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CLINICAL STUDY

A survey of investigations used for the management of glaucoma in hospital service in the United Kingdom

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Abstract

Aims **This study surveys the current use of investigations for the management of glaucoma in hospital practice by UK ophthalmologists.**

Methods **A total of 1007 questionnaires were posted to all active NHS consultant ophthalmologists. They were asked to indicate the type of hospital (whether university (UTH) or general (DGH) hospital), glaucoma specialist status, and availability and use of automated perimetry, disc photography, HRT, GDx, OCT, and pachymetry.**

Results **A total of 493 completed questionnaires were received and 469 were analysed: 284 (60.6%) DGH, 185 (39.4%) UTH, 144 (30.7%) glaucoma specialists. There was good availability of automated perimetry (467, 99.6%), disc photography (420, 89.6%), pachymetry (374, 79.7%), OCT (212, 45.2%), HRT (206, 43.9%), and GDx (59, 12.6%). A total of 308 (65.7%) consultants had at least one digital imaging instrument available. The majority of consultants used SAP (347, 74.0%) and SITA-fast (282, 60.1%) for glaucoma suspects, and for monitoring glaucoma (283, 60.3% and 197, 42.0%, respectively). Some used Esterman (155, 33.0%) and Goldmann fields (90, 19.2%) in addition to SAP and SITA-fast for glaucoma suspects. Few consultants used short-wavelength automated perimetry and frequency-doubled perimetry. Of the three imaging tests, HRT was the most commonly used investigation for disc asymmetry, early glaucoma, glaucomatous progression, ocular hypertension, normal tension glaucoma, and unreliable visual fields ($P<0.0001$). Where pachymeters were available, 333 (89.0%) consultants and 117 (98.3%) glaucoma specialists used pachymetry in glaucoma management.**

Conclusions **There was some variation in the use of investigations for the diagnosis and management of glaucoma, reflecting the range of techniques available. SAP, SITA-fast, and pachymetry were the most commonly utilised investigations followed by HRT. Glaucoma specialist status, type of hospital, and presence of research influenced the availability and use of all investigations, except visual fields.**

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Introduction

Current guidelines from the Royal College of Ophthalmologists, European Glaucoma Society, and the American Academy of Ophthalmology on glaucoma diagnosis and management regard stereoscopic optic disc examination and photography as the preferred methods for optic disc assessment and documentation.[1–3] These guidelines recommend that at baseline examination, the use of digital computerised scanning of the disc/nerve fibre layer is optional, but visual field analysis is mandatory. The significance of psychophysical tests, such as frequency-doubled perimetry (FDT) and short-wavelength automated perimetry (SWAP), in detecting early glaucomatous field loss before standard automated perimetry (SAP) have been acknowledged by the guidelines, but their use have not been mandated. It is also recognised by these guidelines that confirmed worsening of

optic nerve head or retinal nerve fibre layer parameters on digital scanning is a strong sign of progression, and the use of digital scanning for this purpose is recommended. The European Glaucoma Society Guidelines[1] recommend central corneal thickness (CCT) measurement in certain types of glaucoma patients but not for established glaucoma.

The purpose of this study was to ascertain which of these investigations are current practice in the management of glaucoma, and whether the type of hospital, glaucoma specialist status, and presence of glaucoma research influence this practice by consultant ophthalmologists in hospital service in the United Kingdom.

To the best of our knowledge, this is the first study conducted in the United Kingdom to ascertain the investigations used for glaucoma in hospital service.

Materials and methods

In June 2006, a postal questionnaire containing 10 questions regarding the use of investigations for glaucoma, a cover letter, and a self-addressed, stamped reply envelope were sent to 1007 active consultant ophthalmologists in the UK National Health Service (NHS) and 40 consultants in private practice only. A complete and up-to-date list of all consultant ophthalmologists in the United Kingdom was obtained from the Directory of Ophthalmology Care 2006[4] and the Royal College of Ophthalmologists. The study was designed to maintain anonymity for all respondents.

