

Retinopathy

JOURNAL OF GENERAL
INTERNAL MEDICINE

Annual retinal screening may not be best use of care resources

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The risk of moderate-to-severe loss of vision is reduced by 50–90 % using retinal photocoagulation in diabetic retinopathy, but for the best results treatment needs to be delivered before symptoms develop.

2 While it seems that the intervals in following up people with known retinopathy are very important, it has been suggested that annual screening for people whose last retinal examination was normal has very limited benefits.

3 To explore this further, the investigators reviewed medical records (n=238) from three large referral centres, noting which cases were 'suboptimally timed' – where impaired vision due to retinal disease could have been substantially decreased or delayed with earlier photocoagulation – and examining the circumstances involved.

4 None of the 102 cases rated as probably or definitely suboptimal in timing involved screening being performed 13–36 months after the previous screening (33 involved screening being performed >36 months after the previous screening or not at all; 69 were concerned with problems with follow-up of people with known disease).

5 These results, it is suggested, indicate that annual screening may be wasting care resources that could be better used elsewhere.

Hayward RA, Cowan C Jr, Giri V et al (2005) Causes of preventable visual loss in type 2 diabetes mellitus: an evaluation of suboptimally timed retinal photocoagulation. *Journal of General Internal Medicine* 20(5): 467–9

'Screening prevents blindness': is it the full story?



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The introduction to virtually every paper on screening for diabetic retinopathy starts with the statement that 'screening for diabetic retinopathy prevents blindness'. But is this the full story? Systematic screening certainly effectively detects those patients requiring referral to the hospital eye service. Laser treatment is effective in reducing visual loss. However, the words 'optimally timed' always precede 'treatment'.

This very interesting paper (see left) seeks to identify whether, in fact, patients in the three centres studied did receive optimally timed treatment. The study identified that in almost half of cases (43 %), earlier treatment could have prevented or delayed the development of advanced retinopathy and maculopathy and resultant visual loss.

In one-third of cases, patients had not been screened in the previous 3 years or had never been screened. The reasons for screening failure are not discussed, but this surely highlights the need to educate and engage

the patient in the need to attend regularly for screening. It is interesting that all patients who had been screened within the 3-year period were found to have received optimally timed treatment, and the authors use this to argue for less frequent screening intervals than annually for a subset of people with diabetes.

In a further third of patients, suboptimal treatment was attributed to failure to adequately monitor patients in whom sight-threatening retinopathy had been identified. In other words, this is once the patients left the 'screening service' and were supposedly under the care of an ophthalmologist. Again, the reasons are not discussed but are likely to include both patient compliance factors and administrative factors including clinic cancellations. It is for this very reason that screening programmes in the UK are subject to performance review (see *Diabetes Digest* 4(1): 39) and why, in particular, targets have been set for the referral of patients from screening to the hospital eye service and to laser treatment. However, it is one thing to set targets and another to meet them, particularly when administrators must balance a whole raft of potentially conflicting targets. This paper is timely in highlighting these issues.

DIABETES CARE

Complications linked to mortality

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓

1 While it is known that diabetes complications are linked to mortality, many studies have only considered individual complications and have failed to control for other risk factors.

2 Characteristics were assessed of the people enrolled in the Early Treatment Diabetic Retinopathy Study (n=3711) – a randomised, controlled trial to evaluate aspirin therapy and laser photocoagulation.

3 All-cause mortality was the outcome measure used, and the

effect of various diabetes complications was assessed for type 1 diabetes and type 2 diabetes separately.

4 For people with type 1 diabetes, poor visual acuity (hazard ratio [HR], 1.74; 95 % confidence interval [CI], 1.10–2.75) was found to be significantly associated with mortality, after controlling for baseline characteristics and other complications.

5 Poor visual acuity (HR, 1.54; 95 % CI, 1.22–1.94) was also found to be significantly associated with mortality in people with type 2 diabetes, after adjustment for other baseline risk factors, as was diabetic retinopathy; the risk of mortality increased as diabetic retinopathy worsened.

Cusick M, Meleth AD, Agron E et al (2005) Associations of mortality and diabetes complications in patients with type 1 and type 2 diabetes: early treatment diabetic retinopathy study report no. 27. *Diabetes Care* 28(3): 617–25

‘Diabetic macular oedema can cause moderate loss of vision and it may persist even in patients undergoing numerous focal laser photocoagulation sessions.’

