

# Blood Sugar: Hidden Causes of High Blood Sugar Levels in the Morning

High blood sugar in the morning may be caused by the Somogyi effect, a condition also called "rebound hyperglycemia." It also may be caused by dawn phenomenon, which is the end result of a combination of natural body changes. Appointments

## What causes high blood sugar levels in the morning?

Commonly known reasons why your blood sugar may be high in the morning include high-carb bedtime snacks and not enough diabetes medications.

Yet two lesser-known reasons may be causing your morning blood sugar woes: the dawn phenomenon and the Somogyi effect. These causes of high morning blood sugar levels are a result of body changes and reactions that happen while you are sleeping.

## What is the dawn phenomenon?

Your body uses glucose (sugar) for energy and it is important to have enough extra energy to be able to wake up in the morning. So for a period of time in the early morning hours, usually between 3 a.m. and 8 a.m., your body starts churning out stored glucose to prepare for the upcoming day.

At the same time, your body releases hormones that reduce your sensitivity to insulin. In addition, these events may be happening while your diabetes medication doses taken the day before are wearing off.

These events cause your body's blood sugar levels to rise in the morning (at "dawn").

## What is the Somogyi effect?

A second possible cause of high blood sugar levels in the morning is the Somogyi effect, sometimes also called rebound [hyperglycemia](#). It was named after the doctor who first wrote about it.

If your blood sugar drops too low in the middle of the night while you are sleeping, your body will release hormones in an attempt to "rescue" you from the dangerously low blood sugar. The hormones do this by prompting your liver to release stored glucose in larger amounts than usual. But this system isn't perfect in a person with [diabetes](#), so the liver releases more sugar than needed which leads to a high blood sugar level in the morning. This is the Somogyi effect.

How is it determined if the dawn phenomenon or Somogyi effect is causing the high blood sugar levels?

Your doctor will likely ask you to check your blood sugar levels between 2 a.m. and 3 a.m. for several nights in a row. If your blood sugar is consistently low during this time, the Somogyi effect is suspected. If the blood sugar is normal during this time period, the dawn phenomenon is more likely to be the cause.

Some additional clues that the Somogyi effect may be the cause include nightmares, restless sleep and overnight sweating as these are all signs of low blood sugar levels.

How can high blood sugar levels in the morning be controlled?

Once you and your doctor determine how your blood sugar levels are behaving at night, he or she can advise you about the changes you need to make to better control them. Options that your doctor may discuss depend on the cause of the morning high blood sugars.

For dawn phenomenon:

- Changing the timing or type of your diabetes medications
- Eating a lighter breakfast
- Increasing your morning dose of diabetes medication
- If you take insulin, switching to an insulin pump and programming it to release additional insulin in the morning

For Somogyi effect:

- Decreasing the dose of diabetes medications that are causing overnight lows
- Adding a bedtime snack that includes carbs
- Doing evening [exercise](#) earlier
- If you take insulin, switching to an insulin pump and programming it to release less insulin overnight