

# BjO

British Journal of Ophthalmology

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## Editorials

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### Glaucoma in China (and worldwide): changes in established thinking will decrease preventable blindness

The report by Foster and Johnson in this issue of the *BjO* (p 1277) points to dramatic developments in our knowledge of glaucoma worldwide. Firstly, they continue a trend endorsed by an international committee to use the term “glaucoma” only for people who have suffered injury to the optic nerve as judged by visual field abnormality, combined with enlargement of the cup/disc ratio outside statistical limits for the population studied. This approach is intended to differentiate between those with a true disease and those suspects who are at increased risk—for example, those with higher than normal eye pressure or those with narrow angles. In both the developed and the developing world, we must concentrate limited medical resources on those at greatest risk for loss of function and decreased quality of life. In addition, we must avoid treatment of those who would never have lost vision in their lives, and who may be more threatened by treatment than by their natural course.

With respect to angle closure glaucoma (ACG) specifically, Foster and Johnson summarise recent data that build on previous population research. The pioneering work of Alsbirk,<sup>1</sup> Hu,<sup>2</sup> Shiose,<sup>3</sup> and Salmon<sup>4</sup> had reinforced the suggestions that people derived from north China, including native peoples of North America and Greenland, had a high prevalence of ACG. The studies among urban Chinese in Singapore and Mongolian rural villagers confirm that ACG prevalence is higher among these people than among any other populations in the world. Not only do Chinese people represent one billion citizens of China proper, but they are a substantial proportion of those in other south east Asian countries, as well as large minorities in developed countries worldwide. At the same time, we must not assume that there is a uniform rate of ACG among all those who may be referred to as Chinese, since diversity is clearly present in so large a group.

In fact, we might question the assumptions that ACG prevalence in Singapore may be applied to the urban People's Republic of China generally and that Mongolian prevalence of ACG may be generalised to all rural Chinese. Clearly, Foster and Johnson recognise that their estimates are an important, but only an initial, step in moving towards more and more accurate estimates of the prevalence of glaucoma in a diverse population.

The ethnic diversity of ACG is further underscored by other recent population based surveys. It had been taught in many centres that African derived people had little ACG

and that ACG was very common among Hispanic people. Yet, two surveys suggest that the prevalence of ACG is similar among some African<sup>5</sup> and Hispanic<sup>6</sup> populations as among Europeans—that is, about one fifth the rate of open angle glaucoma (OAG) in these populations.

In a meta-analysis of glaucoma prevalence data in 1996,<sup>7</sup> we suggested that the rate of ACG in Chinese people might be three times higher than that for OAG. The Foster/Johnson data analysis concludes that this may nearly be true for Mongolians, but that the relative prevalence for urban Chinese people is closer to 1:1 (actually 2:3). Each study finds that OAG is equally prevalent among Chinese and European people (here African and Hispanic people clearly differ in having more OAG). Worldwide glaucoma figures may need revision in the light of new information.

ACG therefore deserves greater emphasis as it comprises a higher proportion of all those with glaucoma. The lack of past attention may derive from its infrequency in developed countries. This attitude deserves immediate change for two important reasons. ACG blinds many more people than does OAG, and it may be more easily treated. The morbidity estimates for ACG were more clearly defined by Foster and Johnson, indicating that it blinds 10 times more people than OAG in absolute terms, even though the estimated numbers of those with ACG in China are only 30% higher than those with OAG.

What can be done to prevent visual loss from ACG? Firstly, we must develop screening methods that identify those likely to lose vision. Simply identifying narrow angles isn't enough, since the proportion of those with occludable angles is nearly 10 times the proportion of those with damage to their optic nerve from glaucoma. We need innovative and inexpensive screening tools which define features of the anatomical and particularly the physiological attributes of eyes that develop ACG. Simple measures of anatomical size (chamber, axial length, etc) have failed to differentiate effectively those who will get ACG. There are not 10 times more small eyes among Chinese people on a population basis compared to Europeans; hence, there must be, as yet, unmeasured features of their eyes that further increase risk for the disease among smaller Chinese eyes compared to smaller European eyes.

