

Gut microbial mix relates to stages of blood sugar control

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The composition of intestinal bacteria and other micro-organisms—called the gut microbiota—changes over time in unhealthy ways in black men who are prediabetic, a new study finds. The results will be presented Friday at the Endocrine Society's 97th annual meeting in San Diego.

Researchers previously found that the gut microbiota—containing both beneficial and harmful microbes—can affect human health in many ways and that the mix of this community of microscopic organisms differs in people with Type 2 diabetes compared with healthy individuals. However, the new study shows that alterations in the gut microbiota already occur in the early stage of diabetes development known as impaired glucose tolerance or prediabetes, said senior investigator Elena Barengolts, MD, professor of medicine in the University of Illinois College of Medicine and section chief of endocrinology at the Jesse Brown Veterans Affairs (VA) Medical Center in Chicago.

"Your gut bacteria could predict your risk of diabetes," Barengolts said.

Unlike other studies that evaluated [gut microbes](#) at one time point in diabetic people, the new study, according to Barengolts, analyzed the microbiota composition over one year in adults with varying blood glucose (sugar) and insulin levels.

The 116 men in the study were all African-American veterans

participating in the D Vitamin Intervention in VA, or DIVA clinical trial, which the Department of Veterans Affairs funded. Their age ranged from 45 to 75 years, with an average age of 60.

Study subjects were divided into four groups based on changes in their glycemic, or blood sugar, control, as demonstrated by the oral [glucose tolerance](#) test (or the fasting glucose blood test in group 2), between the start and end of the one-year study. The four glycemic control groups were (1) stable (unchanged) normal, (2) stable impaired, (3) worsened, and (4) improved. At the end of the study, the men gave stool samples for analysis of their gut microbiota.

The researchers found that men whose [blood sugar control](#) stayed normal over the year had more gut bacteria that are considered beneficial for metabolic health, whereas those who stayed prediabetic had fewer beneficial bacteria and more harmful bacteria. In addition, the group whose glycemic control improved (group 4) had even more abundant Akkermansia—healthy bacteria—than the group that kept normal [blood sugar](#) control throughout the year.

Although the study found connections between composition of the gut microbiota and glycemic states, Barengolts said further research is needed to evaluate whether certain [intestinal bacteria](#) cause Type 2 diabetes. However, based on other research her group has conducted, she speculated that the foods we eat affect our diabetes risk through our [gut microbiota](#). If the makeup of tiny organisms in the intestinal tract is indeed responsible for the development of Type 2 diabetes, she said it is possible that changing one's gut bacteria could prevent diabetes.

"If doctors accept our suggestions," Barengolts said, "they have additional reasons to recommend foods, such as prebiotics, which improve the growth and activity of helpful [gut bacteria](#)."

Irina Ciubotaru, MD, PhD, an endocrinology fellow at the University of Illinois at Chicago and the Jesse Brown VA Medical Center, will present the research findings at the meeting.

Provided by The Endocrine Society

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