Individualised variable-interval risk-based screening in diabetic retinopathy: the ISDR research programme including RCT

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Plain language summary

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Plain language summary

Diabetic retinopathy remains a leading cause of vision loss for people with diabetes. Annual photographic screening allows early detection and prompt treatment in many countries. A new approach is to vary how often this is undertaken at each visit, after calculating each person's risk of progression; we have called this 'individualised' screening.

We tested this variable-interval risk-based approach against annual screening in a randomised controlled trial of 4534 people in Liverpool. Six-, 12- or 24-month intervals represented high, medium and low risks, respectively, of becoming screen-positive by the next appointment. With our patient and public involvement group, we designed a computer-based risk-calculation system using personal information from screening, general practitioners and hospitals.

Attendance rates at the next screening appointment were similar in the individualised (84%) and annual (control) (85%) groups. Similar amounts of sight-threatening diabetic retinopathy were detected in the two arms (1.4% individualised, 1.7% control), with 43% fewer visits. In this study in a single geographical region, savings estimated to accrue to the NHS per person over 2 years were £17.34 and £23.11 for wider society, but estimates did not include treatment costs.

During interviews, 60 people with diabetes and 21 healthcare professionals said that individualised screening would be acceptable because of increasing rates of diabetes and the chance to target high-risk people. Patients had anxieties about the reliability of the risk-calculation and restricting access, requesting opportunities for earlier screening if risks changed.

Varying screening intervals based on a person's own risk of progression appears feasible and safe. Low-risk people would be spared unnecessary appointments. Introducing an individualised approach could now move to wider testing and validation in other UK and international settings. The trial only ran for 2 years and was in a long-established programme with low rates of disease, so monitoring of attendance and retinopathy rates should be included as part of wider testing.

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