No competing interest

*Eye* (2007) **21,** 252–253. doi:10.1038/sj.eye.6702483; published online 2 June 2006

Sir,

**The influence of disease prevalence on screening for AMD**

I read with interest the article by Jain *et al*[1] titled 'Screening for age-related macular degeneration using nonstereo digital photographs'. The authors found reasonably high sensitivities and specificities for detection of ARM and age-related macular degeneration (AMD) by graders viewing digital photos. While their results are not in question, I do raise objection to their discussion in which they state that the findings of the study might usefully be extended into a primary care setting. This assumption ignores a pivotal statistical fact and highlights why sensitivities and specificities alone do not tell the whole story when assessing how useful a screening test is.[2]

The setting of the study involved a contrived selection of cases from a retinal unit database. In this 'population', the prevalence of neovascular AMD was 31%. In a primary care setting, of course, the real prevalence will be much lower, say 2% in patients over 65 years. While this difference does not affect the sensitivity or specificity of the screening tool, it does impact very significantly on the positive predictive value.

In the study, for example, for grader 1, the sensitivity was 82.1% and the specificity was 79.7%. The positive predictive value can be calculated as 64.8% in the study 'population'. If the same sensitivity and specificity are applied to a primary care population, with an AMD prevalence of say 2%, the positive predictive value drops to 7.8%. This means that over 92% of positive results will actually be false positives.

This demonstrates that the utility of a screening tool cannot be evaluated without reference to the prevalence of the disease in the population in which it is to be used.

**References**

1 Jain S, Hamada S, Membrey WL, Chong V. Screening for age-related macular degeneration using nonstereo digital fundus photographs. *Eye* 2006; **20**: 471–475.
2 Altman DG, Bland JM. Statistics notes: diagnostic tests 2: predictive values. *BMJ* 1994; **309**: 102.

MN Ali

Royal Victoria Infirmary, Queen victoria Road, Newcastle upon Tyne, Tyne and Wear NE1 4LP, UK

Correspondence: MN Ali,
Tel: +44 7967550929;
Fax: +44 7967 550929.
E-mail: nadeem.ali@nhs.net

There are no proprietary interests or sources of funding to declare

*Eye* (2007) **21,** 253. doi:10.1038/sj.eye.6702484; published online 9 June 2006

Sir,

**Reply to Mr Ali**

We would like to thank Mr Ali for his interest in our article 'Screening for age-related macular degeneration using non stereo digital photographs'.[1] We agree with the obvious assertion that prevalence of a disease affects the utility of a screening tool by impacting on the positive predictive value.

However, we did not evaluate this technique as a general screening measure for people over a certain age but only for those with suspicious macular lesions that necessitated a retinal opinion. The 'contrived' database he refers to were patients referred to the retinal service by optometrists for exactly the above reason and these form our intended target population for telemedicine. In this selected group, we observed a high sensitivity and specificity of AMD detection.

We believe that this technique can significantly reduce the time between referral and appointment with a retinal specialist in patients with treatable CNV, which was the aim of the study in the first place.

**Reference**

1 Jain S, Hamada S, Membrey WL, Chong V. Screening for age-related macular degeneration using nonstereo digital fundus photographs. *Eye* 2006; **20**: 471–475.

S Jain

Department of Ophthalmology, Leicester Royal Infirmary, Infirmary Square, Leicester LE1 5WW, UK

Correspondence: S Jain,
Tel: +44 773 6448064;

Fax: +44 116 2586965.
E-mail: drsaurabhjain@hotmail.com

*Eye* (2007) **21,** 253–254. doi:10.1038/sj.eye.6702485; published online 9 June 2006

Sir,
**Reply**

**Comments**

*Comment 1*
The technique of administering the intravitreal injection, and the optimum dosage required to gain a therapeutic benefit still remains a matter of debate. Ozkiris and colleagues administer intravitreal triamcinolone acetonide (IVTA) after performing an anterior chamber paracentesis; in practice, this may be difficult as one is injecting into an already ''soft'' eye.

*Answer 1*
As you know, the total volume of the eye is approximately 7 ml. If you perform an anterior chamber paracentesis and withdraw 0.1–0.2 ml of aqueous humour (1/70 of the total volume), it does not cause a soft eye and intravitreal injection is not difficult. However, if you perform a detailed search on intravitreal injection of triamcinolone acetonide, you may see that lots of surgeons administer intravitreal triamcinolone acetonide (IVTA) after performing an anterior chamber paracentesis.[1]

*Comment 2*
The dosage for several studies looking at the use of IVTA in the treatment of macular oedema in branch retinal vein occlusions is 4 mg and in one study was 20–25 mg. Ozkiris and colleagues used 8 mg to treat their patients, but the reasoning for this dose is not commented upon.

*Answer 2*
The optimum dosage for IVTA injection is still unclear, and further investigations in optimal dosage have been conducted by several researchers. However, the dosages of 4, 8, and 25 mg have been currently used to treat the patients.[2–7]

*Comment 3*
The authors do not comment on whether they would recommend repeat injections, either to maintain the post-treatment improvement in visual acuity in those that responded or to treat the two cases that were refractory to initial IVTA.

*Answer 3*
As you know, the mean elimination half-life of triamcinolone is 18.6 and 3.2 days in non-vitrectomized and vitrectomized patients, respectively, and that after a single intravitreal injection, measurable concentrations of triamcinolone would be expected to last for approximately 3 months ($93 \pm 28$ days) in the absence of a vitrectomy. In addition, Gillies *et al* have speculated that significant levels of triamcinolone persisted in the eye for at least 4 months after a single intravitreal injection of triamcinolone. Vasumathy and *et al* reported that clinically visible depot of intravitreal triamcinolone might be observed even after 120 days. Unfortunately, repeat injections may be required after 6 months of first injection in most patients.

*Comment 4*
Repeated intravitreal injections are not without risk – the authors did not report any injection- or corticosteroid-related complications.

*Answer 4*
I completely agree with you. Our study included a total of 19 eyes of 19 patients with persistent macular oedema due to BRVO. Pre- and post-treatment IOPs are presented in the study. During the follow-up period of 6.2 months, no other injection- or corticosteroid-related complications were observed. As you recognized, the total number of the patients is relatively low and the follow-up time is relatively short. However, in our another study that included a total of 212 eyes of 180 patients who underwent IVTA injection for various indications with a mean follow-up time of 9.2 months, the complications of IVTA injection that may be attributable to the injection procedure or to the corticosteroid suspension were reported.[4]

*Comment 5*
The authors do not discuss their feelings on the statistically significant IOP rise postinjection, except to mention that one eye with a persistently elevated IOP was successfully treated with topical medication.

*Answer 5*
Please see Answer 4.

*Comment 6*
The exclusion criteria of the study excluded patients if they had diabetes mellitus, presumably due to either the potential corticosteroid-related complications associated with this intervention, or because of any co-existing