

Service Implementation - Do Once and Share

Glaucoma Action Team

Final Report

Version 3.0

7th August 2006

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1.0	27.07.2006	First Draft; Giash Ahmed – Project Manager
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2.1	03.08.2006	Third draft; Comments from Sheila Adam – Director of Public Health, North East London Strategic Health Authority
3.0	07.08.2006	Final version for Connecting for Health

Forecast Changes:

Anticipated Change	When

Reviewers:

This document must be reviewed by the following. Indicate any delegation for sign off.

Name	Signature	Title / Responsibility	Date	Version
Muir Gray		Director KPS		
Sheila Adam		SHA Lead		
Parul Desai		Action Team Lead		

Approvals:

This document requires the following approvals:

Name	Signature	Title / Responsibility	Date	Version
Muir Gray		Director KPS		

Distribution:

<Document text>.

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Related Documents:

These documents will provide additional information.

Ref no	Doc Reference Number	Title	Version
1	NPFIT-SHR-QMS-PRP-0015	Glossary of Terms Consolidated.doc	6

Glossary of Terms:

List any new terms created in this document. Mail the NPO Quality Manager to have these included in the master glossary above [1].

Term	Acronym	Definition
Community of Practice	CoP	A wide spectrum of professional bodies; clinicians actively engaged in glaucoma management; patients; charitable and patient-orientated organisations.

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- B. Telephone Survey of Glaucoma Services - Findings
- C. List of Trusts participating in the Survey

- D. DOAS Glaucoma Clinical Care Pathway and Dataset

<i>ACTION TEAM:</i>	<i>DOAS GLAUCOMA</i>
<i>ACTION TEAM LEAD:</i>	<i>PARUL DESAI</i>
<i>PROJECT MANAGER:</i>	<i>GIASH AHMED</i>
<i>LOCATION OF ACTION TEAM:</i>	<i>MOORFIELDS EYE HOSPITAL, LONDON</i>
<i>SHA LEAD:</i>	<i>Dr SHEILA ADAM</i>
<i>ACTION TEAM START DATE:</i>	<i>14th November 2005</i>
<i>DATE OF FINAL REPORT:</i>	<i>31st July 2006</i>
1. BACKGROUND	
<p>Glaucoma as defined for this DOAS project refers to primary open angle glaucoma (POAG), normal tension glaucoma (NTG) and includes ocular hypertension (OHT), a strong risk factor for developing glaucoma. Glaucoma is a chronic disease and necessitates life-long follow-up. Left untreated the natural history of the disease is for progressive visual field loss, leading to irreversible blindness. As such glaucoma causes significant visual disability accounting for at least 13% of blind registrations and 11% of partial sight registrations. It is estimated that 1-2% of people of 40 years of age and over are likely to have glaucoma, and this rises to about 7% in persons over 75 years of age.</p> <p>Glaucoma management has been evolving rapidly in recent years and several models exist emphasising co-management between professional groups, and between primary and secondary care. Currently opportunistic case detection by optometrists in primary care is the single most frequent route of referral to the Hospital Eye Service, but there is no single test to reliably detect those with and those without glaucoma. Emerging evidence from clinical trials indicates that reduction in intra-ocular pressure (IOP) can significantly delay disease progression.</p> <p>Whilst there are guidelines for the management of glaucoma (Royal College of Ophthalmologists 2004), variations in practice exist regarding models of care, service delivery and organisation, and as yet there is no established consensus on an overall care pathway for glaucoma spanning from primary to secondary care. Subsequently there is no apparent agreement on a core dataset and related information flows for glaucoma management. Several recent national initiatives have explored how eye care health services may be delivered in a more accessible and efficient manner – and inevitably this has included glaucoma:</p> <ul style="list-style-type: none"> • <i>National Eye Care Services Steering Group Report – 2004.</i> This recommended development of integrated care pathways across primary, secondary and social care whilst making best use of clinical skill-mix and expertise • <i>Modernisation Agency:</i> “Action on Ophthalmology” - 2003 “Action on Eye Care Services” – taking forward the recommendations from the 	

National Eye Care Services Steering Group through a series of pilot projects that are due to report shortly.

- *National Screening Committee – Glaucoma Working Group* – this is re-convening shortly to consider recent developments in the detection and management of glaucoma that may inform the need (or otherwise) for a national screening programme.

The collective findings, conclusions and recommendations from these national initiatives will clearly inform and contribute to this DOAS project. In addition examples of best practice across the country will also be sought, and the evidence under-pinning recommendations for a proposed pathway will be sought and provided through the Eyes and Vision Specialist Library of National Library for Health (NLH).

This is an important opportunity for clinicians to engage in, and inform the Connecting for Health Programme, and in order to succeed both in the short term and long term, and obtain sustained stakeholder ownership, it will be essential to get professional body support.

The project team will be based at Moorfields Eye Hospital NHS Foundation Trust and overseen by North East London Strategic Health Authority.

2. PROJECT OBJECTIVES

- Define and develop a national clinical glaucoma care pathway template that has been approved by relevant professional bodies.
- Define a core dataset for glaucoma supporting the national glaucoma care pathway template.
- Review current output specifications from Connecting for Health.

3. SHA EXECUTIVE SUMMARY

Name: Dr Sheila Adam

The DOAS Glaucoma Project was well- managed and has achieved all its objectives as set out in the scoping document. The project has worked closely with the national steering committee, clinicians and professional bodies in glaucoma care and have successfully engaged and involved the wider community of practice in the development of the DOAS Glaucoma national clinical care pathway and dataset.

There are concerns that there has been no official feedback from the DOAS programme and Connecting for Health as a whole regarding how the DOAS Glaucoma project and other DOAS projects are being or will be used by Connecting for Health for the development of the NHS Care Record and Common User Interface.

4. *DETAILED REPORT ON WORK WITHIN SCOPE (any outputs from this work which are not covered as specific deliverables)*

Output 1: **National Steering Committee for DOAS Glaucoma**

Status: Completed

Date of Completion: 5th December 2005

Summary of findings:

The membership of the national Steering Committee reflected and represented the views of users and stakeholders involved in glaucoma care. Its membership had been deliberately aimed at professional bodies and clinicians actively engaged in glaucoma management; patients; charitable and patient-orientated organisations; that are likely to have an influence on the wider community of practice for its engagement in the process, ownership and ultimately approval of the outputs of DOAS Glaucoma, for use in clinical practice.

It served to provide specialist advice on:

- Glaucoma care and management
- The development of the clinical care pathway and dataset, and,
- New developments on the horizon and prioritise them for future review or inclusion in the pathway and dataset.

DOAS National Steering Committee Membership :

Royal College of Ophthalmologists
College of Optometrists
Association of Optometrists
Royal College of Nurses – Ophthalmic Nurses Forum
Royal College of General Practitioners

Ophthalmologists with Glaucoma as Special Interest
Optometrists in practice
Glaucoma Nurse Practitioners
Patient Representatives
Royal National Institute for the Blind

Eyes and Vision Specialist Library
DOAS Programme Management Team
North East London Strategic Health Authority
DOAS Glaucoma Action Team

3 meetings were held during the course of the project: 10th January 2006; 28th February 2006; and 4th April 2006. Work in between these meetings was via e-mail / telephone. Minutes of meetings are available from the DOAS Action Team.

Appendices:

- **A. National Steering Committee Terms of Reference and Operational Framework**
- **A1. Attendance at DOAS Glaucoma National Steering Committee Meetings**

Output 2: **Community of Practice:
Survey of the patterns of glaucoma service delivery and
organisation in England**

Status: Completed

Date of Completion: May 2006

Summary of findings:

To provide the contextual background of service delivery and organisation for the development of the pathway and dataset, a telephone survey was conducted.

It was assumed that all Trusts included in the Royal College of Ophthalmologists Directory of Training Posts in Ophthalmology (2005-06) would -

- Be providing sub-specialist services within Ophthalmology that included glaucoma services
- Have clinical guidelines and protocols for the clinical management of glaucoma with standards for clinical care.

124 Trusts provide a Specialist Glaucoma Service in England.

Findings are presented in terms of the corporate and clinical organisation of services, and are provided in **Appendix B**.

This also served to set up the basis for identifying the wider glaucoma community of practice. Contact details for the manager for ophthalmic services and the Lead Consultant Ophthalmologist for Glaucoma or the Service Director were obtained and a contacts database established. This was used to keep them engaged in the project by providing them with feedback on the progress of the project; together with email alerts when documents for review and consultation are placed on the dedicated website (see Output 3).

Appendices:

- **B. Telephone Survey of Glaucoma Services - Findings**
- **C. List of Trusts participating in the Survey**

Output 3: **Community of Practice : Awareness and Engagement
DOAS Glaucoma website – www.doasglaucoma.org**

Status: Live and ongoing

Summary of findings:

To raise awareness within, and promote engagement of, the glaucoma community of practice, we focused on a web-based strategy with the aim of achieving the widest coverage possible within the resources and time available. A dedicated website was set up and has been on-line since the beginning of December 2006.

The website contains details about the project's scope, and its operational and accountability framework, but most importantly, it enables visitors to the site to observe the progress of the project and contribute to it throughout its duration. The consultation draft of the clinical pathway and dataset was placed on the website on the 4th April to facilitate a wide spectrum of consultation and feedback.

Output 4: **Community of Practice – Web-Site Links**
www.doasglaucoma.org

Status: Live and ongoing

Date of Completion: January 2006

Summary of findings:

Links to the DOAS Glaucoma website have been placed on the following professional body websites to facilitate ease of navigation / alternative routes to the project site.

These include :

Royal College of Ophthalmologists www.rcophth.ac.uk/about/college/doas-glaucoma

Royal College of General Practitioners www.rcgp.org.uk

College of Optometrists www.college-optometrists.org

Association of Optometrists www.assoc-optometrists.org/primary/primary_glaucoma.html

NHS Ophthalmic Nurses www.nurseseyesite.nhs.uk/do_once/index.asp

Output 5: **Community of Practice - Publicity (Newsletters)**

Status: Completed

Date of Completion: March 2006

Summary of findings:

The publicity of this project has focused on professional bodies that are actively involved in glaucoma care and management, mainly through their newsletters to their national membership. These include e-newsletters and conventional paper versions as follows:

College of Optometrists	– Newsletter and E-newsletter
Association of Optometrists	– Newsletter and E-newsletter
NHS Ophthalmic Nurses	– Newsletter and Poster (for patient involvement)
Moorfields Eye Hospital	– Newsletter
Royal College of Ophthalmologists	– Newsletter
Royal College of General Practitioners	– Newsletter

Output 6: **Patient Involvement: DOAS Glaucoma Patient Focus Group**

Status: Completed

Date of Completion: March 2006

Summary of findings:

A Patient Focus Group was set up to ensure that the perspectives and needs of patients for health care and information about their care, contributed to the development of the glaucoma care pathway and dataset, and ultimately incorporated within them. The Patient Focus Group was composed of patients with glaucoma (as defined for the scope of this project) with a range of racial backgrounds and ages.

The meeting was held on the 14th March 2006.

Output 7: **First Draft - Clinical Care Pathway and Dataset for Glaucoma**

Status: Completed

Date of Completion: February 2006

Summary of findings:

An evidence-based, draft clinical care pathway and dataset focusing on the clinical management of patients with glaucoma (as defined in the scoping document) was developed.

The approach taken ***built on existing work to identify best practice models and datasets in use*** This involved not only looking at professional body guidance and the peer-reviewed literature, but also through a telephone survey of glaucoma practitioners regarding their protocols, and service organisation. We took the “lessons learnt” from these and their underlying evidence base, to establish a basis for the development of the pathway and dataset and for ultimately achieving consensus and approval. The focus was on clinical care and clinical needs for information to manage patients; and to identify patient needs for information about their care.

A fundamental component to the project, and one that would be necessary to gain wide consensus and professional body approval was ***sourcing the evidence base*** for current guidance and practice and that for the proposed outputs. Each node of the pathway and each data item in the dataset is explicitly supported by “evidence” ranging from professional body guidance, seminal literature, wide body of clinical consensus, patient feedback etc. This is also a pre-requisite if we are to keep the DOAS Glaucoma Care Pathway and Dataset relevant and responsive to clinical practice over time, not just for the present, but when the NHS are Record becomes a reality and thereafter. This aspect of the work was supported by the Eyes and Vision Specialist Library of the National Library for Health.

The Draft DOAS Glaucoma Clinical Care Pathway and Dataset were presented to the Steering Committee on the 28th February 2006.

Output 8: National Consultation – DOAS Glaucoma Clinical Care Pathway and Dataset

Status: Completed

Date of Completion: 4th May 2006

Summary of findings:

National consultation took place during the period: 4th April – 4th May 2006. This was a multi-professional national consultation involving professional bodies and clinicians in practice. The approaches employed included :

Professional Body Consultation - all of the following formally participated and provided feedback and comment :

- Royal College of Ophthalmologists
- College of Optometrists
- Royal College of Nursing – Ophthalmic Nurses Forum
- British and Irish Orthoptic Society
- Royal College of General Practitioners

Community of Practice –

- The DOAS Glaucoma website - the consultation draft of the clinical care pathway and dataset was placed on-line, providing a means of direct feedback to the Action Team.
- E-mail alerts were sent to all our contacts on the Contacts Database of Glaucoma Leads and Managers (Output 2)
- Emails alerts were also sent to individuals particularly from primary care who had expressed an interest through the website during the course of the project.
- Articles for consultation were placed on the following websites and newsletters:
 - College of Optometrists
 - Association of Optometrists
 - Royal College of Nursing (poster for patient was also placed)
 - Moorfields Eye Hospital NHS Foundation Trust
- Emails were sent to members of the Royal College of Nursing, the British and Irish Orthoptic Society, Eyes and Vision Specialist Library
- Consultant Ophthalmologists were contacted individually for the consultation - **765** flyers were sent to all consultant ophthalmologists in England through the post.
- Emails were sent to all glaucoma consultants, glaucoma nurses and senior optometrists at Moorfields Eye Hospital NHS Foundation Trust.

Feedback received from consultation was overwhelmingly supportive, no major omissions, or areas of contention were identified; and the DOAS Glaucoma Clinical Care Pathway and Dataset were supported by broad clinical consensus across professional groups and practitioners involved in glaucoma care.

7. DELIVERABLES (progress report on all deliverables listed in the Scoping Document)

Deliverable name: National Glaucoma Clinical Care Pathway

Status: Ongoing

Date for Completion: August 2006

Stakeholder Consultation Process:

Please refer to Outputs 6,7,8 and 9 – where this has been provided in detail

Evidence of national stakeholder sign off / agreement:

As outlined under Outputs 8 and 9, this is awaited. We expect that this will be forthcoming from all the professional bodies shortly and will be forwarded to CfH.

Through the processes, that have been outlined above (national multi-professional engagement and consultation), the DOAS Glaucoma Action Team and Steering Committee have been able to confidently demonstrate both face and content validity of the DOAS Glaucoma National Clinical Care Pathway and Dataset amongst the community of practice, and have been able to set up the processes for further development / amendment as necessary.

Appendix D: DOAS Glaucoma Clinical Care Pathway and Dataset

Deliverable name: National Glaucoma Clinical Dataset
(supporting the Clinical Pathway)

Status: Ongoing

Date for Completion: August 2006

Stakeholder Consultation Process:

Please refer to Outputs 6,7,8 and 9 – where this has been provided in detail

Evidence of national stakeholder sign off / agreement:

As outlined under Outputs 8 and 9, this is awaited. We expect that this will be forthcoming from all the professional bodies shortly and will be forwarded to CfH.

Through the processes, that have been outlined above (national multi-professional engagement and consultation), the DOAS Glaucoma Action Team and Steering Committee have been able to confidently demonstrate both face and content validity of the DOAS Glaucoma National Clinical Care Pathway and Dataset amongst the community of practice, and have been able to set up the processes for further development / amendment as necessary.