AMERICAN JOURNAL OF OPHTHALMOLOGY

Raised HbA_{1c} linked to persistent diabetic macular oedema

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

- 1 Diabetic macular oedema can cause moderate loss of vision and it may persist even in patients undergoing numerous focal laser photocoagulation sessions.
- 2 Poor glycaemic control may be a factor in this persistence, but no studies before this one had examined this possible relationship.
- 3 In 92 patients (152 eyes) with persistent macular oedema and 32 patients (56 eyes) with resolved macular oedema, the mean HbA_{1c} values were 8.9% and 6.7%, respectively ($P=0.005$).
- 4 A prospective study is needed to confirm the findings, but the results do support the notion that optimising blood glucose is essential in managing diabetic retinopathy.

Do DV, Shah SM, Sung Ju et al (2005) Persistent diabetic macular edema is associated with elevated hemoglobin A1c. *American Journal of Ophthalmology* **139**(4): 620–3

PROGRESS IN RETINAL AND EYE RESEARCH

Characterisation of phenotypes paves way for future work

Readability	✓✓✓
Applicability to practice	✓✓
WOW! factor	✓

- 1 Diabetic retinopathy is reversible at the stage of the initial lesions.
- 2 This early stage is characterised by four major alterations: blood–retinal barrier changes; closure of capillaries; microaneurysms or haemorrhages; and changes to glial and neuronal cells.

‘Multimodal macula mapping has been used to identify three phenotypes of diabetic retinopathy, with different progression types and rates.’

DIABETES CARE

Data support biennial paediatric screening

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓

- 1 There is a need for research to be carried out on optimal retinal screening intervals in children and adolescents.
- 2 This study, which was conducted in Australia, had two groups: the younger group (those <11 years old at their first retinopathy screening; n=50) and the older group (those ≥11 years old at their first retinopathy screening; n=618).
- 3 Retinopathy had not increased significantly until after 2 years in the older group ($P=0.003$) and 6 years in the younger group ($P=0.01$).
- 4 The authors use these and other results to suggest that adolescents and children with reasonable metabolic control could be screened safely every 2 years, although they acknowledge the need for a greater frequency in higher-risk groups.

Maguire A, Chan A, Cusumano J et al (2005) The case for biennial retinopathy screening in children and adolescents. *Diabetes Care* **28**(3): 509–13

- 3 Multimodal macula mapping has been used to identify three phenotypes of diabetic retinopathy, with different progression types and rates.
- 4 This work has paved the way for genotypic characterisation.
- 5 Also, knowledge of the different phenotypes could be used to give patients more tailored management.
- 6 Finally, by identifying the disease mechanisms predominantly involved in each phenotype, drugs can be better targeted, increasing their chance of success.

Cunha-Vaz J, Bernardes R (2005) Nonproliferative retinopathy in diabetes type 2. Initial stages and characterization of phenotypes. *Progress in Retinal and Eye Research* **24**(3): 355–77

ACTA OPHTHALMOLOGICA SCANDINAVICA

Limited functional improvement with cataract surgery in advanced DR

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓

- 1 The presence of a cataract increases the difficulty of retinal examination and photocoagulation for diabetic retinopathy (DR), making cataract surgery important.
- 2 Evaluating the success of surgery needs to take into account not just visual acuity, but visual function (determined by the VF-14 questionnaire in this study) and patient satisfaction too.
- 3 The study (n=74; 74 eyes) comprised patients with no apparent retinopathy (group 1), mild non-proliferative DR (group 2), severe non-proliferative DR (group 3) and proliferative DR (group 4), and all cataract operations were conducted in a standardised manner by the same surgeon.
- 4 The component of visual loss that was due to a cataract was found to not differ significantly between patient groups, using a potential acuity meter.

- 5 In spite of increases recorded in visual acuity, people with more advanced DR had limited functional improvements.
- 6 Accordingly, the proportions of satisfied patients were 82.4% in group 1, 79.0% in group 2, 56.3% in group 3 and 40.0% in group 4.
- 7 The results suggest that patients with more advanced DR should receive education on the potentially limited functional improvement that may result from necessary surgery.

Mozaffarieh M, Heinzl H, Sacu S et al (2005) Clinical outcomes of phacoemulsification cataract surgery in diabetes patients: visual function (VF-14), visual acuity and patient satisfaction. *Acta Ophthalmologica Scandinavica* **83**(2): 176–83