Secondly, iridotomy is the present standard approach to initial treatment of ACG. But, it is subject to abuse if too many eyes are treated which would never develop the

disease. The improvements in screening should lead to clinical trials in which longitudinal follow up determines the relative value of iridotomy in various populations based on estimated risk at baseline. At the other end of the spectrum, those who have already suffered severe attacks may often require more than iridotomy, including trabeculectomy surgery.<sup>8</sup> For these people, research should identify how frequently iridotomy eliminates further need for treatment and who might best be provided with more extensive treatment at diagnosis.

While there has been much emphasis on separate diagnostic testing for ACG, the work of Foster and Johnson, as well as others, points out that only 20–25% of those with ACG develop acute attacks, while the remainder are found to have and continue to have a chronic, asymptomatic disorder. Albeit, starting from a different mechanism, ACG of the more chronic form, and OAG are, therefore, both identifiable in communities by a similar diagnostic approach involving evaluation of the optic nerve and/or visual field. This, to some degree, simplifies the design of public health measures that seek to perform initial identification of all those with visual field loss from glaucoma.

OAG remains an important problem and the present emphasis on ACG is appropriate only because of past inattention. Each glaucoma subtype, OAG or ACG, is a greater

cause of visual morbidity *individually* than any other ocular disease, except cataract and trachoma. Our resources should be directed in ways that prevent these avoidable conditions from adding to the world's blindness burden.

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## BjO Online: has the future just happened?

Is the internet over? Lately, we've been deluged on a daily basis with bad news on the internet front, with much collective anguish over the dot.com die-off and the tech stock collapse. The exuberance of the past few years for all things online has been replaced seemingly overnight by pervasive pessimism. The bubble has burst, and burst resoundingly.

So what can all this mean for scientific publishing on the web and for *BjO* Online in particular? Is the bankruptcy of, say, the online dog food retailer Pets.com a sign that the internet apocalypse is near? Will the electronic medical journal go the way of all start-ups?

We're inclined, here at the *eBjO*, to believe otherwise. At the same time that the internet consumer business model is disintegrating, overall web traffic continues robust growth. As the economy retreats to bricks and mortar, the audience for online news and information sites is expanding. As a conduit for the dissemination of medical information, the internet is inexorably strengthened by faster internet connections, more extensive web infrastructure, and gigahertz PC power. With dogged optimism, the *BjO*'s online incarnation continues to move forward in a number of ways.

For example, website visitors will by now have noticed that we've renovated our cyberspace. Webmaster Dominic Mitchell and the specialist journals website group have recently redesigned *BjO* Online for enhanced usability and features, to say nothing of its jaunty new look. Navigation of the site is easier, the layout more clear, the graphics pleasing to the eye. The signature *BjO* cover photographs from Ivan Schwab's ophthalmological menagerie feature largely in the redesign of the website. Each issue of the *eBjO* is posted with the month's new cover photo in all its JPEG glory. What's more, with a few clicks readers can stroll through a unique photographic gallery of archived *BjO* cover images depicting screech owls, solar eclipses,

ommatidia, and cuttlefish—any of which, by the way, make fine ophthalmology desktop “wallpaper”.

But beyond the new digital aesthetics lie some editorial innovations that are exclusive to the electronic version of the *BjO*. One recent development is the “Editor's choice,” a new feature highlighting one article in each online issue that is culled by editor in chief Creig Hoyt for its particular impact, quality, and relevance. A link from the redesigned home page takes readers directly to each month's editor's choice article. More democratically, another new *eBjO* feature is the “Top 10 papers,” compiled by *eBjO* readers themselves. This link identifies those articles from recent *BjO* issues receiving the most “hits” in the previous month, in effect the result of the *eBjO* reader voting with his or her mouse.

