

## DIABETES MANAGEMENT: BASAL AND BOLUS INSULIN DOSES AND ADVANCED CARBOHYDRATE COUNTING

### TRANSCRIPT (page 1 of 2)

When beginning to advanced carbohydrate count, understanding your insulin routine, including basal and bolus doses, is an important tool to keep your blood glucose in control. To better understand how insulin works, let's take a look at what happens in your body when you eat.

When you eat, your body turns what you eat into nutrients to keep your body healthy and working. These nutrients come from protein, fat and carbohydrates.

Carbohydrates are turned into glucose. To properly use this glucose, your body needs insulin. With insulin, your body can use glucose for energy now, or store it in your cells for later use.

In someone without diabetes, the body is constantly releasing a small amount of insulin into the bloodstream so you have energy all the time, even while you sleep. This constant insulin is called basal insulin.

And when a person without diabetes eats carbohydrates and the carbohydrates change to glucose, enough insulin is released into the bloodstream to keep the blood glucose in a healthy range. This is called bolus insulin.

But when you have diabetes, you need to take insulin – both basal and bolus – to match your body's actions to that of someone without diabetes. You can take insulin with a pump, insulin pen or syringe.

If you inject to get your basal insulin, you may inject an intermediate, or long-acting, insulin once or twice a day. The only intermediate-acting insulin is NPH. Its onset, or how quickly it begins to work to lower your blood glucose, is in about 2 to 4 hours. Its peak, the time it is working hardest to lower your blood glucose, is at 4 to 10 hours; and its duration, or how long it works to lower your blood glucose, is 10 to 18 hours.

There are two long-acting insulins. Detemir and glargine have onsets in a little more than an hour, and work at the same level for up to 24 hours.

*"I take one insulin shot and that lasts for 24 hours a day."*

In addition to the basal insulin dose, your body needs a bolus dose of insulin when you eat a meal or snack containing carbohydrates.

*"And then I take a shot every time I eat. And that's based off of how many carbs I eat."*

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Some people may take the short-acting insulin, regular, for their bolus dose at breakfast. Its onset is in about 30 minutes to an hour after injection. Its peak is at 2 to 3 hours and its duration is 3 to 6 hours, so it can work long enough to cover the rise of blood glucose when food is eaten at lunch.

Others may take a rapid-acting insulin like lispro, aspart or glulisine before meals and snacks. Rapid-acting insulin begins very quickly, usually within 15 minutes. It peaks at 30 minutes to 1½ hours and its duration is a total of 3 to 4 hours.

Because rapid-acting insulin begin to lower your blood glucose almost immediately, you must be ready to begin eating your meal before you take it. Otherwise, your blood glucose could drop too low.

Some people prefer to manage their diabetes using an insulin pump. The pump follows this basal/bolus routine, but uses only rapid-acting insulin delivered through a small plastic catheter under the skin.

When programmed, the pump will deliver a continuous amount of insulin every hour and bursts of bolus insulin, based on your blood glucose and the number of carbohydrates you eat, to keep your diabetes in control.

*"During the week when I travel, I want to have a pump on me. It makes, you know, breakfast here, dinner somewhere else, you know, lunch in another city ... having that pump along is just a great convenience."*

However you choose to take your insulin, your insulin routine is created for you and is based on your lifestyle, eating habits, activity and other personal factors. Understanding your insulin routine together with carbohydrate counting can help you maintain a healthy glucose level, no matter what you eat or do.