The first three questions asked to indicate the type of hospital, whether district general hospital (DGH) or university teaching hospital (UTH), to indicate yes or no for subspecialty interest in glaucoma, and whether glaucoma research is conducted in the department. The remaining questions were multiple choice and consultants were asked to tick as many options that were applicable. These questions obtained information on investigations available in their department for the assessment of glaucoma patients, visual field/s used to assess a patient suspected with glaucoma, visual fields to detect progression of glaucoma, and the frequency of performance of visual fields on glaucoma patients. Questions were also asked to ascertain on which patients the imaging tests, Heidelberg retinal tomography (HRT), optical coherence tomography (OCT) scanning laser polarimetry (GDx), and CCT were performed. The consultants were further asked how often they performed HRT on their glaucoma patients, and to enter any comments. Consultants were given 3 months to respond. Data obtained from the paper questionnaires were entered into a Microsoft Excel spreadsheet and statistical analysis was performed using Graphpad Software 2005. This study did not require approval from the Ethics Committee.

Results

Type of hospital

A total of 493 questionnaires were received from NHS consultant ophthalmologists, giving a response rate of 49%. Only one questionnaire was received from a consultant in private practice. In total, 55% of UTH ophthalmologists and 46% of DGH ophthalmologists responded (Figure 1). A total of 16 consultants declared that they do not manage glaucoma patients and nine forms were incomplete and were excluded from further analysis. Of the 469 remaining consultants, 284 (60.6%) were from DGH and 185 (39.4%) were from UTH.

Glaucoma subspecialty

In total, 144 consultant ophthalmologists indicated on their questionnaire that they were glaucoma specialists. This number is similar to the number of glaucoma

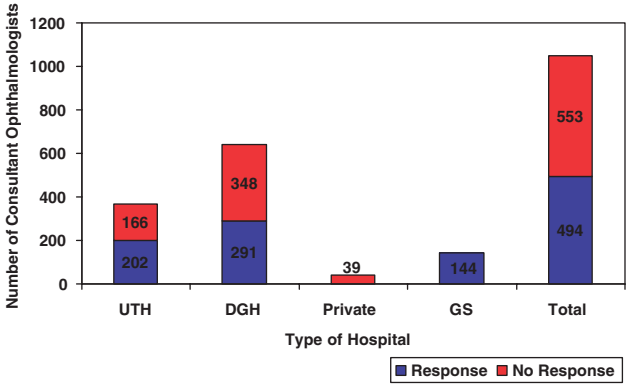

Figure 1 Responses received.

specialists in the Royal College of Ophthalmologists' database. Sixty-four (44.4%) consultant ophthalmologists worked in UTH, and 80 (55.6%) in DGH. In total, 92 (63.9%) glaucoma specialists conducted glaucoma research in their departments. A total of 161 (49.5%) non-specialists conducted glaucoma research in their departments.

Research

In all, 253 (53.9%) consultants conducted glaucoma research in their departments. Glaucoma research was more likely to be carried out in departments with glaucoma specialists ($P = 0.0037$). The majority of consultants with glaucoma research in their department was from UTH (134, 53.0%). There was no statistically significant difference between glaucoma research among UTH glaucoma specialists and DGH glaucoma specialists.

Availability of investigations for glaucoma

Table 1 shows that there was good availability of automated perimetry (467, 99.6%), disc photography (420, 89.6%), and pachymetry (374, 79.7%). In all, 308 (65.7%) consultants had at least one digital imaging instrument available (Table 2). OCT was available to 212 (45.2%) consultants, HRT to 206 (43.9%), and GDx to 59 (12.6%) consultants. Automated visual fields were almost equally available to DGH and UTH consultants. There was better availability of all other investigations to UTH consultants ($P < 0.0001$). Of the different types of HRT, HRT 2 was most commonly available. Only GDx showed significant availability to glaucoma specialists. There was a statistically significant effect of research on the availability of all investigations except automated visual fields.

