

# People with type 2 diabetes now have personalized treatment options

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One out of every 10 Virginia residents has diabetes, according to the Virginia Department of Health. Those more than 630,000 Virginians are a fraction of the 30.3 million people with the disease across the country.

Salvatore Carbone, Ph.D., research instructor of medicine in the Division of Cardiology in the Virginia Commonwealth University Department of Internal Medicine, co-authored an article in the most recent issue of *Mayo Clinic Proceedings* titled "Glucose-Lowering Therapies for Cardiovascular Risk Reduction in type 2 Diabetes Mellitus: State-of-the-Art Review," which outlines how therapies for treating type 2 [diabetes mellitus](#) should be chosen not only based on their effect on blood glucose control, but also their effect on [cardiovascular disease](#) and [risk factors](#).

VCU News sat down with Carbone to unravel what it means for those affected by type 2 diabetes.

## **What is type 2 diabetes?**

Let's start by briefly describing diabetes. Diabetes is essentially a disease in which you have high levels of a sugar—glucose—in the blood. When we eat carbohydrates, they are digested and converted into glucose, which is absorbed into the bloodstream. Responding to the increase of glucose in the blood, our pancreas produces the hormone insulin, which allows glucose to enter the cells and be used to produce energy.

There are two major types of diabetes, type 1 and type 2. For people with type 1 diabetes, their bodies do not produce insulin—that hormone that allows the body to use glucose as energy. For those with type 2 diabetes, their insulin doesn't work very well, resulting in a state called "insulin-resistance." This typically results from long-standing obesity, unhealthy diet and physical inactivity. Of all people with the disease, about 95 percent have type 2 diabetes, making it the most common form. While there are no therapies to date to prevent type 1 diabetes, type 2 diabetes can be prevented with lifestyle interventions aimed at improving quality of diet, increasing physical activity and maintaining healthy weight over a lifespan.

## **What did you find in your research?**

What's most important to know is that the leading cause of death in people with diabetes is cardiovascular disease, including heart attacks and strokes. That shows we now must do everything we can to reduce the risk of cardiovascular disease in patients with diabetes.

Until a few years ago, the only therapies and medications available for patients with diabetes were used to reduce blood sugar in order to reduce the risk of developing typical complications, such as kidney and eye diseases.

However, these therapies did not reduce the risk of developing cardiovascular diseases for the most part. Now, we finally have therapies that go a step further to reduce the risks for cardiovascular diseases, such as heart attacks and strokes, as well as [cardiovascular disease risk](#) factors such as obesity, high blood pressure and kidney diseases. All while we continue to reduce blood sugar levels.

## **If I am a patient with type 2 diabetes, what do your findings mean for me, right now?**

It depends on your situation and the symptoms you have, and don't have. The first step in preventing and treating diabetes is always lifestyle intervention. You can live a long and healthy life with diabetes by eating a healthy diet, exercising regularly and maintaining a healthy body weight.

On top of those lifestyle changes, doctors can now prescribe medications that address different risk areas, which means we can take an individualized approach to your treatment. We can give you the right medications for you.

For example, if you have diabetes and high blood pressure, we can now prescribe medications that address your diabetes and [high blood pressure](#) at the same time. That's not how it was before, in which therapies were only targeted to reduce [blood sugar](#). Personalized medication for diabetes is a completely new concept.

## What's next for the application of this research?

Many of the medications I've described are now also being tested in patients without diabetes. We now have large amounts of data on the effectiveness of [medication](#) on risk factors for cardiovascular disease in patients with diabetes, which we didn't have before. These are things like improved blood pressure medications and medications that reduce body weight. The findings are so strong that the cardiovascular community is interested in exploring their use for those with specific cardiovascular diseases like heart failure.

Here at VCU, the entire system is changing a lot. We now have endocrinologists and diabetologists collaborating with cardiologists. We no longer say, "Now go talk to your cardiologist" or vice versa. We're all working to improve type 2 [diabetes](#) together, which makes it more convenient for the patient, and a really exciting time for providers.

**More information:** Salvatore Carbone et al. Glucose-Lowering Therapies for Cardiovascular Risk Reduction in Type 2 Diabetes Mellitus: State-of-the-Art Review, *Mayo Clinic Proceedings* (2018). [DOI: 10.1016/j.mayocp.2018.07.018](https://doi.org/10.1016/j.mayocp.2018.07.018)

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