

Lifestyle interventions are better than genetic tests for preventing type 2 diabetes

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Targeted interventions based on genetic risk may not be the best approach for preventing type 2 diabetes and instead universal strategies to prevent obesity should be prioritized, according to new research published in this week's *PLOS Medicine*. This analysis, led by Claudia Langenberg from the MRC Epidemiology Unit at the University of Cambridge, UK, suggests that the contribution of genetics to the risk of developing type 2 diabetes is greatest in those who are younger and leaner. However, in this group, the absolute risk of developing type 2 diabetes is low and the number of people who would have to be screened in order to guide targeted prevention would be impractically large.

Diabetes is currently estimated to affect more than 380 million people and the epidemic is likely to increase to 592 million by 2035. Type 2 [diabetes](#) is thought to be caused by a combination of genetic and [lifestyle factors](#), such as overweight and physically inactivity. While progress has been made in understanding the genetic basis of type 2 diabetes, the details of how adverse lifestyles combine with genetic risk to determine risk of developing type 2 diabetes are uncertain.

The authors quantified the association of genetic and lifestyle factors with the risk of developing type 2 diabetes in a large cohort of 340,234 people in 8 European countries followed for 11.7 years. In this EPIC-InterAct study, 12,403 people developed type 2 diabetes. The researchers identified an individual's genetic risk by determining how many of a list of 49 known type 2 diabetes genetic variants each study participant carried. They then assessed how this genetic risk contributed

to each individual's overall risk of developing type 2 diabetes after several risk factors (such as age, waist circumference, physical activity and Mediterranean diet) were taken into account.

They found that the relative increase in risk of type 2 diabetes for each additional adverse gene carried was greatest in participants who were younger and thinner at baseline. However, risk of developing type 2 diabetes was highest in people who were obese, whatever their level of genetic risk for diabetes. The 10-year cumulative incidence of type 2 diabetes was substantially greater for those with the lowest genetic risk who were overweight (1.29%) or obese (4.22%) compared to normal weight individuals with the highest genetic risk (0.89%).

Professor Nick Wareham, who led the EPIC-InterAct study said "this is the largest study to date examining the impact of genetic susceptibility and lifestyle factors on the risk of developing [type 2 diabetes](#)". He added that, "the high absolute risk associated with obesity at any level of [genetic risk](#) highlights the importance of population-wide, rather than genetically targeted, approaches to promoting healthy lifestyles that minimise excess weight".

More information: Langenberg C, Sharp SJ, Franks PW, Scott RA, Deloukas P, et al. (2014) Gene-Lifestyle Interaction and Type 2 Diabetes: The EPIC InterAct Case-Cohort Study. *PLoS Med* 11(5): e1001647. [DOI: 10.1371/journal.pmed.1001647](https://doi.org/10.1371/journal.pmed.1001647)

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