Appendix D: DOAS Glaucoma Clinical Care Pathway and Dataset

Deliverable name: **Review of CfH National Care Record Service (NCRS) Output-Based Specifications (OBS)**

Status: Completed

Date for Completion: May 2006

The NCRS OBS provided by CfH (OBS Extract from Schedule 1.1 - Integrated Care Pathways and Planning Service. Section 105) have been reviewed -

1. We have not identified any specific omissions.
2. Whilst out of scope of the DOAS Glaucoma project, we welcome the need for relating to Social Care, as this will be an important adjunct to any ophthalmic care pathway and dataset in the future.
3. The DOAS Glaucoma Clinical Care Pathway and Dataset reflects the NCRS OBS guidance for Integrated Care Pathways and Planning Services (Extract from Schedule 1.1, section 105) :
 - a. The DOAS Glaucoma Clinical Care Pathway and Dataset covers all aspects of care from detection, diagnosis and investigation, care plan for monitoring and review etc. It spans across primary and secondary health care services.
 - b. It recognises that a patient may have other ocular and systemic comorbidity, which may influence glaucoma management (e.g. compliance with treatment, drug interactions, interpretation of investigations for monitoring disease etc.) Alternatively it recognises that a patient may need treatment other than for glaucoma and this is accounted for management of ophthalmic interventions e.g. cataract.
 - c. The data items reflect clinical standards of care for each stage of the care pathway. They document clinical information that is usually captured and used during the routine care of a glaucoma patient.
 - d. The DOAS Glaucoma Clinical Care Pathway and Dataset are flexible enough to encounter variations between planned care as agreed by clinicians and professional bodies and the actual care based on local service arrangements/ protocols and limitations. Data items are classified as essential or desirable for this purpose (without compromising clinical standards of care) :
 - Essential data items – document clinical management required for diagnosis and management of glaucoma.
 - Desirable data items – document aspects of clinical management and investigation that should occur where local service arrangements / facilities currently allow. In time as professional body guidelines are updated and the equipment and training is made available, these may become “essential”.

8. ADDITIONAL INFORMATION & RECOMMENDATIONS

DOAS Glaucoma has demonstrated a unanimous recognition of the need for a common, national dataset, and interest in electronic systems for glaucoma is rising. Whilst it is a pre-requisite that the Glaucoma Clinical Dataset needs to make sense and be directly relevant to busy clinicians, if it is to meaningfully inform CfH's Output Based Specifications for IT systems and technologies in the NHS, and ultimately reach its full potential through the NHS Care Record, it also has to demonstrate interoperability, fitness for purpose and safety, not just clinically but also technically. The aim is to achieve this by undergoing the NHS-ISB approval process, thereby making it an NHS standard, ensuring that it will be used by Local Service Providers developing IT services and incorporated in the NHS Care Record.

The DOAS Glaucoma Clinical Dataset has strong professional support to take this forward and it will be submitted as a clinical operational standard for glaucoma (as defined in the DOAS scope) for consideration by the NHS-ISB Board.

The planned schedule of work is as follows:

ISB Appraisal of Standard Requirement submission	– 5 September 2006
ISB Board review of Standard Requirement Submission	- 27 September 2006
ISB Appraisal of Draft Standard	– October / November 2006
ISB Board review of Draft Standard	- December 2006
Full ISB approval	- June / August 2007

The work will be funded using residual budget from DOAS Glaucoma project. We shall be seeking additional resources to complete the ISB process from CfH DOAS phase 2 funding. Detailed support requests will be submitted following the ISB Appraisal meeting in September. It is anticipated that the additional resources will be needed for technical support and piloting.

9. CLINICAL LEAD COMMENTS & CONCLUSIONS

Given all of the above I am confident that DOAS Glaucoma project has achieved the objectives that were commissioned by CfH. This has been entirely due to the dedicated time, input and support of the National Steering Committee and the Action Team on a routine day-to-day basis, and the tremendous support and engagement of the wider ophthalmic community.

This report clearly demonstrates the momentum generated within the ophthalmic community, but there is now a need for feedback from the central DOAS Team / CfH regarding the DOAS Programme as a whole, its achievements so far, and how the DOAS Programme is being taken forward in phase 2, and its input into the NHS Care Record.

10. Do Once and Share PROGRAMME COMMENTS

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SIGN OFF

SHA Lead	
Name:	
Signature:	
Date:	
DOAS Programme Manager	
Name:	Jayne Slater
Signature:	
Date:	
KPS Programme Director:	
Name:	Muir Gray
Signature:	
Date:	

APPENDIX A.

NATIONAL STEERING COMMITTEE : DO ONCE AND SHARE – GLAUCOMA

TERMS OF REFERENCE

The National Steering Committee will work with the DOAS Glaucoma Action Team to achieve the objectives and deliverables (as specified within the scoping document ^{a)} of the DOAS Glaucoma Project by:

- i. Representing the stakeholders in the community of practice for glaucoma care
 - ii. Providing specialist advice on the clinical management of glaucoma
 - iii. Providing specialist advice on new and emerging developments (from research and policy initiatives), in the management of glaucoma
 - iii. Facilitating identification, engagement and consultation with; and feedback to; the community of practice for glaucoma care
 - iv. Facilitating the timely approval of the clinical care pathway and dataset, through the members' professional bodies and organisations
- a. *DOAS Glaucoma Scoping Document November 2005)*

OPERATIONAL FRAMEWORK

- i. **Communication** : by the Action Team with members will be by e-mail and phone
- ii. **Meetings** : at least 3 meetings are planned within the 6 month duration of the project.
 - *Notice of meetings* – a minimum of 6-8 weeks will be provided
 - *Attendance at meetings* – will be essential given the short time scale of the project
- iii. **Additional** dialogue, discussion and review of documents in between meetings will occur by e-mail or telephone

10th January 2006

APPENDIX A1.

DO ONCE AND SHARE (DOAS) – GLAUCOMA: NATIONAL STEERING COMMITTEE ATTENDANCE

Date of Meeting: **Tuesday 10th January 2006**

Present:

Miss Parul Desai - Chair, Clinical Lead DOAS Glaucoma
Giash Ahmed, Project Manager, DOAS Glaucoma
Kashif Qureshi, Research Fellow, DOAS Glaucoma
Mr A Cassels-Brown, Royal College of Ophthalmologists
Mr David Broadway, Consultant Ophthalmologist
Miss Wendy Franks, Consultant Ophthalmologist
Ms Agnes Lee, RCN, Ophthalmic Nurses Forum
Ms Jane Hitchcock, RCN, Ophthalmic Nurses Forum
Mr David MacVeigh, College of Optometrists
Mrs Susan Leighter, Association of Optometrists
Dr Tim Smith, Royal College of General Practitioners
Miss Anita Lightstone, RNIB
Mrs Gemma Foster, Patient Representative
Dr Sheila Adam, North East London Strategic Health Authority
Mr Tim Francis, DOAS Programme Management
Ms Jessica Brinsmead, Patient and Public Involvement, MEH
Shona Burman Roy, Chief Knowledge Officer, EVSL, MEH
Richard Seeberan, Technical Manager, EVSL, MEH
Jennifer Wood, Information Co-ordinator, EVSL, MEH
Michael Donnelly, Clinical Governance Manager, MEH

Date of Meeting: **Tuesday 28th February 2006**

Present: Miss Parul Desai - Chair, Clinical Lead DOAS Glaucoma
 Giash Ahmed, Project Manager, DOAS Glaucoma
 Kashif Qureshi, Research Fellow, DOAS Glaucoma
 Miss Wendy Franks, Consultant Ophthalmologist
 Ms Agnes Lee, RCN, Ophthalmic Nurses Forum
 Mr David MacVeigh, College of Optometrists
 Mrs Susan Leighter, Association of Optometrists
 Dr Tim Smith, Royal College of General Practitioners
 Miss Anita Lightstone, RNIB
 Ms Jessica Brinsmead, Patient and Public Involvement, MEH
 Richard Seeberan, Technical Manager, EVSL, MEH
 Jennifer Wood, Information Co-ordinator, EVSL, MEH

Date of Meeting: **Tuesday 9th May 2006**

Present: Miss Parul Desai - Chair, Clinical Lead DOAS Glaucoma
 Giash Ahmed, Project Manager, DOAS Glaucoma
 Mr A Cassels-Brown, Royal College of Ophthalmologists
 Ms Agnes Lee, RCN, Ophthalmic Nurses Forum
 Ms Jane Hitchcock, RCN, Ophthalmic Nurses Forum
 Mr David MacVeigh, College of Optometrists
 Mrs Susan Leighter, Association of Optometrists
 Dr Tim Smith, Royal College of General Practitioner
 Mrs Gemma Foster, Patient Representative
 Dr Sheila Adam, North East London Strategic Health Authority
 Ms Helen Hood, DOAS Programme Management
 Ms Jessica Brinsmead, Patient and Public Involvement, MEH
 Richard Seeberan, Technical Manager, EVSL, MEH
 Jennifer Wood, Information Co-ordinator, EVSL, MEH

APPENDIX B.

Telephone Survey of Glaucoma Services

A. Background

This survey was conducted to provide the contextual background of service delivery and organisation of glaucoma services for the development of the DOAS Glaucoma clinical care pathway and dataset. Although detection and referral of glaucoma is essentially a function of primary care services, glaucoma care and clinical management is primarily based in the hospital eye service (HES), and as such was the focus of this survey.

B. Approach taken

It was assumed that all Trusts included in the Royal College of Ophthalmologists (RCOphth) Directory of Training Posts in Ophthalmology (2005-06) would -

- Be providing sub-specialist services within Ophthalmology that included glaucoma service
- Have clinical guidelines and protocols for the clinical management of glaucoma with standards for clinical care.

The lead Consultant Ophthalmologist for Glaucoma, equivalent clinical lead, or hospital manager responsible for glaucoma care was identified and a convenient time for a telephone interview arranged.

B1.1 Aims :

- Describe the corporate and clinical organisation of a glaucoma service in the HES

C. Findings

There are 124 acute Trusts recognised by the RCOphth for sub-speciality training in England. Of these 100 (81%) were successfully contacted to obtain details of the Consultant Lead for Glaucoma and / or the relevant Hospital Manager. 81 (65%) Trusts were able to complete a telephone interview.

C1. Corporate organisation of glaucoma services

- 78% of Trusts worked as multi-site organisations (mean number of sites involved was 2 ; range 1-7).
- 81% of Trusts provided specialist glaucoma clinics. Whilst 90% of multi-site Trusts provided specialist clinics, 50% of single site Trusts did so.

C2. Clinical organisation of glaucoma services

C2.1 Clinical governance -

90% of multi-site Trusts shared common clinical guidelines and protocols for glaucoma services

C2.2 Clinical teams in HES glaucoma clinics included the following –

Nurses	-	60%
Orthoptists	-	33%
Optometrists	-	11%
Technicians	-	13%

C2.3 Clinical roles of supporting staff in HES glaucoma clinics –

- Supporting clinical staff perform routine examination (visual acuity, IOP, visual field testing and optic nerve imaging), with some duties being performed by technicians also.
- 28% had nurse-led clinics (specialist nurses / nurse practitioners) 4% were optometrist led clinics and 4% had orthoptist led clinics.

C2.4 Links with primary care –

- 12% of Trusts had shared care arrangements with local primary care providers – optometrists.
- Referrals are initiated by optometrists in primary care, but the majority are made to the HES by the patient's GP. Some Trusts (3%) have local arrangements for direct referral from Optometrists.

C2.5 Arrangements for sharing clinical information locally within the organisation –

- 96% used the patient notes supported largely by PAS (patient administration systems) or equivalent.
- Only 4% used an electronic patient record for glaucoma – these were specialty specific and did not relate to other aspects of ophthalmic care, nor systemic systems within the Trust.

C2.6 Arrangements for referrals and booking appointments

All Trusts relied on the GP referral letter which was supported by an optometrist letter in 91% of cases. Booking centres and Choose and Book were being used in over 70% of Trusts interviewed.

APPENDIX C.

List of Trusts participating in the Survey

81 Trusts provided responses to a telephone survey.

Number	Hospital Name	Region
1	Oxford Eye Hospital	Oxford
2	Royal Berkshire Hospital	
3	Stoke Mandeville Hospital	
4	Prince Charles Eye Unit	
5	Milton Keynes General NHS Trust	
6	Birmingham and Midland Eye Centre	West Midlands
7	The Guest Hospital	
8	North Staffs Hospital Trust	
9	Paybody Eye Unit	
10	Sandwell General Hospital	
11	Selly Oak Hospital	
12	Cumberland Infirmary	Northern Region
13	Darlington Memorial Hospital	
14	Dewsbury District Hospital	
15	Royal Victoria Infirmary	
16	The James Cook University Hospital	
17	Sunderland Eye Infirmary	
18	Bradford Royal Infirmary	Yorkshire
19	Calderdale Royal Hospital	
20	Clayton Specialist Eye Centre	
21	Hull Royal Infirmary	
22	Leeds General Infirmary	
23	St. James's University Hospital	
24	Addenbrooke's Hospital	Anglia
25	Ipswich Hospital NHS Trust	
26	James Paget NHS Trust Hospital	
27	Luton and Dunstable NHS Trust	
28	Norfolk and Norwich University NHS Trust	
29	Peterborough District Hospital	
30	West Suffolk Hospital	
31	Princess Alexandra Hospital	

Number	Hospital Name	Region
32	Barnsley District General Hospital NHS Trust	Trent
33	Derbyshire Royal Infirmary	
34	Diana, Princess of Wales Hospital	
35	Doncaster Royal Infirmary	
36	King's Mill Centre for Health Care Services	
37	Leicester Royal Infirmary NHS Trust	
38	Pilgrim Hospital	
39	Rotherham District General Hospital	
40	Royal Hallamshire Hospital	
41	Scunthorpe General Hospital	
42	Barnet General Hospital	North Thames
43	Broomfield Hospital	
44	Charing Cross Hospital	
45	Essex County Hospital	
46	Moorfields Eye Hospital NHS Trust	
47	Watford General	
48	North Middlesex Hospital	
49	Queen Elizabeth II Hospital	
50	Royal London Hospital	
51	St. Bartholomew's Hospital	
52	Southend Hospital	
53	University College London Hospitals	
54	Western Eye Hospital	
55	Ashford and St. Peter's Hospital NHS Trust	South Thames
56	Eastbourne District General Hospital	
57	William Harvey Hospital	
58	Pembury Hospital	
59	Queen Victoria Hospital	
60	Royal Eye Unit, Kingston Hospital NHS Trust	
61	St. George's Hospital	
62	St. Thomas' and Guy's Hospital Trust	
63	Bournemouth Eye Unit	Wessex
64	North Hampshire Hospital	
65	Royal Eye Infirmary, Dorset County Hospital	
66	Royal United Hospital	
67	Salisbury District (Odstock) Hospital	
68	Bristol Eye Hospital	South Western
69	North Devon District Hospital	
70	Royal Eye Infirmary	
71	Taunton and Somerset Hospital	

Number	Hospital Name	Region
72	Arrowe Park Hospital	North West
73	Burnley General Hospital	
74	Furness General Hospital	
75	Leighton Hospital	
76	The Royal Albert Edward Infirmary	
77	Royal Bolton Hospitals Trust	
78	Royal Preston Hospital	
79	Southport General infirmary	
80	University Hospital Aintree	
81	Warrington Hospital NHS Trust	

**c. DOAS GLAUCOMA CLINICAL CARE
PATHWAY AND DATASET – June 2006 v1.0**

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

INTRODUCTION

The **Glaucoma Clinical Care Pathway** focuses on the clinical care that clinical teams provide for patients with glaucoma (primary open angle glaucoma-POAG; normal tension glaucoma-NTG; ocular hypertension-OHT; and POAG/NTG suspects).

It is about:

- **“what we do”** when a person first presents to the health service
- **“what we do”** to make a diagnosis of glaucoma (POAG, NTG, OHT and POAG/NTG suspects)
- **“what we do”** for treating, monitoring response to treatment and for monitoring disease progression

The **Glaucoma Clinical Dataset** focuses on clinical information i.e. - **“what information clinicians need”** - in order to manage patients with glaucoma i.e. what do we need to know about a patient so that we can provide the appropriate management (“to do what we need to do”) for that person? It represents an abstract of all the data that is usually captured during the routine care of a glaucoma patient.