Choice of visual fields

Standard automated perimetry was the investigation of choice for glaucoma suspects (347, 74.0%; Table 3) and for monitoring glaucoma (283, 60.3%). Swedish Interactive Threshold Algorithm (SITA)-fast was the second choice (282, 60.1% and 197, 42.0%, respectively). A total of 155 (33.0%) consultants used Esterman and 90 (19.2%) consultants used Goldmann fields along with SAP or SITA-fast for glaucoma suspects. No consultant used Esterman or Goldmann visual fields only. Five consultants used SWAP and 13 used FDT for glaucoma suspects, wheareas three used SWAP and four used FDT to monitor glaucoma patients. There was no significant difference in the choice of visual field between UTH and DGH consultants, or glaucoma specialists and non-specialists.

Consultants were asked to indicate whether they performed visual fields annually, as necessary, once only, never, or to write other. Most consultants (253, 53.9%) selected as necessary, followed by annually (132, 28.1%). Most glaucoma specialists (88, 61.1%) followed the same

Table 2 Number of consultants with digital imaging available

Digital imaging instrument	*Number of consultants*
HRT only	72
HRT + GDx only	2
HRT + OCT only	104
HRT + OCT + GDx	28
Total HRT	206
GDx + OCT only	7
GDx only	22
OCT only	73
Total GDx	59
Total OCT	212
No digital instrument	163
At least one digital instrument	308

Table 1 Number of consultant ophthalmologists with each glaucoma investigation and association with the type of hospital, glaucoma specialist status, and research

Glaucoma investigation	*Number of consultants* n = *469*	*UTH* n = *185*	*DGH* n = *284*	P-*value*	*Glaucoma specialist* n = *144*	*Non-specialist* n = *325*	P-*value*	*Research* n = *253*	*No research* n = *216*	P-*value*
Disc photography	420	182 (98.4%)	238 (83.8%)	S**	128	292	NS	239 (94.5%)	181 (83.8%)	S**
Automated visual field	467	185	282	NS	144	323	NS	252	215	NS
HRT 1, 2 or 3	206	113 (61.1%)	93 (32.7%)	S**	69	137	NS	145 (57.3%)	61 (28.2%)	S**
GDx VCC	59	34 (18.4%)	25 (8.8%)	S**	32 (22.2%)	27 (8.3%)	S**	44 (17.4%)	15 (6.9%)	S**
OCT	212	131 (70.8%)	81 (28.5%)	S**	73	139	NS	149 (58.9%)	63 (29.2%)	S**
CCT	373	165 (89.2%)	208 (73.2%)	S**	119	254	NS	219 (86.6%)	154 (71.3%)	S**

S** = statistically significant, *P*-value < 0.001, Fisher's exact test, Bonferroni-adjusted *P*-value < 0.005.
NS = not statistically significant, *P*-value > 0.05, Fisher's exact test.
The percentage of consultants using each glaucoma investigation compared to the number of consultants in type of hospital, glaucoma specialty or research is given in parenthesis.

trend, whereas a significantly greater proportion of non-specialists investigated annually.

Digital imaging tests (HRT, OCT, and GDx)

Of the three available digital imaging tests, HRT had the highest percentage of use (174 (84.5%) consultants), followed by GDx (48, 81.4%) and OCT (148, 69.8%) (Table 4). The use of available HRT was significantly greater by glaucoma specialists compared to non-specialists. There was no significant difference in the use of HRT, OCT, or GDx between UTH and DGH consultants. All three techniques were used for investigating disc asymmetry, early glaucoma, glaucomatous progression, ocular hypertension (OTN), normal tension glaucoma (NTG), and unreliable visual fields (Table 5). Of the three imaging modalities, HRT was the most commonly selected investigation by glaucoma specialists and non-specialists, for most categories of glaucoma patients ($P<0.0001$). The most common uses of HRT by both glaucoma specialists and non-specialists were to detect progressive optic disc changes (126, 61%), and for patients with unreliable visual fields (101, 49%). GDx was most commonly used to detect early glaucomatous optic nerve changes (32, 54%) and for patients with unreliable visual fields (29, 49%). OCT was least used for all categories of patients.

