

Glaucoma (update)

**Consultation on draft guideline - Stakeholder comments table
06 June 2017 – 04 July 2017**

Comments forms with attachments such as research articles, letters or leaflets cannot be accepted.

Stakeholder	Docu ment	Page No	Line No	Comments Please insert each new comment in a new row	Developer's response Please respond to each comment
Aspire Pharma Limited	Full	21	9-12	<p>The recommendation within the guideline is to only offer preservative free treatments to the patient if they have an allergy to preservatives or people with clinically significant and symptomatic ocular surface disease, but only if they are at high risk of conversion to COAG. We feel that the scope of this recommendation is too narrow and preservative free treatment should be offered as a first line treatment to patients requiring treatment for glaucoma. Preserved treatments have been linked to failure of surgical interventions and a decrease in quality of life. This is discussed below in more detail.</p> <p>Benzalkonium chloride (the most commonly used preservative in ophthalmic eye drops) is a known irritant and has been identified as a potential allergen. (Uter, Lessman, Geier, & Schnuch, 2008) It has been shown to cause toxic and/or immunoinflammatory effects on the ocular structures. (Baudouin, et al., 1999) In a study by Pisella et al comparing timolol with and without preservative, a significant increase in inflammatory markers, HLA DR & ICAM-1 and a decrease in goblet cell density was found in the preservative containing timolol treatment compared with the preservative free formulation. This is indicative of subclinical toxicity in the conjunctiva. (Pisella, lala, Parier, Brignole, & Baudouin, 2003)</p> <p>Failure of filtration surgery is most commonly caused by excessive scarring in subconjunctival tissue resulting in bleb failure. (Skuta & Parrish, 1987) In a study by Broadway et al, failure of surgery was found to be correlated with an increase in the conjunctiva of fibroblasts, macrophages, lymphocytes and pale cells prior to surgery. (Broadway, Grierson, O'Brian, & Hitchings, 1994) This demonstrates a clear link between failure of surgery and damaged/inflamed conjunctiva. Therefore, it seems logical that the failure of surgery is more likely as a result of the preservative contained with the topical treatment rather than the treatment itself, which is a conclusion also drawn by Pisella et al and Baudouin et al (Pisella, Pouliquen, & Baudouin, 2001) (Baudouin, Labbe, Liang, & Pauly, 2010) As a result, it follows that if surgery may be considered in the future for patients, preservative free topical products should be prescribed first line (at an initial small premium) in order to improve the chance of success of surgery and avoid the negative cost implications of failed surgery. Patients more likely to require surgery include younger patients, those with advanced disease and patients with very high intraocular pressure (Gordon, et al., 2002) Surgery may increase in the future, with the advent of minimally invasive glaucoma interventions, (e.g. trephatome procedure available at Moorfields eye hospital) however the success of this treatment may be impacted by a short term cost based analysis now of prescribing generic preserved eye drops.</p> <p>In addition to the above, we feel that the deleterious effects of benzalkonium chloride and decrease in quality of life for patients with glaucoma have been underestimated as part of the guideline recommendations. Patients experience increased adverse effects with a preserved formulation, which while considered to be relatively mild in comparison to untreated glaucoma, do have a significant impact on the quality of life and possible compliance of the patient. (Skalicky, Goldberg, & McClusky, 2012) These effects have been shown in multiple studies comparing preserved timolol versus preservative free timolol treatments. (de Jong, Stowijk, Kuppens, de Keizer, & van Best, 1994) (Ishibasha, Yokoi, & Kinoshita, 2003)</p> <p>We feel that these effects have been underestimated as part of the treatment options when considering preservative free formulations.</p>	<p>Thank you for your comment. The medical treatment section of the guideline has been updated by reviewing the relevant published evidence and by performing new health economic analysis to assess treatment for cost effectiveness. We have taken into account possible negative effects of preservatives, such as benzalkonium chloride, by specifically looking for evidence for preservative vs preservative-free drops. The potential negative effects including quality of life were considered by the committee.</p> <p>As stated in the review protocol in appendix C, accepted study designs for inclusion in this review were RCTs and systematic reviews of RCTs. Unfortunately none of the references you provide on the topic of preservative-inclusive vs. preservative-free preparations meet this criteria (Ammar et al., 2010; Baudouin et al., 2010; de Jong et al., 1994; Ishibasha et al., 2009; Pisella et al., 2003; Skalicky et al., 2012). The two large scale studies you cite (Pisella et al., 2001, and Jaenen et al., 2007) are epidemiological surveys rather than randomised trials.</p> <p>As a consequence of the high cost of preservative-free preparations relative to standard preserved generic prostaglandins and lack of evidence for commensurate benefit, we are unable to recommend these preparations as a first-line treatment for people, except those with preservative allergy or significant ocular surface disease. In order to discover if someone will be intolerant to drops containing preservatives, it would be normal and reasonable to try these out initially (unless allergy/intolerance has already been established through previous treatment). As always, there will be some exceptions to this, e.g. where someone has severe ocular surface disease, it would be reasonable to go directly to preservative-free drops. Either way, and regardless of how the intolerance is discovered, the use of preservative-free drops would then be appropriate.</p> <p>Preservative free Latanoprost (Monopost) drops are £6.95 more costly per month than standard preserved generic prostaglandins. Due to the higher monthly cost, any benefits of preservative agents in reducing irritation, etc. would have to be equivalent to an average gain of 0.05 (for people with an IOP < 25 mmHg) and 0.1 (for people with an IOP ≥ 25 mmHg) quality adjusted life years (QALYs) before the use of these drops would represent good value for money. This amounts to an additional 18.25 and 36.5 days in full health. The committee did not think this amount of gain was plausible. This has been added into the full guideline on p235.</p> <p>Whilst the committee did not review the evidence for different strengths of bimatoprost, they believe that the recommendations allow for alternative drops to be offered where clinically important intolerance occurs.</p> <p>Regarding 'soft' preservatives, the committee believed that the recommendations are adequate as they cover the scenario of patients with clinically important allergy/intolerance or significant ocular surface disease. In these cases alternative drops should be offered.</p>

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				<p>Two large scale studies comparing preserved and preservative free treatment have not been considered as part of the clinical evidence for these guidelines. The first study observed 4107 patients in France, and nearly half of patients experienced ocular irritation, a large proportion of which was ascribed to the preservatives contained within the treatment. The author noted that the phenomenon was not limited to those who are allergic to preservatives. (Pisella, Pouliquen, & Baudouin, 2001) In a follow-up study, which included the 4107 patients from France, 9658 patients were observed from 4 different countries. The authors concluded that preservative free eye drops were associated with a decrease in the symptoms and signs of ocular irritation and may therefore improve compliance and adherence to the treatment. (Jaenen, et al., 2007)</p> <p>Within 5 years of initiation of treatment for Glaucoma, around 40% of patients will be on 2 or more medications. (Kass, et al., 2002) The preservative load increases significantly when administering more than one eye drop. The cytotoxicity of benzalkonium chloride has been shown to be dose dependent, and cell growth and arrest can be seen at concentrations as low as 0.0001%. (Baudouin, et al., 1999) Therefore considering the points discussed above, patients taking more than one topical treatment should certainly be prescribed a preservative free treatment. In addition to the topical glaucoma treatment patients are taking, many patients within this treatment group have comorbidities which require additional topical ophthalmic treatment resulting in an even higher preservative load (e.g. dry eyes, allergies). These patients have not been considered as part of this guideline and further guidance should be provided to enable physicians to consider these treatments when discussing treatment options. It is advisable that patients suffering from dry eye should avoid the use of benzalkonium chloride preserved artificial tears and, consequently, the use of benzalkonium in treatment for glaucoma for use in such patients should be highlighted as being of concern (Göbbels and Spitznas 1992) and to be avoided, even if the patient does not yet have clinically significant symptoms of dry eye. In the study, the levels of benzalkonium chloride were relatively low at 0.005% in the product tested compared with many glaucoma product at higher levels of benzalkonium chloride.</p> <p>Patients who have been on preserved medication for a prolonged period can still benefit from switching to a preservative free formulation as the effects of benzalkonium chloride have been shown to be reversible. (de Jong, Stowijk, Kuppens, de Keizer, & van Best, 1994)</p> <p>With the development of multidose preservative free products, the cost benefit shifts favourably towards preservative free treatment. If, however, even considering the improved cost of preservative free treatment and the benefits discussed above, preservative free treatment is still not considered to be cost effective, then it is advisable to issue specific advice for bimatoprost, where two distinct versions exist with markedly different levels of benzalkonium chloride content. patients prescribed a generic Bimatoprost should be prescribed the higher strength (0.3mg/ml) to reduce the preservative load administered to the patient. Bimatoprost 0.1mg/ml eye drops contains four times the amount of benzalkonium chloride than the higher strength product. (EMA, 2010).</p> <p>Recommendations to look for preserved products containing so called 'soft' preservatives should also be considered for inclusion in the guidance. These may offer preferred alternative option in light of the above issues highlighted with</p>	

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				<p>benzalkonium chloride, especially where a preservative free alternative formulation is not yet available. "Soft preservatives" have been shown to have a less toxic effect than the use of benzalkonium chloride. (Ammar, Noecker, & Kahook, 2010)</p> <p>References Ammar, D., Noecker, R., & Kahook, M. (2010). Effects of Benzalkonium Chloride-preserved, polyquad-preserved, and sofZia-preserved topical glaucoma medications on human epithelial cells. <i>Advances in Therapy</i>, 27(11), 837-845. Baudouin, C., Pisella, P., Fillacier, K., Goldschild, M., Bacquet, F., De Saint Jean, M., & Bechetoille, A. (1999). Ocular Surface Inflammatory Changes Induced by Topical Antiglaucoma Drugs: Human and animal studies. <i>Ophthalmology</i>, 106(3), 556-563. Baudouin, C., Labbe, A., Liang, H., & Pauly, A. (2010). Preservatives in eyedrops: the good, the bad and the ugly. <i>Progress in retinal and eye research</i>, 29, 312-334. Broadway, N. D., Grierson, I., O'Brian, C., & Hitchings, R. (1994). Adverse effects of topical antiglaucoma medication. <i>Archives of ophthalmology</i>, 112(11), 1446-1454. de Jong, C., Stowijk, T., Kuppens, E., de Keizer, R., & van Best, J. (1994). Topical Timolol with and without benzalkonium chloride: epithelial permeability and autofluorescence of the cornea in glaucoma. <i>Graefe's archive for clinical & experimental</i>, 232, 221-224. De Saint Jean, M., Brignole, F., Bringiuer, A., Bauchet, A., Feldmann, G., & Baudouin, C. (1999). Effects of Benzalkonium Chloride on growth and survival of chong conjunctival cells. <i>Investigative ophthalmology and visual science</i>, 40(3), 619-630. EMA. (2010, January 7). Assessment report for extension to Lumigan. Retrieved from EMA: http://www.ema.europa.eu/docs/en_GB/document_library/EPAR_-_Assessment_Report_-_Variation/human/000391/WC500074096.pdf Göbbels, Martin MD Spitznas, Manfred, MD (1992, June) Corneal Epiuthelial Permeability of Dry Eyes Before and After Tretamnet with Artificial Tears <i>Ophthamogy</i>, 90, 6, 873-878 Gordon, M., Beiser, J., Brandt, J., Heuer, D., Higginbotham, E., Johnson, C., . . . Kass, M. (2002, June). The ocular hypertension study: Baseline factors that predict the onset of primary open-angle glaucoma. <i>Archives of ophthalmology</i>, 120, 712-720. Ishibasha, T., Yokoi, N., & Kinoshita, S. (2003). Comparison of the short-term effects on the human corneal surface of topical timolol maleate with and without benzalkonium chloride. <i>Journal of glaucoma</i>, 12(6), 486-490. Jaenen, N., Baudouin, C., Pouliquen, P., Manni, G., Figueiredo, A., & Zeyen, T. (2007). Ocular symptoms and signs with preserved and preservative-free glaucoma medications. <i>European Journal of ophthalmology</i>, 17(3), 341-349. Kass, M., Heuer, D., Higginbotham, E., Johnson, C., Keltner, J., Miller, P., . . . Gordon, M. (2002). The Ocular Hypertension treatment study: A randomized trial determines that topical ocular hypertensive medication delays or prevents the onset of primary open-angle glaucoma. <i>Archives of Ophthalmology (JAMA)</i>, 120, 701-713. Pisella, J., Pouliquen, P., & Baudouin, C. (2001). Prevalance of ocular symptoms and signs with preserved and preservative free glaucoma medication. <i>British Journal of Ophthalmology</i>, 86, 418-423. Pisella, P., lala, E., Parier, V., Brignole, F., & Baudouin, C. (2003). Effect of preservatives on the conjunctiva: a comparative study of beta-blocker eye drops with and without preservatives in glaucoma patients. <i>Journal of French Ophthalmology</i>, 26(7), 675-9. Skalicky, S., Goldberg, I., & McClusky, P. (2012). Ocular surface disease and quality of life in patients with glaucoma. <i>American Journal of Ophthalmology</i>, 153(1), 1-9.e2.</p>	