Both the **Care Pathway and Dataset** are based on existing sources of good clinical practice from –

- Professional body guidance - Royal College of Ophthalmologists, European Glaucoma Society, American Academy of Ophthalmology
- Protocols and guidelines in use by glaucoma specialists and clinical teams across the country
- Existing ophthalmic information systems
- Input from Patient Focus Groups
- Multi-disciplinary national consultation

Reaching a clinical consensus on “what we should be doing” and “what information we need to do it”, will provide the clinical standards to inform implementation, which will undoubtedly vary according to local arrangements for service organisation and delivery i.e. the “who (within a clinical team) provides the care” and “where this care (health service) is provided”.

The Royal College of Ophthalmologists, College of Optometrists, Association of Optometrists, Royal College of Nursing, and the Royal College of General Practitioners, have all collaborated and contributed to the development of the **Glaucoma Clinical Care Pathway and Clinical Dataset**, which will ultimately inform the development of the NHS Care Record.

EXPLANATORY TERMS FOR SOURCES USED AND GRADES OF EVIDENCE

Cited Sources

AAO	- American Academy of Ophthalmology
EGS	- European Glaucoma Society
RCOphth	- Royal College of Ophthalmologists

- ¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.
- ² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.
- ³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation
- ⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group

Grades of Evidence

The cited grades are those made by the American Academy of Ophthalmology when used to support its recommendations and guidance in its Preferred Practice Patterns, providing explicit rating of its importance to the care process and an explicit rating of the strength of the best available evidence.

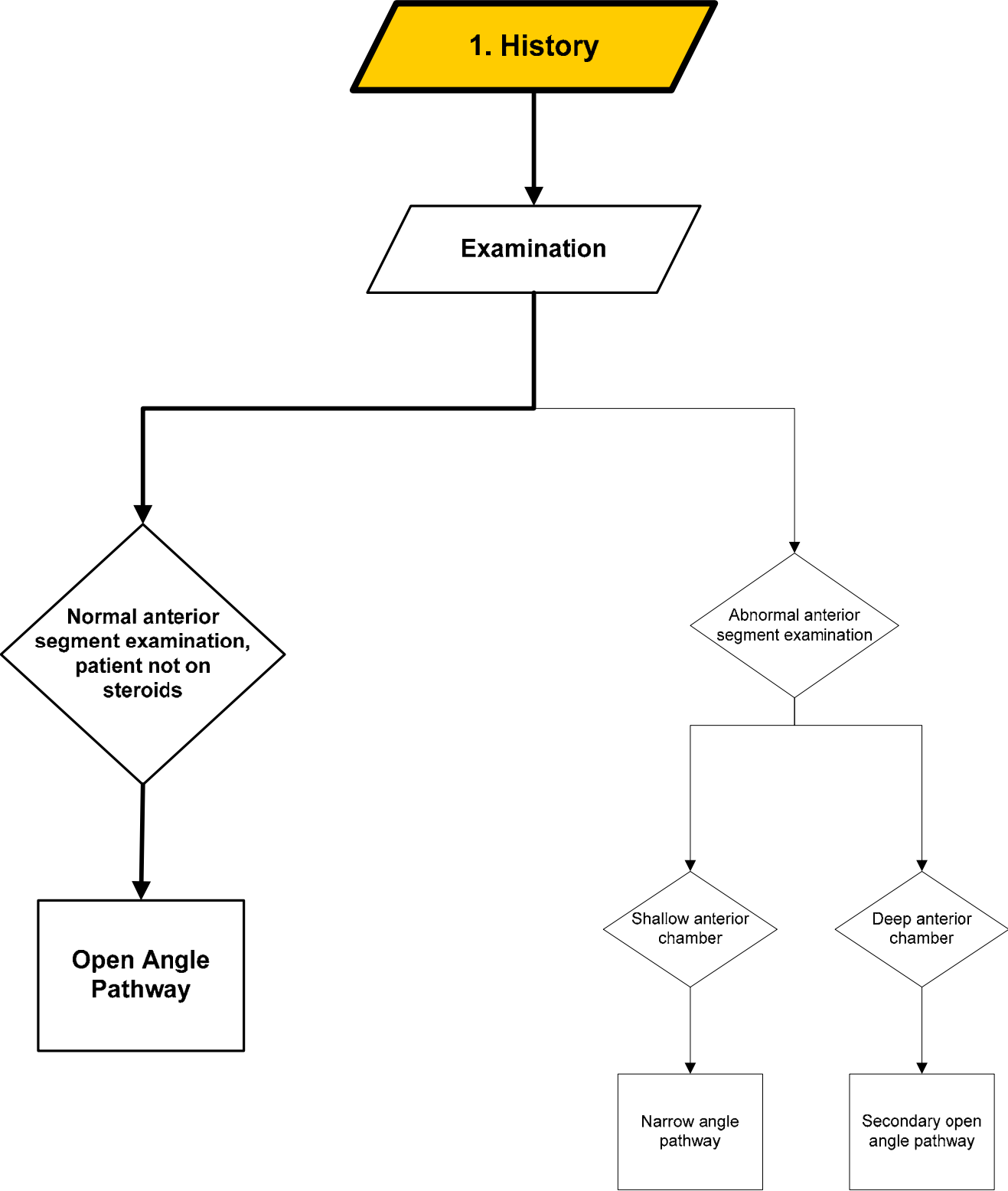
Level A - defined as most important
Level B - defined as moderately important
Level C - defined as relevant, but not critical

Level I - provides strong evidence in support of the statement
Level II - provides substantial evidence in support of the statement
Level III - provides consensus of clinical opinion in the absence of evidence that meets Level I and II

THE GLAUCOMA DOAS NATIONAL STEERING COMMITTEE MEMBERSHIP

- Clinicians with a special interest and expertise in glaucoma management
- Professional bodies and organisations –
 - Royal College of Ophthalmologists
 - College of Optometrists
 - Royal College of Nursing, Ophthalmic Nurses Forum
 - Royal College of General Practitioners
 - Association of Optometrists
- RNIB
- Patient Representatives
- North East London Strategic Health Authority
- DOAS Central Team – Connecting for Health
- DOAS Action Team – Moorfields Eye Hospital

Initial Presentation of Patient



GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

1. HISTORY AT PRESENTATION

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Date of Presentation - History	Documents date of first presentation.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyymmdd	NHS Dictionary
1. HISTORY				
1.1 Patient Details				
NHS number	The unique identifier allocated to a person by the NHS.	Identifies the person receiving the health care.	n10	Summary Core Dataset for Diabetes v4.0
Surname	The patient's surname.	Additional identifier for the person receiving care or unique identification to link records where the new NHS number is unavailable.	NHS Dictionary; a70	Cancer Dataset v4.0
Forename	The patient's forename.	Additional identifier for the person receiving care or unique identification to link records where the new NHS number is unavailable.	NHS Dictionary; a70	Cancer Dataset v4.0
Title	The patient's title.	Identify title of patient.	Mr, Mrs, Miss, Ms, Dr, Other	NHS Dictionary
Previous surname (if different)	To use only if patient has changed their surname.	Identify patient's previous NHS visits under different surname.	NHS Dictionary; a70	NHS Dictionary
Sex	A classification of the sex of a person. The classification is phenotypical rather than genotypical, i.e. does not provide codes for medical or scientific purposes.	Additional identifier for the person receiving health care. Also required in order to interpret some observations and test results and can influence care management.	n1 National codes: 0 Not Known 1 Male 2 Female 9 Not specified	Summary Core Dataset for Diabetes v4.0
Birth Date	Records the date on which the person was born.	Additional identifier for the person receiving health care. Also required for calculation of age.	n8 - ccyymmdd	Summary Core Dataset for Diabetes v4.0
Address	Address nominated by patient as residence.	Required to contact patient.	an175; (5 lines each an35)	NHS Dictionary

Note: All UNSHADED data items are ESSENTIAL and will form the core dataset for the glaucoma clinical care pathway, SHADED data items are DESIRABLE and will be dependent on local service arrangements or protocols.

GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Postcode	The postcode of the patient's home address.	Additional identifier for the person receiving health care and required for correspondence. Also used to determine deprivation.	an8	Summary Core Dataset for Diabetes v4.0
Telephone number	The telephone number to contact patient.	Required to contact patient.	an35	UK Government Data Standards Catalogue
Email address	The email address of patient.	Alternative contact for patient.	Alphanumeric	NHS Dictionary
GMP code	The code of either the GMP with whom the patient is registered or has been referred by.	The contact details for GMP required to notify GMP of patients treatment and progress.	an8	NHS Dictionary
Practice code	The code of the practice of patient's registered GMP.	The contact details for GMP required to notify GMP of patients treatment and progress.	an6	NHS Dictionary
PCT code	The code of PCT.	For NHS organisations it is a code to identify most organisations that exchange information within the NHS.	an8	NHS Dictionary
Optometrist code	The code of Optometrist.	For NHS organisations it is a code to identify most organisations that exchange information within the NHS.		³ Clinical Consensus
Ethnic category	The ethnicity of a patient, as specified by the patient.	The 16+1 new ethnic data categories defined in the 2001 census will become the national mandatory standard for the collection of ethnicity.	ETHNOS: an2	NHS Dictionary
Occupation	Identifies the current or previous occupation if retired, of the patient.	Used for research and audit purposes; to determine deprivation and access to services; and assessment of the impact of glaucoma on visual function and quality of life.	Free text field	Single Assessment Process Dataset
Driving Status at presentation	Establishes whether the patient is a driver or not.	Establishes baseline at presentation for future outcome assessment – indicator of visual functioning. Informs whether DVLA notification necessary.	Never driven Current driver No longer drives	³ Clinical Consensus
Category of driving status	Describes the category of driving status as stipulated by the DVLA.	To monitor impact of glaucoma on visual functioning, and an outcome indicator. For audit and research purposes.	Group 1 – ODL : Car, Motorcycle Group 2 – VOC : LGV, PCV Not relevant	DVLA Codes

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
Living arrangements	Identifies the living arrangements of patient.	Helps to identify if additional support is required for patient at home.	Alone Not alone Sheltered Residential Care	³ Clinical Consensus	
1.2 Ocular History					
Ocular disease	Right eye	Documents known co-existing ocular disease history.	To determine any ocular co-morbidity that may affect the clinical management of patient.	Allergic eye disease Blepharitis Corneal disease Cataract Pseudophakia Aphakia Uveitis Retinal disease Cystoid macular oedema Trauma Other specify	AAO AIII, EGS, RCOphth
	Left eye				
Ocular surgery	Right eye	Documents any previous ocular surgery.	To determine if previous ocular surgery may affect the clinical management of patient.	Previous Glaucoma surgery Cataract surgery Refractive surgery Corneal graft Retinal surgery Previous lid surgery Other specify	AAO AIII, EGS, RCOphth
	Left eye				
Ocular medications	Right eye	Documents patient's current ocular medication.	To inform clinical management of patient and identify potential contraindications.	Ocular lubricants Topical antibiotics Topical steroids Anti allergy drops Other specify	AAO AIII, EGS, RCOphth
	Left eye				
1.3 Family History					
Family history of Glaucoma	Identifies 1 st degree family history of glaucoma.	Identification of known risk factor for development of glaucoma. For audit and research purposes.	Yes/ No/ Don't know	AAO AIII, EGS, RCOphth	
1.4 Drug History					
Systemic medications	Identifies patient's current systemic medication.	To identify current systemic medications taken by patient to inform management and identify contraindications to treatment.	Free text field	AAO	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
1.5 Systemic Medical History				
History of low diastolic blood pressure	Identifies if patient has low diastolic pressure.	To assess the presence of a known risk factor for glaucoma. For research and audit purposes.	Yes/ No	AAO, EGS
History of acute blood volume loss	Identifies if patient has ever suffered significant blood loss.	To assess the presence of a known risk factor for glaucoma. For research and audit purposes.	Yes/ No	EGS
History of migraine	Documents whether patient currently suffers with, or has had a history of migraine.	To assess the presence of a known risk factor for glaucoma. For research and audit purposes.	Yes/ No	EGS
Raynauds disease	Identifies if patient has Raynauds disease.	To assess the presence of a known risk factor for glaucoma. For research and audit purposes.	Yes/ No	AAO, EGS
Asthma	Identifies if patient has asthma.	To determine contra-indication with medication.	Yes/ No	EGS
Chronic Obstructive Pulmonary Disease	Identifies if patient has COPD.	To determine contraindication with medication.	Yes/ No	EGS
Heart block	Identifies if patient has heart block.	To determine contraindication with medication.	Yes/ No	EGS
Ischaemic Heart Disease	Identifies if patient has ischaemic heart disease.	To determine contraindication with medication.	Yes/ No	EGS
Diabetes mellitus Type I	Identifies if patient has diabetes mellitus type I.	To inform clinical management of patient's glaucoma. To assess significant co-morbidity.	Yes/ No	AAO, EGS, RCOphth
Diabetes mellitus Type II	Identifies if patient has diabetes mellitus type II.	To inform clinical management of patient's glaucoma. To assess significant co-morbidity.	Yes/ No	AAO, EGS, RCOphth
Renal impairment	Identifies if patient has any form of renal impairment.	To inform clinical management of patient's glaucoma. To assess significant co-morbidity. To determine contraindication with medication.	Yes/ No	EGS

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
1.6 Allergies				
Drug Allergies	Identifies all known drug allergies.	To ensure patient safety; to avoid allergic reactions; and alerting potential contraindications for treatment.	Free text field	AAO AIII
Other Allergies	Identifies all other (non-drug) known allergies.	To ensure patient safety; to avoid allergic reactions; and alerting potential contraindications for treatment.	Free text field	AAO AIII

POP –UP ALERT: Medication	<p>Beta blockers – Asthma, Heart block, Bradycardia, Hypotension.</p> <p>Carbonic Anhydrase Inhibitors – Renal impairment/ Kidney disease.</p> <p>Prostaglandin Analogues – Pregnancy, Breast- feeding, Aphakia, Pseudophakia with torn posterior capsule, Cystoid Macular Oedema, Ocular Inflammation.</p> <p>Alpha agonists – contra-indicated if patient using mono-amine oxidase inhibitors or tricyclic antidepressants</p> <p>Steroids – current use of topical steroids</p>
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POP –UP ALERT: Allergies	<p>Topical ocular medications</p> <p>Preservatives in topical ophthalmic medications</p> <p>Systemic medications</p>
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¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