Consultants were asked to indicate whether they performed HRT annually, as necessary, once only, never, or to write other. Most consultants selected as necessary, followed by annually.

CCT

A total of 374 (79.7%) consultants, including 119 (82.6%) glaucoma specialists, reported having pachymetry available. Of these, 333 (89.0%) consultants and 117 (98.3%) glaucoma specialists measure CCT in glaucoma management. Consultants were asked whether they performed CCT on all glaucoma patients, OTN, NTG, patients with unreliable visual fields, and disc asymmetry. Most consultants responded with OTN (195, 52.1%), all glaucoma patients (189, 50.5%), and NTG

Table 3 Number of consultants using types of visual fields for glaucoma suspects and association with type of hospital and glaucoma specialist status

Type of visual field	*Total consultants* n = *469*	*UTH* n = *185*	*DGH* n = *284*	P-*value*	*Glaucoma specialists* n = *144*	*Nonspecialists* n = *325*	P-*value*
SAP	347	146	201	NS	107	240	NS
SITA–fast	282	110	172	NS	90	192	NS
SWAP	5	3	2	NS	2	3	NS
FDT	13	4	9	NS	5	8	NS
Goldmann	90	41	49	NS	33	57	NS
Esterman	155	63	92	NS	43	112	NS
Armaly	1	1	0	NS	0	1	NS
Other	8	3	5	NS	1	7	NS

NS = not statistically significant, *P*-value > 0.05, Fisher's exact test.

Table 4 Use of available digital imaging for glaucoma by consultant ophthalmologists

Investigation	*Number of consultants*									
	Total	*UTH* *n* = *185*	*DGH* *n* = *284*	P-*value*	*Glaucoma specialist* *n* = *144*	*Non-specialist* *n* = *325*	P-*value*	*Glaucoma Research* *n* = *253*	*No Glaucoma Research* *n* = *216*	P-*value*
HRT available	206	113	93	NS	69	137	S**	145	61	S*
HRT used	174	92	82		67 (97.1%)	107 (78.1%)		119 (82.1%)	55 (90.2%)	
OCT available	212	131	81	NS	73	139	S*	149	63	S*
OCT used	148	88	60		58 (79.4%)	90 (64.7%)		101 (67.8%)	47 (74.6%)	
GDx available	59	34	25	NS	32	27	NS	44	15	NS
GDx used	48	25	23		27	21		38	10	

S** = statistically significant, *P*-value < 0.001, Fisher's exact test, Bonferroni-adjusted *P*-value < 0.001.
S* = statistically significant, *P*-value < 0.05 and > 0.001, Fisher's exact test, Bonferroni-adjusted *P*-value > 0.05.
NS = not statistically significant, *P*-value > 0.05, Fisher's exact test.
The percentage of consultants using digital imaging compared to the number of consultants with digital imaging available is given in parenthesis.

Table 5 Use of HRT, OCT, and GDx for types of glaucoma patients by consultants

Glaucoma Patient	*Number of consultants using HRT (%)*	*Number of consultants using OCT (%)*	*Number of consultants using GDx (%)*	P-*value*
Disc asymmetry	86 (41.7)	37 (17.4)	24 (40.7)	S**
Detection of early glaucomatous optic nerve changes	91 (44.2)	40 (18.9)	32 (54.2)	S**
Detection of progressive optic disc changes	126 (61.2)	43 (20.3)	23 (38.9)	S**
Ocular hypertension	92 (44.7)	31 (14.6)	23 (38.9)	S**
Normal tension glaucoma	96 (46.6)	37 (17.4)	22 (37.3)	S**
Unreliable visual fields	101 (49.0)	41 (19.3)	29 (49.2)	S**
I do not use this test	30 (14.6)	63 (29.7)	11 (18.6)	S*
Total number of consultants with investigation available	206	212	59	

S** = statistically significant, P-value < 0.001, χ^2 test, 2 df. Bonferroni-adjusted P-value < 0.001.
S* = statistically significant, P-value < 0.05 and > 0.001, chi-square test, 2 df. Bonferroni-adjusted P-value < 0.05.
The percentage of consultants using digital imaging compared to the number of consultants with digital imaging available is given in parenthesis.

