

# Insulin Bolus Calculator With Ketone Correction Bolus

## Do not use the blood glucose correction bolus:

- If blood glucose is less than correction target.
- If it's been less than 3 hours since the last dose of fast-acting insulin was given.
- If a low blood glucose has been treated in the past 3 hours.
- If it's been less than 1 hour since exercise.
- At bedtime or during the night until directed otherwise.

### Step 1) Calculate Carbohydrate Bolus

$$\boxed{\phantom{000}} \div \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

Grams of Carbohydrate      Carbohydrate Ratio      Carbohydrate Bolus

#### Carbohydrate Ratio:

How many grams (g) of carbohydrate will be covered by 1 unit of insulin.

**Example:** 1:20 = 1 unit of insulin covers 20 g of carbohydrate.

### Step 2) Calculate Blood Glucose Correction Bolus

$$\boxed{\phantom{000}} - \boxed{120} = \boxed{\phantom{000}} \div \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

Glucose Reading      Glucose Target      Amount to Correct      Glucose Correction Factor      Glucose Correction Bolus

#### Glucose Target:

Is the highest number in the target range. Example: If the target range is 70 to 120 milliliters per deciliters (mg/dL), the correction target will be 120 (mg/dL).

#### Glucose Correction Factor:

How many points 1 unit of insulin will lower the blood glucose. Example: 1:50 = 1 unit of insulin lowers blood glucose by 50 points.

# Insulin Bolus Calculator With Ketone Correction Bolus

(Continued)

## Step 3) Calculate Ketone Correction Bolus

$$\begin{array}{c} \boxed{\phantom{0000}} \\ \text{Total Daily} \\ \text{Basal Insulin} \end{array} \times \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Ketone} \\ \text{Correction \%} \end{array} = \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Ketone} \\ \text{Correction} \\ \text{Bolus} \end{array}$$

### Ketone Correction Bolus:

Small, moderate, and large ketones require extra insulin for treatment. The ketone bolus dose is calculated using the amount of long-acting (basal) insulin that is taken daily. That amount is multiplied by:

- 0.05 (5%) for small ketones or
- 0.10 (10%) for moderate or large ketones.

## Step 4) Calculate Total Insulin Bolus Dose

$$\begin{array}{c} \boxed{\phantom{0000}} \\ \text{Carbohydrate} \\ \text{Bolus} \end{array} + \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Glucose} \\ \text{Correction} \\ \text{Bolus} \end{array} + \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Ketone} \\ \text{Correction} \\ \text{Bolus} \end{array} = \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Total Bolus} \\ \text{Dose} \end{array} \rightarrow \begin{array}{c} \boxed{\phantom{0000}} \\ \text{Total} \\ \text{Rounded} \\ \text{Bolus Dose} \end{array}$$

### Rounding Rules for ½ Unit:

0.1 to 0.3 = round down to whole unit  
 0.4 to 0.7 = round to ½ unit  
 0.8 to 0.9 = round up to whole unit

### Rounding Rules for Whole Unit:

0.1 to 0.4 = round down to whole unit  
 0.5 to 0.9 = round up to whole unit