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				Skuta, G., & Parrish, R. (1987). Wound healing in glaucoma filtering surgery. Survey of ophthalmology, 32(3), 149-170. Uter, W., Lessman, H., Geier, J., & Schnuch, A. (2008). Is the irritant benzalkonium chloride a contact allergen? A contribution to the ongoing debate from a clinical perspective? Contact Dermatitis, 58(6), 359-63.	
Aspire Pharma Limited	Full	21	9-12	States, 'offer preservative free treatments to the patient if they have an allergy to preservatives or people with clinically significant and symptomatic ocular surface disease, but only if they are at high risk of conversion to COAG', however on page 238, the risk of conversion to COAG was mentioned as being removed, but is still within the recommendation itself. Please clarify if this recommendation should remain.	Thank you for your comment. As detailed in the 'other considerations' section on page 238 and on pages 28–29 of the NICE short version, this recommendation remains but has been amended. Previously, the recommendation stated that high risk of conversion to chronic open-angle glaucoma was defined as 'intraocular pressure (IOP) more than 25 and up to 32 mmHg and central corneal thickness less than 555 micrometres, or IOP more than 32 mmHg', but this definition no longer stands in this update; therefore, the definition wording has been removed.
Department of Health				Thank you for the opportunity to comment on the draft for the above clinical guideline. I wish to confirm that the Department of Health has no substantive comments to make, regarding this consultation.	Thank you.
Guy's & St Thomas' NHS Foundation Trust	Short	11	2	We are concerned that medical treatment of all patients with an IOP of 24 or more will lead to overtreatment of unnecessary patients. Previous guidance took the central corneal thickness into account and meant that those with a thick cornea could be identified as not requiring treatment. Although the commissioned economic model may have concluded that the same treatment is cost-effective irrespective of central corneal thickness, we are concerned that not taking CCT into account will mean many patient will be put on life-long treatment unnecessarily and subjected to all the associated risk of side effects. There will also be additional burden on the hospital eye service as previously patients with mildly elevated IOP and thick corneas could have been discharged.	Thank you for your comment. As you noted, the economic modelling did show that it is clinically and cost effective to treat all people regardless of CCT measurement. However, the committee still chose to keep the recommendation from the previous guideline that CCT should be measured in order to come to a diagnosis (rec 1.2.1) because they acknowledged that this information is valuable when interpreting IOP measurements. As noted in the diagnosis LETR, the committee agree that CCT offers important information that will affect a clinician's choice on when to reassess, as it is a factor to consider when assessing risk of progression to sight loss. The committee believed that this was clear in the recommendation for treatment for people 'if they are at risk of visual impairment in their lifetime'. However, based on your comment, the committee has added an additional recommendation to clarify that treatment decisions will be based on risk assessment and in discussion with the patient and their preferred choice of action. This new recommendation states 'at the time of diagnosis of OHT a risk assessment should be made acknowledging risk factors for future vision loss such as levels of IOP, CCT, family history, and life expectancy'.
Guy's and St Thomas' NHS Foundation Trust	Short	General	General	Overall, the changes to the recommendations seem sensible and reasonable. It is clear that the changes have been made in an attempt to reduce the clinic burden in the hospital eye service as well as overall costs by reducing the number of referrals for patients who are at very low risk of requiring treatment. There are positive steps to try and avoid unnecessary follow-up of low risk patients which are welcome. The greater emphasis on optometrists to undertake a more comprehensive assessment prior to referral, especially the requirement to perform Goldmann tonometry is very welcome, as is the increased threshold (to 24mmHg) for referral based on eye pressure alone.	Thank you for your comment.
Guy's and St Thomas' NHS Foundation Trust	Short	5	16	We feel it would be helpful to provide further detail on the recommended interval for visits to their primary eye care professional rather than just "regular".	Thank you for your comment. The committee discussed this and agreed that the recommended interval for visits to primary eye care professional will vary between patients and should be determined by clinical considerations at

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					discharge. The committee also noted that minimum testing intervals are set out by NHS England.
Guy's and St Thomas' NHS Foundation Trust	Short	7	19	<p>Would the committee be willing to recommend other forms of tonometry that produce Goldmann corrected intraocular pressure readings for reassessment measurements?</p> <p>Instruments such as the Ocular Response Analyser (ORA) have been available for many years and have evidence to support their use as an alternative to Goldmann. They have also substituted the place of Goldmann tonometry in many clinical practices, especially for the monitoring of ocular hypertension and low risk glaucoma due to their ease of use by non-ophthalmologists and objective measuring.</p>	Thank you for your comment. Alternative forms of tonometry (including ORA) were considered in the review protocol for reassessment. Due to the lack of strong evidence for adopting other forms of tonometry, the committee did not feel that they could recommend any except the use of the reference standard of Goldmann. The vast majority of glaucoma treatment research literature is based on Goldmann pressure measurement and that this method remains the international standard in clinical services.
Guy's and St Thomas' NHS Foundation Trust	Short	7	25	"when clinically indicated" - again consideration of providing a more explicit recommendation would be helpful, given that visual field testing is paramount to monitoring of glaucoma and from a patient perspective the most important test with implications of visual function, quality of life and driving status.	Thank you for your comment. The committee agreed that visual field testing should be completed at the discretion of the ophthalmologist. This is to ensure that the most appropriate tests are carried out while reducing the number of unnecessary tests. Clinicians need to make the judgement as to which tests are most appropriate at a reassessment visit.
Guy's and St Thomas' NHS Foundation Trust	Short	10	4	<p>Whilst it is helpful to have a recommendation detailing intervals for follow-up, we are concerned this is overly simplified, particularly for patients where progression is "not detected" and IOP is controlled. Although many patients who have stable COAG would be suitable for routine review in 12-18 months, it is by no means universal.</p> <p>There are many patients with COAG who are at higher risk of adverse progression despite seemingly adequate IOP control and it would be clinically negligent and legally indefensible for them not to be reassessed within 12 months, just because no progression is detected. This includes patients with secondary open angle glaucomas (pigmentary, exfoliative, etc), patients with previous glaucoma surgery, patients with field loss affecting fixation, patients with advanced glaucoma on multiple medications, patients with only one seeing eye, patients with fluctuating eye pressures, patients with poor treatment compliance etc. etc.</p> <p>We would suggest explicitly mentioning that reassessment in 12-18 months is only suitable for low risk patients in whom progression is not detected when their IOP is controlled adequately.</p>	<p>Thank you for your comment. The committee noted that the reassessment intervals were not fixed and would change with the patient's perceived risk and could fall anywhere within the given interval.</p> <p>We have updated table 3 in recommendation 1.4.13 to reflect a 6-12 month reassessment for patients with high clinical risk.</p>
International Glaucoma Association	Short	General	General	<p>We suggest there is a need to ensure that the medium and long term outcomes are reported for glaucoma interventions, and research is needed to answer the question 'What are the most effective treatments for glaucoma and how can treatment be improved?' This was ranked as glaucoma priority #1 by the James Lind Alliance.</p> <p>Why is this important? Glaucoma is a lifelong condition which is progressive if not treated adequately during this time. Many patients live for many years following the diagnosis of their glaucoma. Patients need to make treatment choices on the basis of outcome information which may only measure outcomes over 1-3 years. This information is essential for patients in helping them with their treatment choices.</p>	<p>Thank you for your suggestions. This guideline update reviewed the evidence for what are the most effective pharmacological treatments for glaucoma and made recommendations based on the available clinical evidence and the results of economic modelling. When prioritising future research recommendations the committee concentrated on the areas where the evidence was not as strong or where there was still uncertainty following review of the available evidence. This prioritisation is based on criteria listed in section 4.5.1.</p> <p>The proposed research question is rather broad. We have made several practice recommendations for treatment and have recommended further research to determine the best treatments for those with IOP 22 or 23 mmHg. We hope when trials are designed and conducted suitable outcomes are chosen to allow a fair judgement of the effectiveness or not of the treatments.</p>
International Glaucoma Association	Short	General	General	<p>We suggest that research is needed to identify the most effective way of monitoring the progression of glaucoma (#6 on the James Lind Alliance list of glaucoma research priorities).</p> <p>Why is this important?</p>	Thank you for your comment. The committee acknowledge the importance of identifying the most effective way to monitor progression; however, they believe that your question is too broad to signpost for future research. The committee narrowed down this question for review to focus on the accuracy of structural tests for identifying glaucoma damage and monitoring the progression of glaucoma damage (damage of optic nerve head, macula and retinal nerve fibre

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				<p>Quality of life is the most important overall measure of treatment effect for patients as it measures their life experience and how their life experience is affected by interventions. Patient reported outcome measures are an important instrument for informing patients of the value of interventions which may affect their treatment choices. They also offer an effective tool in audit or service evaluations of a glaucoma services.</p> <p>However uncertainty exists as to which patient reported outcome measures best measure outcomes of treatment in patients with glaucoma. Identifying the most effective PROM for measuring glaucoma outcomes would ensure this was adopted in all future clinical trials and glaucoma audits and would ensure that meaningful comparisons could be made between different interventions. This would further enhance a patient's ability to make treatment choices based on accurate quality of life information.</p>	<p>layer). The committee has prioritised this for a research recommendation. Please see appendix Q for details.</p> <p>The committee agrees that it is important to identify the most effective patients reported outcome measure for future research in order to capture glaucoma patients' quality of life. The committee has therefore accepted your suggestion and added an additional research recommendation on this topic. Please see appendix Q for details.</p>
International Glaucoma Association	Short	5	3	Would it be sensible to replace the word 'consider' with the word 'should'? – consider is weak guidance.	Thank you for your comment. As no strong clinical or economic evidence was identified for repeat measure strategies, the committee did not believe a 'should' recommendation was appropriate. The 'consider' recommendation reflects the lack of evidence in this area.
International Glaucoma Association	Short	5	15	Should this be more explicit – provide results of IOP evaluation disc evaluation and copies of disc imaging and visual field testing?	Thank you for your comment. The committee believed that the current wording of the recommendation determines that results should be made available with the referral while maintaining a level of flexibility regarding the specific information to be included, which may vary between patients. Recommendation 1.3.1 states that records should be made available for all healthcare professionals caring for the patient.
International Glaucoma Association	Short	7	2	Make sure that all records are available and easily accessible in chronological order.	Thank you for your comment. The committee agrees that having all records in an easily accessible and chronological order would be expected.
International Glaucoma Association	Short	7	20	Why is a van Herrick needed at every visit? Is there any evidence base? – these are guidelines for OAG and OHT.	Thank you for your comment. The committee reviewed this point and agreed that for the purposes of reassessment an anterior segment slit-lamp examination should be performed and that the van Herick test should be done where clinically necessary. The recommendation 1.4.1 has been amended accordingly. The committee considered the van Herick test to be an adequate alternative to assess the anterior chamber angle rapidly at reassessment.
International Glaucoma Association	Short	10	16 -	Section 1.5 – there is no facility to offer SLT as a primary treatment, only as a treatment when others have failed or been refused – is this reasonable?	Thank you for your comment. The surgical treatment section of the guideline was not prioritised for update and therefore the recommendations were carried forward from the previous guideline.
International Glaucoma Association	Short	10	10	<p>We welcome the recommendation to share feedback with a patient's optometrist, and would like to see this happen with all relevant HES/GP communications. With greater knowledge of the hospital's plans and expectations for the patient, the optometrist is well placed to ensure that:</p> <ul style="list-style-type: none"> • The patient doesn't slip through any nets resulting in non-attendance • The patient is following the treatment regimen correctly, and • The optometrist can also be better placed to know whether to re-refer if IOPs change significantly from those known to the hospital. <p>WE acknowledge this requires the appropriate infrastructure, and should ideally be done electronically.</p>	Thank you for your comment.
International Glaucoma Association	Short	16	1 -	1.6.4 – should you not specify what level of qualification is acceptable for these skills?	Thank you for your comment. The committee discussed the recommendations relating to the skills, training required to diagnose and monitor OHT, suspected COAG and COAG. The committee noted that it would be unhelpful to specify

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					specific qualifications, as these were likely to differ between providers and were also likely to change over time.
International Glaucoma Association	Short	17	27	1.7.1 – in order to achieve this, adequate time needs to be built into consultations to allow for full discussion.	Thank you for your comment. We agree.
International Glaucoma Association	Short	20	11	“... Sight loss may progress and become symptomatic and eventually cause visual impairment.” Significant sight may be lost in glaucoma well before it becomes symptomatic, so perhaps this could be re-worded.	Thank you for your comment. We have edited the glossary text to capture your suggestion. It now reads: Sight loss may progress to visual impairment and eventually become symptomatic.
Novartis Pharmaceuticals UK Ltd	Full	153	10	We have noticed incorrect information on pg.153 on the fixed combination of Dorzolamide and Brimonidine. Currently the only brimonidine combination without timolol is Brinzolamide and Brimonidine.	Thank you for highlighting this error, we have corrected the information.
Novartis Pharmaceuticals UK Ltd	Full	239	11	We are concerned that the guidelines do not suggest any options for patients to utilize dispensing aids to improve adherence. International Glaucoma Association provides Eye Drops & Dispensing aids guidance (August 2016).	Thank you for your comment. This issue is addressed in the section 'Provision of Information for Patients' section 12.1.2.
Novartis Pharmaceuticals UK Ltd	Full	239, 240	23 (pg.239) 12 (pg.240)	We are concerned that this recommendation does not consider current clinical practice of potentially adding a 3rd therapeutic class when the first two classes fail, or adding a combination of two agents after a first agent has failed, to achieve individualized IOP target. The addition of a 3rd therapeutic class is supported by the European Society Glaucoma Guidelines, specifically treating with fixed combination therapy after the first choice monotherapy has failed (4th Edition, page 141 section 3.3.1.2).	Thank you for your comment. People who have tried 2 therapeutic classes of medication, either individually or together, who still have poorly controlled glaucoma should be offered surgery as per the guideline recommendation. On offering any treatment, there should be a discussion regarding the relative risks and benefits, and other options available include laser treatment and /or a third drug class.
Optical Confederation	Short	General	General	Question 1: We are concerned that for this guidance to be implemented, optometrists as the most numerous of those included in the definition of primary eye care professionals, need to be connected to the NHS infrastructure. Although there have been numerous statements on a paperless NHS, currently optometry practices are not connected to NHS systems and as such will have great difficulty accessing previous care episodes and discharge summaries.	Thank you for your comment. The committee agrees that increased connectivity between optometrists and NHS systems will be of huge benefit; however, it is not within the remit of the guideline to make recommendations on how this could be implemented. However, the committee did carry over the following recommendation from the 2009 guideline: Ensure that all the following are made available at each clinical episode to all healthcare professionals involved in a person's care: records of all previous tests and images related to COAG and OHT assessment, records of past medical history which could affect drug choice, current systemic and topical medication, glaucoma medication record, and drug allergies and intolerances. In order to ensure that information is shared between practitioners and the patient the committee also recommended: Give a discharge summary to people who have been assessed and discharged to primary care. Send a copy to their GP and, with patient consent, copy the relevant information to the primary eye care professional nominated by the patient. Advise people to take their discharge summary with them when attending future sight tests.
Optical Confederation	Short	General	General	Question 1: We are concerned that in the eagerness to remove the cost burden of 1.8 million people with IOP >21 <24 mmHg from formal monitoring, this cost has been shifted to the patient. Unless patients with IOP >21 <24 mmHg are discharged with a statement that they are at risk of glaucoma, there is a chance they may not be eligible for NHS sight tests. This could create a risk of patients not having regular examinations, when they are in a group of increased risk. NHS England have made it clear, that patients should not normally be seen at sooner intervals than those designated by the Department of Health in the memorandum of understanding on the frequency of GOS sight tests.	Thank you for your comment. As detailed in the treatment linking evidence to recommendations (page 233, full guideline), the committee was not convinced that there is sufficient evidence to suggest that people with a baseline IOP of less than 24 mmHg (who have never had a reading greater than 24 mmHg, as those in ocular hypertension study had) are at a significant increased risk. Therefore, these people cannot be considered as any different from the population of <21 mmHg and could not be advised for any shorter reassessment interval than that set out by the NHS sight test criteria. However, the committee acknowledge that there is a large degree of uncertainty around the population who have IOP 22 or 23 and as such, they prioritised a research recommendation for treatment in this group.
Optical Confederation	Short	General	General	Question 2:	Thank you for your comment. The committee agrees that increased connectivity between optometrists and NHS systems will be of huge benefit; however, it is