(155, 41.4%). A significantly greater proportion of UTH consultants and glaucoma specialists measure CCT on all glaucoma patients, wheareas DGH consultants measure CCT in NTG and OTN.

Discussion

The purpose of this study was to determine the differences or similarities in the use of various diagnostic techniques between types of hospitals, and to establish whether the presence of a glaucoma specialist or glaucoma research in an ophthalmology unit are factors in the choice of investigations used. From the analysis of the data obtained from this sample, it is evident that the presence of a glaucoma specialist in the department did not seem to influence the availability of most investigations, with the exception of GDx. UTHs were better equipped with digital imaging, pachymetry, and disc photography than DGHs. Departments with glaucoma research were also better equipped. Two-thirds of glaucoma specialists had glaucoma research in their department.

Choice of visual field

SAP was preferred to SITA-fast for monitoring glaucoma and for investigating glaucoma suspects. A number of consultants and glaucoma specialists used Esterman and Goldmann visual fields along with either SAP or SITA-fast, to monitor glaucoma suspects. A possible explanation is that Esterman is a binocular test and is used to assess driving capacity in the United Kingdom; however, Esterman and Goldmann visual fields provide little information about early glaucomatous field defects. By contrast, SWAP and FDT, which are known to detect very early glaucomatous field defects before SAP[5] and possibly before digital imaging[6,7] were used by a small number of consultants. This may be due to the longer time taken to perform SWAP compared to SAP and the low availability of FDT in the United Kingdom. One study compared SAP, SWAP, and FDT and found that FDT showed the highest sensitivity overall.[8]

Digital imaging instruments

Optic nerve head photography was two times more available than digital imaging and still seems to be the mainstay of optic nerve head imaging. OCT was the most available digital imaging modality but was slightly less used than HRT in glaucoma management. A likely explanation is that OCT has a wider clinical application in other subspecialties and is therefore more available, but is probably used more commonly for retinal conditions than for glaucoma. The less common use of OCT for glaucoma compared to HRT becomes more evident on direct questioning about different categories of glaucoma patients in question 8 of the questionnaire. The clinical applications of imaging are screening for glaucoma, diagnosis of glaucoma, and detection of glaucomatous progression. Of the three digital imaging devices, HRT was the most commonly used investigation by consultants in this survey to evaluate glaucoma patients, primarily for the detection of glaucomatous progression and for patients with unreliable visual fields. The reason may be that, of the three modalities, HRT is the most advanced technology. HRT was introduced in 1991 and was updated to HRT 2 in 1999, wheareas GDx was introduced in 1992 and OCT in 1995. In addition, GDx and OCT have had a number of software and hardware alterations over a short time span.

HRT 2 has been shown to have a sensitivity of 84% and a specificity of 96% and is more sensitive than clinical assessment of stereoscopic optic disc photographs in detecting early glaucoma when compared with normals defined by visual field status,[9] although other studies suggest otherwise.[10] Some studies have suggested that

HRT 2 can be used as a screening tool to diagnose early perimetric glaucoma[11] as well as preperimetric glaucoma.[12] It has been shown that baseline HRT measurements are predictive of glaucomatous changes in ocular hypertensives without detectable functional damage.[13] Several studies have reported the ability of HRT to detect progression.[14,15] HRT is better in detecting glaucomatous progression than expert clinicians viewing stereophotos,[16] and detects progression earlier than SAP.[14]

