

## Screening for sight threatening eye disease

### Calculation of sensitivity is misleading

EDITOR.—We disagree with the statement by S P Harding and colleagues that “on the evidence currently available . . . photographic screening . . . is the method of choice for purchasers of health care.”<sup>1</sup> Their study shows that photography had a higher sensitivity than ophthalmoscopy in detecting diabetic eye disease (89% *v* 65%). The sensitivity in detecting sight threatening retinopathy or sight threatening maculopathy, however, was the same (56%) for both techniques. One of the key principles for any screening programme is that an effective intervention should be available for the condition detected. The purpose of a screening programme for diabetic eye disease is to detect treatable sight threatening retinopathy and sight threatening maculopathy. The sensitivity of screening methods should be compared with the detection of these two conditions.

In Harding and colleagues' study population of 320, photography and ophthalmoscopy each detected 27 of the 48 cases of sight threatening retinopathy and sight threatening maculopathy. Thus use of either technique detected sight threatening retinopathy or sight threatening maculopathy in 8% of the diabetic population screened but failed to detect true sight threatening retinopathy or sight threatening maculopathy in a further 7%. This seems inadequate and suggests that other methods of screening should be explored.

Stereoscopic biomicroscopy is the standard against which both techniques were compared. We believe that this should be regarded as the primary screening method rather than techniques with low sensitivities being accepted. Harding and colleagues state in their discussion that efforts should be directed towards training optometrists in the use of stereoscopic biomicroscopy, but they do not pursue this. Many optometrists already have slit lamps in their surgeries. Training optometrists to screen by stereoscopic biomicroscopy is likely to be more cost effective and clinically effective than either photographic screening or direct ophthalmoscopy.

The costs and benefits of screening by stereoscopic biomicroscopy for treatable diabetic eye disease should be assessed. The evidence currently available does not indicate that a photographic screening programme is any better than direct ophthalmoscopy in detecting sight threatening diabetic eye disease.

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1 Harding SP, Broadbent DM, Neoh C, White MC, Vora J. Sensitivity and specificity of photography and direct ophthalmoscopy in screening for sight threatening eye disease: the Liverpool diabetic eye study. *BMJ* 1995;311:1131-5. (28 October.)

### Cost effectiveness of screening modalities must be determined

EDITOR.—S P Harding and colleagues recommend a three field photographic screening protocol with use of mydriatics to detect diabetic retinopathy.<sup>1</sup> Despite the relatively high sensitivity (89%) reported for the detection of sight threatening eye disease with this method, the sensitivities for detecting severe retinopathy and maculopathy were lower (47% and 61% respectively). Furthermore, in 46 (14%) cases photographs were either unobtainable or ungradable; this figure was much higher than the 2% for ophthalmoscopy.

Other studies have shown that sight threatening retinopathy and maculopathy missed by ophthalmoscopy are detected by photography and vice versa.<sup>2</sup> This suggests that a combined modality would have a higher sensitivity, albeit at a cost of reduced specificity. Ryder *et al* reported that a combination of photography and ophthalmoscopy had a sensitivity of 100% for detecting sight threatening retinopathy.<sup>3</sup>

There is a strong case for screening. The best screening method is still unclear, but the evidence strongly favours a combined modality to maximise sensitivity. Before a decision is made on the modality for a national screening programme, however, purchasers need to know the cost effectiveness of the single modality screening described by Harding and colleagues compared with that of the combination of photography and dilated ophthalmoscopy performed by various professionals.

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### Stereoscopic viewing of the retina needed to identify maculopathy

EDITOR.—S P Harding and colleagues' detailed quantitative evidence showing the capabilities of direct ophthalmology and retinal photography is an important step in the establishment of worthwhile screening.<sup>1</sup> Their emphasis on the photographic improvements obtained with dilatation of the pupil and use of 35 mm film in place of Polaroid film concurs with the view of most retinal specialists who manage sight threatening retinopathy.

Two points arise from the study. Firstly, it is disappointing to see that over half of the cases of sight threatening retinopathy were missed by both methods when compared with expert assessment of the fundus. Thus we cannot rely on the accuracy of either method for predicting whether treatment is necessary. Secondly, the authors' definition of maculopathy is confined to the presence of exudate at the macula, and no mention is made of the more common and serious problem of macular oedema. Macular oedema is only rarely visible on photography, unlike exudates. Given that macular oedema is three times more common than the deposition of exudates<sup>2</sup> and that diabetic maculopathy accounts for nearly three quarters of cases of blindness,<sup>3</sup> the only accurate way of identifying maculopathy is to use stereoscopic viewing of the retina.

Patients should be referred for biomicroscopic examination of the retina if they have proliferative retinopathy, macular exudates, or any loss of visual acuity; if there are signs of any retinopathy within one disc diameter of the central fovea; or if there is anything more than minimal retinopathy.

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### Authors' reply

EDITOR.—Marie Hickey-Dwyer and Susan Ellerby contend that the calculations of sensitivity that we presented are misleading because the sensitivities for the detection of sight threatening retinopathy and sight threatening maculopathy by photography

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