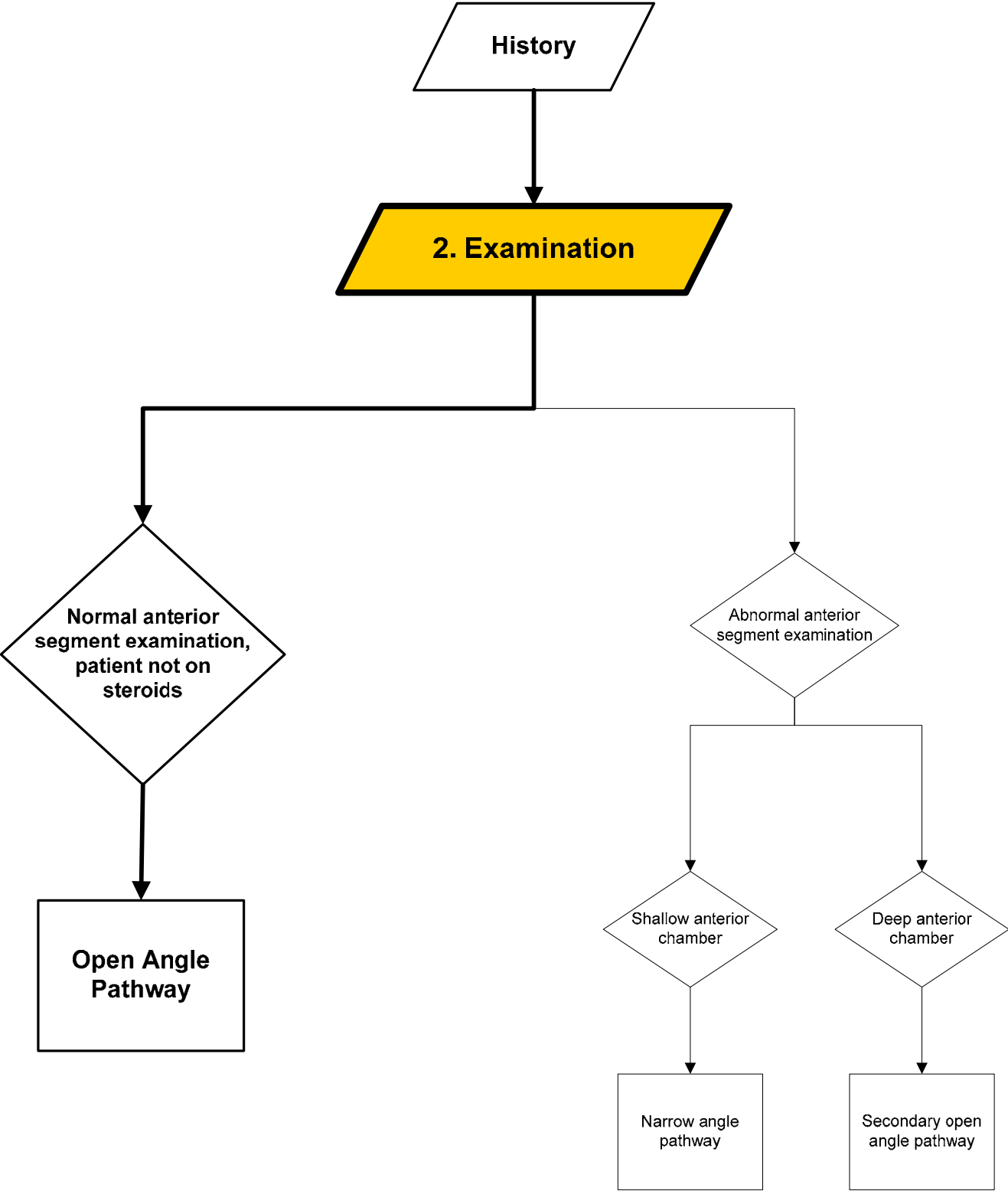
² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

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Initial Presentation of Patient



GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

2. EXAMINATION AT PRESENTATION

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
Date of Presentation - Examination		Documents date of examination of first presentation.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyyymmdd	NHS Dictionary
2. EXAMINATION					
2.1 Visual Acuity					
Visual acuity unaided	Right eye	Measurement of visual acuity using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				
Visual acuity with correction if worn	Right eye	Measurement of visual acuity with correction using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye	To include any form of correction (i.e. glasses, contact lenses)			
Visual acuity with pin-hole	Right eye	The estimate of best attainable visual acuity of patient measured using specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
2.2 Pupillary Reactions					
RAPD	Right eye	To assess pupillary reactions.	Assessment of gross optic nerve function.	RAPD/ No RAPD	AAO BII
	Left eye				
2.3 Anterior Segment					
Central corneal thickness	Right eye	Measurement for central corneal thickness.	Central corneal thickness is a factor that affects the accuracy of IOP measurements by applanation techniques.	µm	AAO AIII, EGS
	Left eye				
Anterior segment inflammation	Right eye	Presence of current anterior segment for inflammation.	To determine if patient has POAG or Secondary glaucoma, to inform the patient management care pathway.	Yes/ No	AAO AIII
	Left eye				
Depth of anterior chamber	Right eye	Measurement depth of anterior chamber, by van Herricks method.	To grade ratio of aqueous gap/cornea into ranges of variation.	Numerical value; 0.00 - 1	EGS
	Left eye				
Gonioscopy	Right eye	General assessment of anterior chamber angle conformation.	Diagnostic assessment and to inform patient management.	Open Occludable Closed	AAO AIII, EGS
	Left eye				
Lens	Right eye	Presence of cataract.	Common treatable co-morbidity in glaucoma patients. Presence needs to be considered for interpretation of visual fields.	Nil Early Moderate Mature	³ Clinical Consensus
	Left eye				
2.4 Intra Ocular Pressure					
Tonometry	Right eye	Document the equipment used to measure IOP.	For comparative purposes to assess accuracy of IOP measurement	Non contact tonometry Goldman applanation tonometry Perkins Other specify	Goldman Aplanation Tonometry (AAO AIII, EGS, RCOphth)
	Left eye				
Intra Ocular Pressure	Right eye	Measurement of intro-ocular pressure (IOP) of eye.	An essential component of glaucoma assessment taking into account of diurnal variation to inform management of glaucoma.	mmHg – Numerical value: nn Time – Numerical value; nn:nn	Time (AAO BII)
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
2.5 Posterior Segment - Optic Disc Examination					
Slit Lamp Lens	Right eye	To indicate type of slit lamp lens used for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Volk Nikon Other specify	³ Clinical Consensus
	Left eye				
Slit Lamp Lens Power	Right eye	To indicate strength of slit lamp lens in dioptres for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Alphanumeric 60D 68D 78D 90D	³ Clinical Consensus
	Left eye				
Vertical disc diameter	Right eye	A measure of disc size.	Evaluation of optic nerve for signs of glaucomatous damage and to inform management of and monitoring of disease.	Numerical value (mm); nn.n	EGS
	Left eye				
Cup/ Disc ratio	Right eye	The decimal value obtained by dividing the vertical cup diameter with the vertical disc diameter.	Evaluation of optic nerve for signs of glaucomatous damage and to inform management of and monitoring of disease.	n2 01 No view 02 Cup disc ratio 0.1-1.0	EGS
	Left eye				
Disc haemorrhages	Right eye	Assessment of presence of haemorrhage at or near optic disc margin.	Presence indicates local vascular damage.	Present/ Absent	EGS
	Left eye				
Dilated fundus examination	Right eye	Examination of fundus (dilated).	To identify ocular co-morbidities.	BRVO CRVO CMO Background Diabetic Retinopathy Moderate non-proliferative DR Severe non-proliferative DR Proliferative DR Treated proliferative DR Early AMD Moderate AMD Advanced AMD Other specify	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
2.6 Visual Fields Assessment					
Perimetry	Right eye	Type of perimetry used to assess visual fields.	For comparative purposes for interpreting visual fields and to inform management and monitoring of disease.	Goldman perimetry Dicon Henson Octopus Humphrey Frequency Doubling Perimetry (FDP)	AAO AIII, EGS, RCOphth
	Left eye				
Visual field	Right eye	Description of visual field.	Inform diagnosis and management of glaucoma and monitoring progression.	Normal/Abnormal	AAO AIII, EGS, RCOphth
	Left eye				
2.7 Refraction					
Sphere	Right eye	The spectacle correction worn by the patient. This may be assessed by measurement of the patient's current glasses or by refraction of the patient at the time (automated or manual – subjective refraction). The sphere is the base – corrections upon which cylinder, reading addition and prism may be superimposed.	To establish how far from normal sight the patient's eye is, and to compare with other eye. It is necessary to correct for refraction, when patient performs visual field test.	±nn.nn 2 decimal places Dioptres NB – It is necessary to specify the value if positive or negative.	Cataract National Dataset v14 ¹ Consistent with other Ophthalmic DOAS projects
	Left eye				
Cylinder	Right eye	The cylindrical correction superimposed on refraction as part of patient's the patient's refraction.	To establish how far from normal sight the patient's eye is, and to compare with other eye. It is necessary to correct for refraction, when patient performs visual field tests.	±nn.nn 2 decimal places Dioptres NB – It is necessary to specify the value if positive or negative.	Cataract National Dataset v14 ¹ Consistent with other Ophthalmic DOAS projects
	Left eye				
Axis	Right eye	The axis of the cylindrical refraction.	To establish how far from normal sight the patient's eye is, and to compare with other eye. It is necessary to correct for refraction, when patient performs visual field tests.	nnn.n 2 decimal places 000.5 to 180.0 degrees	Cataract National Dataset v14 ¹ Consistent with other Ophthalmic DOAS projects
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
2.8 Action taken				
Management decision at presentation	Describes what happens to the patient at the end of initial assessment	Supports patient management along the care pathway. For clinical audit purposes.	Referred for Diagnostic Assessment Review for repeat investigations Routine review Discharge	³ Clinical Consensus

¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

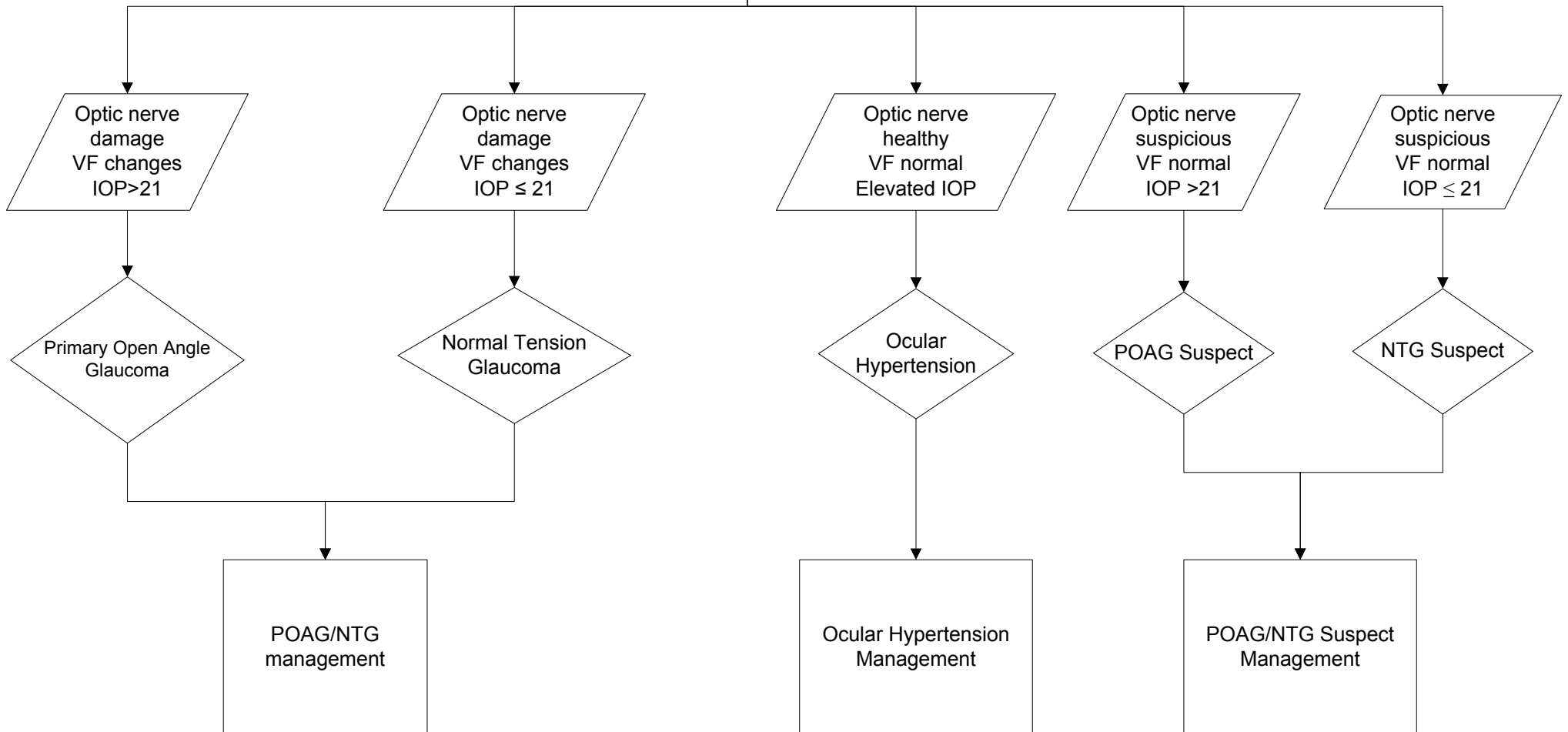
³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

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Open Angle Pathway

3. Diagnostic Assessment



GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

3. DIAGNOSTIC ASSESSMENT

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
Date of diagnostic assessment	Documents date of diagnostic assessment, (this may be at the same time as FIRST PRESENTATION depending on local service arrangements and protocols).	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyyymmdd	NHS Dictionary	
3. DIAGNOSTIC ASSESSMENT					
3.1 Visual Acuity					
Visual acuity unaided	Right eye	Measurement of visual acuity using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				
Visual acuity with correction if worn	Right eye	Measurement of visual acuity with correction using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye	To include any form of correction (i.e. glasses, contact lenses)			
Visual acuity with pin-hole	Right eye	The estimate of best attainable visual acuity of patient measured using specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
3.2 Pupillary Reactions					
RAPD	Right eye	To assess pupillary reactions.	Assessment of gross optic nerve function.	RAPD/ No RAPD	AAO BII
	Left eye				
3.3 Anterior Segment					
Central corneal thickness	Right eye	Measurement of central corneal thickness.	Central corneal thickness is a factor that affects the accuracy of IOP measurements by applanation techniques.	µm	AAO AIII, EGS
	Left eye				
Anterior segment inflammation	Right eye	Presence of current anterior segment inflammation.	To determine if patient has POAG or Secondary glaucoma, to inform the patient management care pathway.	Yes/ No	AAO AIII
	Left eye				
Gonioscopy	Right eye	General assessment of anterior chamber angle conformation.	Diagnostic assessment and to inform patient management.	Open Occludable Closed	AAO AIII, EGS
	Left eye				
Lens	Right eye	Presence of Cataract.	Common treatable co-morbidity in glaucoma patients. Presence needs to be considered for interpretation of visual fields.	Nil Early Moderate Mature	³ Clinical consensus
	Left eye				
3.4 Intra Ocular Pressure					
Tonometry	Right eye	Document the equipment used to measure IOP.	For comparative purposes to assess accuracy of reading.	Non contact tonometry Goldman applanation tonometry Perkins Other specify	Goldman Applanation Tonometry (AAO AIII, EGS, RCOphth)
	Left eye				
Intra Ocular Pressure	Right eye	Measurement of intra-ocular pressure (IOP) of eye.	An essential component of glaucoma assessment taking into account of diurnal variation to inform management of glaucoma.	mmHg – Numerical value: nn Time – Numerical value; nn:nn	Time (AAO BII)
	Left eye				

Note: All UNSHADED data items are ESSENTIAL and will form the core dataset for the glaucoma clinical care pathway, SHADED data items are DESIRABLE and will be dependent on local service arrangements or protocols.

GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
3.5 Posterior Segment - Optic disc examination					
Slit Lamp Lens	Right eye	To indicate type of slit lamp lens used for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Volk Nikon Other specify	³ Clinical Consensus
	Left eye				
Slit Lamp Lens Power	Right eye	To indicate strength of slit lamp lens in dioptres for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Alphanumeric 60D 68D 78D 90D	³ Clinical Consensus
	Left eye				
Vertical disc diameter	Right eye	A measure of disc size.	Evaluation of optic nerve for signs of glaucomatous damage and to inform management of and monitoring of disease.	Numerical value (mm); nn.n	EGS
	Left eye				
Cup/ Disc ratio	Right eye	The decimal value obtained by dividing the vertical cup diameter with the vertical disc diameter.	Evaluation of optic nerve for signs of glaucomatous damage and inform management of and monitoring of disease.	n2 01 No view 02 Cup disc ratio 0.1-1.0	EGS
	Left eye				
Disc haemorrhages	Right eye	Assessment of presence of haemorrhage at or near optic disc margin.	Presence indicates local vascular damage.	Present/ Absent	EGS
	Left eye				
Dilated fundus examination	Right eye	Examination of fundus (dilated).	To identify ocular co-morbidities.	BRVO CRVO CMO Background Diabetic Retinopathy Moderate non-proliferative DR Severe non-proliferative DR Proliferative DR Treated proliferative DR Early AMD Moderate AMD Advanced AMD Other specify	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
3.6 Visual Fields Assessment					
Perimetry	Right eye	Type of perimetry used to assess visual fields.	For comparative purposes for interpreting visual fields and to inform management and monitoring of disease.	Goldman perimetry Dicon Henson Octopus Humphrey Frequency Doubling Perimetry (FDP)	AAO AIII, EGS, RCOphth
	Left eye				
Visual Field image	Right eye	Capturing and archiving of digital visual field images for each eye.	Inform diagnosis and management of glaucoma and monitoring progression. To support clinical audit and assessment of outcomes.	<u>Requirement of an image</u> Visual field images to be available in an accessible viewable format on screen, with the facility for viewing consecutive field images (e.g. Scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression. Manipulation of images necessary	³ Clinical Consensus
	Left eye				
Reliability of field	Right eye	Assessment of the reliability indices of field.	Identifying factors that affect the reliability of field test. To inform interpretation of field and its contribution to clinical management.	Reliable/ Unreliable	³ Clinical Consensus
	Left eye				
Assessment of field	Right eye	Assessing the outcome of the field test.	Identifying outcome and taking appropriate action.	Normal Defect evident Uncertain	³ Clinical Consensus
	Left eye				
3.7 Optic Disc Imaging					
Optic disc digital photograph	Right eye	Digital optic disc colour photos for each eye.	Objective documentation and archiving of optic disc parameters to inform clinical management and monitoring of disease progression. To support clinical audit and assessment of outcomes.	Colour digital disc photo Images to be available in an accessible viewable format on screen, with the facility for viewing consecutive images (e.g. scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression.	³ Clinical Consensus
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
Modality of optic disc imaging	Right eye	Imaging technique used.	Emerging technological modalities available with different assessment features. Variable availability of equipment and use in current routine practice. Uptake increasing	HRTII OCT GDXVcc Other specify	³ Clinical Consensus
	Left eye		Allows for documentation of modality of disc imaging used for comparative purposes and inform diagnosis, management and monitoring of disease.		
Optic nerve image	Right eye	Digital optic nerve image.	Capturing and archiving of digital optic disc images for each eye. Inform diagnosis and management of glaucoma and monitoring progression.	<u>Requirement of an image</u> Images to be available in an accessible viewable format on screen, with the facility for viewing consecutive images (e.g. scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression.	³ Clinical Consensus
	Left eye		To support clinical audit and assessment of outcomes.		
3.8 Diagnosis					
Diagnosis	Right eye	Documentation of diagnosis made.	Inform patient's clinical management and monitoring along care pathway. To support clinical audit and assessment of outcomes.	Ocular hypertension Primary open angle glaucoma Normal Tension Glaucoma Suspect POAG Suspect NTG Other specify	³ Clinical Consensus
	Left eye				

¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

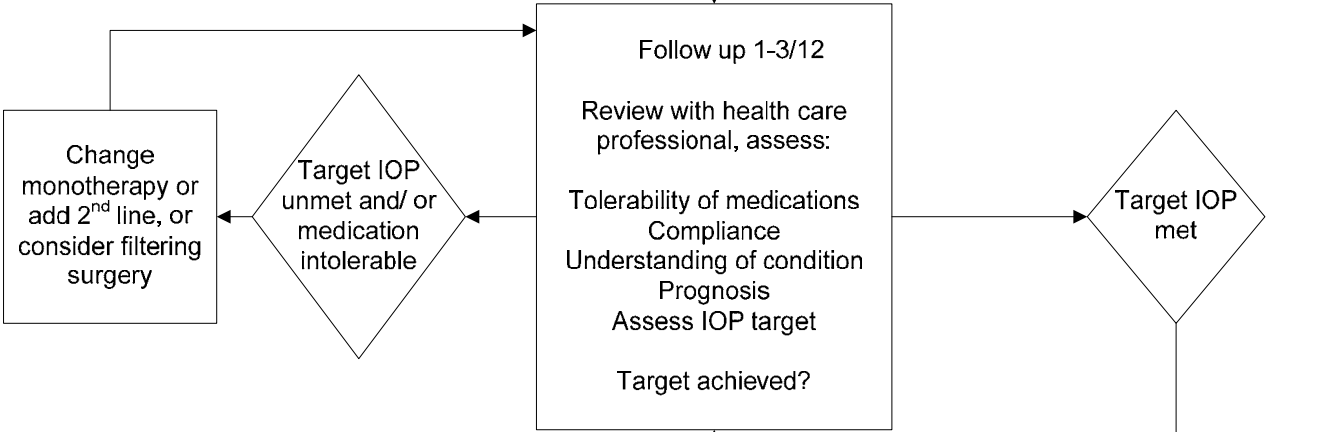
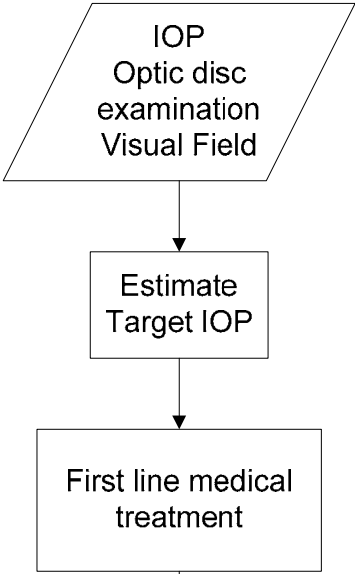
³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

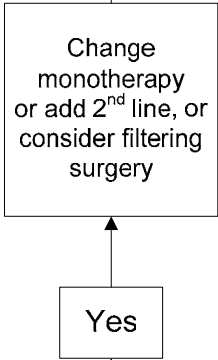
Note: All UNSHADED data items are ESSENTIAL and will form the core dataset for the glaucoma clinical care pathway, SHADED data items are DESIRABLE and will be dependent on local service arrangements or protocols.

POAG/NTG Management

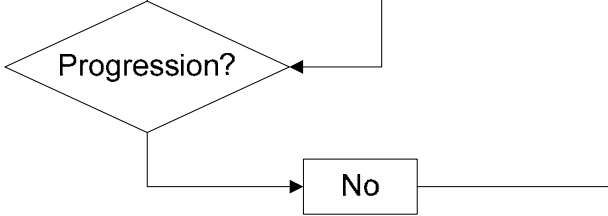
4. Care Plan



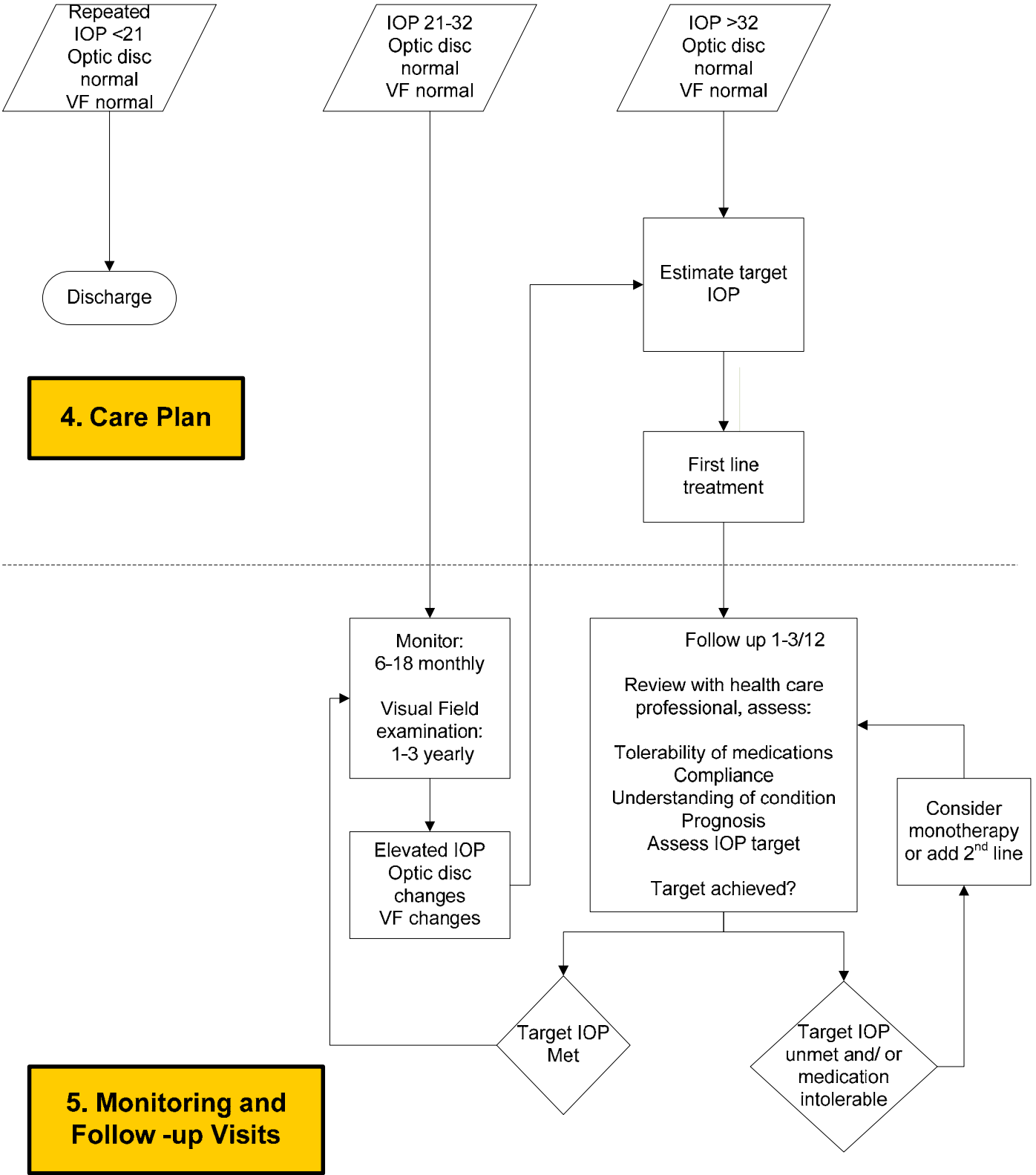
5. Monitoring and Follow-up Visits



6. Glaucoma Surgery

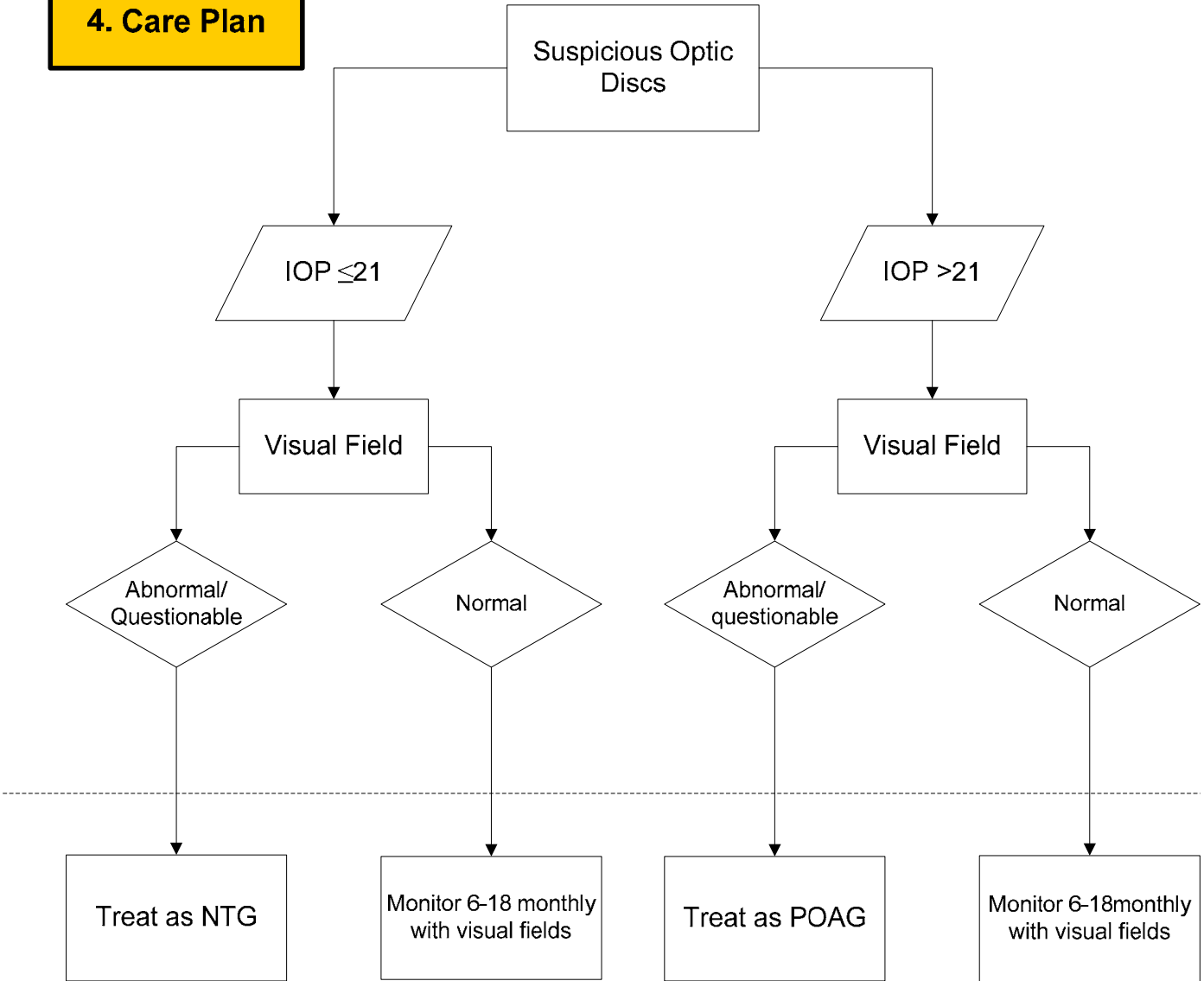


Ocular Hypertension Management



Suspect POAG/NTG Management

4. Care Plan



5. Monitoring and Follow-up Visits

GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

4. CARE PLAN FOR PATIENT AT DIAGNOSIS

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
Date of care plan	Date on which management initiated, link to IOP and interventions graph	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyyymmdd	NHS Dictionary	
4. CARE PLAN FOR PATIENT					
Target IOP	Right eye	The attainable IOP target for patient on treatment, taking into consideration contributing factors.	Monitoring response to treatment. To support clinical audit and outcome assessment.	mmHg – Numerical value: nn	EGS
	Left eye				
First line of topical treatment option	Right eye	Type of topical medication used to treat patient.	Managing and monitoring of patient care To support clinical audit and outcome assessment.	Nil Prostaglandin analogues Beta blockers Alpha agonists Carbonic anhydrase inhibitors Combined beta blockers/CAIs Combined beta blockers/alpha agonists	EGS
	Left eye				
Management decision at care plan assessment.	Describes what happens to patient at the end of this assessment.	Supports management of patients care pathway and for audit purposes.	Follow-up Discharge	³ Clinical consensus ⁴ Patient Feedback	
Follow up interval	Suggested interval until next follow up appointment.	To determine management of patient and their glaucoma based on severity of their disease, and for audit purposes.	Days, weeks or months	³ Clinical consensus	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
4.1 Prescription				
Prescription given to patient?	To record if patient was given a copy of the prescription.	To inform patients what medication they are currently being given for their treatment.	Yes/ No/ Not relevant	³ Clinical consensus ⁴ Patient Feedback
Arrangement for repeat prescription?	To record from where patient should get their repeat prescription.	To ensure patients know where they have to go to get their repeat prescription and to record who is responsible for providing the repeat prescription.	GP Hospital Community Pharmacist Other specify Not relevant	³ Clinical consensus ⁴ Patient Feedback
4.2 Administration of drops				
Impairment of manual dexterity	To identify if patient has any impairment of manual dexterity that may affect their administration of eye drops.	Difficulty with administration may influence compliance. To determine if the medications are being taken properly or inform use of alternatives Indicator of whether support necessary for administration of drops to facilitate compliance.	Tremor CVA Arthritis Other specify	³ Clinical consensus
Responsibility for administration of drops	Person responsible for administering drops to patient.	Difficulty with administration may influence compliance. To determine if the medications are being taken properly or inform use of alternatives Indicator of whether support necessary for administration of drops to facilitate compliance.	Patient Carer Community nurse Other specify	³ Clinical Consensus ⁴ Patient Feedback
Demonstration of eye drop instillation?	Records whether a demonstration of eye drop was provided to the patient and/or their carer.	Difficulty with administration may influence compliance. To determine if the medications are being taken properly or inform use of alternatives Indicator of whether support necessary for administration of drops to facilitate compliance.	Yes No	³ Clinical Consensus ⁴ Patient Feedback