GDx discriminates well between normal and glaucomatous eyes,[17] can be used to diagnose early preperimetric glaucoma,[18] and can predict glaucomatous visual field loss in glaucoma suspects.[19] There are few studies exhibiting its ability to identify and monitor glaucomatous progression because of its recent introduction. GDx VCC is better at detecting nerve fibre layer loss than retinal nerve fibre layer photography,[20] and may be used as a screening tool, as it has been shown to have 89% sensitivity and 96% specificity,[21] but preferably not in isolation.[22]

There are differences in the measurement of the peripapillary retinal nerve fibre layer thickness between Stratus OCT and GDx VCC, but the diagnostic accuracy of the best parameters of the two modalities is similar.[23] OCT can discriminate between normal and glaucomatous eyes,[24] but there are few longitudinal studies suggesting that it can identify glaucomatous progression.[25] To our knowledge, there are no published studies on the ability of the recently introduced Stratus OCT to detect glaucoma progression.

Comparison of HRT, OCT, and GDx

The ability to distinguish healthy eyes from those with glaucomatous field loss were similar among the best parameters for each instrument.[24,26] One study showed that although the diagnostic abilities of the three imaging modalities were similar, assessment of stereophotographs and measurements from OCT and HRT had higher sensitivities than measurements from GDx.[27] A combination of the imaging methods significantly improves the ability to distinguish normal eyes from early—to moderate glaucoma.[28] When used alone, HRT, GDx and OCT can differentiate between normal and early–moderate glaucoma, but none of the instruments are sensitive or specific enough to be used as a screening tool for early–moderate glaucoma.[29] More severe visual field loss is associated with increased sensitivity of all imaging instruments. It has been shown that structure–function relationships are significantly strongest for Stratus OCT measurements and similar between HRT 2 and GDx VCC for glaucoma suspects and patients.[30,31] Large optic discs are associated with decreased sensitivity for the best parameters of the Stratus OCT and GDx VCC, whereas small optic discs are associated with increased sensitivity. For HRT 2, an inverse effect is observed.[32]

A combination of structural and functional tests improves the ability to detect glaucoma. Adding either FDT or SWAP to each of the digital imaging modalities led to an increase in the sensitivity of glaucoma detection.[33]

CCT

Recent studies have shown that CCT is essential in the evaluation of glaucoma. CCT is a confounder of Goldmann applanation tonometry (GAT), and omitting its measurement may lead to the overdiagnosis, underdiagnosis, or misclassification of glaucoma, especially after refractive surgery. It is also important to measure CCT to determine the target IOP for each patient.

CCT has also been shown by the OHTS study to be a potent predictor of glaucoma risk,[34] and is inversely related to the risk of developing glaucomatous damage. The role of CCT as a predictor of glaucoma development was also confirmed by studies, which showed that ocular hypertensive patients exhibiting early glaucomatous damage on FDT, SWAP,[5,35] and OCT,[36] had thinner corneas than those with normal tests. CCT is important in the management of preperimetric glaucomatous optic neuropathy, as it has been shown that patients who develop early SAP defects have thinner corneas.[37]

CCT also gives an indication of the robustness of the optic nerve and is inversely associated with glaucomatous optic neuropathy, larger disc size, and a more deformable disc.[38] Corneal hysteresis has been shown to be inversely associated with visual field progression.[39]

Implications for clinical practice

The National Institute for Clinical Excellence is currently evaluating a data set for glaucoma. This survey represents a snapshot of current practice and we believe that the data may provide some helpful information about the current use of technology in some of the ophthalmology clinics in the United Kingdom. The data may also help to formulate a consensus about diagnostic imaging in glaucoma management in the United Kingdom.

