

UK National Screening Committee

Screening for Open Angle Glaucoma

19 November 2015

Aim

1. To ask the UK National Screening Committee (UK NSC) to make a recommendation, based upon the evidence presented in this document, whether or not screening for open angle glaucoma meets the NSC criteria to support the introduction of a population screening programme.

This document provides background on the item addressing screening for open angle glaucoma (OAG).

Current recommendation

2. The current recommendation is that a systematic population screening programme for glaucoma is not recommended.

In 2007 the HTA (Health Technology Assessment) published a systematic review and economic evaluation '*The clinical and cost-effectiveness of screening for open angle glaucoma*', and concluded that a general population screening programme would not be cost-effective. The review found evidence to suggest that early detection and treatment of OAG could reduce the risk of disease progression. However the review also found insufficient evidence to identify a leading test candidate and no Randomised Control Trials (RCT) evaluating the overall balance of benefit and harm from screening for glaucoma. The review suggested that a system of targeted screening for people in high-risk groups may be more clinically and cost-effective.

Review

3. This condition is being reviewed as part of the UK NSC's three year review cycle and has been undertaken by Solutions for Public Health. The review focuses on the test, treatment, and RCT looking at the effectiveness of a screening programme reducing morbidity.
4. The conclusion of this review is to not screen the UK adult population for open angle glaucoma. The key reasons to support the conclusion are:
 - a. The test: Studies assessing the available tests of eye structure and function have been identified. However these report unacceptable sensitivity and specificity values with low predictive values. Current testing options were considered unsuitable for use in general population screening. **Criterion 5 not met.**
 - b. The treatment: There is no high-quality evidence demonstrating that strategies to reduce visual damage from chronic OAG are more effective than no treatment. The quality of evidence summarised in systematic reviews has been characterised as low-moderate grade, and the treatment itself can result in numerous harms. In addition no studies exploring treatment in screen-detected populations were identified. **Criterion 10 not met.**
 - c. The screening programme: RCTs assessing the effectiveness of screening for OAG have not been identified by the literature search for this review. Therefore it remains uncertain whether a general population screening programme would be effective in reducing morbidity. It was suggested that other issues needed to be resolved before an RCT was likely to be viable in the UK. This included the work to quantify the cost of visual impairment and the development of a viable screening test. **Criterion 13 not met.**

Consultation

5. A three month consultation was hosted on the UK NSC website. Communication of the consultation was promoted through both PHE Events and the PHE Screening Twitter platform. Direct emails were sent to stakeholders of whom 15 organisations were contacted directly. Annex A
6. Responses were received from the following four stakeholders: College of Optometrists; Association for Independent Optometrists and Dispensing Opticians; International Glaucoma Association; Royal College of Ophthalmologists, and an individual member of the public. Annex B

7. All responding organisations agreed that the absence of a test suitable for whole population screening was an obstacle to recommending the introduction of a screening programme. There was debate about the value of early treatment in diagnosed cases. However there was also acknowledgement that the evidence base was limited in terms of quality. Two responses suggested that identifying an approach to high risk populations, for example based on ethnicity or siblings of known cases may be a higher priority than universal screening. This is in keeping with recommendations from the recent Cochrane systematic review and the 2007 HTA systematic review.




Recommendation




8. The committee is asked to approve the following recommendation:

A systematic population screening programme for glaucoma is not recommended.

A suitable test for general population screening has not been identified, and while there is some evidence to suggest that early treatment of OAG is useful this has not been established in screen detected populations. There is no evidence from RCTs to appraise the effectiveness of a general population screening programme in reducing morbidity.

Based upon the 22 UK NSC criteria to recommend a population screening programme, Glaucoma screening in adults did not meet the following primary requisites:

Criteria		Met / Not met
The Condition		
1	The condition should be an important health problem.	Met 
2	The epidemiology and natural history of the condition, including development from latent to declared disease, should be adequately understood and there should be a detectable risk factor, disease marker, latent period or early symptomatic phase.	Met 
The Test		
5	There should be a simple, safe, precise and validated screening test.	Not met 

The Treatment		
10	There should be an effective treatment or intervention for patients identified early detection, with evidence of early treatment leading to better outcomes than late treatment.	Not met 
11	There should be agreed evidence based policies covering which individuals should be offered treatment and the appropriate treatment to be offered.	Not met 
The Screening Programme		
13	There should be evidence from high quality Randomised Controlled Trials that the screening programme is effective in reducing mortality or morbidity.	Not met 

