# **Optimizing Bolus Insulin**



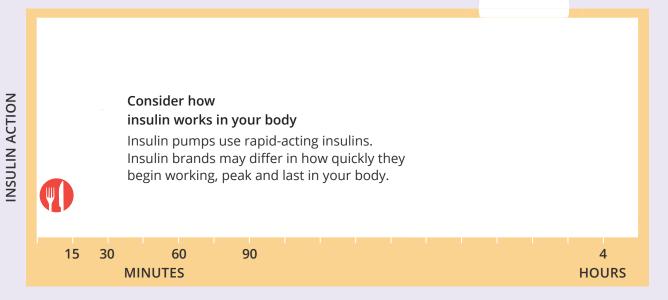
## **Understanding Bolus Delivery**

### Why are boluses so important?

The pancreas releases a burst of insulin at mealtimes in response to the amount of carbohydrate you eat. With diabetes, your pancreas can no longer produce the insulin you need. So, you must take mealtime insulin to match the amount of carbohydrate you eat. With insulin pump therapy, this burst of insulin is known as a bolus.<sup>1</sup>

Bolus calculators on insulin pumps suggest a bolus amount based on your blood glucose (BG) level and carbohydrate intake. The pump also takes into consideration previous boluses to ensure you do not take too much insulin.<sup>2</sup>

### When Should You Bolus?3



### When should you take your bolus before meals?

When possible, take your bolus 15–20 minutes before a meal for improved BG after meals. Consult your healthcare provider about your insulin and best timing for meals.

### Should I worry about previous boluses?

The bolus calculator is equipped to subtract for insulin on board (IOB) from your previous bolus. This can limit the risk of "stacking" or overlapping your boluses.

### Consider the type of food you are eating

Accurate carb counting and eating balanced meals at home can be easy, but what about eating out? Dining out at a restaurant or

gathering can be challenging.
You may find yourself eating
different foods under very
different situations.

After eating out, it is not uncommon to see variable trends in BGs, especially if the meal is higher in fat, protein and carbs. Meals like this could cause BGs to be below or at target initially, then rise above target hours later. You can accommodate for different types of food by using the advanced bolus feature on your pump.

# **Optimizing Bolus Insulin**

### What types of boluses are available?

Insulin pumps have the ability to provide different bolus delivery options, such as immediate, extended or a combination of the two.

### **Immediate Bolus**

## Bolus delivered entirely before eating

#### Immediate + Extended Bolus

## Some given now, some given later over a set amount of time

#### **Extended Bolus**

Bolus spread out entirely over a set amount of time

### TIME

**Example:** Balanced meals, such as chicken, broccoli and rice

**Example:** High fat/protein meals, such as pizza

**Example:** Cocktail hour, grazing at a party or eating popcorn at a movie

### How do you decide which type of bolus to use?

Start by looking for patterns. How are your BGs reacting to what you have eaten? If out of target BGs are not related to miscounting carbs, then consider the types of foods you are eating. High fat/protein meals could elevate BG several hours after eating. Refined and processed foods, like white bread and corn flakes, can cause an early, quick rise in BG.

### Bolus suggestions for different meals:3,4

#### **High Fat Protein** High Glycemic Index (GI) • For meals ≥ 40 g of fat, consider • High GI foods may need more For protein-only meals with ≤ 75 g increasing your total bolus dose of protein, insulin may not need to insulin immediately and less later. 30-35%. Try setting an extended be adjusted. • Consider dosing 15-20 minutes or bolus 50% now, 50% over 2-2.5 • For meals with at least 30 g more before eating. hours as a starting point. carbohydrate and 40 g protein, consider increasing your total bolus by 15-20%.

After trying these bolus suggestions monitor BGs and make adjustments for next time. Discuss the type of insulin you are using and alternate bolus options with your healthcare provider.

#### REFERENCES

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- 4. Bell KJ, Smart CE, Steil GM, Brand-Miller JC, King B, et al. Impact of fat, protein, and glycemic index on postprandial glucose control in type 1 diabetes: implications for intensive diabetes management in the continuous glucose monitoring era. *Diabetes Care*. 2015;38:1008-1015.

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