Insulin Controlling Blood Sugar

## Insulin is continuously released into the blood stream.

Insulin levels are carefully calibrated to keep the blood glucose just right.

Insulin is the main regulator of sugar in the bloodstream.

This hormone is made by beta cells and continuously released into the blood stream. Beta cells are found in the pancreas, which is an organ behind the stomach. Insulin levels in the blood stream are carefully calibrated to keep the blood glucose just right.

High insulin levels drive sugar out of the bloodstream into muscle, fat and liver cells where it is stored for future use. Low insulin levels allow sugar and other fuels to be released back into the blood stream.


Insulin is Made in the Pancreas
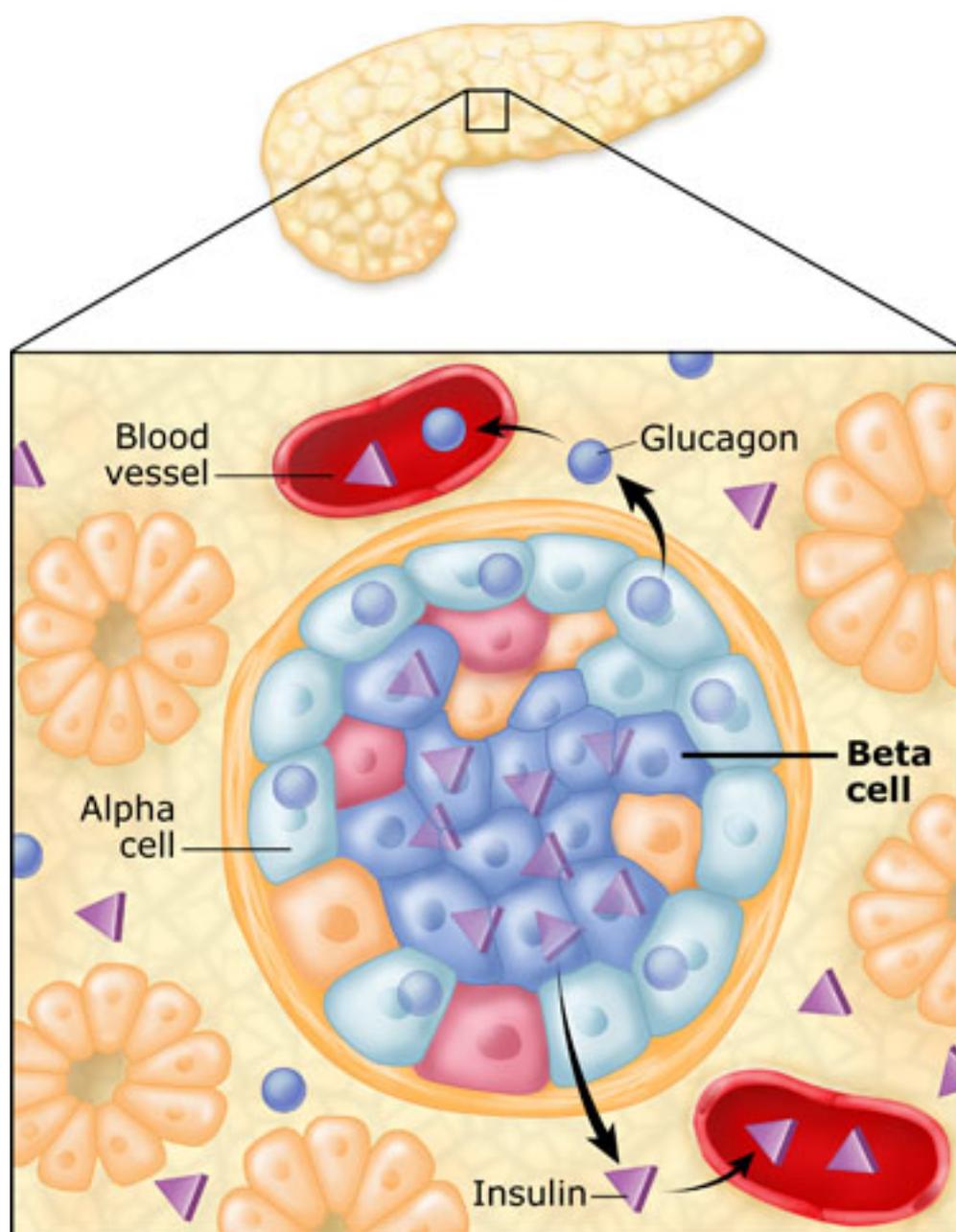
Overnight and between meals, insulin levels in the blood stream are low and relatively constant. These low levels of insulin allow the body to tap into its stored energy sources (namely glycogen and fat) and also to release sugar and other fuels from the liver. This overnight and between-meal insulin is referred to as **background or basal** insulin. When you haven't eaten for a while, your blood sugar level will be somewhere between 60 to 100 mg/dl.

