

Scientists develop 12-hour method to predict diabetes onset in patients using artificial intelligence

December 2 2022



Credit: Pixabay/CC0 Public Domain

Scientists at Klick Applied Sciences have discovered a way to transform

a continuous glucose monitor (CGM) into a powerful diabetes screening and prevention tool using artificial intelligence.

In findings presented Friday at the [NeurIPS](#) conference in New Orleans, Klick scientists revealed how they used machine learning and just 12 hours of data from CGMs to determine whether a patient was prediabetic or diabetic.

"We have demonstrated that 12 hours of monitoring can make a big difference in the lives of people at risk of developing diabetes while there's still time to course correct," said Jouhyun Jeon, lead scientist of the study and principal investigator at Klick Applied Sciences. "We think CGMs could be used to not just monitor diabetes—but to prevent it altogether."

For the study, about 600 patients who identified as healthy, prediabetic, or living with type 2 diabetes wore a CGM device for an average of 12 days. The scientists looked at their glucose measurements over time and developed [machine learning](#) models to see if those values could be used to determine whether that person was healthy, prediabetic or diabetic.

Jeon said they discovered their 12-hour model showed similar high accuracy to results from the longer intervals, correctly identifying two-thirds of patients with prediabetes, while also showing high accuracy in identifying healthy patients and those with type 2 diabetes. Jeon said the shorter time frame is a big step forward, adding most research draws from 10 to 14 days worth of readings, and often requires analysis from expert clinicians.

According to the CDC, prediabetes is a serious health condition where blood sugar levels are higher than normal, but not high enough yet to be diagnosed as type 2 diabetes. Approximately 96 million American adults—more than one in three—have prediabetes. Of those with

prediabetes, more than 80% don't know they have it.

"An overwhelming majority of people with early-onset diabetes are not aware of their condition and don't consult a physician until their ability to control their [blood sugar levels](#) is irreparably damaged," said Michael Lieberman, managing director of research and development at Klick Applied Sciences. "Our research has tremendous potential to help move [blood glucose](#) digital biomarkers into a position where they can be an invaluable tool for physicians for preventing diabetes before it starts."

These findings are the latest in Klick's ongoing work in the diabetes space. Their "Homeostasis as a proportional–integral control system" study, based on mathematical modeling to determine some of the underlying changes in how glucose is regulated that can cause [diabetes](#), was published in *Nature* in 2020. They also presented earlier findings at the 2018 International Joint Conference on Artificial Intelligence (IJCAI) in Stockholm, Sweden.

Provided by Klick Applied Sciences

Citation: Scientists develop 12-hour method to predict diabetes onset in patients using artificial intelligence (2022, December 2) retrieved 26 April 2024 from <https://medicalxpress.com/news/2022-12-scientists-hour-method-diabetes-onset.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--