

WHAT ARE THE HEALTH EFFECTS OF SCREENING COMPARED TO NOT SCREENING FOR TYPE 2 DIABETES MELLITUS?¹

WHAT IS TYPE 2 DIABETES?

Type 2 diabetes mellitus is a metabolic disorder characterised by high blood sugar which can lead to complications like kidney and eye disease.

It can develop at any age but usually peaks in adults 65 years of age and above and may be treated in the beginning through diet and exercise.

Type 2 diabetes mellitus may have no or few symptoms at the start and thus may go undiagnosed.

WHAT DID WE WANT TO FIND OUT?

Whether screening apparently healthy people could lead to early detection and treatment of type 2 diabetes mellitus as well as prevent or delay the development of related complications¹.



WHAT DID WE DO?

- We searched for randomized controlled trials that investigated the effects of screening compared to not screening for type 2 diabetes mellitus
- We summarised the results of the trial identified and rated our confidence in the evidence, based on common criteria such as trial methods and sizes

WHAT DID WE FIND?

We found one randomised controlled trial where 20,184 individuals at high-risk for type 2 diabetes from 33 general practices in Eastern England were either invited or not invited to screening for type 2 diabetes (the ADDITION-Cambridge study)².

Eligible participants had to have an elevated diabetes risk score but no known diabetes. Risk was determined based on:

- Age
- Sex
- Body mass index, and
- Use of prescribed steroids and anti-hypertensive medication.

A total of 11,737 participants attended screening and 4137 participants were not screened:

- Overall, 36% of participants were women
- The average age of participants was 58.2 years in the screening group and 57.9 years in the no-screening group
- Almost half of participants in both groups were on medication for high blood pressure.

KEY RESULTS

- **It is not clear from the available evidence whether or not screening for type 2 diabetes mellitus make a difference to death from any cause and death from diabetes-related causes** (the only outcomes of importance for our review for which study authors provided reliable data).
- The trial did not assess all the outcomes we intended to address in the review such as diabetes-related morbidity, incidence of type 2 diabetes, health-related quality of life, adverse events, and socioeconomic effects report on side effects of screening, health-related quality of life, glycosylated haemoglobin A1c (HbA1c), among others. Therefore we could not draw firm conclusions relating to the health outcomes of early type 2 diabetes screening.

WHAT ARE THE LIMITATIONS OF THE EVIDENCE?

Our overall certainty in the results from the included trial is low because the results are very imprecise, so they could change in any direction if new trials are published.

Summary of findings: Screening for diabetes vs. no screening for diabetes for type 2 diabetes mellitus

Patient or population: Individuals without known diabetes mellitus but at high risk for the condition

Setting: Primary healthcare clinics in Eastern England

Intervention: Invitations to screening followed by intensive treatment or routine care of participants with screen-detected diabetes

Comparison: No invitation to screening for type 2 diabetes mellitus

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no screening for diabetes	Risk with Screening for diabetes				
All-cause mortality follow-up: 9.6 years	91 per 1,000	96 per 1,000 (82 to 113)	HR 1.06 (0.90 to 1.25)	20184 (1 RCT)	⊕⊕○○ Low ^a	Screening for type 2 diabetes mellitus may result in little to no difference to death from any cause
Diabetes-related mortality assessed with: according to whether diabetes was included anywhere in the death certificate follow-up: 10 years	4 per 1,000	5 per 1,000 (3 to 8)	HR 1.26 (0.75 to 2.12)	20184 (1 RCT)	⊕⊕○○ Low ^b	Screening for type 2 diabetes mellitus may result in little to no difference to death from diabetes-related causes
Diabetes-related morbidity	-	-	-	1 RCT	-	No substantial difference on self-reported cardiovascular events in subsample (response rate: 15% of participants in the screening group and 40% of participants in the control groups)
Incidence of type 2 diabetes - not reported	-	-	-	-	-	-
Health-related quality of life	-	-	-	1 RCT	-	No substantial difference on self-reported health-related quality of life in a subsample (the response rate was 62% in the screening group and 53% in the control group)
Adverse events - not reported	-	-	-	-	-	-
Socioeconomic effects - not reported	-	-	-	-	-	-

Explanations

a. Downgraded by two levels due to serious imprecision (CI includes both benefit and harm; one study only)

b. Downgraded by two levels due to serious imprecision (CI includes both benefit and harm; one study only; not a common event).

HOW UP TO DATE IS THIS EVIDENCE?

The systematic literature search is up to date to May 2019

REFERENCES

¹Peer N, Balakrishna Y, Durao S. Screening for type 2 diabetes mellitus. Cochrane Database of Systematic Reviews 2020, Issue 5. Art. No.: CD005266. DOI: 10.1002/14651858.CD005266.pub2.

²Simmons RK, Echouffo-Tcheugui JB, Sharp SJ, et al. Effect of screening for type 2 diabetes on population mortality over ten years: the ADDITION-Cambridge cluster-randomised controlled trial. Diabetologia 2012;55:S81-2