Long term impact of screening for type 2 diabetes mellitus – a commentary on new evidence

10.1136/ebmed-2015-110208

Helen C Eborall
Department of Health Sciences, University of Leicester, Leicester, UK
Correspondence to: Dr Helen C Eborall, Department of Health Sciences, University of Leicester, 22–28 Princess Road West, Leicester LE1 6TP, UK; hce3@le.ac.uk

Commentary on: Echouffo-Tcheugui JB, Simmons RK, Prevost AT, et al. Long-term effect of population screening for diabetes on cardiovascular morbidity, self-rated health, and health behaviour. Ann Fam Med 2015;13:149–57.

Context
Despite fulfilling many of the criteria for a screening programme, population-based screening for type 2 diabetes mellitus (T2DM) continues to be the focus of debate, chiefly concerning the balance of benefits against harms.1–3 This paper contributes by analysing the long-term impact of a single round of population-based screening on three key outcomes: (1) cardiovascular morbidity—which modelling data suggests could be reduced by screening; (2) self-rated health—an independent predictor of morbidity and mortality and (3) health-related behaviour—particularly the potential for continued engagement in ‘unhealthy’ behaviours following a negative screening test. This paper addresses the need for evidence from trials on the long-term effects.

Methods
This paper reports on a questionnaire study nested within a parallel-group cluster-randomised controlled trial of T2DM screening and treatment.4 The screening strategy applied a risk score to practice registers to identify those most at risk and invited them to attend for stepwise screening. The nested study questionnaire was posted to a computer-generated random sample of those invited to the original screening in 27 interventions and five control practices (of 63 trial practices), 7 years after practice randomisation. Questionnaire items assessed: experience of cardiovascular disease events and prescription of cardio protective medication; self-rated health status and health utility; and health-related behaviours over the preceding 3 months (physical activity, diet, smoking, alcohol and health service use). Analysis was principally by intention to screen. Primary comparison was between the screening group and the non–screening controls; additional analyses compared subgroups: screening attenders with non-attenders and attenders who screened negative with non-attenders.

Findings
A response rate of 62% and 53% for screening and control groups, respectively, yielded a sample of 1373 and 572; 152 of the screening group were non-attenders. Analyses found no significant differences at 7 years between the screening and control groups in the proportion reporting cardiovascular disease, hypertension, or prescription of antihypertensives or glucose-lowering medication; self-rated health (Short Form-8); health utility (EuroQol-5D); current smoking status, alcohol consumption, physical activity, dietary patterns; or patterns of health service use. No significant differences were found for any health-related behaviour between attenders who screened negative and non-screening controls, and between screening attenders and non-attenders.

Commentary
This study is the first to assess long-term population-level effects of screening for T2DM and, addressing a criticism of previous studies, it included non-screening controls. The findings confirm and extend (by adding long-term data) the argument that population screening for T2DM is not associated with any direct or indirect adverse impact.5, 6 Being invited to the screening was associated with no detrimental impact on self-rated health status or health utility and there was no evidence of false reassurance in the form of increased ‘unhealthy’ behaviours following receipt of a negative screening test result.

Concerning benefits to population-level cardiovascular morbidity, the findings indicate neither a significant reduction in self-reported cardiovascular morbidity nor a significant positive change to health-related behaviour. The analysis differed, however, from previous studies, by assessing cardiovascular morbidity in all those invited for screening, rather than only those with screen-detected T2DM; the latter group made up only 2.9% of those eligible for screening in the wider trial. The authors note potential contextual influences in UK primary care on population levels of cardiovascular morbidity; that is, improved detection and management of cardiovascular risk factors through the introduction of pay-for-performance remuneration and recommendations for opportunistic and systematic screening initiatives.

One limitation acknowledged by the authors concerns generalisability; ethnic diversity and levels of deprivation in the study population (East of England) are quite different from other regions of the UK, and these factors can influence the acceptability and uptake of screening.

Implications for practice
This study provides no evidence for a change in practice; the findings confirm the position that population-level screening for T2DM has no adverse impact. Rather, concerning the question of population-level benefits, the authors add their support to the call for further research into the cost-effectiveness of such screening.

Competing interests None declared.

Provenance and peer review Commissioned; internally peer reviewed.

References
1. Wareham NJ, Griffin SJ. Should we screen for type 2 diabetes? Evaluation against national screening committee criteria. BMJ 2001;322:986–8.
2. Khunti K, Davies MJ. Should we screen for type 2 diabetes? Evaluation against national screening committee criteria. BMJ 2001;322:986–8.
3. Gemperli A, Tedgui A, Gaudin P, et al. Impact of screening on cardiovascular disease and diabetes mortality: a population-based cohort study. Am J Epidemiol 2015;182:106–16.
4. Echouffo-Tcheugui JB, Simmons RK, Prevost AT, et al. The ADDITION-Cambridge trial protocol: a cluster-randomised controlled trial of screening for type 2 diabetes and intensive treatment for screen-detected patients. BMC Public Health 2009;9:136.
5. Eborall HC, Griffin SJ, Prevost AT, et al. Psychological impact of screening for type 2 diabetes: controlled trial and comparative study embedded in the ADDITION (Cambridge) randomised controlled trial. BMJ 2007;335:486–93.
6. Paddison CA, Eborall HC, Sutton S, et al. Are people with negative diabetes screening tests falsely reassured? Parallel group cohort study embedded in the ADDITION (Cambridge) randomised controlled trial. BMJ 2009;339:b4535.