In this sample, we believe the response rate from glaucoma specialists was high; however, as the survey was anonymous, we could not establish the overall proportion of UK glaucoma specialists who responded to the study. Another limitation of this survey

was the large study population with an overall response rate of just under 50%. From this sample, only 16 ophthalmologists indicated that they do not manage glaucoma patients. We suspect that a significant number of non-responders belong to this group of ophthalmologists. No attempt was made to recontact non-responders as their identity was kept anonymous. As only one response was received from the a consultant in private practice, no study or comparison could be made with that practice pattern. The questionnaire was limited to 10 questions in an effort to increase compliance, and were multiple choice with additional space to allow responses not listed. We were particularly interested in the availability and use of digital imaging, visual fields, and CCT. Tonometry, corneal hysteresis, and gonioscopy were excluded from the survey.

Conclusions

From this study, there seems to be some variation in the use of investigations for the diagnosis and management of glaucoma reflecting the range of techniques available. SAP, SITA-fast, pachymetry, and HRT were the most commonly utilised investigations. Glaucoma specialist status, type of hospital, and presence of research influenced the availability and use of some investigations.

The data from this survey suggest that consultants with subspecialist interest in glaucoma were more likely to conduct glaucoma research. Of all the glaucoma equipment, only GDx was more likely to be available where a glaucoma specialist was present. The choice of visual fields and digital imaging equipment was similar between glaucoma specialists and non-specialists. Glaucoma specialists chose SAP, which was closely followed by SITA-fast, for glaucoma suspects and glaucoma monitoring. Some added Esterman fields for glaucoma suspects, presumably to assess the driving standard. SWAP and FDT were rarely used. Glaucoma specialists showed significantly greater use of available HRT and OCT than non-specialists. Of the three digital techniques, HRT was most commonly used by both specialists and non-specialists, and the leading use by glaucoma specialists was for glaucomatous progression, followed by unreliable fields, disc asymmetry, OTN, NTG, and early glaucoma. Almost all glaucoma specialists measured CCT in glaucoma management, and do so on all glaucoma patients.

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Competing interest

The authors have no proprietary a financial interest in any of the products named.

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Appendix

This is the questionnaire that was posted to all consultant ophthalmologists

Glaucoma investigations in hospital service—a UK survey
Please tick all options that apply.

1. Type of hospital

District general hospital
University teaching hospital
Independent hospital

2. Do you have a subspecialty interest in glaucoma?

Yes
No

3. Is glaucoma research conducted in your department?

Yes
No

4. What investigations are available in your department for the assessment of glaucoma?

Disc photography				
automated visual fields				
HRT (Heidelberg retinal tomography)	If yes:	HRT 1	HRT 2	HRT 3
GDx VCC (scanning laser polarimetry)				
OCT (optical coherence tomography or Stratus)				
Central corneal thickness				
Phasing				
None of the above				

5. What visual field/s do you use to assess a patient in whom you suspect glaucoma?

(a) SAP (standard automated perimetry)	Please select which type:	24–2	30–2
(b) SITA-fast			
(c) SWAP (short-wavelength automated perimetry or blue-on-yellow)			
(d) FDT (frequency-doubling technology)			
(e) Goldmann manual perimetry			
(f) Binocular field	Please select which type:	Esterman	Armaly
(g) Other			

6. Which visual field/s do you use to monitor glaucoma or detect progression?
(Please select from options a–g in question number 5).

7. How often do you perform visual fields on glaucoma patients?

Never	Once only	Annually	As necessary	
Other				

8. In which patient/s do you use HRT, OCT, and GDx?

Please tick all that apply.

	HRT	OCT	GDx
I do not use this test			
In patients with disc asymmetry			
To detect early glaucomatous optic nerve changes			
To detect progressive optic disc changes			
Ocular hypertension			
Normal tension glaucoma			
Unreliable visual fields			
Other			

9. In which patients do you perform central corneal thickness?

I do not use this test	
In patients with disc asymmetry	
On all glaucoma patients	
Ocular hypertension	
Normal tension glaucoma	
Unreliable visual fields	
Other	

10. How often do you perform HRT on a glaucoma suspect?

Never	Once only	Annually	As necessary
Other			

11. Comments: