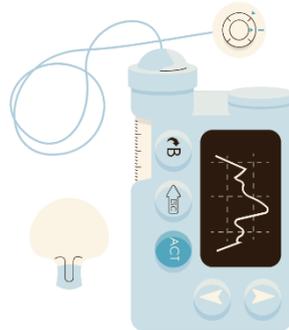




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# Insulin Pump Therapy

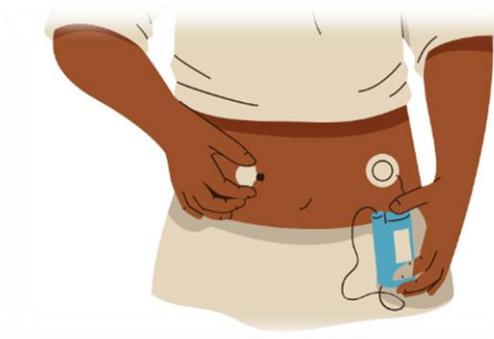


## What is insulin pump?

An insulin pump is a small device that is worn externally.

It delivers precise doses of rapid-acting insulin into subcutaneous tissue to closely match your body's needs.

Doses are delivered through a flexible plastic tube ending with a Cannula that it is inserted into the subcutaneous tissue.



# How does the insulin pump work?

Insulin pump therapy uses rapid-acting insulin for both basal and bolus insulin requirements.

Pumps deliver insulin in two ways, basal and bolus

## 1- Basal delivery

Is a continuous infusion of insulin that is delivered automatically 24 hours a day. The

purpose of basal insulin is to cover hepatic glucose production and to maintain

glucose stability during fasting states

(between meals and during sleep)

This type of pumping is programmed in the clinic.



# How does the insulin pump work?

## 2- Bolus

### a- Meal Bolus

You need an insulin dose when you eat carbohydrates, whether it is in a main meal or a snack. You must enter the amount of carbohydrates and the level of blood glucose



before the meal. You will be taught how to do that in the clinic.

# How does the insulin pump work?

## b- Correction Bolus

You need corrective insulin dosage when the blood glucose level rises above the normal range outside mealtimes, After entering the result of blood glucose level, an amount of insulin is pumped. You should not count any amount of carbohydrates, meaning it is advised not to eat any food during correction time.



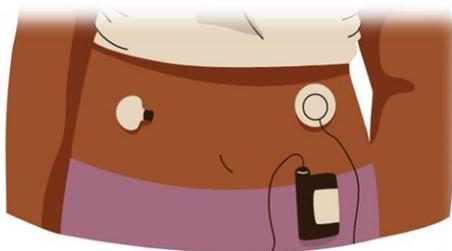
## You can use the pump if you are:

- Responsible and psychologically stable.
- Willingness to monitor blood glucose (BG) a minimum of four times a day.
- Educated and willing to learn how to use the pump.
- Willingness to quantify food intake.
- Willingness to comply with medical follow-up.



## What are the advantages of Insulin Pump?

1. Improved glycemic control and decreased glycemic variability.
2. normalization of lifestyle and sense of well-being.
3. One insertion every 3 days.
4. Pump can be programmed to adapt to daily activities (Exercise, Travel).
5. Meal-time flexibility.



## What are the advantages of Insulin Pump?

6. Reduced severity and frequency of hypoglycemia & long-term complications.
7. Greater precision in dosing (e.g. for pediatrics).
8. Dual/Square Wave bolus features for different food/meal types.
9. Help with dawn phenomenon (high blood sugars in the early morning).
10. Help with delayed digestion (gastroparesis).



## What are the risks of Insulin Pump?

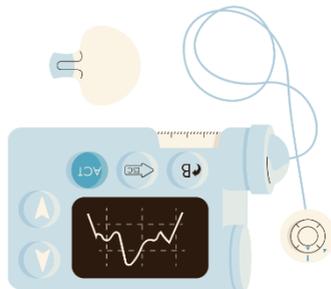
- **Ketoacidosis** may happen within hours due to a malfunction in the pump, lack of insulin or low amount of insulin in the pump.
- **Infection**, it may occur at the site of the catheter (needle), so you must change the injection site and keep the catheter clean to reduce the risk of infection.
- **Skin sensitivity**, it can be eliminated by changing the site of the catheter.
- **Weight gain**, which can be avoided by exercising and following a healthy diet.





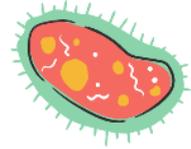
## You must know the following points:

- How to monitor blood glucose and when to measure it.
- The symptoms of hypoglycemia and hyperglycemia.
- How to Control the level of glucose and how to limit hypoglycemia and hyperglycemia.
- How to choose a suitable site for the catheter (needle) under the skin.



## Pay attention the following points:

- Avoid infection by changing the site of the catheter every 2-3 days. If the injection site (catheter) is infected, the catheter must be removed immediately and inserted in another site.



## Pay attention the following points:

- Some pump cannula sites absorb insulin differently compared to other sites.



For example: when the pump is inserted in the thigh and you are exercising for example: jumping, running or any other sport that involves thigh area, this is will increase the speed of insulin absorption.

- You need to know how to use the pump and deal with the warning signs of low battery or lack of insulin.



## You must consider the following points:

- At night, put the pump next to you on the bed or on the bedside table, or in the pocket of your pajamas.



- While showering, remove the pump.



- When you are exposed to radiation, remove the pump, such as medical radiology equipment.



- Ask for advice whenever necessary.



## Nutritional advices for Bolus Pumping:

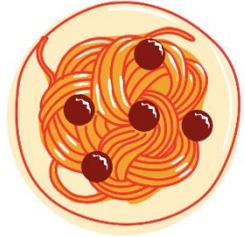
When a person eats a fatty meal or a meal that contains a percentage of fat, this slows down the digestion and absorption of sugars, and thus the blood sugar keep rising for few hours post meal.

- When you drink juice or eat fruits at the beginning of the meal, you need to increase the percentage of Normal Bolus (Bolus that deliver within minutes).



## Nutritional advices for Bolus Pumping:

- If the food contains a small amount of protein, for example: (spaghetti with simple minced meat), You can use Dual Wave Bolus( Normal +



Square ) the Normal Bolus amount will be: 70%, and the Square wave (Bolus that take hours to deliver) amount will be: 30%

- If you start your food with a big salad and then eat some kind of sweets, the normal Bolus amount will be: 20%, and the and the Square Bolus amount will be: 80%



### Sources and References:

American Diabetes Association, ADA

Canva

### Review and Audit:

The content of this booklet is reviewed by diabetes Unit  
Consultants at King Fahad University Hospital.

## Health Awareness Unit

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