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				Connecting optometry practices to the NHS infrastructure has a significant cost. Funding has previously been requested from NHS England, but has been rejected. Without connection to the wider NHS, it will be very difficult to break the cycle of unnecessary re-referral caused by operating in technological isolation. There is also the potential cost of 1.8 million people who require more regular follow up by primary eye care professionals.	not within the remit of the guideline to make recommendations on how this could be implemented. However, the committee did carry over the following recommendation from the 2009 guideline: Ensure that all the following are made available at each clinical episode to all healthcare professionals involved in a person's care: records of all previous tests and images related to chronic open-angle glaucoma (COAG) and ocular hypertension (OHT) assessment, records of past medical history which could affect drug choice, current systemic and topical medication, glaucoma medication record, and drug allergies and intolerances. In order to ensure that information is shared between practitioners and the patient the committee also recommended: Give a discharge summary to people who have been assessed and discharged to primary care. Send a copy to their GP and, with patient consent, copy the relevant information to the primary eye care professional nominated by the patient. Advise people to take their discharge summary Thank you for your comment. The committee agrees that increased connectivity between optometrists and NHS systems will be of huge benefit; however, it is not within the remit of the guideline to make recommendations on how this could be implemented. However, the committee did carry over the following recommendation from the 2009 guideline: Ensure that all the following are made available at each clinical episode to all healthcare professionals involved in a person's care: records of all previous tests and images related to COAG and OHT assessment, records of past medical history which could affect drug choice, current systemic and topical medication, glaucoma medication record, and drug allergies and intolerances. In order to ensure that information is shared between practitioners and the patient the committee also recommended: Give a discharge summary to people who have been assessed and discharged to primary care. Send a copy to their GP and, with patient consent, copy the relevant information to the primary eye care professional nominated by the patient. Advise people to take their discharge summary with them when attending future sight tests.
Optical Confederation	Short	4	2,3,4	We are pleased to see that it is made clear that these recommendations are outside of a sight test. However, we would like to see a more explicit early statement that a service should be commissioned to provide this service.	Thank you for your comment. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. This is particularly the case for the recommendations we have directed to people planning and providing eye care services before referral (recommendations 1.1.8 and 1.1.9). Your comments will be considered by NICE where relevant support activity is being planned.
Optical Confederation	Short	4	11	We are concerned that pupil dilation adds an unnecessary burden and level of inconvenience to the patient. The need for pupil dilation should be clinically driven. If a sufficient view of the optic nerve can be obtained without dilation we do not believe it is necessary. For those that are driving this may require a return visit adding cost.	Thank you for your comment. Bullet point 2 of recommendation 1.1.1 has been amended to reflect that pupil dilatation should be carried out only if necessary in a case-finding scenario.
Optical Confederation	Short	4	8,9	We are concerned that threshold fields may not always be appropriate and difficult to complete for some patients. It would be better to have a line that says "threshold fields where possible". Otherwise there is a risk that the extra time and cost associated make referral refinement unviable.	Thank you for your comment. Bullet point 1 of recommendation 1.1.1 has been amended to reflect that central visual field assessment can be performed using standard automated perimetry in the case-finding scenario.
Optical Confederation	Short	4	15,16	We are pleased to see the addition of Van Herick's and SD-OCT for anterior chamber assessment, but this could lead to a need to revise existing repeat readings schemes. Existing agreements may have to end before new ones can be negotiated.	Thank you for your comment. The committee agrees that implementation will need to occur over a period of time suitable to allow these adjustments to be made. Your comments will be considered by NICE where relevant support activity is being planned.

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Optical Confederation	Short	4	18,19	We believe the word "routinely" should be added, if an IOP is measured that warrants emergency referral and the practice does not have access to a Goldman-type applanation tonometer, it is our opinion that in this case, referral should both be made and accepted. For the avoidance of doubt this is defined by the College of Optometrists as an IOP \geq 45 mmHg. If not this exposes patients to unacceptable risk.	Thank you for your comment. When the word routinely is used, it is important to identify the 'non-routine' situations where the recommendation would not apply. The committee considered this for non-contact measurements of extremely high IOP and could not come to consensus on a specific 'too high' threshold. Therefore, the committee felt it would be acceptable to leave this up to clinical judgement as noted in the reference to urgent or emergency referral in recommendation 1.1.4: Before deciding to refer, consider repeating visual field assessment and IOP measurement on another occasion to confirm a visual field defect or IOP of 24 mmHg or more, unless clinical circumstances indicate urgent or emergency referral is needed.
Optical Confederation	Short	4	20,21,	Without very clear and easily accessible discharge plans it is very difficult for optometrists to know if clinical circumstances have changed. Unlike medicine, optometrists do not have a common record that follows the patient and patients tend to move between practices on a regular basis. There is an associated cost of making the necessary connections to NHS IT. Currently there is no funding available to optical practices.	Thank you for your comment. The committee agrees that access to the appropriate discharge information is important for primary health care practitioners. The committee included a new recommendation regarding the provision of discharge summaries and who these should be available to (see recommendation 1.4.15). Commissioning of these services is outside the scope of the NICE guideline committee. Your comments will be considered by NICE where relevant support activity is being planned.
Optical Confederation	Short	5	16,17	This requires greater elaboration to inform patients of both the reasons for non-referral and when they should return. If it is requested that patients are followed up more regularly than their normal sight test intervals, this would not normally be provided under GOS and as such would require an extended primary care service. NHS England have made it clear that patients should not normally be seen at sooner intervals than those designated by the Department of Health in the memorandum of understanding on the frequency of GOS sight tests.	Thank you for your comment. As detailed in the treatment linking evidence to recommendations section (page 233, full guideline), the committee was not convinced that there is sufficient evidence to suggest that people with a baseline intraocular pressure (IOP) of less than 24 mmHg (who have never had a reading greater than 24 mmHg, as those in ocular hypertension study had) are at a significant increased risk. Therefore, these people cannot be considered as any different from the population of <21 mmHg and could not be advised for any shorter reassessment interval than that set out by the NHS sight test criteria. However, the committee acknowledged that there is a large degree of uncertainty around the population who have IOP 22 or 23; as such, they prioritised a research recommendation for treatment in this group. Your comments will be considered by NICE where relevant support activity is being planned.
Optical Confederation	Short	5	16,17	Consideration should also be given to the funding of this recommendation. Only those with defined criteria are eligible for NHS sight tests. Unless patients with IOP >21 <24 mmHg are discharged with a statement that they are at risk of glaucoma, there is a chance they may not be eligible for NHS sight tests. This could create a risk of patients not having regular examinations, when they are in a group of increased risk.	Thank you for your comment. As detailed in the treatment linking evidence to recommendations section (page 233, full guideline), the committee was not convinced that there is sufficient evidence to suggest that people with a baseline intraocular pressure (IOP) of less than 24 mmHg (who have never had a reading greater than 24 mmHg, as those in ocular hypertension study had) are at a significant increased risk. Therefore, these people cannot be considered as any different from the population of <21 mmHg and could not be advised for any shorter reassessment interval than that set out by the NHS sight test criteria. However, the committee acknowledge that there is a large degree of uncertainty around the population who have IOP 22 or 23; as such, they prioritised a research recommendation for treatment in this group. Your comments will be considered by NICE where relevant support activity is being planned.
Optical Confederation	Short	5	7,8,9,10,11,12,13	We are concerned that this could be misleading. While it makes sense to repeat IOP and visual fields, If there is optic nerve head damage, then this does not warrant repeat measures as it is unlikely to be a false positive.	Thank you for your comment. The reference to repeat measures is signposting people to the recommendation farther down that recommends people 'consider' repeat measures (not a strong recommendation). This does not preclude people from referring based on a single finding of optic nerve head damage.
Optical Confederation	Short	5	23,24.25, 26	While we welcome this recommendation, care should be taken to not disadvantage patients. These services should be commissioned from all practices as extended	Thank you for your comment. The committee agrees that if the practice is able and willing to provide these services then they would be eligible to be

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				primary care services. This will maximise patient convenience and cost effectiveness. We would discourage the use of tertiary referral triage centres as this inconveniences patients, limits patient choice and is no more cost-effective than services commissioned at optical practices. It should be noted that this pathway starts at the outcome of a sight test. It would therefore seem logical that the most convenient system for the patient is for repeat readings to follow on directly from the sight test at the same location.	commissioned to do so. A significant limitation will be the availability of optometrists who are trained to the required level. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. Your comments will be considered by NICE where relevant support activity is being planned.
Optical Confederation	Short	6	6,7	Pupil dilation at diagnosis is sensible. However, the evidence does not support mandatory dilation at referral.	Thank you for your comment. Bullet point 2 of recommendation 1.1.1 has been amended to reflect that pupil dilatation should be carried out only if necessary in a case-finding scenario.
Optical Confederation	Short	10	10,11,12, 13,14	We welcome the addition of the discharge summary, however there will still be logistical challenges as patients move around between practices. Thought should be given to how this information can be accessed by whichever optometrist sees the patient.	Thank you for your comment. The committee acknowledged that an IT solution would be preferable to ensure the continuity of care as patients change practices. However, until this can be achieved, the committee agreed that a discharge summary provided to the patient is probably still of benefit.
Optical Confederation	Short	11	5,6,7	Only those who meet defined criteria are eligible for NHS sight tests. Unless patients with IOP >21 <24 mmHg are discharged with a statement that they are at risk of glaucoma, there is a chance they may not be eligible for NHS sight tests. This could create a risk of patients not having regular examinations, when they are in a group of increased risk.	Thank you for your comment. As detailed in the treatment linking evidence to recommendations section (page 233, full guideline) the committee was not convinced that there is sufficient evidence to suggest that people with a baseline intraocular pressure (IOP) of less than 24 mmHg (who have never had a reading greater than 24 mmHg, as those in ocular hypertension study had) are at a significant increased risk. Therefore, these people cannot be considered as any different from the population of <21 mmHg and could not be advised for any shorter reassessment interval than that set out by the NHS sight test criteria. However, the committee acknowledge that there is a large degree of uncertainty around the population who have IOP 22 or 23, and as such, they prioritised a research recommendation for treatment in this group.
Optical Confederation	Short	15	25,26,27, 28	We are pleased to see that this has been clarified to avoid the current confusion amongst some practitioners.	Thank you for your comment.
Royal National Institute of Blind People	Short	General	General	RNIB carried out a survey of 64 glaucoma patients recruited from RNIB's supporter community and beyond to inform the response to this draft Clinical Guideline to ensure patient voice and experience is represented in our response. The survey was carried out in the consultation period to capture patient responses to the content of the draft guidance. Our findings from this survey will be referred to throughout where relevant. Profile of respondents (base: 64): <ul style="list-style-type: none"> 58 per cent of respondents (n=37) were first referred to hospital by their GP or optician more than years ago, followed by 17 per cent between six and ten years ago (n=11), and 16 per cent three to five years ago (n=10). 30 per cent of respondents were male (n=19) and 67 per cent were female (n=43). The remaining respondents declined to respond. Only one respondent was aged between 18-24 (2 per cent), no respondents were 25-34; six per cent of respondents were aged between 35-44 (n=4); 15 per cent were aged between 45-54 (n=9); 15 per cent were aged between 55-64 (n=9); 29 per cent were aged between 65-74 (n=18); 13 per cent were aged between 75-84 (n=8); 19 per cent were aged between 85-94 (n=12); no respondents were aged over 95. 	Thank you for your comments and for surveying patient views.

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				<ul style="list-style-type: none"> The majority of respondents were from England (84 per cent; n=54) and there was a good spread of respondents across the regions. 8 per cent of respondents were from Wales (n=5). 69 per cent of respondents were living with another eye condition (n=44). 	
Royal National Institute of Blind People	Short	General	General	<p>All information provided to patients must be in a format that is accessible to them. This is now a requirement covered by the NHS Accessible Information Standard (2016).</p> <p>A minority of patients said that the format in which they received information throughout the pathway did not meet their needs (23 per cent). 20 per cent of patients did not know that they could request written information in an accessible format.</p> <p>RNIB recommends the NHS Accessible Information Standard (2016) be explicitly included and highlighted in the Glaucoma Clinical Guideline with particular note of the requirement to undertake a patient assessment to identify, capture and record the person's accessibility requirements.</p> <p>Information for patients must be communicated in a way that they can understand. Just under a third of the patients we surveyed (30 per cent) report that the information given to them at the referral stage was not delivered in a way that they could understand. 34 per cent of patients we surveyed [base 64] reported that information about treatment options were not explained to them in a way that they could understand. There is a need to clearly explain treatment and management in a way that patients can understand.</p> <p>RNIB recommends that sections 6.4.2 and 6.4.3 of the Accessible Information Standard Implementation Guide be highlighted, with mention of the need to use plain language so that people can understand the information they are being given.</p>	Thank you for your comment. Text has been added and reference has been made to this document in the provision of information for patients linking evidence to recommendations section in the full guideline.
Royal National Institute of Blind People	Short	4 5	2-21 1-17	<p>Patients express that they would like information, advice and support at the primary care and referral stage of the pathway. Currently there is no patient information provision at this stage of the pathway as it is not explicitly mentioned in the patient information section (Section 1.7 and 1.7.1).</p> <p>While the majority of patients surveyed (42 per cent [base 64]) told us that they had the right information at the primary care stage, a significant number (32 per cent [base 64]) said they did not. When asked what would have been helpful patients told us they wanted:</p> <ul style="list-style-type: none"> - information on what it means to have glaucoma - an explanation about the condition, the risks and the referral process - personalised information - reassurance - time to ask questions. <p>Section 1.7 describes the importance of providing information to patients at diagnosis but we would suggest that information need begins earlier. This could be addressed by amending section 1.7 to take account of this, or to build into section 1.1</p>	Thank you for your comment. The committee agree with your suggestion and have amended the recommendation 1.7 to include referral and discharge.

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				<p>RNIB recognises that section 1.7 is not open to amendment but requests the addition of 'referral' to 1.1.7 'Offer people the opportunity to discuss their referral, diagnosis, prognosis and treatment' to cover this stage of the pathway.</p> <p>Alternatively the following should be added to Section 1.1</p> <p>At referral</p> <ul style="list-style-type: none"> - Discuss with the person rationale for referral and the referral process. Allow time for questions - Provide information about what people should expect next. - signpost to support organisations for further information and support - Potential risks of elevated pressure in the eye. 	
Royal National Institute of Blind People	Short	18	24	<p>RNIB supports the addition of information about the Eye Clinic Liaison Officer in Section 1.7.1. RNIB investigated the impact of Eye Clinic Liaison Officers (ECLO impact tool: UK wide findings 2015-2016), finding that this provision increased emotional well-being as well as increasing patient understanding of the support available to them outside of the eye clinic. Additionally people who received support from an ECLO reported that as a result they felt reassured and more optimistic about the future.</p> <p>Below are results from the above report available here: www.rnib.org.uk/ECLO-impact-tool</p> <ul style="list-style-type: none"> • After visiting an ECLO, people's understanding of the support available outside of the eye clinic rose from 23 per cent to 91 per cent • 75 per cent of respondents reported their emotional well-being had increased as a result of seeing an ECLO • 85 per cent of respondents reported feeling either much more or more reassured after contact with an ECLO • 70 per cent of respondents either strongly agreed or agreed that they felt more optimistic about the future, due to the support of an ECLO This figure stayed relatively stable at 69 per cent when asked 3 months later in the follow up survey <p>Additional evidence outlining the positive impact of ECLO services can be found in this independent report: Filling the gap where patients used to fall: evaluating the role and impact of eye clinic liaison officers and other vision support workers across the United Kingdom</p>	Thank you for your support for the inclusion of the Eye Clinic Liaison Officer in recommendation 1.7.1..
Royal National Institute of Blind People	Short	18	25	<p>RNIB Supports the addition of information about 'support organisations' to section 1.7.1. RNIB and other support organisations such as the International Glaucoma Association and local societies have a huge amount of information and support to offer people living with glaucoma.</p> <p>RNIB and Royal College of Ophthalmologists regularly update a joint 'Understanding Series' of booklets, one of which is entitled 'Understanding Glaucoma' which covers information on types of glaucoma, managing glaucoma, coping and further support available. This series is available in CD, large print, Braille and online at https://www.rnib.org.uk/eye-health-eye-conditions-z-eye-conditions/glaucoma#understanding</p>	Thank you for your comment.

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The Clinical Council for Eye Health Commissioning	Short version	General	General	<p>The Clinical Council for Eye Health Commissioning (CCEHC) would like to thank NICE for this guideline on glaucoma. The guidance is all very sensible and sets out what should be done clinically.</p> <p>The previous Guideline and Quality Standard resulted in variable implementation and restricted its potential for improving quality of referrals, monitoring and patient experience. Unless commissioning issues are reviewed, there is a risk of repeating the previous experience of patchy commissioning of repeat measures and enhanced case finding through enhanced services. Where these are commissioned, uptake by local providers can also very variable.</p> <p>We would like to make some comments about:</p> <ol style="list-style-type: none"> 1. The tests required before referral 2. The information to be included with referral 3. The commissioning implication of the management of patients discharged to primary eye care services 	Thank you for your comments.
The Clinical Council for Eye Health Commissioning	Short version	4	2	<p>The case-finding before referring a person for diagnosis of chronic open angle glaucoma (COAG) and related conditions is an essential part of glaucoma care.</p> <p>As recommended in the Royal College of Ophthalmologists' Commissioning Guide: Glaucoma (https://www.rcophth.ac.uk/wp-content/uploads/2016/06/Glaucoma-Commissioning-Guide-Recommendations-June-2016-Final.pdf), Commissioners should ensure they commission services that allow people with Ocular Hypertension (OHT) or suspected glaucoma to be appropriately assessed by primary eye care professionals before being referred to a consultant ophthalmologist if glaucoma is still suspected.</p> <p>We believe that the recommendations about the tests required before referral (Tests using Goldmann-type applanation tonometry (GAT), slit lamp biomicroscopy with pupil dilation and visual field assessment using standard automated perimetry) can only be implemented by commissioning the service separately from General Ophthalmic Services (GOS), as the GOS contract relates only to the sight test.</p> <p>The pre-referral should, therefore, be commissioned as an extended community service. Greater clarity is required in the pathway between a repeat measures service (which does not involve dilation) and enhanced case finding (that does involve dilation).</p>	Thank you for your comment. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. This is particularly the case for the recommendations we have directed to people planning and providing eye care services before referral (recommendations 1.1.8 and 1.1.9).
The Clinical Council for Eye Health Commissioning	Short version	5	15	<p>The Royal College of Ophthalmologists' Commissioning Guide mentioned above also recommends that Commissioners should ensure that local systems allow the transfer of complete information on clinical findings.</p> <p>The NICE recommendation to provide results of all examinations and tests with the referral should therefore be also commissioned as an extended community service as this is outside the GOS contract.</p>	Thank you for your comment. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care.
The Clinical Council for Eye Health Commissioning	Short version	10	5	<p>When patients with ocular hypertension (OHT) who do not require treatment are discharged back to primary eye care services, the ocular status should be conveyed to the referring primary eye care professional to avoid unnecessary re-referral to the hospital eye services. This requires information sharing between ophthalmology services and the primary eye care professional (optometrist).</p>	Thank you for your comment. The committee agrees that sharing relevant information with the primary care eye professional at discharge is important. The committee has made recommendations 1.1.8 and 1.1.9, but the specification detail is out with the remit of the guideline committee.

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				<p>We welcome this recommendation of sharing information and suggest include the information gathered at discharge: visual field, optic nerve head observation, intraocular pressure, anterior chamber configuration and central corneal thickness.</p> <p>GAT and any repeat measurements should be commissioned as an extended community service in the same way as the pre-referral. Patients will require a letter from an ophthalmologist to confirm that they are at risk of Glaucoma, otherwise, if they are not entitled to an NHS sight test (e.g. under 60yrs) they will have to pay privately.</p>	
The College of Optometrists	Short version	General	General	<p>The College of Optometrist would like to thank NICE for this guideline on glaucoma. The guidance is all very sensible and sets out what should be done clinically.</p> <p>We would like to make some comments about:</p> <ol style="list-style-type: none"> 4. The tests required before referral 5. The information to be included with referral 6. The commissioning implication of the management of patients discharged to primary eye care services 7. The relevant healthcare professional to diagnose chronic open angle glaucoma (COAG) 8. The specialist qualifications when working under the supervision of a consultant ophthalmologist 	Thank you for your comments.
The College of Optometrists	Short version	4	2	<p>The case-finding before referring a person for diagnosis of chronic open angle glaucoma (COAG) and related conditions is an essential part of glaucoma care.</p> <p>As recommended in the Royal College of Ophthalmologists' Commissioning Guide: Glaucoma (https://www.rcophth.ac.uk/wp-content/uploads/2016/06/Glaucoma-Commissioning-Guide-Recommendations-June-2016-Final.pdf), Commissioners should ensure they commission services that allow people with Ocular Hypertension (OHT) or suspected glaucoma to be appropriately assessed by trained community optometrists before being referred to a consultant ophthalmologist if glaucoma is still suspected.</p> <p>We believe that the recommendations about the tests required before referral (Tests using Goldmann-type applanation tonometry (GAT), slit lamp biomicroscopy with pupil dilation and visual field assessment using standard automated perimetry) can only be implemented by commissioning the service separately from General Ophthalmic Services (GOS), as the GOS contract relates only to the sight test.</p> <p>The pre-referral should, therefore, be commissioned as an extended community service.</p>	Thank you for your comment. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. This is particularly the case for the recommendations we have directed to people planning and providing eye care services before referral (recommendations 1.1.8 and 1.1.9).
The College of Optometrists	Short version	5	15	<p>The Royal College of Ophthalmologists' Commissioning Guide mentioned above also recommends that Commissioners should ensure that local systems allow the transfer of complete information on clinical findings.</p> <p>The NICE recommendation to provide results of all examinations and tests with the referral should therefore be also commissioned as an extended community service as this is outside the GOS contract.</p>	The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care.

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The College of Optometrists	Short version	10	5	<p>When patients with ocular hypertension (OHT) who do not require treatment are discharged back to primary eye care services, the ocular status should be conveyed to the referring optometrists to avoid unnecessary re-referral to the hospital eye services. This requires information sharing between the primary care optometrist and the ophthalmology services.</p> <p>We welcome this recommendation of sharing information and suggest this includes, at a minimum, the information gathered at diagnosis: visual field, optic nerve head observations, intraocular pressure, anterior chamber configuration and central corneal thickness.</p> <p>Repeats of these measurements are not mandated within the GOS contract and would need to be commissioned as an extended community service.</p>	<p>Thank you for your comment. The committee agrees that sharing relevant information with the primary care eye professional at discharge is important. The guideline committee hoped and expected that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. This is particularly the case for the recommendations we have directed to people planning and providing eye care services before referral (recommendations 1.1.8 and 1.1.9).</p>
The College of Optometrists	Short version	15	15	<p>We believe for patients to receive quality glaucoma care, the healthcare professionals involved in their care should have the knowledge, skill and experience to deliver that care appropriately in whichever healthcare setting they are seen.</p> <p>Levels of supervision while training and working within a glaucoma service can vary substantially from direct interaction after every patent episode to supervision by audit.</p> <p>We suggest that the recommendations for a specialist qualification (according to case complexity) should be considered to apply equally to those healthcare professionals working within a consultant-led service and those working independently of consultant ophthalmologist supervision.</p> <p>Please see the College of Optometrists and the Royal College of Ophthalmologists' joint supplementary guidance on supervision in relation to glaucoma related care by optometrists: https://www.college-optometrists.org/guidance/supplementary-guidance/supervision-glaucoma-related-care-by-optometrists.html</p>	<p>Thank you for your comment. The committee agreed that it was important to note that supervision (i.e., working within a consultant-led service) should not be conflated with the level of training or qualifications obtained (i.e., those working independently of consultant ophthalmologist supervision). The committee discussed that training requires close contact between trainee and trainer, while working under supervision will vary according to level of training, established qualifications and experience of the health care practitioner. The committee agreed that the recommendation regarding training, qualifications and experience made in CG85 were still appropriate although we have now removed the brackets '(when not working under the supervision of a consultant ophthalmologist)' from 1.6.2. and 1.6.5 to clarify the issue.</p>
The College of Optometrists	Short version	15	16	<p>This recommendation is unchanged from the previous version of the NICE guideline.</p> <p>Glaucoma is a condition that is primarily managed with topical medications, and so could mostly be managed in a community setting. The most urgent issue is to address the lack of capacity in the Hospital Eye Service (HES). Across the UK, HES are struggling to manage rising demand due to an ageing population and more advanced ophthalmic treatments.</p> <p>We believe that the diagnosis of chronic open angle glaucoma (COAG) could also be made by a suitably qualified health care professional with the relevant experience.</p> <p>We suggest including a research recommendation around the levels of agreement between suitably qualified healthcare professionals in relation to the diagnosis and differential diagnosis of COAG, and a research recommendation around the levels of agreement between specialist ophthalmologists in relation to the diagnosis and differential diagnosis of COAG.</p>	<p>Thank you for your comment. The committee discussed the potential of this research question. However, the committee agreed that the purpose of this recommendation is to ensure that where diagnosis of COAG is made, other conditions that mimic COAG can be investigated as needed in a routine manner (blood tests, MRI scan, and so on). Community (optometrists) will not necessarily have access to the facilities required to achieve this level of diagnosis and will not have the medical knowledge necessary to know when to suspect a problem. The committee agreed that while optometrists would be able to recognise patterns of field loss and disc damage, they might not be well placed to address the problems of the less common but potentially lethal misdiagnosis such as tumours. In order to complete a study looking at these rare events a very large sample size would be required, which is unlikely to be funded. The committee considered other research questions to be a higher priority at this time.</p>
The College of Optometrists	Short version	16	18	<p>We believe for patients to receive quality glaucoma care, the healthcare professionals involved in their care should have the knowledge, skill and experience to deliver that care appropriately in whichever healthcare setting they are seen.</p>	<p>Thank you for your comment. The committee agreed that it was important to note that supervision (i.e., working within a consultant-led service) should not be conflated with the level of training or qualifications obtained (i.e., those working independently of consultant ophthalmologist supervision). The committee discussed that training requires close contact between trainee and</p>

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				<p>Levels of supervision while training and working within a glaucoma service can vary substantially from direct interaction after every patient episode to supervision by audit.</p> <p>We suggest that the recommendations for a specialist qualification (according to case complexity) should be considered to apply equally to those healthcare professionals working within a consultant-led service and those working independently of consultant ophthalmologist supervision.</p> <p>Please see the College of Optometrists and the Royal College of Ophthalmologists' joint supplementary guidance on supervision in relation to glaucoma related care by optometrists: https://www.college-optometrists.org/guidance/supplementary-guidance/supervision-glaucoma-related-care-by-optometrists.html</p>	<p>trainer, while working under supervision will vary according to level of training, established qualifications and experience of the health care practitioner. The committee agreed that the recommendation regarding training, qualifications and experience made in CG85 were still appropriate although we have now removed the brackets '(when not working under the supervision of a consultant ophthalmologist)' from 1.6.2. and 1.6.5 to clarify the issue.</p>
The Royal College of Ophthalmologists	Both	General	General	Comments made on the Short version apply also to the long version	Thank you. Any amendments will be made to both versions.
The Royal College of Ophthalmologists	Both	General	General	Most of the new recommendations seem very sensible (subject to concerns outlined below). A further practice recommendation is suggested)	Thank you. Please see our responses to these comments.
The Royal College of Ophthalmologists	Both	General	General	Key research recommendations: The College supports the recommendations and suggest two more.	Thank you. Please see our responses to these comments.
The Royal College of Ophthalmologists	Both	General	General	Failure to revise the review questions for Sections 6.3 and 6.4 (Accuracy of structural tests and Accuracy of intraocular pressure tests) seriously undermines the utility of these parts of the Guidelines. The Review questions are inappropriate to provide the evidence needed by the guideline committee (see Comments ID64 and ID66, below). The consequence of failure to ask the correct review questions are: no useful evidence, wasted public funds, reputational damage (consequent on poorly-thought-out questions).	Thank you for your comment. We think that we have asked appropriate review questions and reviewed the most important evidence in the area. We have answered these points in full in the responses to comments ID64 and ID66.
The Royal College of Ophthalmologists	Both	General	General	The draft guidance with potentially the biggest impact on practice is discussed in Comments ID138 and ID85.	Thank you. Please see our responses to these comments.
The Royal College of Ophthalmologists	Both	General	General	The draft guidance with potentially the biggest cost impact is discussed in Comment ID111	Thank you. Please see our response to this comment.
The Royal College of Ophthalmologists	Both	General	General	<p>Addition research questions to consider.</p> <p>This research question is #1 on the James Lind Alliance list:</p> <p>a) What are the most effective treatments for glaucoma and how can treatments be improved?</p> <p>Why is this important</p> <p>Glaucoma is a lifelong condition which is progressive if not treated adequately during this time. Many patients live for many years following the diagnosis of their glaucoma. Patients need to make treatment choices on the basis of lifetime outcomes for interventions rather than on the basis of outcome information which may only measure outcomes over 1-3 years. This information is essential for patients in helping them with their treatment choices.</p>	<p>Thank you for your suggestions. This guideline update reviewed the evidence for pharmacological treatments for glaucoma and made recommendations based on the available clinical evidence and the results of economic modelling. When prioritising future research recommendations the committee concentrated on the areas where the evidence was not as strong or where there was still uncertainty following review of the available evidence. This prioritisation is based on criteria listed in section 4.5.1.</p> <p>The first of your suggested research recommendations is rather broad. The committee have made several practice recommendations for treatment but</p>

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				b) Does OCT technology facilitate more prompt decision-making for glaucoma diagnosis and identification of progressive glaucoma?	have made a research recommendation in relation to treatment for people with an IOP of 22 or 23 mmHg. The committee agrees that the use of OCT technology is an important consideration for research and had already prioritised a research recommendation in this area. Please see Appendix Q for details.
The Royal College of Ophthalmologists	Both	General	General	Practice recommendation, related to the research recommendation in comment ID8: Ensure medium and long term outcomes are recorded for glaucoma interventions (visual field and IOP)	Thank you for your suggestions. The committee hope that in practice, relevant patient data would be recorded including medium and long-term outcomes. We have recommended that clinical records are made available to all healthcare professionals involved in the care of patients.
The Royal College of Ophthalmologists	Both	General	General	Addition research question to consider. This research question is #6 on the James Lind Alliance list: What is the most effective way of monitoring the progression of glaucoma? This would be helped by identification of effective patient reported outcome methods and evidence from longer term outcomes for treatment interventions Which patient reported outcome measures are most effective in defining quality of life in patients with glaucoma? Why is this important Quality of life is the most important overall measure of treatment effect for patients as it measures their life experience and how their life experience is affected by interventions. Patient reported outcome measures are an important instrument for informing patients of the value of interventions which may affect their treatment choices. They also offer an effective tool in audit or service evaluations of a glaucoma services. However, uncertainty exists as to which patient reported outcome measures best measure outcomes of treatment in patients with glaucoma. Identifying the most effective PROM for measuring glaucoma outcomes would ensure this was adopted in all future clinical trials and glaucoma audits and would ensure that meaningful comparisons could be made between different interventions. This would further enhance a patient's ability to make treatment choices based on accurate quality of life information.	Thank you for your comment. The committee acknowledge the importance of identifying the most effective way to monitor progression; however, they believe that your question is too broad to signpost for future research. The committee narrowed down this question for review to focus on the accuracy of structural tests for identifying glaucoma damage and monitoring the progression of glaucoma damage (damage of optic nerve head, macula and retinal nerve fibre layer). The committee prioritised this for a research recommendation. Please see Appendix Q for details. The committee agrees that it is important to identify the most effective patient reported outcome measure for future research in order to capture glaucoma patients' quality of life. The committee has therefore accepted your suggestion and added an additional research recommendation on this topic. Please see Appendix Q for details.
The Royal College of Ophthalmologists	Full	General	General	The guideline does not discuss Normal Tension Glaucoma (NTG) separately. This is a different form of COAG as the management is slightly different for these patients. It should either be mentioned/ discussed separately or it should be mentioned that the management is the same as COAG.	Thank you for your comment. It is still unclear where the division between pressure-dependant mechanisms and non-pressure-dependant mechanisms lies. We believe it is broadly covered in our recommendations on the risk of progression and establishing a baseline and risk of visual loss in the person's lifetime.
The Royal College of Ophthalmologists	Full	General	General	The guideline does not consider lifestyle factors in detail. There is some evidence even though it might not be high quality evidence that things like drinking too much coffee, exercise and other factors can have an influence on the pressure in the eye which could have an impact on advanced glaucoma patients. These need to be looked at and advise given in the guidelines regarding need to follow them or disregard them.	Thank you for your comment. No significant new evidence on lifestyle factors was identified during the surveillance review and the topic was not prioritised during the stakeholder scoping stage for this guideline and it was not included in the scope. Therefore, the committee did not look for evidence and so could not make recommendations in this area.
The Royal College of Ophthalmologists	Full	General	General	The guideline does not discuss the option of Primary Trabeculectomy in patients with advanced glaucoma that is the practice in some cases. Does it need to consider the evidence for that.	Thank you for comment. The topic area for surgery was not prioritised for update at the stakeholder scoping stage for this guideline and therefore the evidence for primary trabeculectomy was not assessed. The surgery recommendations were carried forward from 2009 and recommends offering people with advanced COAG, surgery, with pharmaceutical augmentation as indicated. The committee is aware of the ongoing TAGS trial and the results of

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					this may inform future updates of this guideline. The NICE surveillance programme will take this into account at the next scheduled review.
The Royal College of Ophthalmologists	Full	General	General	The guideline does not look at the evidence of using the different MIGS techniques in patients with Ocular Hypertension or Early glaucoma who need some lowering of IOP but not very low target pressures.	Thank you for your comment. Surgical treatment for glaucoma was outside the scope of the current guideline update.
The Royal College of Ophthalmologists	Full	General	General	There is evidence in literature that doing 5 visual fields in the first year helps to plot the rate of progression in glaucoma patients. This has not been looked at in the guideline and needs to be looked at.	Thank you for your comment. Visual field testing was not included within the update to this guideline. However, the committee decided that performing a repeated visual field measurement may be of benefit when establishing severity of impairment at diagnosis. Text has been added to bullet point 1 of recommendation 1.2.1 to clarify this. This information has been passed to NICE's surveillance team to inform future updates of this guideline.
The Royal College of Ophthalmologists	Full	General	General	There is a much higher incidence of dry eyes in patients with glaucoma. This is usually missed and the patients are labelled as being allergic to the drops. The guideline needs to look at the option of combining glaucoma drops with artificial tears eye drops to reduce the number of hospital visits and also the conversion to surgery	Thank you for your comment. Combining pharmacological treatments with artificial tear eye drops was not prioritised for update at the scoping stage for this guideline.
The Royal College of Ophthalmologists	Full	General	General	The guideline has looked at the cost effectiveness of various imaging techniques in glaucoma. It would be good if it looks at what could class as progression on the OCT scan as there is some natural decay in the nerve fibre layer which is not progression go glaucoma.	Thank you for your comment. The committee discussed this issue at length and agrees that quantifying the amount of progression necessary to identify/define 'progression' is crucial. However, there is no universal consensus on what constitutes the level of progression. The committee chose to take a pragmatic approach and accept the definition of progression as reported by the published studies.
The Royal College of Ophthalmologists	Short	4	8	<p>Threshold perimetry in primary care. Is this feasible? What proportion of optometry practices have threshold perimetry? Some practices may have only suprathreshold tests available. Implementation of this recommendation could have high cost either through 1) primary care optometry practices having to buy new equipment or 2) generating additional referrals for referral refinement.</p> <p>Is threshold testing sufficiently superior to require optometry practices (which are not paid to do the tests) to invest?</p> <p>This recommendation is based on committee opinion and not on any evidence for this setting.</p>	Thank you for your comment. Bullet point 1 of recommendation 1.1.1 has been amended to reflect that central visual field assessment can be performed using standard automated perimetry (full threshold or supra-threshold) in the case-finding scenario.
The Royal College of Ophthalmologists	Short	5	3	Consider always requiring a repeat VF if abnormality is an isolated finding	Thank you for your comment. The committee felt that in some cases an isolated VFD could represent serious underlying pathology. By insisting that a second VF is performed, patients with potentially serious conditions could be subject to delay in their diagnosis and treatment. The committee acknowledged that considering a repeated visual field measurement prior to referral may be appropriate in some cases, and this is reflected recommendation 1.1.4. Clinical judgement will ultimately dictate whether this is appropriate.
The Royal College of Ophthalmologists	Short	5	5	Consider always requiring a repeat IOP if >24 <28 if an isolated finding	Thank you for your comment. As no strong clinical or economic evidence was identified for repeat measure strategies, the committee did not believe a recommendation requiring repeat measures was appropriate. The 'consider' recommendation reflects the lack of evidence in this area.
The Royal College of Ophthalmologists	Short	5	10	An earlier recommendation for case-finding is to use OCT, if available. It would make sense to refer to OCT here (eg unequivocal OCT abnormality not explained by non-glaucomatous conditions, such as myopia)	Thank you for your comment. The committee agreed that stereoscopic slit-lamp biomicroscopy was necessary prior to onward referral to hospital eye care services. The committee discussed that the ability of healthcare practitioners to interpret OCT would be variable in this context and therefore it was not appropriate to base a referral on.
The Royal College of	Short	7	19	Reassessment need not be with a Goldmann-type tonometer – non-contact tonometry is adequate.	Thank you for your comment. The committee discussed which test was most appropriate as a reference standard while formulating the evidence review

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Ophthalmologists				<p>There is no evidence presented in the guideline to support GAT for monitoring.</p> <p>Patients under care have had central corneal thickness measurement and spurious readings caused by abnormal CCT will have been identified; monitoring with air-puff tonometry is perfectly reasonable.</p>	<p>protocol to establish which test is the most appropriate for measuring intraocular pressure. Evidence from this review was used to inform the recommendations on which tests are necessary to be completed at case finding, diagnosis and at reassessment intervals. It was noted that Goldmann applanation tonometry (GAT) use is standard practice in ophthalmology services and that the treatment literature is based on measurements made by GAT. Due to the paucity of evidence suggesting that alternative tonometers (such as NCT) could replace GAT for decision-making, the committee decided to retain the same reference standard test (GAT).</p>
The Royal College of Ophthalmologists	Short	7	20	<p>There is no need to perform an angle assessment at each re-assessment visit for patients identified as having open angles (COAG). What is the evidence base for this recommendation? Suggest using 'when clinically indicated'</p>	<p>Thank you for your comment. The committee reviewed this point and agreed that for the purposes of reassessment an anterior segment slit-lamp examination with van Herick test should be done where clinically necessary. The recommendation 1.4.1 has been amended accordingly. The committee considered the van Herick test to be an adequate alternative to assess the anterior chamber angle rapidly at reassessment.</p>
The Royal College of Ophthalmologists	Short	9	Table 1	<p>It is not clear in which clinical scenarios much of the re-assessment guidance applies. There is text in the full guidance (page 146 "For people with an acceptable IOP who have no signs of progression, the committee decided that...") that makes the intention clear, but this does not come through in the Guidance itself. The judgement of "no signs of progression" can only be made in the context that there is sufficient data to inform that judgement. For Humphrey perimetry, at least 4 VFs are needed to identify 'possible progression' and 5 to identify 'probable progression'.</p> <p>It would be very helpful if a comment was added to the tables that "uncertain conversion" includes insufficient data to make the judgement. This would allow the clinician flexibility to shorten the re-assessment interval (according to risk level) until sufficient data are available.</p> <p>The committee has lost an opportunity to provide guidance on how much VF data is required to identify progression. There is plenty in the literature to support such guidance and some is just common sense (eg needing at least two baseline VFs close together as a baseline and needing at least two more before even tentative progression can be identified). This general point is reiterated in comments #24, 25 and 47.</p> <p>Consider adding a line in the table for 'newly-initiated treatment' – review with repeat threshold VF testing and ONH assessment 1 to 4 months [it may be that the Committee consider this is covered under the existing first line, but this would emphasise the benefit of good baseline measurements]</p>	<p>Thank you for your comment. The committee agreed that a comment regarding a lack of data needed to identify progression would be a beneficial addition. This has been added as a footnote to the COAG reassessment interval table (please see table 3 of the NICE short version of the guideline). The committee has left the judgement of how much VF data are required to establish progression, and the quality of the data necessary, up to the judgement of clinicians.</p> <p>The committee think that the table does not need amending as it already assumes that people will follow recommendation 1.2.1 which states that VF should be repeated as necessary.</p>
The Royal College of Ophthalmologists	Short	9	Table 2	<p>Similar comment – it should be emphasised to get two baselines tests close together if they are at moderate or high risk of conversion, before extending the follow-up interval</p>	<p>Thank you for your comment. The committee acknowledge that 'uncertain' cases are common and establishing baseline status is of utmost importance; however, as the committee did not review the evidence for this practice at the diagnosis stage, it did not believe it could make a strong recommendation to repeat visual fields at diagnosis. However, some clinical flexibility has been added by extending the recommendation to include 'repeated if necessary to establish severity at diagnosis'.</p>
The Royal College of Ophthalmologists	Short	10	Table 4	<p>In general, the 3rd line ('not detected') is OK, but there should be a comment that this holds provided there are enough data to detect progression. E.g. the GPA analysis of the HFA requires 4 VFs before 'possible progression' can be flagged.</p>	<p>Thank you for your comment. The committee agrees that a comment regarding a lack of data needed to identify progression would be a beneficial addition. This has been added as a footnote to the chronic open-angle glaucoma reassessment interval table (please see table 3 of the NICE short version of the guideline).</p>

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				A suggestion for all these recommendations (#16 to 18) is that could be worded so that they apply to patients after the first year of assessment (recognising that patients need more frequent visits in their 1st year) or that the 'uncertain progression status' includes situations in which there is insufficient information.	
The Royal College of Ophthalmologists	Short	11	10	The guideline mentions choice of alternative generic PGA- Do the authors mean a different type of prostaglandin in generic form than the same prostaglandin in a different Generic bottle? This needs to be clarified.	Thank you for your comment. We mean a different drug within in the PGA therapeutic class, prescribed generically.
The Royal College of Ophthalmologists	Full	12	general	Most areas in the country do not have systems set up in primary care that do repeat measures, enhanced case finding or referral refinement. These will need to be set up very quickly and this is going to be difficult as some if it will require training of Optometrists to be able to do the relevant tests. There will also be a cost implication as these clinics will need to be resourced and the optometrists paid for performing these tests	Thank you for your comment. The wording of the recommendations for repeat measures, enhanced case finding and referral refinement specify that people 'consider' implementing these referral-filtering strategies (weak recommendation rather than a strong recommendation). The choice of the word 'consider' reflects the lack of strong high quality evidence identified in this area. The committee believed that many existing local arrangements have already implemented referral-filtering strategies, and that coupled with economic evidence discussed in the LETR on page 254-255, ultimately there may be possible cost-saving implications. As the hospital eye service (HES) is currently experiencing significant issues regarding capacity constraints, the committee felt that it was important that people planning eye care services consider providing referral filtering schemes such as repeat measures by optometrists to reduce the number of false positive referrals, reduce unnecessary anxiety to the patient and ensure patients avoid further unnecessary tests.
The Royal College of Ophthalmologists	Full	12	General	The algorithm does not mention doing Central corneal thickness as part of the referral algorithm .I feel this is important as a pressure of 22 with a very thin cornea is much worse than a pressure of 24-25 with a thick cornea. The Ocular Hypertension treatment study established that a thin cornea was an independent risk factor for glaucoma. So it should form part of the referral algorithm.	Thank you for your comment. The results of the Health Economic Analysis illustrate that it is cost effective to treat all people with intraocular pressure (IOP) above 21 mmHg regardless of their central corneal thickness; however, because of uncertainty surrounding the baseline risk of people with IOP<24mmHg, the committee decided to set the referral threshold at 24mmHg IOP. As everyone with an IOP at or above 24mmHg (regardless of central corneal thickness [CCT]) should be referred for a full assessment and diagnosis, doing central corneal thickness as part of the referral algorithm is not necessary. CCT should however be done at the diagnosis stage of the pathway as part of the risk assessment for the patient. The diagnosis algorithm has been amended to include CCT as a required test as part of the risk assessment of the patient.
The Royal College of Ophthalmologists	Full	12	Figure 1	Clarity: 'consider repeat measures' box – as you have "if any of", the "and/or" after each bullet is unnecessary. For consistency, the "Refer if" box could say "Refer if any of:" and delete the "and/or"	Thank you for your comment. We have amended the wording in the referral algorithm to clarify this.
The Royal College of Ophthalmologists	Full	13	General	The diagnostic algorithm also does not mention the need and value of doing a Central Corneal thickness. This should form an important part of the diagnosis and management of glaucoma and needs to be included.	Thank you for your comment. We have amended the diagnosis algorithm to include central corneal thickness measurement. The committee agreed that this test was important when assessing risk and subsequently informing the treatment and management of the patient.
The Royal College of Ophthalmologists	Full	14	General	The algorithm advises that patients with OHT have no evidence of conversion to COAG they should be seen every 18-24 months. At the moment patients who have a family history of glaucoma are seen every 24 months by their optometrists for a glaucoma check. Do we need to change the advise to the optometrists where they do not need to provide free eye tests if people are under the hospital as this has a major cost implication for the NHS.	Thank you for your comment. The committee was unable to make recommendations regarding the criteria for the NHS sight test, as it was outside their remit and patients may benefit from other aspects of the optometrist's examination e.g. refraction.
The Royal College of	Full	15	Figure 4	This flow chart is confusing – it seems possible to follow a patient with IOP >24mmHg, offered treatment, conversion not detected, IOP controlled, discharge!	Thank you for your comment. We have added 2 boxes to the suspected COAG algorithm to reflect that patients with controlled IOP and no detection of COAG

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Ophthalmologists				<p>Is it possible to simplify the flow chart by assuming that OAG Suspects with IOP >24mmHg are managed according to the OHT pathway?</p> <p>The College notes the committee considered that suspects might be at higher risk of converting than OHT, but they are probably not at greater risk of visual disability, especially if their IOP is controlled, so this simplification is probably justified.</p> <p>The IOP treatment threshold is the same for OHT and glaucoma suspects, so it would be consistent to have the follow-up interval the same.</p>	<p>conversion who are being treated still need to be reassessed at appropriate intervals. The committee discussed the possibility of merging the OHT and suspected COAG reassessment interval at length. However, the consensus of the group was that these people where glaucoma was suspected were at higher risk than those with OHT and therefore need to be reassessed more frequently. For further discussion, please see the reassessment intervals LETR on pages 138-139 of the full guideline.</p>
The Royal College of Ophthalmologists	Full	16	Figure 5	<p>There seems an inconsistency between the OHT and COAG pathway in terminology – OHT used the term 'controlled or at target' whereas the OAG only uses 'controlled'</p> <p>The OHT pathway contains recommendations for escalating therapy, whereas the COAG one merely states "reassess".</p> <p>On page 138, there is text explaining that 'clinically acceptable control of IOP' is replacing use of 'target'. Does this adequately address the question? We treat patients to obtain an IOP in a certain range – that's a target. It is individualized and changes over time, but it is still a target.</p> <p>Reference to 'Target pressure' is retained in Chapter 8 (eg page 148, line 5), explaining what is meant by 'target IOP' so there is a lack of consistency in the Guideline. The College favours retaining the Target IOP concept.</p>	<p>Thank you for your comment. We have removed the term 'at target' from the OHT algorithm and from the introduction to the treatment section of the guideline. The committee felt that the term 'target' had been interpreted by some as a fixed level of IOP, rather than a dynamic guide to IOP control which is subject to re-assessment or adjustment according to the individual patient and which can change over time. We agree that treatment may be given to obtain IOP within a certain range. In addition, as a consequence of the risks or side effects of treatment, for some individuals, there may be circumstances when it is not possible to achieve the ideal reduction of IOP. The term 'clinically acceptable IOP' has been coined to take account of these issues.</p> <p>The COAG pathway contains options to offer surgery or an alternative second-line treatment if prostaglandins have not been effective, which the committee agreed are indicators of escalation.</p>
The Royal College of Ophthalmologists	Full	19	Line 5	<p>Consider adding a re-evaluation of the target IOP (or treatment intensity) – this goes along with the re-evaluation of risk</p>	<p>Thank you for your comment. The committee felt that the term 'target IOP' had been interpreted by some as a fixed level of IOP, rather than a goal that is subject to re-assessment or adjustment according to the individual and which may change over time. We agree that treatment may be chosen to obtain IOP within a certain range. In addition, as a consequence of the risks or side effects of treatment, for some individuals, there may be circumstances when it is not possible to achieve the ideal reduction of IOP. The term 'clinically acceptable IOP' has been coined to take account of these issues. The committee agreed that the addition of 'review treatment plan' to the reassessment interval boxes on the COAG algorithm would be beneficial when considering the re-evaluation of risk. The COAG algorithm has been amended to reflect this.</p>
The Royal College of Ophthalmologists	Short	20	11	<p>"Sight loss may progress and become symptomatic and eventually cause visual impairment."</p> <p>Consider rewording, because vision may be impaired in glaucoma before it becomes symptomatic – falls and motor vehicle accidents are more frequent, even when the VF impairment is not advanced and many patients are unaware of this impairment.</p>	<p>Thank you for your comment. We have edited the glossary text to capture your suggestion. It now reads: Sight loss may progress to visual impairment and eventually become symptomatic.</p>
The Royal College of Ophthalmologists	Full	21	24-26	<p>The guidelines mention that once drugs from 2 therapeutic classes have been tried surgery should be offered. With the new combination drops available this would amount to one bottle in most of the cases. Does this need to be changed to 2 bottles which would vary from patient to patient and might be 2 therapeutic classes or 3 as most patients are fine with upto 2 bottles and it works fine in practice including my practice.</p>	<p>Thank you for your comment. People who have tried 2 therapeutic classes of medication (whether as combination drops or not) who still have poorly controlled glaucoma should be offered surgery as per the guideline recommendation. On offering any treatment, there should be a discussion regarding the relative risks and benefits, and it is true that some patients may decline the offer of surgery. Under those circumstances, additional medication or laser may be a suitable further option.</p>

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The Royal College of Ophthalmologists	Full	26	11-15	The guideline talks about having 1 pressure cut off for Ocular Hypertension which is 24. This would equate to less patients with pressures under 24 being on treatment but more patients with IOP more than 24 but thick corneas being on treatment. The cost of this needs to be looked at as in the old guidance talked about stopping drops at age cut off's but patients will be having drops for longer.	Thank you for your comment. Comprehensive Health Economic Analysis has been carried out regarding the threshold IOP accounting for age and central corneal thickness (CCT) variable. The results of the health economic analysis were that it is cost effective to treat people with IOP >21 regardless of CCT measurement. Having considered these results while being mindful of substantial uncertainty surrounding the baseline risk of people with IOP <24mmHg, the committee made the decision to increase the referral and treatment threshold to 24mmHg. Therefore, it remains cost effective to treat people with IOP ≥24mmHg who have thick corneas. New population data estimate that people with an IOP >21mmHg make up about 4% of the population in the UK (roughly 2 million people), whereas people with an IOP ≥24mmHg make up about 0.4% (roughly 230,000). The number of people not treated because of the new higher threshold is likely to be higher than the number of people treated with IOP ≥24mmHg with thick corneas.
The Royal College of Ophthalmologists	Full	26	11-15	The guideline mentions that the cost of the prostaglandins has gone down and so cost is not an issue. It does not mention about the side effects of the drops as a balance for the low cost as a good proportion of patients experience side effects. So the side effects and the cost need to be balanced.	Thank you for your comment. The Health Economic Analysis accounted for the predicted side effects of treatment using evidence on the proportions of people who will not tolerate the different treatments. Although the base case model did not attach utility decrements to the adverse events from Prostaglandins (PGA), we have run an additional sensitivity analysis to identify the thresholds at which a utility decrement from PGA side effects would have to be in order to make Beta-blockers cost-effective compared to generic PGA. For the lower IOP subgroup the utility decrement would need to be -0.12 and for the higher IOP subgroup the utility decrement would need to be -0.15. These values are considerably high and would not be likely to be achieved from the side effects of PGAs within the duration of time before treatment would be switched. People experiencing intolerable side effects should be offered alternative treatment options.
The Royal College of Ophthalmologists	Short	27	Table	First item "leaving it open to either biomicroscopy slit lamp examination or stereo photography" – this suggests that a "picture" can be obtained by slit lamp biomicroscopy; unless there is a special attachment, it cannot. This is repeated at least twice in the Full guideline.	Thank you for your comment. The wording of bullet point 2 of recommendation 1.1.1 has been amended to clarify that an 'image' can be obtained by OCT or stereoscopic optic nerve head photography. This wording has also been amended in recommendation 1.2.4.
The Royal College of Ophthalmologists	Full	68	Line 13	Guided Progression Analysis is not a risk tool. It is a method for detecting progression. The paper i40a technology evaluation (diagnostic precision study) and not a very good one at that. It is of concern that this paper has been evaluated as an assessment of a risk tool and has made it into the draft report.	Thank you for your comment. The committee agreed that the Guided Progression Analysis (GPA) does not fit the generally accepted definition of a risk tool and, in fact, a paucity of such tools was found. The committee agreed, however, that the information provided by GPA is valuable regarding the prediction of future blindness. Within this context, the detection of progression is relevant to quantifying the risk of significant future loss of vision for the patient.
The Royal College of Ophthalmologists	Full	76	Table 14	The reference standard for the Review Question of the value of imaging (both for diagnosis and for progression) is inappropriate (see Comment ID5). Biomicroscopic examination at the slit lamp cannot seriously be considered the reference standard for progressive glaucoma? It is also not appropriate for assessment of diagnostic imaging devices. The optimal study design for these studies a difficult problem, but the reference standard chosen for this review question is highly inappropriate. There is a valid argument that biomicroscopic evaluation of the ONH is an inappropriate reference standard for imaging device assessment (see Sources of bias in studies of optic disc and retinal nerve fibre layer morphology. Garway-Heath DF, Hitchings RA. Br J Ophthalmol. 1998 Sep;82(9):986). Not only is biomicroscopic evaluation highly error prone, it introduces differential bias in the evaluation of different imaging technologies.	Thank you for your comment. The committee understand and recognise the point that you are making, and this has been discussed in detail (please see the Linking evidence to recommendations section for the accuracy of diagnostic tests on pages 119 and 126 in the full guideline). Current practice for the majority of clinicians is slit-lamp biomicroscopic evaluation of the optic nerve head and this is also what the relevant papers report as their reference standard. The potential exists that new technology could be better than the current reference standard but the committee were not aware that there was evidence of superiority of Optical coherence tomography (OCT). Therefore, the committee did not believe that it would be an appropriate reference standard. OCT may add value but that is not yet proven in terms of prediction of progression to visual loss. There is uncertainty about the clinical significance of

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				This question must be addressed in future updates. Perhaps it could be included as a Research question – what is the appropriate methodology for evaluation of diagnostic imaging devices for glaucoma?	the changes detected by OCT and their relationship to functionally significant future visual loss. Furthermore, OCT is not currently available to all patients and access will vary depending on location. A number of hospitals that do have access to the machine do not necessarily obtain exclusive use for their glaucoma patients which can present a resource issue. The committee decided to prioritise a research recommendation in this area. Please see Appendix Q for further details.
The Royal College of Ophthalmologists	Full	94	Table 19	Pneumotometry is not the same as NCT/air-puff tonometry. It is a different technique (ie Ocular blood flow pneumotometry)	Thank you for your comment. The review protocol for the accuracy of intraocular pressure tests has been amended to reflect that the committee understood these tests as being different. Where evidence was found for either pneumotometry or non-contact/air puff tonometry, these would have been included within the review separately.
The Royal College of Ophthalmologists	Full	94	Table 20	The Review Question of the value of alternative forms of tonometry is inappropriate (see Comment ID5). It appears that the evaluation of the tonometers is sensitivity and specificity to detect an IOP >21mmHg by GAT. This is a meaningless evaluation and repeats the mistake of the last Guideline. Given the within- and between-person variability in GAT measurements, it is highly unlikely that GAT itself would meet the criteria set by the committee. The College notes that the committee has reservations that only one threshold was assessed. This isn't really the point – the whole approach to the evaluation is wrong. As mentioned in response to the last version of the Guideline, the important metrics are agreement (bias) and measurement precision. Ultimately, the association of IOP measurement with VF progression rate will tell us the most useful tonometer. The most useful form of tonometry will never be established with the current question and this question should be changed in any future guideline revision.	The committee acknowledges that the Bland & Altman approach is common within this area of research and provides relevant information regarding the agreement of 2 tests over a range of pressures. However, it does not provide any information regarding the accuracy of either of the tests in diagnosing a specific condition. This information is crucial when undertaking economic analysis and deciding whether or not a test should be recommended at a national level. The committee acknowledged that knowing the diagnostic accuracy of an instrument at one cut-off (21mmHg) does not necessarily provide a comprehensive overview of the accuracy of that test. It should be noted that evidence of any test included within the review protocol at any pressure threshold was suitable for inclusion within the review. Please see table 19 on page 94 of the full guideline. However, the cut-off used in the identified published studies was 21mmHg. The committee discussed which test would be most appropriate to use as a reference standard and agreed that GAT, while not perfect, was standard clinical practice and the most appropriate test to use. It should also be noted that the entire glaucoma treatment literature is based on pressure measurements made by GAT.
The Royal College of Ophthalmologists	Full	118	Table	There is a flaw in the argument for referral based on NCT. The text says that the committee was concerned about the poor sensitivity of NCT to identify IOP >21mmHg by GAT and, therefore, would not accept NCT referrals from Primary Care. The flaw is that referrals are made for IOPs above 21 (now 24) mmHg; optometrists will not repeat an NCT IOP <21mmHg with GAT. The argument would only make sense if GAT were required for all IOP measurements in Primary Care.	Thank you for your comment. The committee appreciates your point that it may be preferable to use Goldmann-type applanation tonometry for all case-finding scenarios; however, they did not believe that this would be feasible for all high street optometric practices. The committee believe that those who incorrectly test less than 24 mmHg on non-contact tonometry (false negatives) are likely to be picked up during their next visit to their primary eye care professional.
The Royal College of Ophthalmologists	Full	122	Table	First paragraph – setting a test sensitivity threshold is not meaningful unless the stage of disease to be identified is also specified.	Thank you for your comment. The committee discussed this issue at length and agrees that quantifying the amount of progression necessary to identify/define 'progression' is crucial. However, there is no universal consensus on what constitutes the level of progression necessary. The committee chose to take a pragmatic approach and accept the definition of progression as reported by the published studies.
The Royal College of Ophthalmologists	Full	128	Text	Setting a threshold for acceptable sensitivity to identify progression is meaningless without first quantifying the amount of progression that needs to be identified.	Thank you for your comment. The committee discussed this issue at length and agreed that quantifying the amount of progression necessary to identify/define 'progression' is crucial. However, there is no universal consensus on what constitutes the level of progression necessary. The committee chose to take a pragmatic approach and accepted the definitions of progression as reported by the published studies.