When eating, the amount of insulin released from the pancreas rapidly spikes. This burst of insulin that accompanies eating is called **bolus** insulin. After a meal, blood sugar levels peak at less than 140 mg/dl and then fall back to the baseline (pre-meal) range. The high levels of insulin help the sugar get out of the blood stream and be stored for future use.

The Effect of Insulin
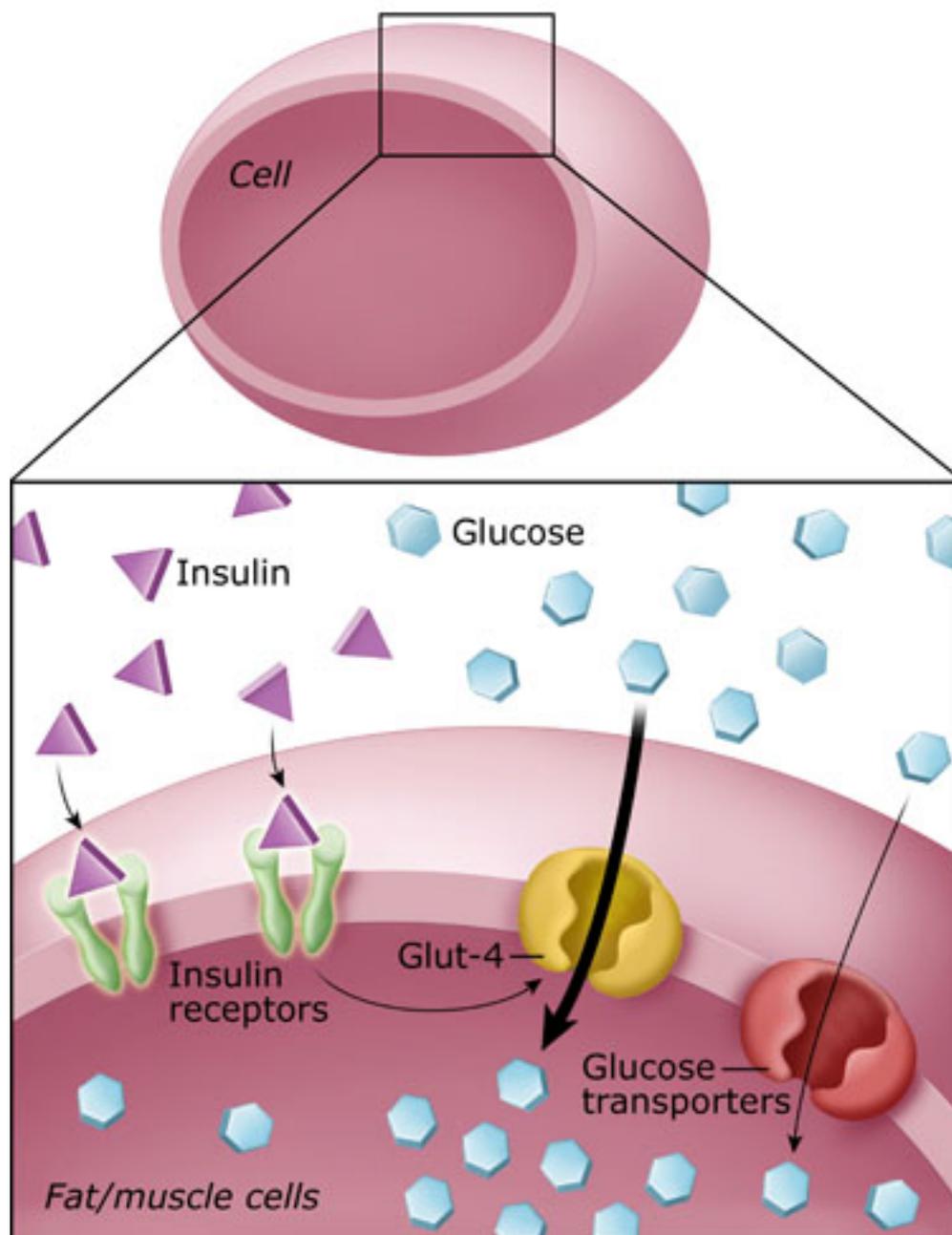
Insulin levels throughout the day

Normal (Non-diabetic) Blood Glucose and Insulin Levels over 24 Hours
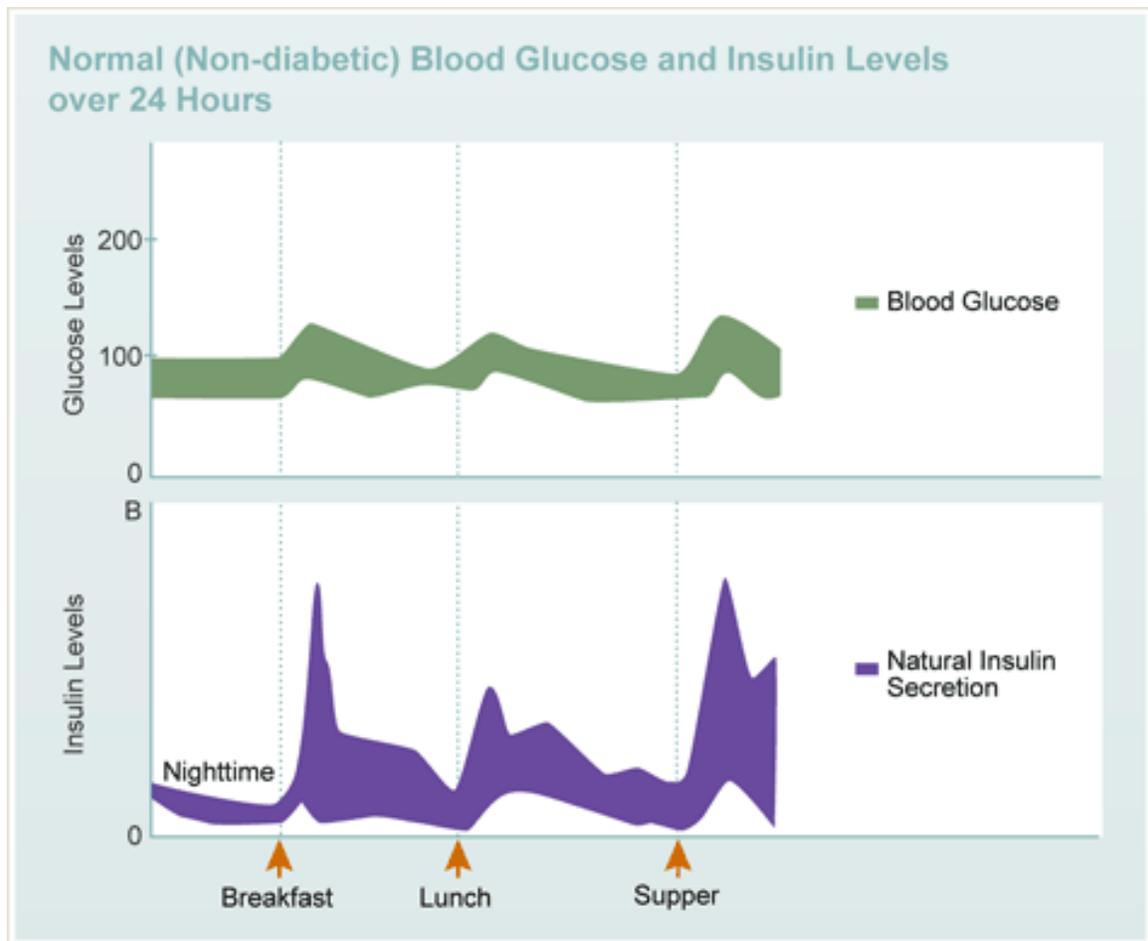
To keep the blood glucose in a narrow range throughout the day, there is a low steady secretion of insulin overnight, fasting and between meals with spikes of insulin at mealtimes. Adapted: Jacobs DM Care 20:1279, 1997

There are other hormones that work together with insulin to regulate blood sugar including incretins and gluco-counter regulatory hormones, but insulin is the most important.