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Assessment of eye drop instillation	Documents if patient or carer was able to instill eye drops accordingly.	Difficulty with administration may influence compliance. To determine if the medications are being taken properly or inform use of alternatives Indicator of whether support necessary for administration of drops to facilitate compliance.	Yes No	³ Clinical Consensus ⁴ Patient Feedback
Patient information on condition	Records whether patient was provided with information about the condition and medications whether verbal or written.	Indicator of patient education, audit and outcome assessment.	Yes No	³ Clinical Consensus ⁴ Patient Feedback

POP –UP ALERT: Medication	Beta blockers – Asthma, Heart block, Bradycardia, Hypotension. Carbonic Anhydrase Inhibitors – Renal impairment/ Kidney disease. Prostaglandin Analogues – Pregnancy, Breast-feeding, Aphakia, Pseudophakia with torn posterior capsule, Cystoid Macular Oedema, Ocular Inflammation. Alpha agonists – contra-indicated if patient using mono-amine oxidase inhibitors or tricyclic antidepressants Steroids – current use of topical steroids
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POP –UP ALERT: Allergies	Topical ocular medications Preservatives in topical ophthalmic medications Systemic medications
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¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

5. MONITORING AND FOLLOW- UP VISIT

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
Date of follow-up visit	Documents date of follow-up visit.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyyymmdd	NHS Dictionary	
5. FOLLOW- UP VISIT					
5.1 Visual Acuity					
Visual acuity unaided	Right eye	Measurement of visual acuity using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				
Visual acuity with correction	Right eye	Measurement of visual acuity with correction using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye	To include any form of correction (i.e. glasses, contact lenses).			
Visual acuity with pin-hole	Right eye	The estimate of best attainable visual acuity of patient measured using specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
5.2 Pupillary Reactions					
RAPD	Right eye	To assess pupillary reactions.	Assess gross optic nerve function.	RAPD/ No RAPD	AAO BII
	Left eye				
5.3 Anterior Segment					
Lens	Right eye	Presence of Cataract.	Common treatable co-morbidity in glaucoma patients. Presence needs to be considered for interpretation of visual fields.	Nil Early Moderate Mature	³ Clinical Consensus
	Left eye				
5.4 Intra Ocular Pressure					
Tonometry	Right eye	Document the equipment used to measure IOP.	For comparative purposes to assess accuracy of reading.	Non contact tonometry Goldman applanation tonometry Perkins Other specify	Goldman Aplanation Tonometry (AAO AIII, EGS, RCOphth)
	Left eye				
Intra Ocular Pressure	Right eye	Measurement of intro-ocular pressure (IOP) of eye.	An essential component of glaucoma assessment taking into account of diurnal variation to inform management of glaucoma.	mmHg – Numerical value: nn Time – Numerical value; nn:nn	Time (AAO BII)
	Left eye				

POP –UP ALERT: Target IOP met?	Right eye	Yes/ No
	Left eye	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
5.5 Posterior Segment - Optic disc examination					
Slit Lamp Lens	Right eye	To indicate type of slit lamp lens used for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Volk Nikon Other specify	³ Clinical Consensus
	Left eye				
Slit Lamp Lens Power	Right eye	To indicate strength of slit lamp lens in dioptres for optic disc examination.	To facilitate interpretation of disc diameter and cup-disc ratio.	Alphanumeric 60D 68D 78D 90D	³ Clinical Consensus
	Left eye				
Vertical disc diameter	Right eye	A measure of disc size.	Evaluation of optic nerve for signs of glaucomatous damage and to inform management of and monitoring of disease.	Numerical value (mm); nn.n	EGS
	Left eye				
Cup/ Disc ratio	Right eye	The decimal value obtained by dividing the vertical cup diameter with the vertical disc diameter.	Evaluation of optic nerve for signs of glaucomatous damage and inform management of and monitoring of disease.	n2 01 No view 02 Cup disc ratio 0.1-1.0	EGS
	Left eye				
Disc haemorrhages	Right eye	Assessment of presence of haemorrhage at or near optic disc margin.	Presence indicates local vascular damage.	Present/ Absent	EGS
	Left eye				
Dilated fundus examination	Right eye	Examination of fundus (dilated).	To identify ocular co-morbidities.	BRVO CRVO CMO Background Diabetic Retinopathy Moderate non-proliferative DR Severe non-proliferative DR Proliferative DR Treated proliferative DR Early AMD Moderate AMD Advanced AMD Other specify	AAO AIII, EGS
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
5.6 Visual Fields Assessment					
Visual fields required?	Right eye	Documents need for visual fields test assessment at this visit.	To monitor patient management along care pathway To support clinical audit and outcome assessment.	Yes No Not applicable	NHS Dictionary
	Left eye				
Date of visual fields test	Right eye	Documents date field test performed.	To monitor patient management along care pathway To support clinical audit and outcome assessment.	n8 - ccyymmdd	NHS Dictionary
	Left eye				
Perimetry	Right eye	Type of perimetry used to assess visual fields.	For comparative purposes for interpreting visual fields and to inform management and monitoring of disease.	Dicon Henson Octopus Humphrey Frequency Doubling Perimetry (FDP)	AAO AIII, EGS, RCOphth
	Left eye				
Visual Field image	Right eye	Capturing and archiving of digital visual field images for each eye.	Inform diagnosis and management of glaucoma and monitoring progression. To support clinical audit and assessment of outcomes.	<u>Requirement of an image</u> Visual field images to be available in an accessible viewable format on screen, with the facility for viewing consecutive field images (e.g. Scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression. Manipulation of images necessary.	³ Clinical Consensus
	Left eye				
Reliability of field	Right eye	Assessment of the reliability indices of field.	Identifying factors that affect the reliability of field test. To inform interpretation of field and its contribution to clinical management.	Reliable/ Unreliable	³ Clinical Consensus
	Left eye				
Assessment of field	Right eye	Assessing the outcome of the field test.	Identifying outcome and taking appropriate action.	Normal Defect evident Uncertain	³ Clinical Consensus
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
5.7 Optic Disc Imaging					
Optic disc digital photograph	Right eye	Digital optic disc colour photos for each eye.	Objective documentation and archiving of optic disc parameters to inform clinical management and monitoring of disease progression. To support clinical audit and assessment of outcomes.	Colour digital disc photo Images to be available in an accessible viewable format on screen, with the facility for viewing consecutive images (e.g. scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression	³ Clinical Consensus
	Left eye				
Optic disc imaging required?	Right eye	Record if optic disc imaging is required at this visit.	Identifies if optic disc imaging is required at this visit based on previous visits and determines optic disc imaging requirement at next visit.	Yes No	³ Clinical Consensus
	Left eye				
Modality of optic disc imaging	Right eye	Imaging technique used.	Emerging technological modalities available with different assessment features. Variable availability of equipment and use in current routine practice. Uptake increasing Allows for documentation of modality of disc imaging used for comparative purposes and inform diagnosis, management and monitoring of disease.	HRTII OCT GDxVcc Other specify	³ Clinical Consensus
	Left eye				
Optic nerve image	Right eye	Digital optic nerve image.	Capturing and archiving of digital optic disc images for each eye. Inform diagnosis and management of glaucoma and monitoring progression. To support clinical audit and assessment of outcomes.	<u>Requirement of an image</u> Images to be available in an accessible viewable format on screen, with the facility for viewing consecutive images (e.g. Scrolling on a screen; or multiple consecutive images on screen); to aid clinical assessment of progression.	³ Clinical Consensus
	Left eye				

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
5.8 Glaucoma Medication				
5.8.1 Tolerability of Medication				
Side- Effects: Local	Ophthalmic side effects of topical glaucoma medication.	Assessment of patient's tolerability, which may influence compliance. Informs use of alternative medication. To support clinical audit and assessment of outcomes.	None Red eye Ocular dermatitis Increased lash growths Iris pigmentation Ocular surface irritation Peri-orbital pigmentation Papillary conjunctivitis Follicular conjunctivitis Forniceal shortening Other specify	³ Clinical Consensus ⁴ Patient Feedback
Side- Effects: Systemic	Systemic side effects of topical glaucoma medication.	Assessment of patient's tolerability, which may influence compliance. Informs use of alternative medication. To support clinical audit and assessment of outcomes.	None Shortness of breath Wheeze Impaired taste Other specify	³ Clinical Consensus ⁴ Patient Feedback
5.8.2 Glaucoma medication change				
Medication changed	Records if patient's medication changed.	Determines management of patient and also notifies the relevant professionals of medication changed.	Yes/ No	³ Clinical Consensus ⁴ Patient Feedback
5.8.3 Prescription				
Prescription given to patient?	To record if patient was given a copy of the prescription	To inform patients what medications they are currently being given for their treatment.	Yes/ No	³ Clinical Consensus ⁴ Patient Feedback
Arrangement for repeat prescription?	To record from where patient should get their repeat prescription.	To ensure patients know where they have to go to get their repeat prescription and to record who is responsible for providing the repeat prescription.	GP Hospital Community Pharmacist Other specify	³ Clinical Consensus ⁴ Patient Feedback

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
5.9 Clinical Management					
Management decision at this follow-up assessment.	Describes what happens to patient at the end of this assessment.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	Follow-up Discharge Low Vision Aids Assessment Certification of Vision Impairment Registration	³ Clinical Consensus	
Follow up interval	Interval until next appointment.	Determines the management of patient and their glaucoma.	Days, weeks, months	³ Clinical Consensus	
Fields at next follow-up?	Records if fields are required at next follow-up.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	Yes/ No	³ Clinical Consensus	
5.10 Surgery					
Glaucoma surgery indicated?	Right eye	Decision to proceed to filtering surgery has been made.	Determines surgical management of patient. To monitor patient management along care pathway. To support clinical audit and outcome assessment.	Yes/ No	³ Clinical Consensus ² Existing clinical protocols and information systems
	Left eye				
Cataract surgery indicated?	Right eye	Decision to proceed to cataract surgery has been made.	Determines surgical management of patient To monitor patient management along care pathway and transfer to Cataract Pathway To support clinical audit and outcome assessment.	Yes/ No	³ Clinical Consensus ² Existing clinical protocols and information systems
	Left eye				
Other surgery indicated?	Right eye	Decision to proceed to other surgical options.	Determines surgical management of patient To monitor patient management along care pathway. To support clinical audit and outcome assessment.	Yes/No	³ Clinical Consensus ² Existing clinical protocols and information systems
	Left eye			Specify	

¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

6. GLAUCOMA SURGERY

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance	
6.1 Pre-operative Assessment					
Date of pre-operative assessment	Documents date of pre-operative assessment.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyyymmdd	NHS Dictionary	
Eye for surgery	Documents which eye is to be operated upon.	Facilitates clinical risk and patient safety checks to ensure that appropriate eye will be having the operation. To support clinical audit and assessment of outcomes.	n2 01 Right eye 02 Left eye	¹ Consistent with other Ophthalmic DOAS projects	
First/ Second eye	Determine whether fellow eye has already had surgery for glaucoma.	Facilitates clinical risk and patient safety checks to ensure that appropriate eye will be having the operation. To support clinical audit and assessment of outcomes. To support clinical audit and assessment of outcomes. Analysis of trends in surgical activity.	n2 01 First eye 02 Second eye		
Visual acuity unaided at pre-operative assessment	Right eye	Measurement of visual acuity using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.		<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL
	Left eye				
Visual acuity with correction if worn at pre-operative assessment	Right eye	Measurement of visual acuity with correction using the specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination. Indicator of visual function for clinical audit and outcome assessment.		<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL
	Left eye	To include any form of correction (i.e. glasses, contact lenses).			

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
Visual acuity with pin-hole at pre-operative assessment	Right eye	The estimate of best attainable visual acuity of patient measured using specified standard (Snellen or LogMAR).	Establishes baseline at presentation Ensures complete examination Indicator of visual function for clinical audit and outcome assessment.	<u>Snellen</u> 6/4, 6/5, 6/6, 6/9, 6/12, 6/18, 6/24, 6/36, 6/60, 3/60, 1/60, CF, HM, PL, NPL <u>LogMAR</u> -0.2, -0.1, 0.0, 0.2, 0.3, 0.48, 0.6, 0.8, 1.0, 1.3, 1.8, CF, HM, PL, NPL	
	Left eye				
Pre-operative IOP	Right eye	Measurement of IOP.	Establishes baseline prior to surgery. Ensure complete examination prior to surgery.	Time – Numerical value; nn:nn mmHg – Numerical value: nn	¹ Consistent with other Ophthalmic DOAS projects
	Left eye				
Pre-operative anterior segment examination	Right eye	Eye conditions which may be predictors of potential adverse outcomes.	To inform surgical management. To support clinical audit and outcome assessment.	n2 01 Normal 02 Blepharitis 03 Conjunctival inflammation 04 Anterior chamber activity 05 Other specify	
	Left eye				
Pre-operative medical conditions		General systemic conditions which may be predictors of potential adverse outcomes of surgery and anaesthesia.	To inform anaesthetic and surgical management. Ensure complete examination prior to surgery. To support clinical audit and outcome assessment.	n2 01 None 02 Hypertension 03 Ischaemic heart disease 04 Pacemaker in situ 05 Anxiety 06 Claustrophobia 07 Tremor 08 Dementia/confusion 09 Asthma 10 Chronic obstructive airways disease 11 Arthritis 12 Patient on warfarin 13 Other specify	² Existing clinical protocols and information systems

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item		Description	Purpose	Codes and Classifications	Source/ Guidance
Pre-operative topical medications	Right eye	Describes topical glaucoma medications, which the patient is currently on.	Establishes baseline prior to surgery. Ensure complete assessment prior to surgery. To support clinical audit and outcome assessment.	n2 01 None 02 Xalatan 03 Lumigan 04 Travatan 05 Timolol 06 Alphagan 07 Trusopt 08 Azopt 09 Cosopt 10 Combigan 11 Betagan 12 Betoptic 13 Pilocarpine 14 Other specify	² Existing clinical protocols and information systems
	Left eye				
Pre-operative Cup/ Disc ratio	Right eye	Indicator of glaucomatous damage to the optic nerve.	Establishes baseline prior to surgery. Ensure complete examination prior to surgery. To support clinical audit and outcome assessment.	n2 01 No view 02 Cup disc ratio 0.1-1.0	
	Left eye				
6.2 Consent					
Consent		Documentation of informed consent.	Facilitates clinical governance (risk management and patient safety) audit and patient education.	n2 01 Yes 02	¹ Consistent with other Ophthalmic DOAS projects
6.3 Anaesthetic					
Date of anaesthetic		Documents date of anaesthetic assessment.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	n8 - ccyymmdd	NHS Dictionary
Staff administering anaesthetic		Member of staff administering the anaesthetic to the patient, identified by anonymised number held locally.	To support clinical audit, assessment of complications and outcomes and inform training.	n10 Table held locally	¹ Consistent with other Ophthalmic DOAS projects

