

# Does Daily Self-Monitoring of Blood Sugar Levels Improve Blood Sugar Control and Quality of Life for Patients with Type 2 Diabetes Who Do Not Use Insulin? —The Monitor Trial

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### What was the research about?

With type 2 diabetes, a person's blood sugar levels become higher than normal because the body doesn't make or use the hormone insulin correctly. Keeping blood sugar levels normal can help prevent health problems that affect the heart, brain, eyes, limbs, and kidneys. Many people with type 2 diabetes use diet, exercise, and medicine to manage their blood sugar levels. They may also prick their fingers and measure their blood sugar levels with personal monitors daily. People can then adjust their diets and exercise in response to the blood sugar levels. But checking takes time, the supplies can be costly, and the health benefits are not clear.

This study focused on people with type 2 diabetes who don't take insulin. The study compared people who did and didn't check their blood sugar levels daily to see which group did a better job keeping their blood sugar at good levels. The study looked at what happened if patients who checked their blood sugar levels also received text messages explaining their blood sugar levels. The study also looked at the effects of checking blood sugar levels daily on the people's quality of life.

### What were the results?

At the end of the one-year study, there were no differences, on average, in blood sugar levels and

quality of life between people who checked their blood sugar daily and those who didn't. People who tested their blood sugar levels daily had slightly lower blood sugar levels in the middle of the study than those who didn't test. But this difference didn't last until the end of the study. Among people who checked their blood sugar levels, there were no differences in blood sugar levels or quality of life between those who did and didn't receive text messages.

### Who was in the study?

The study included 450 people with type 2 diabetes in North Carolina. The people in the study were 31 to 92 years old. They didn't take insulin, but most of them took other medicine, such as metformin or a sulphonylurea, to treat their diabetes.

### What did the research team do?

The research team assigned people with type 2 diabetes to one of three study groups by chance. People in one group didn't check their own blood sugar levels for a year. People in the other two groups checked their own blood sugar levels daily. People in both of these groups received their blood sugar level results right away. People in one of the blood sugar testing groups also got text messages with information about what their levels may mean.

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The research team took the people's blood at the start of the study and again a year later. They did a test to measure A1C in the blood samples. This test shows a person's average blood sugar levels during the past three months. Doctors and patients use the A1C test to find out if people are managing their diabetes well. The research team looked at people's health records to see their A1C levels between the beginning and the end of the study. The team also surveyed people about their quality of life at the start and the end of the study. The research team compared the results of the A1C test and the survey among the three groups.

### **What were the limits of the study?**

The study didn't have enough people from different races and ages to find out if blood sugar level testing may help manage blood sugar levels in specific groups of people. The study included people only from North Carolina. The results may be different for people from other places. People in the study didn't always test their blood sugar levels exactly as instructed by the research team. Results may be different if people

tested their blood sugar levels every day as instructed. Doctors didn't always review the results of the blood sugar level tests or give advice about the results.

Future research could look at whether interaction, such as texting, between doctors and patients with type 2 diabetes about patients' blood sugar level results improves patients' blood sugar levels or quality of life.

### **How can people use the results?**

People with type 2 diabetes who don't use insulin can use these results to ask their doctors if they should check their blood sugar levels daily. Checking blood sugar levels daily didn't help people in this study manage their blood sugar levels better than those who didn't. But blood sugar level testing may be useful in some situations, such as before or after a change in diabetes medicine or to inform treatment decisions.

*To learn more about this project, visit [pcori.org/Donahue018](http://pcori.org/Donahue018).*