Retinopathy

DIABETIC MEDICINE

Quality assurance is inadequately resourced

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

1 This paper outlines a pilot study that measured quality assurance targets for diabetic retinopathy screening and performance comparison between ten existing services, in order to prepare for the roll-out of a national programme.

2 Following consultation with retinal screeners, ophthalmologists and diabetologists, objectives and quality standards were developed and services submitted 2001/2002 performance data in response to a questionnaire.

3 All aspects of the programme were covered in the 17 quality standards and ten programmes partook.

4 All returns were incomplete, particularly optometry-based schemes.

5 Eight or more services showed they could only reach the minimum level in only five of the 17 standards, 30 % could not give coverage data and all were running behind.

6 Reasons given for failing to achieve standards and/or difficulties in obtaining data included lack of experience of quality assurance and severe underfunding.

7 The limited information systems were incompatible between eye and diabetes units and there was a general lack of coordinated management of the whole programme.

8 Quality assurance is expensive, time-consuming and is not adequately resourced.

Garvican L, Scanlon PH (2004) A pilot quality assurance scheme for diabetic retinopathy risk reduction programmes. Diabetic Medicine **21**: 1066–74

A pilot quality assurance scheme for diabetic retinopathy risk reduction programmes

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This paper by Garvican and Scanlon is a timely reminder of the need for protection of the patient as Strategic Health Authorities and Primary Care Trusts throughout the country struggle with the complexities of adapting existing screening programmes or developing new programmes according to national guidelines. The title reflects the fact that screening is a 'sieve'. No method can currently achieve 100 % sensitivity and 100 % specificity – the aim is to reduce risk. For this reason it is crucial that quality assurance forms an integral part of any national screening programme. Experience from the cervical screening programme has shown that failure to participate in adequate internal and external quality assurance leads to missed disease, substantial litigation and considerable psychological stress. Quality assurance is the safety net and should never be viewed as an optional extra or a potential area for cost-cutting.

Ten established screening programmes took part in an audit conducted by the National Screening Programme for England and Wales. The participating programmes covered both long-established and recently-established programmes, rural and inner-city populations, and both of the accepted national methods. A set of 17 quality standards was developed by a group of experts encompassing all aspects of screening, from initial invitation through referral and treatment of positive cases, to outcome measures. The aim of the audit was to compare performance according to the standards and assess the ease of data collection, allowing refinement of the standards accordingly.

None of the programmes, including the longest established, was able to provide all of the required data. None of the programmes could meet even the minimum level in all 17 quality standards, although eight programmes met the minimal level in five, and eight programmes met the achievable level in two.

The paper concludes by highlighting the fact that all the programmes were under-funded and that a substantial increase in investment would be required to meet the National Service Framework for diabetes targets for screening.

ARCHIVES OF OPHTHALMOLOGY

Tight BP reduces complications from diabetic eye disease

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

1 This study investigated the relationship between diabetic retinopathy in people with type 2 diabetes and blood pressure (BP).

2 The outcome of retinopathy status was assessed by four-field retinal photography related to allocation within a randomised controlled trial comparing tight with less tight BP control.

3 Of the 1148 people studied with hypertension and type 2 diabetes from 19 hospital-based clinics, 758 were allocated to a tight BP control policy with β-blockers or angiotensin-converting enzyme inhibitor as main therapy; 390 were allocated to less tight BP control policy.

4 By 4.5 years after randomisation, there was a highly significant difference in microaneurysm count with 23.3 % in the tight BP control group and 33.5 % in the less tight BP control group having ≥ 5 microaneurysms.

5 A two-step or more deterioration on the Early Treatment Diabetic Retinopathy Study scale was significantly different at 4.5 years, with fewer people in the tight BP control group progressing two steps or more.

6 People in the tight BP control group were less likely to undergo photocoagulation, and were less likely to reach the end point of blindness.

7 Tight BP control reduces the risk of clinical complications from diabetic eye disease.

UK Prospective Diabetes Study (UKPDS) Group (2004) Risks of progression of retinopathy and vision loss related to tight blood pressure control in type 2 diabetes mellitus. Archives of Ophthalmology **122**: 1631–40

'Healthcare professionals [...] and patients were generally satisfied with the [TOSCA] procedures.'

DIABETIC MEDICINE

TOSCA procedures acceptable to patients

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

1 This study investigated the feasibility of establishing telemedicine-based digital screening for detecting diabetic retinopathy and to evaluate patient and healthcare professional satisfaction with the screening procedures used in the TOSCA project.

