

# Latest news: Prediabetes and dementia; and core genes and type 1 diabetes risk

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## Dementia risk higher the younger a person is at diabetes diagnosis

Analysis of data from the ARIC (Atherosclerosis Risk in Communities) study reveals that adults diagnosed with diabetes before the age of 60 years have an increased risk of developing dementia, while for those diagnosed at 80 years or older the risk was not increased.

Researchers collected data from participants enrolled at four sites in the US (mean age, 56.8 years; 55.3% women). Amongst 11 656 adults without diabetes at baseline (1990–1992), 2300 (20.0%) had prediabetes (defined as an HbA<sub>1c</sub> of 39–46 mmol/mol). Subsequent incident diabetes was defined by a formal diagnosis or use of antidiabetes medication. Incident dementia was determined via active surveillance. Follow-up continued until first diagnosis of dementia, death, loss to follow-up or the end of the study (2019).

During a median follow-up of 15.9 years, 3143 participants developed diabetes. More adults with prediabetes (44.6%) developed diabetes than those without prediabetes (22.5%).

Of the cohort, 2247 participants developed dementia during a median follow-up of 24.7 years. More adults with diabetes (23.9%) developed dementia than those without diabetes (20.5%).

Before accounting for incident diabetes and other covariates, prediabetes was significantly associated with the risk of dementia (HR, 1.12). After adjustment, however, the association was attenuated and non-significant (HR, 1.05).

Earlier age of onset of diabetes had the

strongest association with dementia. Adults who were diagnosed with diabetes when  $\leq 60$  years had a higher risk for dementia than those without diabetes (aHR, 2.92), while the risks for those who developed it from 60 to 69 years (aHR, 1.73) and 70 to 79 years (aHR, 1.23) were also higher than for those without diabetes. There was no increased risk for dementia for those diagnosed at  $\geq 80$  years.

The researchers conclude that the association of prediabetes with dementia risk is explained by the subsequent development of diabetes. Preventing or delaying the progression of prediabetes to diabetes, especially in younger adults, is important in reducing the dementia burden. Modest weight loss through referral to initiatives such as the NHS Diabetes Prevention Program can be effective in achieving this goal.

The study results can be read in full [here](#).

## Study identifies core genes associated with type 1 diabetes risk

New research has for the first time revealed nine “core” genes that are central to the development of type 1 diabetes. The findings provide hope that some of the genes will be potential targets for new immunotherapies.

Type 1 diabetes is an autoimmune condition that occurs when the body's immune system attacks and destroys the insulin-producing beta cells of the pancreas. A complex mix of genetic and environmental factors contribute to this situation. It is known that many individual genes have a very small cumulative effect

on risk. Improving our knowledge of the genes linked to type 1 diabetes and the processes that they control provides the prospect of being able to intervene to stop its development.

The new study, led by researchers at the University of Edinburgh, analysed how different genes impact the risk of developing type 1 diabetes, with the aim of identifying the those with the biggest impact and others which only have small effects.

The team identified nine core genes, all linked to activity in the immune system, that have direct and powerful effects on type 1 diabetes risk. Seven of these have a crucial role in the regulation of the immune cells that attack the pancreas. Two are linked to the part of the immune system that is responsible for detecting threats, such as bacteria and viruses, and had not previously been associated with type 1 diabetes.

It is hoped that these core pathways can be targeted with immunotherapies that could prevent, delay or treat type 1 diabetes. In 2022, teplizumab became the first immunotherapy for the delay of type 1 diabetes onset, when it was approved for use in the US. For everyone at risk of or affected by the condition to benefit, however, a range of treatments will be necessary to target the many ways that the immune system can attack beta cells.

The study results can be read in full [here](#). ■

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