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The Royal College of Ophthalmologists	Full	136	4	The cost mentioned for a monitoring visit in the HES is not correct. With the latest tariff for 2017-18 the new cost is GBP 59 per visit. Also till last year the cost was GBP 67 per visit. This needs to be corrected and also the economic modelling needs to be looked at again to see if the model needs to change based on the new costs.	Thank you for your comment. The cost mentioned for a monitoring visit in HES is sourced from the latest NHS reference costs. NICE's reference case for guideline development (and the methods of Technology Appraisals on which it is based) do not recommend the use of tariff prices to cost secondary care procedures, as they are reimbursement rates and do not reflect the true costs borne by the NHS, which the reference costs do. This explains the £30 cost difference. The results of the health economics model were not sensitive to the cost of a hospital monitoring visit therefore replacing the NHS reference cost with £59 would not have changed the model results.
The Royal College of Ophthalmologists	Full	144	Recommendations	<p>"Progression not detected, IOP controlled, Reassess between 12 and 18 months". Similar to point in Comment #23.</p> <p>The College has serious concerns that, unless the recommendation is qualified, this will lead to poor management of many patients. Progression may be undetected because there are insufficient data (either because the patient is newly-diagnosed or because VFs have been done every 18 months). There is presently no recommendation to obtain good baseline data (at least 2 VFs). 'IOP control' is just a guess at baseline, based on risk factors (and these guidelines have established that risk assessment is poor). Our clinical guess is often incorrect. The only way we know if a patient is stable is by measuring non-progression and we need VFs to do that.</p> <p>The qualification the College recommends is that at least 2 baseline VFs should be obtained soon after referral, then follow-up intervals should be based on risk of visual disability and IOP control. If risk is high and IOP control equivocal (or even acceptable according to initial guess), intervals may be 4 to 6-monthly. Low-risk patients may be seen less frequently. High risk patients with demonstrated stability may also be seen less frequently.</p> <p>The bottom line is that an interval of 12 months for a new OAG patient who has 'controlled IOP' is too long, especially if they are high risk. That some of this has been considered is apparent in the discussion text of the Guideline, but it is not at all clear from the recommendations. The justification seems to be to give more leeway for the clinicians to decide what is needed, but this is at the expense of giving guidance, which is what guidelines are supposed to do. A way around this would be to specify that 'Uncertain progression' includes too little data.</p>	Thank you for your comment. The committee acknowledge that 'uncertain' cases are frequent, and establishing baseline status is of utmost importance. However, as they did not review the evidence for this practice at the diagnosis stage, as it was outside of the scope of the update, the committee did not believe they could make a strong recommendation to repeat visual fields at diagnosis. To address this point, some clinical flexibility has been added by extending the recommendation to include 'repeated if necessary to establish severity at diagnosis'. The committee agree with your suggestion for adding clarity to the reassessment intervals recommendation and have added a footnote to the interval tables to highlight that 'uncertain progression' includes too little or inaccurate data.
The Royal College of Ophthalmologists	Full	144	6	The cost for the HES visit needs to be changed to the new costs of GBP 59 per visit and the economic model adjusted if needed.	Thank you for your comment. The cost mentioned for a monitoring visit in HES is sourced from the latest NHS reference costs. NICE's reference case for guideline development (and the methods of NICE's technology appraisals programme on which it is based) does not use tariff prices to cost secondary care procedures, as they are reimbursement rates that do not reflect the true costs borne by the NHS; the reference costs do. This explains the £30 cost difference.
The Royal College of Ophthalmologists	Full	201	Table 65	The 3rd column is headed '% of their class', yet the contents of the column appear to be decimal proportions. There are no units given to columns 4 to 6.	Thank you for highlighting these errors. We have now amended the table.
The Royal College of Ophthalmologists	Full	209	32	The central corneal thickness mentioned is 55 microns which is possibly a typing error. It needs to be corrected.	Thank you for highlighting this error. It has now been amended.

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The Royal College of Ophthalmologists	Full	209	39	The pressure readings mentioned are 21 and 24 mm Hg and then above 24 mm Hg. Is this correct or does it need to be changed to the ones in line 30 which is 21-25mm Hg and above 25 mm Hg	Thank you highlighting this error, this has now been amended.
Vision 2020 UK	Short	General	General	<p>VISION 2020 UK thanks NICE for this guideline on glaucoma. The guidance is all very sensible and sets out what should be done clinically.</p> <p>However unless commissioning issues are reviewed, there is a risk of repeating the previous guidelines experience of patchy commissioning of repeat measures and enhanced case finding through enhanced services. Where these are commissioned, uptake by local providers can also very variable.</p> <p>We would like to make some comments about:</p> <ol style="list-style-type: none"> 1. The tests required before referral 2. The information to be included with referral 3. The commissioning implication of the management of patients discharged to primary eye care services <p>Also research is needed to answer the question 'What are the most effective treatments for glaucoma and how can treatment be improved?' This was ranked as glaucoma priority #1 by the Sight Loss and Vision Priority Setting Partnership (SLV PSP) http://www.sightlosspsp.org.uk/index.php/priorities-for-glaucoma-research Why is this important? Glaucoma is a lifelong condition which is progressive if not treated adequately during this time. Many patients live for many years following the diagnosis of their glaucoma. Patients need to make treatment choices on the basis of outcome information which may only measure outcomes over 1-3 years. This information is essential for patients in helping them with their treatment choices.</p>	<p>Thank you for your suggestions. We agree that patchy uptake remains an issue and hope that commissioners will be prompted to act following this update.</p> <p>Thank you for your research suggestions. This guideline update reviewed the evidence for what are the most effective pharmacological treatments for glaucoma and made recommendations based on the available clinical evidence and the results of economic modelling. When prioritising future research recommendations the committee concentrated on the areas where the evidence was not as strong or where there was still uncertainty following review of the available evidence... This prioritisation is based on criteria listed in section 4.5.1.</p> <p>The proposed research question is rather broad. We have made several practice recommendations for treatment and have recommended further research to determine the best treatments for those with IOP 22 or 23 mmHg.</p>
Vision 2020 UK	Short	General	General	<p>Addition research question to consider. This research question is #6 on the SLV PSP http://www.sightlosspsp.org.uk/index.php/priorities-for-glaucoma-research:</p> <p>What is the most effective way of monitoring the progression of glaucoma?</p> <p>This would be helped by identification of effective patient reported outcome methods and evidence from longer term outcomes for treatment interventions Which patient reported outcome measures are most effective in defining quality of life in patients with glaucoma?</p> <p>Why is this important Quality of life is the most important overall measure of treatment effect for patients as it measures their life experience and how their life experience is affected by interventions. Patient reported outcome measures are an important instrument for informing patients of the value of interventions which may affect their treatment choices. They also offer an effective tool in audit or service evaluations of a glaucoma services. However, uncertainty exists as to which patient reported outcome measures best measure outcomes of treatment in patients with glaucoma. Identifying the most effective PROM for measuring glaucoma outcomes would ensure this was adopted in all future clinical trials and glaucoma audits and would ensure that meaningful</p>	<p>Thank you for your comment. The committee acknowledge the importance of identifying the most effective way to monitor progression; however, they believe that your question is too broad to signpost for future research. The committee narrowed down this question for review to focus on the accuracy of structural tests for identifying glaucoma damage and monitoring the progression of glaucoma damage (damage of optic nerve head, macula and retinal nerve fibre layer). The committee has prioritised this for a research recommendation. Please see appendix Q for details.</p> <p>The committee agrees that it is important to identify the most effective patients reported outcome measure for future research in order to capture glaucoma patients' quality of life. The committee has therefore accepted your suggestion and added an additional research recommendation on this topic. Please see appendix Q for details.</p>

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				comparisons could be made between different interventions. This would further enhance a patient's ability to make treatment choices based on accurate quality of life information.	
Vision 2020 UK	Short	4	2	<p>The case-finding before referring a person for diagnosis of chronic open angle glaucoma (COAG) and related conditions is an essential part of glaucoma care.</p> <p>As recommended in the Royal College of Ophthalmologists' Commissioning Guide: Glaucoma (https://www.rcophth.ac.uk/wp-content/uploads/2016/06/Glaucoma-Commissioning-Guide-Recommendations-June-2016-Final.pdf), Commissioners should ensure they commission services that allow people with Ocular Hypertension (OHT) or suspected glaucoma to be appropriately assessed by primary eye care professionals before being referred to a consultant ophthalmologist if glaucoma is still suspected.</p> <p>We believe that the recommendations about the tests required before referral (Tests using Goldmann-type applanation tonometry (GAT), slit lamp biomicroscopy with pupil dilation and visual field assessment using standard automated perimetry) can only be implemented by commissioning the service separately from General Ophthalmic Services (GOS), as the GOS contract relates only to the sight test.</p> <p>The pre-referral should, therefore, be commissioned as an extended community service. Greater clarity is required in the pathway between a repeat measures service (which does not involve dilation) and enhanced case finding (that does involve dilation).</p>	Thank you for your comment. The guideline committee hope and expect that commissioners will be prompted to take note of the NICE guideline recommendations when commissioning services relating to glaucoma care. This is particularly the case for the recommendations we have directed to people planning and providing eye care services before referral (recommendations 1.1.8 and 1.1.9).
Vision 2020 UK	Short	5	3	Would it be sensible to replace the word 'consider' with the word 'should'? – consider is weak guidance.	Thank you for your comment. As no strong clinical or economic evidence was identified for repeat measure strategies, the committee did not believe a 'should' recommendation was appropriate. The 'consider' recommendation reflects the lack of evidence in this area.
Vision 2020 UK	Short	5	15	<p>The Royal College of Ophthalmologists' Commissioning Guide mentioned above also recommends that Commissioners should ensure that local systems allow the transfer of complete information on clinical findings.</p> <p>The NICE recommendation to provide results of all examinations and tests with the referral should therefore be also commissioned as an extended community service as this is outside the GOS contract.</p>	Thank you for your comment. The committee agrees that the sharing of information prior to referral and at discharge is important. However, the commissioning of services is outside the scope of the NICE guideline committee. Your comments will be considered by NICE where relevant support activity is being planned.
Vision 2020 UK	Short	7	2	Make sure that all records are available and easily accessible in chronological order.	Thank you for your comment. The committee agrees that having all records in an easily accessible and chronological order would be expected.
Vision 2020 UK	Short	10	5	<p>When patients with ocular hypertension (OHT) who do not require treatment are discharged back to primary eye care services, the ocular status should be conveyed to the referring primary eye care professional to avoid unnecessary re-referral to the hospital eye services. This requires information sharing between ophthalmology services and the primary eye care professional (optometrist).</p> <p>We welcome this recommendation of sharing information and suggest include the information gathered at discharge: visual field, optic nerve head observation, intraocular pressure, anterior chamber configuration and central corneal thickness.</p> <p>GAT and any repeat measurements should be commissioned as an extended community service in the same way as the pre-referral. Patients will require a letter from an ophthalmologist to confirm that they are at risk of Glaucoma, otherwise, if they are not entitled to an NHS sight test (e.g. under 60yrs) they will have to pay privately.</p>	Thank you for your comment. The committee agrees that sharing relevant information with the primary care eye professional at discharge is important. The committee could not make recommendations regarding the commissioning of an extended community service, as this was not within the remit of the guideline committee.