2 The non-randomised multicentre study investigated 390 people with diabetes over three months.

3 Two digital retinal images per eye were taken and exported to a central server; participants completed a questionnaire to assess satisfaction.

4 Patients found the retinal photography procedures acceptable – only 6 % in one centre would not recommend the procedure, and healthcare professionals were also satisfied with the overall procedures.

5 The average time taken to grade participants was five minutes.

Luzio S, Hatcher S, Zahlmann G et al (2004) Feasibility of using the TOSCA telescreening procedures for diabetic retinopathy. Diabetic Medicine **21**: 1121–28

ACTA OPHTHALMOLOGICA SCANDINAVICA

A need to detect diabetic maculopathy in type 2 diabetes

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

1 This study reported blindness in diabetes patients in Århus County, Denmark during 1993–2002.

2 Participants comprised 7527 people who had been treated for or experienced visual loss due to diabetic retinopathy since 1992; 1949 had type 1 diabetes and 5459 had type 2 diabetes.

3 The major cause of blindness in type 1 was proliferative diabetic retinopathy (PDR); in type 2 it was age-related macular degeneration, PDR and diabetic maculopathy.

4 From 1993–2002 there was a significant decrease in the number of blind eyes secondary to PDR in type 1 and a significant increase in the number of blind eyes secondary to diabetic maculopathy in type 2.

5 The main challenge to reduce diabetes-related blindness is in detecting and treating diabetic maculopathy in type 2 diabetes.

Jeppesen P, Bek T (2004) The occurrence and causes of registered blindness in diabetes patients in Århus County, Denmark. Acta Ophthalmologica Scandinavica **82**: 526–30

INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE

A model to identify future retinopathy

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

1 The aim of this study was to formulate and test a model to predict the development of local patches of nonproliferative diabetic retinopathy (NPDR) based on multifocal electroretinogram (mfERG) implicit times and diabetic risk factors.

2 Fundus photographs and mfERGs were obtained from 28 eyes of 28 people with diabetes during initial and 12-month follow-up examination.

3 A z-score was calculated in comparison with 20 age-matched people, and data collected from four previously untested people with diabetes and the other eye of eight previous patients during their second year follow-up so as to test the model.

4 After one year, new retinopathy developed in 11 of 12 NPDR eyes and one of 16 eyes with no initial retinopathy.

5 The researchers accounted for the correlation among zones within each eye and formed a predictive model with the variables mfERG implicit time, duration of diabetes, presence of retinopathy and blood glucose level at initial visit.

6 The area under the receiver operating characteristic curve of the multivariate model is 0.90 (p<0.001).

7 The predictive model produced sensitivity of 86 % and a specificity of 84 % for successively discriminating normal retinal locations from those where new retinopathy had developed one year later.

8 The development of diabetic retinopathy over a period of a year can be predicted by a multivariate model.

9 Inclusion of mfERG implicit times means that the model can identify specific sites of future retinopathy.

Han Y, Schneck ME, Bearse MA et al (2004) Formulation and evaluation of a predictive model to identify the sites of future diabetic retinopathy. Investigative Ophthalmology & Visual Science **45**: 4106–12

'Elevated serum lipids, particularly total-to-HDL cholesterol ratio and triglycerides, are independent risk factors for both clinically significant macular oedema and retinal hard exudate.'

DIABETES

Lipid-lowering treatment may decrease CSMO

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

1 The relationships between serum lipid levels and clinically significant macular oedema (CSMO), hard exudates and other diabetic retinopathy (DR) end-points in people with type 1 diabetes were evaluated.

2 Data were studied from serum lipids measured annually among the 1441 DCCT participants.

3 Proportional hazards regression models examined the relationship of the cumulative average of lipid levels with development of CSMO, hard exudate, DR progression and development of proliferative DR (PDR).

4 In models controlling for primary prevention vs secondary intervention subgroup, randomised treatment assignment, HbA_{1c}, and other risk factors, total-to-HDL-cholesterol ratio and LDL predicted CSMO and hard exudate.

5 Relationships of lipids with progression of DR and development of PDR were weaker and not significant after adjustment for HbA_{1c}; higher serum lipids are associated with increased risk of CSMO and retinal hard exudate.

Miljanovic B, Glynn RJ, Nathan DM, Manson JE, Schaumberg DA (2004) A prospective study of serum lipids and risk of diabetic macular edema in type 1 diabetes. Diabetes **53**: 2883–92