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PATIENT INFORMATION ON

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*Medicine To Treat:
Diabetes*

What You Need to Know About Insulin

Introduction

The insulin preparations currently available in Singapore are mostly from human origin; pork or bovine insulin preparations are hardly used nowadays.

Because insulin is digested and destroyed by the stomach, it cannot be taken orally. Currently, the only way to receive insulin is by injection.

Insulin should only be used when prescribed by a doctor and titration in dosing should be supervised.

There are several types of insulin preparations available: they differ mainly in their onset and duration of action. The rapid and short-acting ones are used mainly to control high blood sugar levels after each meal whilst the intermediate and long-acting ones provide the patients with a smoother daylong glucose control.

| Types of Insulin | Onset of Action | Duration of Action |
|-------------------------|------------------------|---------------------------|
| Rapid-acting | 15 min | 4 hours |
| Short-acting | ½ – 1 hour | 6 – 8 hours |
| Intermediate-acting | 2 – 4 hours | 16 – 18 hours |
| Long-acting | 4 – 8 hours | 24 hours |
| Premixed insulin | ½ – 1 hour | 16 – 18 hours |

Insulin should be given as instructed by the nurse or the pharmacist. The insulin preparations are available in vials, cartridges or penfills and disposable pens.

The main precaution the patient needs to be aware of is the risk of developing low blood sugar levels. Low blood sugar levels may happen when the patient is not eating well, taking alcohol on an empty stomach or due to some drug interactions.

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How Should I Draw a *Single* Type of Insulin?

1. Wash and dry your hands.
2. Roll the insulin vial gently between the palms of your hand. This provides the dual benefit of mixing the insulin and warming it to body temperature to reduce pain when injecting.
3. Remove the coloured cap of a new vial.
4. Clean the rubber stopper on the insulin vial with an alcohol swab.
5. Take the syringe from the packet and remove the cap.
6. Draw in air equal to dose of insulin by pulling the plunger down.
7. With the vial standing upright, insert the needle into the rubber stopper on the vial and push the plunger down. This pushes air into the vial, which makes it easier when withdrawing the insulin out of the vial.
8. Turn the vial and syringe upside down. Slowly pull the plunger down about 5 units past the required dose. If there are no bubbles, push the top of the plunger tip up to the line, which marks the exact dose.
9. If air bubbles are in the syringe, remove them by flicking or tapping the syringe at the bubble with your finger. When the air bubbles rise to the top of the syringe, push the plunger tip up to the exact dose. It is important to get the air bubbles out of the syringe so that you have an accurate dose of insulin.
10. Remove the syringe from the vial.
11. You are now ready to give the injection.

How Should I Draw *Two* Types of Insulin?

1. Wash and dry your hands.
2. Roll the insulin vial gently between the palms of your hand. This provides the dual benefit of mixing the insulin and warming it to body temperature to reduce pain when injecting.
3. Remove the coloured cap of a new vial.
4. Clean the rubber stopper on the insulin vial with an alcohol swab.
5. Take the syringe from the packet and remove the cap.
6. Draw in air equal to dose of cloudy insulin.
7. Insert the needle in cloudy insulin and inject air into the vial.
8. Do not draw out cloudy insulin yet. Take empty syringe out of cloudy insulin vial.
9. Draw in air equal to dose of clear insulin
10. Insert needle into clear insulin and inject air.

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11. Insert vial of clear insulin and draw out exact dose.
12. Insert needle into vial of cloudy insulin. (Do not push in plunger as this would inject clear insulin into cloudy insulin vial.)
13. To avoid air bubbles, slowly pull back plunger to exact unit marker for total dose of clear and cloudy insulin units prescribed.
14. Remove the syringe from the vial.
15. You are now ready to give the injection

How Should I Select a Site for Injection?

1. Insulin is injected into the subcutaneous tissue (between the skin and the muscle layer).
2. The site for injection is important as insulin absorption rate varies from site to site.
Eg. Abdomen – the fastest
 - a. Arm – intermediate
 - b. Thigh and buttock – the slowest
3. Rotate the injection site within one area to avoid development of “fatty lumps” or “hollow”.
4. Avoid injections into areas that will be exercised, e.g. arm or thigh when playing tennis.
5. Clean the injection site with soap and water. It is not necessary to swab the skin area with methylated spirit 70% at home as this can lead to thickening of the skin.

How Should I Give Injection With Syringe?

1. Select a clean injection site.
2. Firmly pinch up a large area of skin in the abdomen with thumb and forefinger.
3. Hold the syringe with the other hand.
4. Push the needle at an angle of 90 degrees to the skin, all the way in.
5. Inject insulin by pushing the plunger all the way down with index finger and release the pinched skin.
6. Place the swab over the injection site and press down on it lightly as the needle is removed.
7. If slight bleeding occurs, gently press over the injection site for a few seconds.
8. Do not rub the injection areas as this may cause insulin to be absorbed too quickly.
9. Dispose of syringe safely.

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How Should I Store Insulin Vials?

1. Unopened insulin vials should be stored in the lower compartment of the refrigerator away from the freezer. Frozen insulin should never be used.
2. The current vial in use can be kept at room temperature or the coolest possible place for up to 4 weeks.
3. Do not keep insulin in a hot place (eg. In a hot, closed vehicle, on top of a television set) or expose it to heat or sunlight. Long exposure to direct sunlight will gradually degrade insulin and give it a yellow-brown colour. Do not use the insulin if this happens.

We are located in these polyclinics :

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|---------------|-----------------|----------|-----------------|-----------|----------------|
| Ang Mo Kio | Tel : 6554 7462 | Clementi | Tel: 6872 7137 | Toa Payoh | Tel: 6354 7330 |
| Bukit Batok | Tel : 6896 2271 | Hougang | Tel : 6489 8078 | Woodlands | Tel: 6369 7024 |
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