



# Diabetes Education Teaching Guide

## *Insulin Pumping*



## *Question #1*

True or False? An insulin pump is only to be used by people with type 1 diabetes.

## *Answer #1*

True or False? An insulin pump is only to be used by people with type 1 diabetes.

False

## *Question #2*

Insulin pumps are used to:

- A. Replace insulin injection therapy
- B. Automatically test your blood sugar level
- C. Replace the need for daily exercise

*Answer #2*

Insulin pumps are used to:

- A. Replace insulin injection therapy**
- B. Automatically test your blood sugar level
- C. Replace the need for daily exercise

*Question #3*

True or False? Once I go on an insulin pump I can never go off.

*Answer #3*

True or False? Once I go on an insulin pump I can never go off.

False

## Question #4

The “basal rate” refers to:

- A. The dose of insulin given to correct a high blood sugar
- B. A small, steady flow of insulin delivered by the pump throughout the day
- C. Your blood sugar first thing in the morning

## *Answer #4*

The “basal rate” refers to:

- A. The dose of insulin given to correct a high blood sugar
- B. A small, stead flow of insulin delivered by the pump throughout the day**
- C. Your blood sugar first thing in the morning

*Question #5*

True or False? The insulin pump is a “closed loop system.”

*Answer #5*

True or False? The insulin pump is a “closed loop system.”

False

Insulin pumps are being used as alternate insulin delivery systems for people using insulin to manage their diabetes. They are small, sleek, and safe machines, about the size of a beeper.

Just like a pancreas, an insulin pump releases a small, continuous amount of insulin into the bloodstream. In pump technology, this is known as “basal” insulin. And, just as a pancreas produces insulin quickly to counteract carbohydrate intake, an insulin pump allows its wearer to dial in additional insulin to cover the amount of carbohydrates ingested. This insulin is known as a ‘bolus of insulin.

However, an insulin pump does not automatically adjust insulin levels in accordance with blood sugars. It is not a “closed loop” system — the pump user must program the pump to deliver insulin to their preference and needs.

In an insulin pump, most often the insulin is delivered through a thin tube that is easily connected both to the pump and to the person wearing the pump, through a needle or catheter, placed under the skin. The tubing needs to be changed every 2-3 days, meaning the user only needs to feel a needle that often. Most pump users connect to the abdomen, although others use thighs, hips, upper buttocks, or even arms. The tube can be easily detached for some activities, such as showering, that are easier to do without the pump on. However, some pumps have no tubing and use a wireless PDA to program the desired function. Many pumps are water resistant, allowing the pump user to stay attached while swimming, if desired.

There are many different reasons to choose pump therapy over multiple injection therapy and following are some of the most important reasons to consider this choice. Talk with your endocrinologist or certified diabetes educator if you think the pump might be right for you.

- **Poor glucose control (high A1C values).** At the June 2002 meeting of the American Diabetes Association, three studies demonstrated that pump therapy is the most effective way to maintain tight blood sugar control. If you are struggling to keep your sugars within a healthy range, the continuous flow of insulin that a pump offers may help you regulate your blood sugar control.
- **Frequent and/or nightly hypoglycemia.** One of the biggest advantage of insulin pump therapy is that you can adjust your basal rates for different times of the day. You may need more insulin during the evenings, and less while you sleep, or the reverse. By working with your doctor to establish your basal rates, you can avoid taking too much insulin and will never have to worry about insulin “peaks.” These factors help many people avoid frequent lows.

- **Desire for a flexible lifestyle (sleeping late, skipping meals, etc.)** Once basal rates are set correctly, you never have to eat to match your insulin again. If you want to skip a meal, you can. If you need to eat dinner at different times because of your work schedule, you can. If you need to postpone a meal, you need not rush to eat a snack. Pump therapy allows people with diabetes to make the same lifestyle choices as people without diabetes.
- **Planned or existing pregnancy.** Pump therapy is the preferred insulin therapy for women with type 1 who want to get pregnant. A pump allows the wearer to easily make the necessary insulin adjustments that the different stages of pregnancy require. If a woman is experiencing morning sickness, a pump allows her to give boluses based on the amount of food she is able to keep down. The ability to give precise dosing, down to fractions of a unit of insulin, also allows her to keep her blood sugars in the very tight range that pregnancy demands.
- **Better weight management and control with exercise.** Again, pump therapy means never having to eat to feed your insulin or having to take a snack so you don't get low while working out. Rather, the fine tuning that a pump can allow means that you can adjust your basal rates as you take in fewer calories and lose weight, all while maintaining tight blood sugar control.

However, pumping is not for everyone. Using an insulin pump requires close monitoring of blood glucose, good diabetes record-keeping skills, and comfort with wearing an external device 24/7. Insulin pumping may also be a more expensive alternative to injection therapy, depending upon insurance coverage and other variables. If you think insulin pumping may be right for you, talk to your doctor to see how you can get started.

### *Question #1*

Name three reasons that a person with diabetes may choose to use an insulin pump.

## *Answer #1*

Name three reasons that a person with diabetes may choose to use an insulin pump.

1. Poor glucose control
2. Frequent hypoglycemia
3. Desire flexible lifestyle
4. Pregnancy
5. Better weight management and exercise control

## Question #2

An insulin pump infusion set should be changed every:

- A. 24 hours
- B. Two weeks
- C. 2-3 days

*Answer #2*

An insulin pump infusion set should be changed every:

- A. 24 hours
- B. Two weeks
- C. 2-3 days**

*Question #3*

True or False? Insulin pumps are only worn on the abdomen.

*Answer #3*

True or False? Insulin pumps are only worn on the abdomen.

False

*Question #4*

The amount of insulin given to cover the amount of carbohydrates eaten is called a:

- A. Bandeau
- B. Basal
- C. Bolus

## *Answer #4*

The amount of insulin given to cover the amount of carbohydrates eaten is called a:

- A. Bandeau
- B. Basal
- C. Bolus**

## *Question #5*

True or False? Once you are using an insulin pump, you no longer need to test your blood sugar.

*Answer #5*

True or False? Once you are using an insulin pump, you no longer need to test your blood sugar.

False

1. Sometimes the biggest hurdle in deciding to use an insulin pump is adjusting to the idea of using a machine to manage insulin. Invite representatives from different pump companies or pumping patients from your practice to visit your group and show the ins and outs of insulin pumping. Have your group discuss what they view the pros and cons of pumping to be, and how they can manage these feelings if they decide to pursue pumping.
2. Preparing to start on an insulin pump means getting familiar with carbohydrate counting and keeping good diabetes management records. Have your group develop logbooks that work for their management goals and discuss the importance of noting glucose trends and how they affect medication doses.
3. Visit a local diabetes expo to see insulin pumps in action! Visit insulin pump booths to have a chance to see an insulin pump — and speak with a representative from pump companies to set up a pump trial for yourself.

*If you have other activities you'd like to share, email us at [ercc@dlife.com](mailto:ercc@dlife.com).*

- *Start Pumping: A Practice Approach to the Insulin Pump.* Howard Wolpert. (Copyright 2005, American Diabetes Association)
- *Insulin Pump Therapy Demystified: An Essential Guide for Everyone Pumping Insulin.* Gabrielle Kaplan-Mayer. (Copyright 2002, Marlowe & Company)
- *Think Like a Pancreas: A Practical Guide to Managing Diabetes with Insulin.* Gary Scheiner MS, CDE. (Copyright 2004, Marlowe & Company)