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Vision 2020 UK	Short	10	10	<p>We welcome the recommendation to share feedback with a patient's optometrist, and would like to see this happen with all relevant HES/GP communications. With greater knowledge of the hospital's plans and expectations for the patient, the optometrist is well placed to ensure that:</p> <ul style="list-style-type: none"> • The patient doesn't slip through any nets resulting in non-attendance • The patient is following the treatment regimen correctly, and • The optometrist can also be better placed to know whether to re-refer if IOPs change significantly from those known to the hospital. <p>This sharing will aid the Integrated care agenda as set out in the NHS England 5 year forward plan.</p> <p>We acknowledge this requires the appropriate infrastructure, and should ideally be done electronically.</p>	Thank you for your comment.
Vision 2020 UK	Short	15	15	<p>With the College of Optometrists we believe that for patients to receive quality glaucoma care, the healthcare professionals involved in their care should have the knowledge, skill and experience to deliver that care appropriately in whichever healthcare setting they are seen.</p> <p>Levels of supervision while training and working within a glaucoma service can vary substantially from direct interaction after every patient episode to supervision by audit.</p> <p>We suggest that the recommendations for a specialist qualification (according to case complexity) should be considered to apply equally to those healthcare professionals working within a consultant-led service and those working independently of consultant ophthalmologist supervision.</p> <p>Please see the College of Optometrists and the Royal College of Ophthalmologists' joint supplementary guidance on supervision in relation to glaucoma related care by optometrists: https://www.college-optometrists.org/guidance/supplementary-guidance/supervision-glaucoma-related-care-by-optometrists.html</p>	Thank you for your comment. The committee agreed that it was important to note that supervision (i.e., working within a consultant-led service) should not be conflated with the level of training or qualifications obtained (i.e., those working independently of consultant ophthalmologist supervision). The committee discussed that training requires close contact between trainee and trainer, while working under supervision will vary according to level of training, established qualifications and experience of the health care practitioner. The committee agreed that the recommendation regarding training, qualifications and experience made in CG85 were still appropriate although we have now removed the brackets '(when not working under the supervision of a consultant ophthalmologist)' from 1.6.2. and 1.6.5 to clarify the issue.
Vision 2020 UK	Short version	15	16	<p>This recommendation is unchanged from the previous version of the NICE guideline.</p> <p>Glaucoma is a condition that is primarily managed with topical medications, and so could mostly be managed in a community setting. The most urgent issue is to address the lack of capacity in the Hospital Eye Service (HES). Across the UK, HES are struggling to manage rising demand due to an ageing population and more advanced ophthalmic treatments.</p> <p>We believe that the diagnosis of chronic open angle glaucoma (COAG) could also be made by a suitably qualified health care professional with the relevant experience.</p> <p>We suggest including a research recommendation around the levels of agreement between suitably qualified healthcare professionals in relation to the diagnosis and differential diagnosis of COAG, and a research recommendation around the levels of agreement between specialist ophthalmologists in relation to the diagnosis and differential diagnosis of COAG.</p>	Thank you for your comment. The committee discussed the potential of this research question. However, the committee agreed that the purpose of this recommendation is to ensure that where diagnosis of COAG is made other conditions, which mimic COAG, can be investigated as needed in a routine manner (blood tests, MRI scan etc.). Community (optometrists) will not necessarily have access to the facilities required to achieve this level of diagnosis and will not have the medical knowledge necessary to know when to suspect a problem. The committee agreed that while optometrists would be able to recognise patterns of field loss and disc damage, they might not be placed to address the problems of the less common but potentially lethal misdiagnosis such as tumours. In order to complete a study looking at these rare events a very large sample size would be required which is unlikely to be funded. The committee considered other research questions to be a higher priority at this time.
Vision 2020 UK	Short	20	11	<p>"... Sight loss may progress and become symptomatic and eventually cause visual impairment."</p>	Thank you for your comment. We have edited the glossary text to capture your suggestion. It now reads: Sight loss may progress to visual impairment and eventually become symptomatic.

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				Significant sight may be lost in glaucoma well before it becomes symptomatic, so perhaps this could be re-worded.	
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	general	general	<p>We support the revised NICE Guidelines for (chronic open angle) glaucoma and ocular hypertension. They represent a clear improvement based on learning from the previous CG85 of 2009.</p> <p>Specific comments: The guidelines should be more explicit that that receivers of referrals may return to sender for additional work-up if: ..non-GAT IOP in suspected OHT is less than 24mmHg ..isolated finding of possible visual field defect unless confirmed by two threshold tests.</p> <p>NICE should not endorse NCT for the measurement of IOP.</p> <p>We suspect that the committee has underestimated stereocamera coverage and its potential value.</p>	<p>Thank you for your comment.</p> <p>The committee recognised that non-contact tonometry was only considered acceptable in a case-finding scenario and where IOP is found to be elevated; this must be confirmed using GAT prior to onward referral. We believe the wording of our recommendations is clear on this.</p> <p>The committee felt that in some cases an isolated VFD could represent serious underlying pathology. By insisting that a second VF is performed, patients with potentially serious conditions could be subject to a delay in their diagnosis and treatment.</p> <p>However, the committee acknowledged that at diagnosis performing a repeated visual field measurement may be of benefit to identify the severity of impairment. Text has been added to bullet point 1 of recommendation 1.2.1 to clarify this.</p> <p>The committee reviewed the evidence regarding optic nerve assessment and agreed that an optic nerve head image is of benefit at diagnosis for baseline documentation and may be helpful in a case-finding scenario. The wording has been amended to clarify this point.</p>
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	general		We commend the advisory group on its work.	Thank you.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full		Fig. 2	If VH grade were 0 - 1, it would be reasonable to forego gonioscopy.	Thank you for your comment. The committee noted that gonioscopy is required for formal diagnosis of COAG as in addition to information on the angle depth (potential need for laser or surgical treatment) it provides diagnostic information of relevance to risk stratification of the patient in terms of possible future loss of vision.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full		Fig. 2	Figure 2 is missing a pathway with disc damage and no visual field defect (= 'pre-perimetric' glaucoma)	Thank you for your comment. The committee discussed this group of people and concluded that people with disc damage and no visual field defect would be categorised as COAG and would be managed according to this pathway. We have amended the diagnosis algorithm (figure 2) to reflect that people with optic nerve head damage regardless of the presence of a visual field defect will be treated and managed according to the COAG pathway.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	1		<p>'cannot exclude absence of structural damage...' Logically this applies to all patients. Please revise (this is important)</p> <p>'structural damage present...'</p>	Thank you for your comment. We have amended the wording in the referral algorithm to clarify this.

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Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	1		: repeat measures should be via applanation tonometry, GAT if patient is able to undergo slit lamp examination, other wise Perkins is acceptable. It would be ideal to use 'GAT' throughout for consistency	Thank you for your comment. We have clarified the wording used in the referral algorithm to be in line with the recommendation that at case-finding Goldmann-type applanation tonometry (which includes both slit-lamp mounted Goldmann applanation tonometry and Perkin's applanation tonometry) are acceptable to perform as repeated measures. While the committee expressed that slit-lamp mounted Goldmann applanation tonometry was the preferred test for measuring IOP prior to referral, some situations could arise where this is not an appropriate test, such as where a physical barrier exists in terms of approaching the slit-lamp or where learning or cooperation difficulties are present. This is discussed briefly in the service models LETR on page 301-302 and in the case-finding LETR on page 138-139 of the full guideline.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	1		State clearly IOP =>24 on two GAT measurements taken on 2 occasions	Thank you for your comment. The repeat measures recommendation is a 'consider recommendation', reflecting the uncertainty of the evidence. The recommendation allows but does not directly specify that 2 Goldmann-type measurements are necessary prior to referral. Possible scenarios include a single IOP measurement from a non-contact tonometer followed by a Goldmann-type measurement, 2 Goldmann-type measurements or a single Goldmann-type measurement alone (where repeat measures are not possible or unavailable).
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	1		If a test is required- you cannot make e.g. SD-OCT optional. Photographic documentation also of use. It is reasonable to assert that a disc image is essential (OCT or photograph) to triage referral.	Thank you for your comment. The recommendation does not specify that a disc image is essential. The committee considered the evidence available for imaging technologies and acknowledged that OCT was of potential benefit. However, not all health care practitioners making referrals will have access to this equipment and the cost associated with having to purchase this equipment would be significant. The committee decided that if available, an image would be of benefit; however, it would not be mandated. This is also in line with the tests currently mandated by the general ophthalmic services (GOS) contract. The committee agreed that an optic nerve head image may be of benefit in a case-finding scenario and bullet point 2 of recommendation 1.1.1 has been amended to reflect this. In addition, the committee also specified that an image is required at diagnosis for baseline documentation (recommendation 1.2.4).
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	14		P14: consider use of preservative-free drops if drainage surgery is likely to be necessary.	Thank you for your comment. The surgical treatment of chronic open-angle glaucoma (COAG) was not in the scope of this guideline update, as it was not prioritised as an area necessary for update by the NICE surveillance review. We did not search for evidence regarding the use of preservative-free drops for people requiring drainage surgery. Therefore, we cannot make recommendations in this area.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	15	7	L7: since SD-OCT will not be universally available- please allow more generic: photograph or OCT. Delete SD since swept source devices will be more common. Just in case GDx still out there- worth indicating that these are of minimal/no utility. We suggest OCT (not TD)	Thank you for your comment. The committee agreed that various forms of OCT would be available and that this was also likely to change as technology develops. We have therefore amended the terminology to OCT throughout the guideline.
Wales Glaucoma Alliance and Wales Ophthalmic	full	18	15	L 15: would clinical circumstance include inexperience with gonioscopy- worth clarifying.	Thank you for your comment. The diagnosis, treatment and management of ocular hypertension, suspected chronic open-angle glaucoma (COAG) and COAG should be undertaken by healthcare professionals with suitable training, qualifications and experience. This is noted in recommendations 1.6 on page 15-17 of the NICE guideline: short version.

Glaucoma (update)

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06 June 2017 – 04 July 2017

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Planned Care Board					
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	19	1	For patients with occludable angles provide guidance on checking IOP post dilation.	Thank you for your comment. The diagnosis and management of angle closure glaucoma was not covered within the scope of this guideline update; therefore, we cannot make recommendations on this. However, the committee agreed that where the angle may be considered potentially occludable checking the IOP after dilatation, if done, would be considered good practice.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	20	17	Agree that 5FU should not be used as an adjunct in modern glaucoma surgery.	Thank you for your comment.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	21	20	Laser trabeculoplasty refers to ALT and or SLT – the latter would most likely be done but we do not yet have trial results for UK (LIGHT)	Thank you for your comment.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	22		Consultation comments are likely to include MIGS suggestion: We advise these are resisted until we have better data on efficacy/benefits and complication rates compared with modern trabeculectomy.	Thanks you for your comment. MIGS surgery was not considered within the scope of this updated guidance.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	23	14	why the inclusion of suprathreshold testing at this point?	Thank you for your comment. The section you are referring to was not prioritised for update in the current guideline. The committee reviewed the 2009 recommendations and agreed they were reasonable to carry over. Suprathreshold may be adequate to detect conversion to glaucoma and this test is widely available in optometric practices
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	26	28	; 'When I consider how my light is spent.' (for the ophthalmologists)	Thank you for your comment.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	67		The risk model analysis is excellent. The technical underpinning of the HRT (low SNR in region of interest) seems to have escaped ophthalmic interest. And would contribute to the critical analysis of these tools.	Thank you for your comment. The committee discussed that HRT was an obsolete technology and was no longer being serviced.

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Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	101		The life span of 15 years is likely an underestimate. Since n is a power in the cost equation please model for 20,25,30 years. It would be worth estimating the age of GAT devices currently in use in the NHS. I would predict a median age of >20 years.	Thank you for your comment. The costing used in the HE analysis employed a conservative estimate. The committee think that 15 years is an appropriate estimate of the life span of the device; however, we expect that increasing the age of the GAT devices would strengthen the recommendations.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	113		The lack of photographic data in this table is puzzling. Will not the limited product life of OCTs suggest that baseline photographic have utility? The issue of data format obsolescence was not considered (bitmaps remain a robust data format).	Thank you for your comment. The committee agreed that an optic nerve head image may be of benefit in a case-finding scenario and bullet point 2 of recommendation 1.1.1 has been amended to reflect this. In addition, the committee also specify that an image is required at diagnosis for baseline documentation (recommendation 1.2.4).
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	114		The committee noted that anterior chamber angle measurements alone, in the absence of any other significant ophthalmic abnormality or symptoms suggestive of possible angle closure, were not sufficient to refer to hospital eye services; however, information regarding the anterior chamber angle along with the other recommended tests at this point in the patient pathway is helpful to ensure appropriate referrals. It would be helpful to list the symptoms that would be required to support an ACG referral. Please clarify that a VH=0 will not be sufficient for a referral in the absence of symptoms (?)	Thank you for your comment. A review of the symptoms most indicative for a referral for angle closure glaucoma was outside the scope of this guideline.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	116		worth clarifying by stating: NCT based referrals can be refused (regardless of the NCT measurement) until confirmed by GAT. It could be argued that an IOP of 40 by NCT would be sufficient to warrant referral. This potential work around should be blocked with a more explicit statement on the role of NCT.	Thank you for your comment. The committee believe that the combination of recommendation #2 (case finding) 'Do not base a decision to refer solely on IOP measurement using non-contact tonometry'; recommendation #4 (case finding) 'Refer...if IOP confirmed as 24 mmHg or more using GAT'; and recommendation #48 (service models) 'People planning eye care services should use a service model that includes GAT before referral for diagnosis of COAG', make it clear that GAT must be done before referral. The committee considered an urgent referral threshold for non-contact measurements of extremely high IOP and did not believe there was universal clinical consensus on a specific 'too high' threshold which would warrant an urgent referral. Therefore, the committee felt it would be acceptable to leave this up to clinical judgement and added the following guidance to the recommendation 1.1.4: Before deciding to refer, consider repeating visual field assessment and IOP measurement on another occasion to confirm a visual field defect or IOP of 24 mmHg or more, unless clinical circumstances indicate urgent or emergency referral is needed.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	117		The utility of disc photographs. Stereoscopic disc photography (mindful of the number of KOWA stereoscopic cameras that have been acquired in the last 3 years) should be addressed. Better to refer to non-TD OCT or SD/SS OCT. We note that stereoscopic imaging is referenced in 6.7.1.2 3.	Thank you for your comment. The committee agreed that various forms of OCT would be available and that this was also likely to change as technology develops. We have therefore amended the terminology to OCT throughout the guideline.
Wales Glaucoma Alliance and Wales	full	124		CCT: Please confirm that CCT should be stated for what it is, no more, and not be used to 'correct' IOP readings.	Thank you for your comment. We confirm that based on the economic model results, treatment was found to be cost-effective for IOP regardless of CCT measurement. Clinicians will want to take a CCT measurement as part of a risk

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Ophthalmic Planned Care Board					assessment to inform prognosis but treatment decisions for people with IOP ≥ 24 mmHg do not need to be based on CCT.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	128		re angle closure, please clarify the utility of IOP measurements post dilation for patients deemed to be at risk of ACG. Also stress that IOP assessment should be made in eyes that have been dilated	Thank you for your comment. The diagnosis and management of angle closure glaucoma was not covered within the scope of this guideline update; therefore, we cannot make recommendations on this. However, the committee agreed that where the angle may be considered potentially occludable checking the IOP after dilatation, if done, would be considered good practice.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	209	32	typo: CCT < 555 (not 55)	Thank you for highlighting this error. It has now been amended.
Wales Glaucoma Alliance and Wales Ophthalmic Planned Care Board	full	252		Advise that the second field test is mandatory to justify referral.	Thank you for your comment. As no strong clinical or economic evidence was identified for repeat measure strategies, the committee could not make a mandatory recommendation, and some cases, e.g., with very severe disease and reliable first visual field testing, or those very high intraocular pressure, would need to be referred promptly. The 'consider' recommendation reflects the lack of evidence in this area.

**None of the stakeholders who comments on this clinical guideline have declared any links to the tobacco industry.*