Patients frequently refuse insulin therapy, delaying blood sugar control

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Patients with type 2 diabetes who have high levels of blood sugar are at greater risk of serious complications such as chronic kidney disease, heart disease and blindness. While lifestyle changes and medications can

help some patients better control their blood sugar levels, type 2 diabetes tends to progress, and patients typically need more intense treatment to continue to maintain blood sugar control. Insulin offers the most robust way to control blood glucose, but insulin therapy is often delayed, sometimes by several years. A new study by investigators from Brigham and Women's Hospital finds that more than 40 percent of patients refuse a physician's recommendation of insulin therapy. The study also finds that patients who decline insulin therapy had worse blood sugar control and it took them significantly longer to lower their blood sugar levels than patients who began insulin therapy. The team's findings are published in *Diabetic Medicine*.

"Type 2 diabetes is a serious disease. High blood sugar levels can have a severe impact on a person's quality of life and life expectancy," said corresponding author Alexander Turchin, MD, MS, director of quality in diabetes at the Brigham. "Saying no may bear a strong influence on blood sugar levels and, down the road, complications. A few years of uncontrolled blood sugar can have a big impact."

Previously conducted clinical trials have found that just a few years of elevated blood sugar levels can lead to an increased risk of heart attack and kidney failure 10 or 20 years later. Given the consequences of uncontrolled blood sugar levels, Turchin and colleagues set out to better understand why insulin therapy initiation is frequently delayed.

The team used natural language processing—an artificial intelligence tool that can scan through large amounts of data to pull out key phrases—to comb through clinical narratives that physicians had recorded in patients' medical records. This allowed researchers, for the first time, to identify documented insulin decline by patients in electronic medical records notes. The study included more than 5,000 adults with type 2 diabetes who were followed by primary care physicians (PCPs) affiliated with the Brigham and Massachusetts

General Hospital between 2000 and 2014.

More than 2,000 patients (43 percent) in the study declined insulin therapy. It took patients who declined insulin an average of 50 months to reach target blood sugar levels, whereas it took an average of 38 months for those who started insulin therapy when their physician recommended it. Participants were more likely to accept insulin therapy if they had diabetes complications or higher blood sugar levels or if they were already seeing an endocrinologist. Older participants and those taking other diabetes medications were less likely to accept insulin therapy.

The authors note that the study does not address the reason patients decline insulin therapy—that generally is not noted in a patient's record. All patients in the study received care in Massachusetts where insulin costs are generally lower than in other parts of the country. Turchin would like to further investigate possible reasons in future studies as well as the long-term complications that patients who decline insulin may experience.

"Our study calls into question an assumption of therapeutic inertia—the idea that if a patient with diabetes has high blood sugar, it's always the fault of the health care provider for not treating the condition more aggressively," said Turchin. "We find that the situation is far more complicated. The patient is at the center of their health care and makes their own health care decisions. When we think about improving health care, we must take into consideration that both the provider and patient are involved in these decisions."

More information: A. Turchin et al, Predictors and consequences of declining insulin therapy by individuals with type 2 diabetes, *Diabetic Medicine* (2020). DOI: 10.1111/dme.14260

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