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Grade of staff administering anaesthetic	Grade of individual administering anaesthetic.	To support clinical audit, assessment of complications and outcomes and inform training.	n2 01 Consultant 02 Fellow 03 Specialist Registrar 04 SHO 05 Trust Doctor 06 Nurse 07 Clinical Assistant 08 Other ODP	¹ Consistent with other Ophthalmic DOAS projects
Type of anaesthetic	Mode of administration of anaesthetic administered prior or during surgery.	To support clinical audit, assessment of complications and outcomes.	n2 01 None 02 General 03 Retrobulbar 04 Peribulbar 05 Subtenons 06 Subconjunctival 07 Topical 08 Intracameral 09 Other specify	
Sedation	Any other additional drug administered to patient for sedation.	To support clinical audit, assessment of complications and outcomes.	NHS drug dictionary May include, type of local, adrenalin, hyalase, buffers, anxiolytics, analgesics, other medicines.	
Pre-operative antimicrobial prophylaxis	Documents any antimicrobial preparation administered, prior to operation.	To support clinical audit, assessment of complications and outcomes. Infection Control - monitoring of hospital acquired infections.	NHS Drug dictionary	² Existing clinical protocols and information systems
Complications of Local Anaesthetic (LA)	Any adverse event occurring during or after administration of LA that might compromise surgery or the outcome.	To support clinical audit, assessment of complications and outcomes.	n2 01 None 02 Eyelid haemorrhage/bruising 03 Conjunctival chemosis 04 Retrobulbar/peribulbar haemorrhage 05 Globe/optic nerve perforation or penetration 06 Inadequate anaesthesia 07 Systematic problems, bradycardia, apnoea, hypotension 08 Operation cancelled due to complication	Summary Core Dataset for Diabetes v4.0 ¹ Consistent with other Ophthalmic DOAS projects

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.4 Operation				
Date of Surgery	Document date of surgery.	To monitor patient management along care pathway. To support clinical audit and outcome assessment.	an10 ccyy-mmdd	NHS Dictionary
Type of operation	Documents Surgical procedure performed.	Identifier of procedure. To support clinical audit and assessment of outcomes. Analysis of trends in surgical activity.	n2 01 Trabeculectomy 02 Trabeculectomy + antiproliferative 03 Insertion of tube 04 Cyclodiode laser 05 Laser trabeculoplasty 06 Bleb revision 07 Bleb needling 08 Other specify	² Existing clinical protocols and information systems
Type of admission	Description of how patient was admitted for care.	To support clinical audit, assessment of outcomes and complications, and monitoring of surgical activity.	n2 01 Day case/ambulatory 02 Inpatient	¹ Consistent with other Ophthalmic DOAS projects
Eye for surgery	Patient's eye being operated on.	Facilitates clinical risk and patient safety checks to ensure that appropriate eye will be having the operation. To support clinical audit and assessment of outcomes.	n2 01 Left eye 02 Right eye	
First/ Second eye	Determine whether fellow eye has already had surgery for glaucoma.	Facilitates clinical risk and patient safety checks to ensure that appropriate eye will be having the operation. To support clinical audit and assessment of outcomes. To support clinical audit and assessment of outcomes. Analysis of trends in surgical activity.	n2 01 First eye 02 Second eye	
Surgeon	Operating surgeon identified by anonymised number according to local organisational arrangements.	To support clinical audit and assessment of outcomes. To inform training.	n10 Table held locally	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Surgeon grade	Grade of operating surgeon.	To support clinical audit and assessment of outcomes. To inform training.	n2 01 Consultant 02 Specialist Registrar 03 Fellow 04 Associate Specialist 05 SHO 06 Clinical Assistant 07 Trust Doctor 08 Other specify	¹ Consistent with other Ophthalmic DOAS projects
Assistant	Member of staff assisting the surgeon performing the operation, identified by anonymised number according to local organisational arrangements.	To support clinical audit and assessment of outcomes. To inform training.	n10 Table held locally	
Assistant grade	Grade of staff assisting surgeon.	To support clinical audit and assessment of outcomes. To inform training.	n2 01 Consultant 02 Specialist Registrar 03 Fellow 04 Associate Specialist 05 SHO 06 Clinical Assistant 07 Trust Doctor 08 Other specify	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.5 Trabeculectomy Surgical Data				
6.5.1 Operation Details				
Conjunctival flap method	Describes type of conjunctival flap made- - technical specification of procedure.	Supports audit and outcome assessment.	n2 01 Limbal based 02 Fornix based	² Existing clinical protocols and information systems
Antimetabolite	Documents the antimetabolite used - technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 None 02 5FU 25mg/ml 03 5FU 50mg/ml 04 MMC 0.1mg/ml 05 MMC 0.2mg/ml 06 MMC 0.3mg/ml 07 MMC 0.4 mg/ml 08 Other specify	
Antimetabolite exposure time	Describes the length of time in minutes and seconds which tissue is exposed to antimetabolites - technical specification of procedure.	To support clinical audit and assessment of outcomes.	Time mins/secs	
Antimetabolite site	Describes the site which is exposed to antimetabolites - technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 Conjunctival 02 Scleral	
Flap suture method	Describes the method of closure of scleral flap - technical specification of procedure.	To support clinical audit and assessment of outcomes.	N2 01 Fixed scleral 02 Releasable scleral	
Number of sutures used to close scleral flap	Describes the number of sutures used to close scleral flap - technical specification of procedure.	To support clinical audit and assessment of outcomes.	Range 1-10	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Post-operative antibiotic	Describes the type of post operative antibiotic given.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Cefotaxime 02 Cefuroxime 03 Gentamicin 04 Vancomycin 05 Tobramycin 06 Amikacin 07 Chloramphenicol 08 Other specify	² Existing clinical protocols and information systems
Post-operative antibiotic delivery route	Describes route of administration of antibiotic.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Subconjunctival 03 Topical 04 Intracameral	
Post-operative steroid	Describes the type of post operative steroid given.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Betamethasone 03 Methylprednisilone 04 Dexamethasone 05 Maxitrol	
Postoperative steroid delivery route	Describes route of administration of steroid given at the end of surgery.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Subconjunctival 03 Topical	
Per-operative complications of procedure	Unplanned events occurring during surgery that may influence performance of the surgical procedure and clinical outcome.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Conjunctival button hole 02 Corneal abrasion 03 Antimetabolite spillage onto cornea 04 Scleral flap buttonhole 05 Torn scleral flap 06 Iris trauma 07 Iris prolapse 08 Hyphaema 09 Vitreous loss 10 Choroidal/suprachoroidal haemorrhage 11 Operation cancelled 12 Other specify	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.5.2 Post-operative Details				
Date post-operative complication detected	Documents date at which complication occurred after surgery.	To support clinical audit and assessment of outcomes.	Date n8 cc/yy/mm/dd	² Existing clinical protocols and information systems
Post-operative complications of trabeculectomy.	Ophthalmic complications of trabeculectomy.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Blebitis 03 Bleb failure 04 Bleb leak 05 Cataract 06 Choroidal detachment 07 Endophthalmitis 08 Flat anterior chamber 09 Hyphaema 10 Hypotony 11 Raised IOP 12 Suprachoroidal haemorrhage 13 Wound leak	
6.5.3 Post-op Bleb Management				
Date of post-operative bleb management	Date of intervention required for bleb management.	To support clinical audit and assessment of outcomes.	Date n8 cc/yy/mm/dd	³ Clinical Consensus
Bleb Intervention	Type of intervention required to ensure bleb function.	To support clinical audit and assessment of outcomes of surgery.	n2 01 Massage 02 Removal of releasable sutures 03 Injection of 5FU 04 Needling of bleb 05 Injection steroids 06 Revision of bleb 07 Re-do Trabeculectomy 08 Other specify	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.6 Cyclodiode laser				
6.6.1 Operation details				
Area treated	Describes the structures to which laser will be applied.	To support clinical audit and assessment of outcomes.	n2 01 Ciliary body 02 Other	² Existing clinical protocols and information systems
Degrees treated	Describes the area treated with laser technical specification of procedure.	To support clinical audit and assessment of outcomes	0 – 360 degrees	
Number of shots applied	Describes the number of shots given – technical specification of procedure.	To support clinical audit and assessment of outcomes.	0 – 200 shots	
Power of laser applied	Describes the power setting of laser used mW – technical specification of procedure.	To support clinical audit and assessment of outcomes.	0 – 3000 mW	
Duration of laser applied	Describes the duration of laser burns applied – technical specification of procedure.	To support clinical audit and assessment of outcomes.	0 – 3000 msec	
Quadrants spared	Describes which quadrants are spared of laser, if any – technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Superonasal 03 Superior 04 Superotemporal 05 Temporal 06 Nasal 07 Inferonasal 08 Inferotemporal 09 Inferior	
Per-operative complications of cyclodiode laser	Unplanned events occurring during laser treatment that may influence clinical outcome.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Conjunctival burn 03 Scleral rupture 04 Iris trauma 05 Hyphaema 06 Globe rupture	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.6.2 Post-operative Details				
Date post-operative complication detected	Documents date at which complication occurred after surgery.	To support clinical audit and assessment of outcomes.	Date n8 cc/yy/mm/dd	² Existing clinical protocols and information systems
Post-operative complications of cyclodiode laser	Ophthalmic complications of cyclodiode laser.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Failure of treatment to lower IOP 03 Persistent Uveitis 04 Phthisis 05 Other specify	
6.7 Tube Insertion				
6.7.1 Operation details				
Tube name	Type of tube implant used - technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 Ahmed S2 valve 02 Ahmed S3 valve (184 mm2) 03 Baerveldt tube 200mm2 04 Baerveldt tube BG-103-250 05 Baerveldt tube BG-101-350 06 Baerveldt tube BG-102-350 07 Baerveldt tube BG-103-425 08 Molteno MI-01 09 Molteno MI-D1 10 Molteno MI-P1 11 Molteno Double plate MI-R2 12 Molteno Double plate MI-L2 13 Molteno Double plate MI-DR2 14 Other specify	² Existing clinical protocols and information systems
Plate position	Describes the position of the plate of tube implant technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 Superotemporal 02 Superonasal 03 Inferotemporal 04 Inferonasal 05 Other specify	

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GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
Donor material	Describes the type of donor material used to cover the plate technical specification of procedure.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Sclera 03 Pericardium 04 Other specify	² Existing clinical protocols and information systems
Tube entry	Describes site of tube entry into AC – technical specification of operation.	To support clinical audit and assessment of outcomes.	Number in degrees Gauge of tube 19 – 23	
Antimetabolite	Documents the antimetabolite used – technical specification of operation.	To support clinical audit and assessment of outcomes.	n2 01 None 02 5FU 25mg/ml 03 5FU 50mg/ml 04 MMC 0.1mg/ml 05 MMC 0.2mg/ml 06 MMC 0.3mg/ml 07 MMC 0.4 mg/ml 08 Other specify	
Antimetabolite exposure time	Describes the length of time in minutes and seconds which tissue is exposed to antimetabolites – technical specification of operation.	To support clinical audit and assessment of outcomes.	Time mins/secs	
Antimetabolite site	Describes the site which is exposed to antimetabolites – technical specification of operation.	To support clinical audit and assessment of outcomes.	n2 01 Conjunctival 02 Scleral	
Per-operative complications of tube insertion	Unplanned events occurring during laser treatment that may influence clinical outcome.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Corneal touch 03 Corneal abrasion 04 Antimetabolite spillage onto cornea 05 Iris trauma 06 Iris prolapse 07 Hyphaema 08 Vitreous loss 09 Choroidal/suprachoroidal haemorrhage 10 Operation cancelled 11 Other specify	

Note: All UNSHADED data items are ESSENTIAL and will form the core dataset for the glaucoma clinical care pathway, SHADED data items are DESIRABLE and will be dependent on local service arrangements/ protocols.

GLAUCOMA CLINICAL CARE PATHWAY AND DATASET

Data item	Description	Purpose	Codes and Classifications	Source/ Guidance
6.7.2 Post-operative Details				
Date post-operative complication detected	Documents date at which complication occurred after surgery.	To support clinical audit and assessment of outcomes.	Date n8 cc/yy/mm/dd	² Existing clinical protocols and information systems
Post-operative complications of tube insertion	Ophthalmic complications of tube insertion.	To support clinical audit and assessment of outcomes.	n2 01 None 02 Hypotony 03 Raised IOP 04 Hyphaema 06 Wound leak 07 Flat anterior chamber 08 Tube recession 09 Choroidal detachment 10 Suprachoroidal haemorrhage 11 Blebitis 12 Endophthalmitis 13 Corneal touch 14 Other specify	

¹ Consistent with other Ophthalmic DOAS projects – Cataract and Diabetic Eye Disease.

² Existing clinical protocols and information systems – Medisoft Glaucoma and TargetFour E-Patient.

³ Clinical Consensus – DOAS Glaucoma National Steering Committee and feedback from national consultation.

⁴ Patient Feedback – DOAS Glaucoma Patient Focus Group.

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APPENDIX

REFERENCES

Evidence Base Supporting DOAS Glaucoma Clinical Care Pathway and Dataset

A Ocular History

American Academy of Ophthalmology - important pieces of information in the absence of evidence base :-

- A1 Previous Ocular disease
- A2 Previous Ocular surgery
- A3 Previous Ocular medication

B Family History

- B1 *Dielemans I, Vingerling J, Wolfs R et al*
The prevalence of Primary open angle glaucoma in a population based study in The Netherlands.
The Rotterdam study. *Ophthalmology* 1994; 101:1851-5
- B2 *Tielsch J, Sommer A, Katz J et al.*
Racial variations in the prevalence of primary open angle glaucoma. The Baltimore Eye Survey. *JAMA* 1991; 266:369-74

C Drug History

American Academy of Ophthalmology (AAO) III ie important pieces of information in the absence of an evidence base.

D Systemic Medical History

D1 Low diastolic perfusion pressure

- D1.1 *Tielsch J, Katz J, Sommer A et al.*
Hypertension, perfusion pressure and primary open-angle glaucoma. A population based assessment. *Arch Ophthalmol* 1995;113:216-21

D1.2 *Leske M, ConnelA, Wu S et al.*
Risk factors for open angle glaucoma. The Barbados Eye Study.
Arch Ophthalmol 1995;113:918-24

D2 Migraine, peripheral vasospasm

D2.1 *Wang J, Mitchell P, Smith W*
Is there an association between migraine and open angle glaucoma?
Findings from the Blue Mountains Eye Study.
Ophthalmology 1997;104:1714-19

D2.2 *Broadway D, Drance S*
Glaucoma & vasospasm
Br J Ophthalmol 1998;82:862-70

D2.3 *Cursifen C, Wiese M, Cursifen S*
Migraine and tension headache in high pressure and normal pressure
glaucoma
Am J Ophthalmol 2000;129:102-4

D3 Diabetes

D3.1 *Mitchell P, Smith W, Chey T, Healey P*
Open-angle glaucoma and diabetes: the Blue Mountains eye study.
Ophthalmology 1997;104:712-8

D3.2 *Klein B, Klein R, Jensen S*
Open angle glaucoma and older onset diabetes: the Beaver Dam study.
Ophthalmology 1994;101:1173-7

D3.3 *Wu S, Leske M*
Associations with IOP in the Barbados Eye study.
Arch Ophthalmol 1997;115:1572-6

D3.4 *Tielsch J, Katz J, Quigley H*
Diabetes, intraocular pressure and open angle glaucoma in the Baltimore
Eye survey.
Ophthalmology 1995;102:48-53

D3.5 *Ellis J, Evans J, Ruta D et al.*
Glaucoma incidence in an unselected cohort of diabetic patients: is
diabetes a risk factor for glaucoma? The DARTS/MEMO study
Br J Ophthalmol 2000;84:1218-24

D3.6 *AGIS:3* Baseline characteristics of black and white patients.
Ophthalmology 1998;105:1137-45

E Ethnic category

- E1.1 *Mountain J, Risch N*
Assessing genetic contributions to phenotypic differences of racial and ethnic groups.
Nat Genet 2004;36:548-53
- E1.2 *Tielsch J, Sommer A, Katz J*
Racial variations in the prevalence of primary open angle glaucoma. The Baltimore Eye survey
JAMA 1991;266:369-74
- E1.3 *Leske M, Connell A, Sahadat A, Hyman L*
The Barbados Eye Study. Prevalence of open angle glaucoma
Arch Ophthalmol 1994;112:821-9
- E.14 *Quigley H, West S, Rodriguez J*
Prevalence of glaucoma in a population based study of Hispanic subjects: Projecto VER
Arch Ophthalmol 2001;119:1819-26

F Examination

F1 Pupils

- F1.1 *Kohn A, Moss A, Podos S*
Relative afferent pupillary defect in glaucoma without characteristic field loss
Arch Ophthalmol 1979;97:249-6
- F1.2 *Brown R, Zilis J, Lynch M, Sonbob G*
The afferent pupillary defect in asymmetric glaucoma
Arch Ophthalmol 1987;105:1540-3