After its first year, the “Video Reports” feature is garnering an array of articles unique to the electronic *BjO*. With web videos, audio narratives, and short text articles on a variety of subjects, ranging from the surgical (phaco at the forefront with David Chang), to the scientific (tumbling leucocytes in mouse retinal vasculature identified by Xu and colleagues), to the downright macabre (subconjunctival invasion by the nematode *Dipetelonema* as visualised by Huynh et al).

The move towards free full text articles online is gaining momentum. As more and more medical and scientific journals make available “toll free” links to full text articles or abstracts, online readers increasingly find that they can go directly to a reference cited in a given *eBjO* article without leaving the comfort of their desktops, not only to articles from the *BjO* but from many other journals as well. Such information sharing has arisen through affiliations like High Wire Press, which numbers the *British Journal of Ophthalmology*, *Ophthalmology*, *IOVS*, and *Science* among its 293 participating journals, offering over 300 000 free

articles. Hundreds of thousands of free articles are also accessible at the digital archives at PubMed Central and BioMed Central. The internet may yet deliver on its promise to give us a new standard of medical information services and frictionless, open access scholarship.

On another fundamental issue in electronic publishing, a recent editorial<sup>1</sup> in this journal by Alex Williamson of the BMJ Publishing Group reaffirmed the longstanding commitment at the *British Medical Journal* and its sister journals (*BJO* included) to provide free online subscriptions to readers and institutions in the developing world. This summer, at the urging of the World Health Organization, six of the major medical publishing houses also agreed to offer developing countries free or discounted online access to about a thousand of the world's top medical periodicals. The initiative has been likened by a WHO official to creating "a top flight US library" for doctors, researchers, and institutions in poor countries plagued by diminishing funds in the face of spiralling journal expenses.

With the recognition of the "digital divide" in internet access and technology that exists between industrial and developing regions, the *BJO*'s move to an online version has held the risk of neglecting portions of our global readership. Happily, experience over the first years of the online *BJO* seems to be proving otherwise. Access and use in developing nations is active and growing. Tracking hits on the *eBJO* website by the address of origin reveals that our global digital readership is significant. While the staunch .uk domain retains the distinction of having the largest base of readers (about 14% of total online readers), many

arrive at the *eBJO* site via far flung listing domains (internet addresses comparable to ".com")—from .np (Nepal) to .na (Namibia); from .ye (Yemen) to .yu (Yugoslavia); from .kh (Cambodia) to .ke (Kenya). Sixty six countries defined by the World Bank as low income economies are included on the list of those entitled to free online access to the *eBJO*. Bangladesh, Benin, Congo, Gambia, Ghana, Indonesia, Malawi, Nigeria, Sudan, Tanzania, Togo, Uganda, and Zimbabwe are just some of the countries with active subscriptions.

As another index of accessibility, the *BJO* website's eLetters feature, the online rapid response function, is well represented by letters and comments from readers in developing countries, confirming the inclusive nature of the medical information exchange on the net. The next challenge in this initiative to improve global access to medical research publications will be to expand the internet infrastructure in these countries, with wider availability of hardware and internet service. But, even in the face of economic and structural obstacles, open online access to medical journals is fulfilling the potential of the web to extend the global distribution of medical information.

For internet medical journals, it looks like the future is still happening, and will be for some time.

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#### Video Reports ([www.bjophthalmol.com](http://www.bjophthalmol.com))

- Capsule staining and mature cataracts: a comparison of indocyanine green and trypan blue dyes. *D F Chang*
- Pearls for implanting the Staar toric IOL. *D F Chang*
- An intraocular steroid delivery system for cataract surgery. *D F Chang*
- Evaluation of leucocyte dynamics in mouse retinal circulation with scanning laser ophthalmoscopy. *Heping Xu, A Manivannan, Garry Daniels, Janet Liversidge, Peter F Sharp, John V Forrester, Isabel J Crane*
- *Dipetalonema reconditum* in the human eye. *T Huynh, J Thean, R Maini*