New calculator will help clinicians diagnose diabetes more accurately

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A new calculator developed by the University of Exeter will help clinicians classify whether a patient has type 1 or type 2 diabetes, ensuring they get the best treatment and reducing complications.

The calculator uses a model that takes into account available data about

the patient, as well as [blood test](#) results. It can be used to identify if a person is likely to have type 1 [diabetes](#), to reduce misdiagnosis. Former Prime Minister Theresa May was initially diagnosed with type 2 diabetes. Only when tablet treatment failed to work was she re-diagnosed with type 1.

It is often difficult for clinicians to diagnose which type of diabetes a patient has. While blood tests such as antibodies against the cells that make insulin, or a person's genetic risk of type 1 diabetes may help diagnosis, these tests do not give a diagnosis on their own, and may be interpreted very differently depending on whether or not a person has other features of type 1 diabetes. The new calculator, currently available in beta format, combines available information from blood tests with a person's age of diagnosis and BMI for a personalised medicine approach. The calculator was developed by researchers at the universities of Exeter, Oxford and Dundee and published today in *BMJ Open*. Funded by NIHR, the study analysed data on 1,352 participants with diabetes and tested the calculator in a further 582 participants.

The new calculator will build on the success of a similar calculator previously developed at Exeter, to help clinicians determine whether a patient has the diabetes subtype MODY, caused by a single gene. The online calculator has been used by more than 100,000 people, with more than 9,000 people downloading the calculator phone app Diabetes Diagnostics, which will be updated to include the new calculator. New research recently presented at the European Association for the Study of Diabetes conference in Barcelona has shown that almost half of all referrals sent to the UK diagnostic laboratory for MODY now report using the calculator, and those that report using the calculator have a higher detection rate compared with those that do not.

Dr. Angus Jones, of the University of Exeter Medical School, who led the research, said: "The right diagnosis in diabetes is absolutely crucial to

getting the best outcomes for patients, as treatment is very different in different types of diabetes. However in some people it can be very difficult to know what type of diabetes they have. Our new calculator can help clinicians by combining different features to give them the probability a person will have type 1 diabetes, and assess whether additional tests are likely to be helpful."

The full paper is called 'Development and validation of multivariable clinical diagnostic models to identify type 1 diabetes requiring rapid insulin therapy in adults aged 18 to 50', and is published in *BMJ Open*.

More information: Previous calculator available here: www.diabetesgenes.org/mody-probability-calculator/

Beta version of new calculator available here: www.diabetesgenes.org/t1dt2d-prediction-model/

Provided by University of Exeter