep each of your injections at least two finger's width from the last injection

10. How to keep insulin safe while traveling?

Many people travel with insulin and you can also do it with some of the following precautions:

- Always carry your diabetes supplies with you, in your handbag or in a place easily accessible whether you're traveling by plane, train or automobile. It is always good to carry a prescription letter from your doctor, listing name of the medication you use. This would help you through security checkpoints at airports and also in case your insulin is lost or stolen. Do not think you can go without medicines for even a single day. High blood sugar levels even for short duration can make you tired, exhausted and more prone to any acute sickness along with being a reason for long term complications
- In general, you should stick with the exact brand and formulation of insulin that you have been prescribed by your doctor. If you are traveling abroad, carry enough insulin with you. In different countries insulin of different strengths is available like U-100, U-80 or U-40. If you need to use these insulin's, you must buy new syringes to match the new insulin to avoid a mistake in your insulin dose. U-100 insulin should be taken with U-100 syringe. It is always advisable to carry around double the insulin you require while travelling.
- You can keep insulin in use at room temperature (below 30 degrees) for around a month, but do not keep insulin in direct sun, glove compartment of car or any hot place. Extreme temperatures can denature your medications and test supplies and reduce potency of your insulin
- You can always use cool pouch- you will get from your regular chemist. Cool pouch needs to be frozen in freezer for 24 hours before traveling. Before beginning to travel, you can take it out and keep it along with your insulin pen in a small bag while traveling

11. Can a person with diabetes reuse needle and syringes?

Mostly all needles and syringes are recommended for single use. However many people reuse syringes and needles to help cut costs.

Do not reuse if⁶ -

- You are ill,
- You have open wounds on your hands, or
- You have poor resistance to infection



12. If one's insulin dose is increased, is diabetes getting worse?

The most important goal for people with diabetes is keeping near-normal blood sugar levels in order to feel well and avoid long-term diabetes complications. To do this, each person needs different doses and regimens of insulin at the different stages of the disease.

*The Content is not intended to be a substitute for professional medical advice. Always seek the advice of your doctor or other qualified healthcare provider with any questions you may have regarding a medical condition or medical treatment. Never disregard professional medical advice or delay in seeking it because of something you have read on website/mail.

Changing Diabetes® and the Apis bull logo are registered trademarks of Novo Nordisk A/S.

Reference: 1. Bagust, A. and Beale, S. (2003) Deteriorating Beta-Cell Function in Type 2 Diabetes: A Long-Term Model. *QJM: An International Journal of Medicine*, 96, 281-288. <https://doi.org/10.1093/qjmed/hcg040>. 2. Turner, R.C., Cull, C.A., Frighi, V. and Holman, R.R. (1999) Glycemic Control with Diet, Sulfonylurea, Metformin, or Insulin in Patients with Type 2 Diabetes Mellitus: Progressive Requirement for Multiple Therapies (UKPDS 49). *The Journal of the American Medical Association*, 281, 2005-2012. 3. American Diabetes Association. Standards of medical care in diabetes—2019. *Diabetes Care*. 2019;42:S1-193. 4. Beals J.M., DeFelippis M.R., Paavola C.D., Allen D.P., Garg A., Bruce Baldwin D. (2019) Insulin. In: Crommelin D., Sindelar R., Meibohm B. (eds) *Pharmaceutical Biotechnology*. Springer, Cham. 5. Perriello et al. *Diabet Med* 2005;22:606-11; Olkinne. *Drugs*2005;65:325-40;Becker. *Exp Clin Endocrinol Diabetes* 2005;113:292- ;Heller et al. *Diabet Med* 2004;21(7):769-775. 6. <https://www.diabetes.org/diabetes/medication-management/insulin-other-injectables/insulin-storage-and-syringe-safety> accessed on 16th April 2020