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- Findings of a meta-analysis of the impact of lifestyle change and medication on diabetes risk
- Implications for practice related to the analysis

Diet and exercise can reduce diabetes risk

Lifestyle changes can reduce the risk of type 2 diabetes by about 40%, according to a meta-analysis summarised by a National Institute for Health Research Signal.

The review combines international data from over 40 trials looking at the long-term impact of lifestyle modification and medication. This is a significant issue; around 10% of the total NHS budget is spent managing diabetes and its complications. According to Diabetes UK, incidence in the UK has doubled in the last 20 years; 3.7 million people are now diagnosed with diabetes, and 90% of these have type 2 diabetes. This means six in every 100 UK adults have type 2 diabetes.

Long-term the condition can lead to adult-onset blindness, kidney failure, surgical amputation, and an increased risk of cardiovascular disease and death.

Previous studies have demonstrated that diet, physical activity and pharmacological interventions can prevent diabetes. However, it is unclear which preventive strategies offer the most sustained benefit. This is relevant as currently in England, around a third of adults are thought to be classed as having 'pre-diabetes', in which blood sugar is raised but is still below the threshold for diabetes.

The meta-analysis identified 53 randomised controlled trials assessing prevention strategies in 49,029 adults with pre-diabetes. The average age of the

participants was 57 years, and average body mass index (BMI) was borderline obese (BMI 30.8). Nineteen studies evaluated single or multiple medications, 19 tested lifestyle modifications, and five tested both lifestyle modifications and medications. Follow-up times ranged from six months to six years in 40 studies, with three studies assessing outcomes at 10-20 years.

Study results were highly variable, possibly owing to differences in interventions, the classifications of diabetes and prediabetes used or the study setting.

Targeting diet and exercise

The main findings, summarised in Box 1, support current recommendations from the National Institute for Health and Care Excellence, which are that lifestyle change programmes – targeting both diet and exercise – are central to reducing the risk of type 2 diabetes in high-risk individuals.

Metformin is recommended only if blood glucose control has deteriorated despite lifestyle change, or if a person is

Implications for practice

The findings strengthen National Institute for Health and Care Excellence recommendations to consider lifestyle change in people at high risk of type 2 diabetes. This is in line with the new Diabetes Prevention Programme launched in England in 2016.

There is little evidence that medication effects are sustained once treatment stops. The risk-reducing impact of lifestyle modification also declined about three years following active therapy.

Future research could explore whether maintenance interventions are required to prolong effects.

unable to participate, particularly if their BMI is above 35. Similarly, orlistat may be considered if BMI is above 28. No other drug therapies are recommended.

The review found that diabetes risk remained low for an average of about seven years after lifestyle modification but that the effect did decline over time. However, this was not the case with interventions using medication, where there was no sustained effect after stopping treatment. **NT**

● To read the full Signal report go to:

[Bit.ly/NIHRDiabetesRisk](https://bit.ly/NIHRDiabetesRisk)

Box 1. What did the meta-analysis find?

- At the end of treatment (average 2.6 years), lifestyle modification reduced the risk of diabetes by about 40%. Diabetes developed in around seven per 100 people per year following combined diet and physical activity strategies compared with 11 per 100 controls
- Medication also reduced the risk of diabetes at the end of the treatment period (average 3.1 years). Weight loss drugs such as orlistat gave the highest overall risk reduction, followed by certain diabetes drugs, including metformin. An overall risk reduction of 36% was found across all medication studies, though this included three lifestyle-plus-medication studies.

- There were five cases of diabetes per 100 people taking medication per year compared with nine per 100 controls
- Four studies considered the effect of lifestyle modification at later follow-up (average 7.2 years). Three were diet and physical activity interventions, and one trial looked at a reduced-fat diet alone. Overall the risk of diabetes was 28% lower at follow-up compared with controls. This had decreased from a 45% risk reduction at the end of active treatment in the same studies
- Six studies found no sustained effect of various medicines at longer follow-up, ranging from two to 52 weeks after treatment completion.

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