F2 Anterior Segment

American Academy of Ophthalmology comprehensive adult medical eye evaluation primary practice patterns 2005

F3 Depth of AC

Van Herick W, Shaeffer R, Schwartz A
Estimation of width of angle of anterior chamber significance of narrow angle 1969;68:626-32

F4 Gonioscopy

- F4.1 *Spaeth G*
The development of the human chamber angle: a new system of descriptive grading.
Trans Ophthalmol Soc 1971;91:709-39
- F4.2 *Alward W*
Colour Atlas of Gonioscopy 1994
- F4.3 *Congdon, N, Spaeth G, Ausberger J et al*
A proposed simple method for measurement of anterior angle.
Am J Ophthalmol 1999;106:2161-7
- F4.4 *Riley S, Nairn J, Maestre F, Smith T.*
Analysis of anterior chamber angle by gonioscopy and by ultrasound biomicroscopy.
Int Ophthalmol Clin 1994;34:271-282
- F4.5 *Fran Smith M, Doyle W.*
Clinical examination of Glaucoma. In :Yanoff M, Duker J. London, Mosby, 1999;12:4.9

F5 Tonometry

- F5.1 *Martin X*
Normal intraocular pressure in man.
Ophthalmologica 1992;205:57-63
- F5.2 *Fran Smith M*
Clinical Examination of Glaucoma.
Yanoff M, Dueker J. Ophthalmology. London, Mosby 1999;12:4.1-4.3
- F5.3 *Weber J, Koll W, Kriegelstein G.*
Intraocular pressure and visual field decay in chronic glaucoma.
Germ J Ophthalmol 1993;30:372-376
- F5.4 *Brandt J, Beser J, Kass M, Gordon M.*
The ocular hypertension treatment study (OHTS) group: central corneal thickness in the OHTS.
Ophthalmology 2001;108:1779-1788
- F5.5 *Whitacre M, Stein R*
Sources of error with use of Goldman type tonometers.
Surv Ophthalmol 1993;38:1-30

F6 Central Corneal Thickness (CCT)

- F6.1 *Gordon M, Beiser J, Brandt J*
The Ocular Hypertension Treatment study (OHTS): baseline factors predict the onset of primary open angle glaucoma
Arch Ophthalmol 2002;120:714-20
- F6.2 *Kass M, Heuer D, Higginbotham E et al.*
The Ocular Hypertension Treatment Study: a randomised trial determines that topical ocular hypertensives delay or prevents the onset of primary open angle glaucoma
Arch Ophthalmol 2002;120:701-13
- F6.3 *Herndon L, Weizer J, Stimett S*
Central Corneal Thickness as a risk factor for advanced glaucoma damage
Arch Ophthalmol 2004;122:17-21
- F6.4 *Agudelo L, Molina A, Alvarez D*
Changes in Intraocular Pressure after LASIK (Laser In Situ Keratomileusis) for myopia, hypermetropia and astigmatism
J Refract Surg 2002;18:472-4

F7 Optic nerve head and retinal nerve fibre layer

- F7.1 *Tuulonen A, Airaksinen P.*
Initial glaucomatous optic disc and retinal nerve fibre layer abnormalities and their progression.
Am J Ophthalmol 1991;111:485-490
- F7.2 *Quigley H*
II Changes in the appearance of the optic disc.
Surv Ophthalmol 1985;30:117-126
- F7.3 *Gordon J, Pilz-Seymour J.*
The significance of optic disc haemorrhages in glaucoma.
Arch Ophthalmol 1993;111:62-4
- F7.4 *Drance S*
Disc haemorrhages in the glaucomas.
Surv Ophthalmol 1989;93:853-857
- F7.5 *Nervaz J, Rockwood E, Anderson D.*
The configuration of peripapillary tissue in unilateral glaucoma.
Arch Ophthalmol 1988;106:901-903

- F7.6 Chauhan B, McCormick T, Nicolela M
Optic disc and visual field changes in a prospective longitudinal study of patients with glaucoma. Comparison of scanning laser tomography (SLT) with perimetry and optic disc photography.
Arch Ophthalmol 2001;119:1492-9
- F7.7 Mohammedi K, Bond C, Weinreb R et al.
RNFL measurements with scanning laser polarimetry (SLP) predicts glaucomatous visual field loss.
Am J Ophthalmol 2004;138:592-601
- F7.8 Sommer A, Katz J, Quigley H et al
Clinically detectable nerve fibre atrophy precedes onset of visual field loss.
Arch Ophthalmol 1991;109:77-83
- F7.9 Quigley H, Enger C, Katz J et al.
Risk factors for the development of glaucomatous visual field loss in ocular hypertension.
Arch Ophthalmol 1994;112:644-9
- F7.10 Jonas J, Martus P, Horn F et al
Predictive factors of the optic nerve head for development or progression of glaucomatous visual field loss.
Invest Ophthalmol Vis Sci 2004;45:2613-8
- F7.11 Uchida H, Ugurlu S, Caprioli J.
Increasing peripapillary atrophy is associated with progressive glaucoma.
Ophthalmology 1998;105:1541-5
- F7.12 Zeyen T, Caprioli J
Progression of disc and field damage in early glaucoma.
Arch Ophthalmol 1993;111:62-5
- F7.13 Odberg T, Riise D.
Early diagnosis of glaucoma. The value of successive stereophotography of the optic disc.
Acta Ophthalmol (Copenh) 1985;63:257-63
- F7.14 Sommer A, Pollack I, Maumenee A.
Optic disc parameters and onset of glaucomatous visual field loss. Methods and progressive changes in disc morphology
Arch Ophthalmol 1979;97:1444-8

- F7.15 Wollstein G, Garway-Heath D, Hitchings R.
Identification of early glaucoma cases with the scanning laser ophthalmoscope.
Ophthalmology 1998;105:1557-63
- F7.16 *Hollo G, Suveges I, Nagymihaly A, Vargha P*
Scanning laser polarimetry of the retinal nerve fibre layer in primary open-angle and capsular glaucoma.
Br J Ophthalmol 1997;81:857-861
- F7.17 *Tjon Fo Sang M, Lemji H.*
Sensitivity and specificity of nerve fibre layer measurement in glaucoma as determined with scanning laser polarimetry.
Am J Ophthalmol 1997;123:62-69
- F7.18 *Schuman J, Hee M, Puliafito C et al.*
Quantification of nerve fibre layer thickness in normal and glaucomatous eyes using optical coherence tomography. A pilot study.
Arch Ophthalmol 1995;113:586-596
- F7.19 *Carpineto P, Ciancalini M, Zuppari E et al.*
Reliability of nerve fibre layer thickness measurement using ocular coherence tomography in normal and glaucomatous patients.
Ophthalmology 2003;110:190-195
- F7.20 *Chauhan B, McCormick T, Nicoleta M, LeBlanc R.*
Optic disc and visual field changes in a prospective longitudinal study of patients with glaucoma. Comparison of scanning laser tomography with conventional perimetry and optic disc photography.
Arch Ophthalmol 2001;119:1492-1499
- F7.21 *Kamal D, Garway-Heath D, Hitchings R, Fitzke F.*
Use of sequential Heidelberg retina tomography images to identify changes at the optic disc in ocular hypertensive patients at risk of developing glaucoma.
Br J Ophthalmol 2000;84:993-998
- F7.22 *Zangwill L, Weinreb R, Berry C et al.*
The confocal scanning laser ophthalmoscope ancillary study to the ocular hypertension treatment study: study design and baseline factors.
Am J Ophthalmol 2004;137:219-27
- F7.23 Zeyen T, Miglior S, Pfeiffer N et al.
Reproducibility of evaluation of optic disc change for glaucoma with stereo optic disc photographs.
Ophthalmology 2003;110:340-4

F8 Visual field testing

- F8.1 *Bengtsson B, Heijl A, Olsson J.*
Evaluation of a new threshold visual field strategy, SITA, in normal subjects.
Acta Ophthalmol Scand 1998;76:165-169
- F8.2 *Sample P, Taylor J, Martinez G, Lusky M, Weinreb R.*
Short-wavelength colour visual field in glaucoma suspect at risk.
Am J Ophthalmol 1993;115:225-233
- F8.3 *Lester M, Alteri M, Vittone P et al.*
Detection of glaucomatous visual field defect by non-conventional perimetry.
Am J Ophthalmol 2003;135:35-39
- F8.4 *Lester M, Mermoud A, Schnyder C.*
Frequency doubling technique in subjects with ocular hypertension and glaucoma. Correlation with Octopus Perimeter Indices.
Ophthalmology 2001;107:228-294
- F8.5 *Katz J, Quigley H, Sommer A.*
Detection of incident field loss using the glaucoma hemifield test.
Ophthalmology 1996;103:657-663
- F8.6 The Advanced Glaucoma Intervention Study Investigators: AGIS
Visual field test scoring and reliability.
Ophthalmology 1994;101:1445-1455
- F8.7 *McNaught A, Crabb D, Fitzke F, Hitchings R.*
Visual field progression: comparison of Humphrey Statpac-2 and point-wise linear regression analysis.
Gaefe's Arch Clin Exp Ophthalmol 1996;243:411-418
- F8.8 *Fitzke F, Hitchings R, Poinoswamy D, Mc Naught A, Crabb D.*
Analysis of visual field progression in glaucoma.
Br J Ophthalmol 1996;80:40-46
- F8.9 *Medeiros F, Sample P, Weinreb R.*
Frequency doubling technology perimetry abnormalities as predictors of glaucomatous visual field loss.
Am J Ophthalmol 2004;137:863-71
- F8.10 *Landers J, Goldberg I, Graham S.*
Detection of early visual field loss in glaucoma using frequency-doubling perimetry and short-wavelength automated perimetry.
Arch Ophthalmol 2003;136:18-25

G Management

G1 Target IOP

- G1.1 *The advanced Glaucoma Intervention Study (AGIS) 7*
The relationship between control of intraocular pressure and visual field deterioration.
Am J Ophthalmol 2000;130:429-440
- G1.2 The ocular hypertention treatment study (OHTS)
Kass M, Heuer D, Higginbotham E
OHTS: a randomised trial determines that topical ocular hypotensive medications delays or prevents the onset of open angle glaucoma.
Arch Ophthalmol 2002;120:701-713
- G1.3 *The early manifest glaucoma study (EMGTS)*
Heijl A, Leske M, Bengtsson B
Reduction of intraocular pressure and glaucoma progression, results from the Early Manifest Glaucoma Trial (EMGTS)
Arch Ophthalmol 2002;120:1268-79
- G1.4 *Leske M, Heijl A, Hussein M et al*
Early manifest glaucoma study (EMGTS). Factors for glaucoma progression and the effect of treatment.
Arch Ophthalmol 2003;121:48-569
- G1.5 *Jampel H*
Target pressure in glaucoma therapy.
J Glaucoma 1997;6:133-8

G2 Treatment

- G2.1 *Goldberg I*
Should Beta blockers be abandoned as initially monotherapy for open angle glaucoma?
Br J Ophthalmol 2002;86:691-5
- G2.2 *Lichter P, Musch D, Gillespie B et al.*
Interim clinical outcomes in the Collaborative Initial Glaucoma Treatment Study comparing initial treatment randomized to medications or surgery.
Ophthalmology 2001;108:1943-53
- G2.3 *Kass M, Gordon M, Morley R et al.*
Compliance with topical timolol treatment.
Am J Ophthalmol 1987;103:188-93

G2.4 *Haynes R, McDonald H, Garg A, Montague P.*
Interventions for helping patients to follow prescriptions for medications
(Cochrane review).
Chichester: John Wiley & Sons, Ltd, 2003;48

G2.5 *Osterberg L, Blaschke T*
Adherence to medication.
N Eng J Med 2005;353:487-97

G3 Trabeculectomy

G3.1 *Gross R, Feldman R, Spaeth G et al*
Surgical therapy of chronic glaucoma in aphakia and pseudophakia.
Ophthalmology 1988;95:1195-201

G3.2 *The Advanced Glaucoma Intervention Study:8.*
Risk of cataract formation after trabeculectomy.
Arch Ophthalmol 2001;119:1771-9

G3.3 *Hylton C, Congdon N, Friedman D et al*
Cataract after glaucoma filtration surgery.
Am J Ophthalmol 2003;135:231-2

G3.4 *Andreanos D, Georgopolous G, Vergados J et al.*
Clinical evaluation of the effect of mitomycin-C in re-operation for primary
open angle glaucoma.
Eur J Ophthalmol 1997;7:49-54

G3.5 *Wilkins M, Indar A, Wormald R.*
Intra-operative mitomycin C for glaucoma surgery.
Cochrane database Sys Rev 2001:CD002897

G3.6 *Robin A, Ramakrishnan R, Krishnadas R et al*
A long-term dose-response study of mitomycin in glaucoma filtration
surgery.
Arch Ophthalmol 1997;115:969-74

G3.7 *Costa V, Comegno P, Vasconcelos J et al*
Low-dose mitomycin C trabeculectomy in patients with advanced
glaucoma.
J Glaucoma 1996;5:193-9

G3.8 *WuDunn D, Cantor L, Palanca-Capistrano A et al.*
A prospective randomised trial comparing intraoperative 5-fluorouracil vs
mitomycin C in primary trabeculectomy.
Am J Ophthalmol 2002;134:521-8

- G3.9 *Singh K, Mehta K, Shaikh N.*
Trabeculectomy with intraoperative mitomycin C versus 5-fluorouracil.
Prospective randomised clinical trial.
Ophthalmology 2000;107:2305-9
- G3.10 *Fluorouracil Filtering Surgery Study one-year follow-up.*
The Fluorouracil Filtering Surgery Study Group.
Am J Ophthalmol 1989;108:625-35
- G3.11 *Wormald R, Wilkins M, Bunce C*
Post-operative 5-fluorouracil for glaucoma surgery.
Cochrane Syst Rev 2001:CD001132
- G3.12 *Zacharia P, Depperman S, Schuman J*
Ocular hypotony after trabeculectomy with mitomycin C
Am J Ophthalmol 1993;116:314-26
- G3.13 *Jampel H, Quigley H, Kerrigan-Baumrind L et al.*
Risk factors for late-onset infection following glaucoma surgery.
Arch Ophthalmol 2001;119:1001-8

G4 Tube surgery

- G4.1 *Mills R, Reynolds A, Emond M et al*
Long-term survival of Molteno glaucoma drainage devices.
Ophthalmology 1996;103:299-305
- G4.2 *Coleman A, Hill R, Wilson M et al*
Initial experience with the Ahmed Glaucoma Valve implant.
Am J Ophthalmol 1995;120:23-31
- G4.3 *Siegner S, Netland P, Urban R et al.*
Clinical experience with the Baerveldt glaucoma drainage implant.
Ophthalmology 1995;102:1298-307
- G4.4 *Friedman S, Jampel H, Lubomski L et al*
Surgical strategies for coexisting glaucoma and cataract: an evidence-based update.
Ophthalmology 2002;109:1902-13

G5 Cyclodiode laser

- G5.1 *Kosoko O, Gaasterland D, Pollack I, Enger C.*
Long-term outcome of initial ciliary ablation with contact diode laser
transscleral cyclophotocoagulation for severe glaucoma. The Diode Laser
Ciliary Ablation Study Group.
Ophthalmology 1996;103:1294-302

- G5.2 *Fankhauser F, Kwaniewska S, Van der Zypen E.*
Cyclodestructive procedures. I. Clinical and morphological aspects: a review.
Ophthalmologica 2004;218:77-95
- G5.3 *Wilensky J, Kammer J,*
Long-term visual outcome of transscleral laser cyclotherapy in eyes with ambulatory vision.
Ophthalmology 2004;111:1389-92
- G5.4 *Bloom P, Tsai J, Sharma K et al.*
"Cyclodiode" Trans-scleral diode laser cyclophotocoagulation in the treatment of advanced refractory glaucoma.
Ophthalmology 1997;104:1508-19;discussion 19-20.