List of organisations contacted:

1. Age UK
2. Association for Independent Optometrists and Dispensing Opticians;
3. Association of Optometrists
4. British and Irish Orthoptic Society
5. British Association of Retinal Screening
6. College of Optometrists
7. Faculty of Public Health
8. International Glaucoma Association
9. National Eye Research Centre
10. Royal College of General Practitioners
11. Royal College of Ophthalmologists
12. Royal National Institute of Blind People (RNIB)
13. UK & Eire Glaucoma Society
14. UK Vision Strategy
15. Vision2020UK

Annex B

Name:	Mr Bernanrd Chang	Email address:	xxxx xxxx
Organisation (if appropriate):	The Royal College of Ophthalmologists		
Role	Vice President and Chair of Professional Standards		
Do you consent to your name being published on the UK NSC website alongside your response? <p style="text-align: center;">Yes X</p>			
Section and / or page number	Text or issue to which comments relate	Comment	
		<i>Please use a new row for each comment and add extra rows as required.</i>	
Introduction- Point 13	All of point 13	<p>“Damage resulting from glaucoma” is a little misleading, the College believes Burr’s comment refers to those presenting with very early glaucoma and visual field loss. As glaucoma is asymptomatic a proportion of patients present with much more advanced change and therefore progression to unilateral blindness can be considerably faster.</p> <p>The sentence “damage resulting from glaucoma...” should be amended to “damage resulting from glaucoma typically occurs slowly over a long period of time and many people who are diagnosed with early glaucoma (pre-perimetric glaucoma) will never develop significant visual impairment during their lifetime (Burr et al 2007)</p> <p>No long term study has demonstrated the time to unilateral blindness against a population stratified for severity of disease on diagnosis.</p>	

<p>The Treatment Point 63</p>	<p>In conclusion, we did not identify any high quality evidence demonstrating treatment of glaucoma to be more effective than no treatment. This criterion is not met.</p>	<p>There are Randomised Control Trials that demonstrate reduced glaucoma progression with treatment. NICE felt there was sufficient evidence to recommend the treatment of Open Angle Glaucoma (OAG) and those with ocular hypertension at increased risk of conversion to OAG even if the evidence is “moderate”. Multiple studies have demonstrated that treating and lowering Intra Ocular Pressure (IOL) does reduce progression.</p> <p>1: Gordon MO, Beiser JA, Brandt JD, Heuer DK, Higginbotham EJ, Johnson CA, Keltner JL, Miller JP, Parrish RK 2nd, Wilson MR, Kass MA. The Ocular Hypertension Treatment Study: baseline factors that predict the onset of primary open-angle glaucoma. Arch Ophthalmol. 2002 Jun;120(6):714-20; discussion 829-30.</p> <p>2: Leske MC, Heijl A, Hussein M, Bengtsson B, Hyman L, Komaroff E; Early Manifest Glaucoma Trial Group. Factors for glaucoma progression and the effect of treatment: the early manifest glaucoma trial. Arch Ophthalmol. 2003Jan;121(1):48-56.</p> <p>3: Garway-Heath DF, Crabb DP, Bunce C, Lascaratos G, Amalfitano F, Anand N, Azuara-Blanco A, Bourne RR, Broadway DC, Cunliffe IA, Diamond JP, Fraser SG, Ho TA, Martin KR, McNaught AI, Negi A, Patel K, Russell RA, Shah A, Spry PG, Suzuki K, White ET, Wormald RP, Xing W, Zeyen TG. Latanoprost for open-angle glaucoma (UKGTS): a randomised, multicentre, placebo-controlled trial. Lancet. 2015 Apr 4;385(9975):1295-304. doi: 10.1016/S0140-6736(14)62111-5.</p> <p>4: Maier PC, Funk J, Schwarzer G, Antes G, Falck-Ytter YT. Treatment of ocular hypertension and open angle glaucoma: meta-analysis of randomised controlled trials. BMJ. 2005 Jul 16;331(7509):134.</p> <p>In addition there is evidence to show that the amount of visual field progression is related to the amount of pressure reduction. The Advanced Glaucoma Intervention Study (AGIS): 7. The relationship between control of intraocular pressure and visual field deterioration. The AGIS Investigators. Am J Ophthalmol. 2000 Oct;130(4):429-40.</p>
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		<p>It is clear that the relatively mild effect of treatment found in the RCTs is not considered to be of high significance in this argument. This is a shame as a finding of a more efficient treatment (in reducing visual morbidity) would drive the search for a more efficient screening protocol forward.</p> <p>The Ocular Hypertension Treatment Study and Early Manifest Glaucoma Trial, The Advanced Glaucoma Intervention Study are considered to be landmark studies in this area.</p>
The Treatment Point 68	Policies specifically relating to people identified through a screening programme would need to be developed.	The same guidelines as considered appropriate for those currently diagnosed as Ocular Hypertensive or OAG would apply and specific policies are not required. Epidemiological studies have demonstrated that more than 50% of glaucoma patients are undiagnosed but have not identified that they differ from those who had been previously diagnosed.
Overall comment		<p>It is a shame that rather than examining the potential for detecting glaucoma in a population of relatively low risk individuals (those aged >40) more emphasis is given to the detection of glaucoma in higher risk groups such as those with a clear cut positive family history of the condition. Given the estimated lifetime prevalence of POAG in siblings of those with POAG (20-25%) research in this high risk group would be likely to be more productive.</p> <p>General screening is unlikely to be productive and cost-effective but focusing on higher risk patient groups may be a better way forward.</p>

Name:	Russell Young	Email address:	
Organisation (if appropriate):	International Glaucoma Association		
Role:	Chief Executive Officer		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/> ✓</p>			
Section and / or page number	Text or issue to which comments relate	Comment	
		<i>Please use a new row for each comment and add extra rows as required.</i>	
The Screening Programme (page 15)	71. The Cochrane Review	We agree with the <i>Cochrane Review</i> and the recommendation that there is insufficient evidence to recommend population-based screening for OAG.	

		<p>But the <i>Cochrane Review</i> did continue to say: “much can be done to improve awareness and encourage at risk individuals to seek testing”.</p> <p>The IGA believes that additional activities could include:</p> <ul style="list-style-type: none"> • GP questionnaires' detailing family history, myopia, ethnicity, diabetes, visual disturbance and refer for an eye health check (Supports the RCGP Vision Priority 2013—2016) • Use of a non-contact, hand-held tonometer in GP practice to identify borderline pressures or over and then refer for eye health check. • Referral by the GP of all African Caribbean's over the age of 35 for an eye health check at the local optometrist, especially those with a family history. • The IGA supports the recommendations by <i>Glaucoma Screening the Real World report Eugenio A. Maul, MD and Henry D. Jampel, MD:</i> <p>“...we should do our best to target high-risk populations, educate the eye care providing community to optimize glaucoma case finding during comprehensive eye examinations, and educate the community about glaucoma and the importance of periodic eye examinations to detect eye disease as recommended by the American Academy of</p>
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		<p>Ophthalmology”</p> <ul style="list-style-type: none"> And further supported by a study by <i>R. Wormald, E. Basauri, L, 1994 The African Caribbean Eye Survey: Risk Factors for Glaucoma in a Sample of African Caribbean People Living in London:</i> <p>“...Community-based facilities are required to raise awareness of the risk among this ethnic minority in this country and casefinding resources should be provided to meet local needs.</p>
		<p>The IGA believes that RCTs should be undertaken to assess the benefit of screening people of African origin who have four times a greater risk of POAG:</p> <ul style="list-style-type: none"> <i>R. Wormald, E. Basauri, L, 1994 The African Caribbean Eye Survey: Risk Factors for Glaucoma in a Sample of African Caribbean People Living in London</i> “...this study provides good evidence that the 4 times greater risk of glaucoma estimated for American blacks compared with whites applies equally to the United Kingdom population”. Cochrane Review “...POAG is more common ...may come on at an early age and is more aggressive”. <i>The World Glaucoma Association Committee report Screening for Open-Angle Glaucoma report Roy Wilson (co-chair), Cristina Leske, Paul Lee, Tetsuya</i>

		<p>Yamamoto, Daniel Grigera, Paul Healey, Linda Zangwill and Anders Heijl (co-chair) "Justification for glaucoma screening is most strongly supported in high-risk groups" but qualifies it by saying "the cut-off level of glaucoma prevalence needed to make screening desirable is not known"</p>
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Name:	Cindy Tromans		Email address:	xxxx xxxx
Organisation (if appropriate):	College of Optometrists			
Role:	Board Chair			
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>				
Section and / or page number	Text or issue to which comments relate	Comment		
Para 10	The condition should be an important health problem.	<p>Agree. It is important that people attend for eye examinations, as case detection is an important way of finding glaucoma. Repeat measures and referral refinement schemes are also important. Please remember that the system is different in the four countries. In Scotland, for example, there are crucial differences in the eye examination, the skill levels that are used in "routine" everyday GOS appointments and the funding mechanisms / remuneration. Additionally</p> <ul style="list-style-type: none"> • SIGN is different from NICE • The GOS arrangements in Scotland are different • Eye exams, skill levels, equipment and <u>the IT link</u> are different <p>The skill level of an optometrist in Scotland is the same as the rest of the UK; it is only that in Scotland they are contracted to do more and use the full range of</p>		

		skills we all have.
Para 85		<p>We agree that it is unclear which, if any, of the tests for glaucoma considered would be suitable for a population screening programme. However, it is important to remember that community optometrists have an important role in opportunistic case finding for glaucoma, using a battery of tests including repeat measures and referral refinement. The lack of evidence surrounding the benefit of a screening programme should not detract from the important work done by community optometrists in opportunistic case finding for glaucoma which is – in its early stages - asymptomatic.</p> <p>In opportunistic case finding for glaucoma, using the traditional battery of tests of van herick, disc assessment, visual fields and measurement of Intraocular pressures, repeat measures (core competency) and referral refinement (often requiring additional skills) are contractual arrangements in England, but are part of the core contracts in Scotland and Wales.</p>

Name:	Keith Pearce		Email address:	xxxx xxxx
Organisation (if appropriate):	AIO – Association for Independent Optometrists and Dispensing Opticians			
Role:				
Do you consent to your name being published on the UK NSC website alongside your response? Yes				
Section and / or page number	Text or issue to which comments relate		Comment	
<p>Comments on behalf of the AIO on the draft report “Screening for glaucoma. A draft report for the National Screening Committee”</p> <p>The report struggles to find an acceptable simple cost effective screening tool which can identify people with early signs of glaucoma. It also struggles to find good quality evidence that early intervention and treatment of glaucoma is beneficial at all.</p> <p>Optometrists use a number of techniques routinely to identify the presence of glaucoma .We have no high quality evidence to support this, but we would suggest that optometry was responsible for initiating the vast majority of suspect glaucoma referrals via GPs and some directly into secondary care. We continue to examine these patients when they return to us for routine eye examinations as they receive their care from the hospital eye service. As such we do have a significant depth of understanding of this cohort of patients.</p> <p>It is our understanding that some patients appear to respond well to treatment, some not so well and some hardly at all. That is that the damage to the optic nerve head as measured by visual fields, observation of the optic disc and various imaging techniques slows down at various progression speeds after the start of medication. We believe it would be difficult to get high quality evidence of the efficacy of glaucoma medication with such a complex disease process and that NICE showing that there is low to moderate quality evidence that treatment was more effective than no treatment is probably as good as you are going to get. As clinicians we are convinced that not to treat this cohort of patients would lead to a significant proportion of the population having significant visual difficulties with all of the associated social problems and cost to society. The visual difficulties would include the loss</p>				

of the ability to drive, the loss of navigational vision and the loss of the ability to read.

It is not a surprise to us that the study found that there was not one test with the sensitivity and specificity to provide an accurate diagnosis of glaucoma good enough to be used as a screening tool. Optometrists use eye pressure, visual field analysis, observation of the optic nerve head, central corneal thickness, Van Herick's technique, family and ocular history and ocular symptoms to risk assess and justify whether a patient should be referred to an ophthalmologist for potential diagnosis for glaucoma. This range of testing takes time, considerable skill and knowledge base to interpret the findings, the process would not lend itself to screening.

In our view glaucoma is a disease which causes significant visual impairment and as a consequence significant social problems. It is a progressive disease which can be treated to slow its progress, in most cases to ensure the patient has useful vision to the end of their life. A significant percentage of neurons are lost before the disease becomes apparent so early diagnosis is crucial.

Optometry has the correct skill base to identify those most at risk patients for examination by ophthalmology. The NHS eye examination should be funded so that optometry can refine referrals which will make better use of expensive secondary care. Direct referral pathways from optometry to ophthalmology should be developed to improve the efficiency of the NHS and make a simpler patient pathway.

Dear Sir (NSC)

I have been asked to participate in this consultation after writing to **XXXX XXXX** and **XXXX XXXX**

I am concerned that adults born in the 1950/1960/1970's are going blind because glaucoma is not being picked up quickly enough by current checks. I have attach my letter to **XXXX XXXX** you to view. **XXXX XXXX** has written to me several times as he agreed with me that an adult screening programme needed to be put in place to pick up premature babies from this period of time. **XXXX XXXX** has also written to **XXXX XXXX** (ref PH897) and I have had a reply which informs me of the current screening of premature babies but does not talk about my concerns of premature babies from the 1950/60/70 who are being diagnosed too late and have lost their sight or like me who were conscious enough to go and get my eyes checked out and referred to REI Derriford Hospital for laser eye surgery. Rather than repeat myself I have attached my letter to **XXXX XXXX**.

XXXX XXXX explained the current screening programme for premature babies which is fantastic news but did not address my point that adults who were born premature in the 1950/60/70's are going blind as they are not being picked up by current procedures.

I am quite happy to forward any correspondence from **XXXX XXXX** by post is you wish.

I would be grateful if this could be taken very seriously as people are going blind because procedures are not in place.

Yours

XXXX XXXX XXXX XXXX

Ivybridge

Devon

XXXX XXXX

XXXX XXXX

XXXX XXXX

4th July 2015

XXXX XXXX XXXX XXXX

Plymouth

Devon

XXXX XXXX

Dear XXXX XXXX

As requested I am writing to you to give you a fuller picture of my medical condition.

My last uneventful eye check was with Specsavers, XXXX XXXX, Plymouth in October 2013. My eye pressure readings were normal - 12/14.

In November 2014 I noticed my vision was slightly blurred and not as clear as it should be. Thinking that I would need new glasses, I made an appointment for January 15. My appointment was with XXXX XXXX. I saw XXXX XXXX, the optician who stated that my eye pressures were very high. In fact the highest she had ever come across. My field vision test was also very poor. The appointment centre at REI Derriford Hospital had offered me 6th April 2015. I was not prepared to wait that long as XXXX XXXX had stated that my pressures were extremely high.

I took it upon myself to call my doctor and see if my appointment at the REI at Derriford could be brought forward as XXXX XXXX had stated that XXXX XXXX would not send me directly to Derriford as an emergency but would like me to be seen within the next two weeks. Within five days I was offered an appointment at the REI Hospital, Plymouth. I had had to make seven phone calls between opticians, my doctors and the REI to get this emergency appointment.

My appointment was with XXXX XXXX who confirmed that I had glaucoma and gave me drops to take in my left eye twice a day and Lumigan for both eyes at night to reduce eye pressure. I took these each day but noticed my vision was still blurred and phoned the REI over a period of a month and stated that my eyes were still blurred and misty. They stated that I was suffering from dry eyes and needed a dry eye treatment from my chemist. The first treatment was nothing more than water and when this didn't work I purchased System plus which was oil based – this helped a little.

At my next appointment with XXXX XXXX my vision had deteriorated quite significantly and my angles were very small. XXXX XXXX stated that I should have come in as an emergency but I did state that I had called the REI twice and was advised to purchase dry eye treatments. Upon examination I was then seen by XXXX XXXX and a student who was with him that day. His first words to me were "were you a premature baby". I stated that yes I was by about three months. Within three hours I had had laser eye surgery on both eyes. I

was then given four sets of drops and tablets to be taken for the next two weeks. I have been back to see the REI and my angles are now “open”. My vision has cleared but the damage done by the glaucoma not being picked up is irreversible. I am now due to see the REI in September 2015. I still have to take my eye drops twice a day for the glaucoma and once a night for my eye pressures – for life. **XXXX XXXX** stated that I may need to have the eye laser surgery again at some stage. I have also been told that I have a catarrah in my left eye.

In the past I have had regular eye checks. My pressures have been taken and at no stage before January 2015 was I alerted to the fact that I had an issue.

Apart from my eyes I am in good health. I am slightly asthmatic which is well under control.

I am concerned that other premature babies are slipping through the net as my glaucoma was allowed to develop even though I had regular eye checks. If I had been screened as I mentioned in my previous letter could this not have been picked up and treated sooner?

If I close my right eye I can't see my left eye. I have no history of glaucoma in my family. As a result of this all of my siblings and children have had their eyes checked for glaucoma. Luckily all are clear. My daughters have been told they will be screened from the age of 40 because of me.

Any help at all in highlighting this life changing condition and putting in place a screening program would be beneficial to all of those babies in the 1960/70's who were unluckily enough to be borne too soon.

Yours faithfully

XXXX XXXX