The ROYAL COLLEGE of OPHTHALMOLOGISTS

Glaucoma Society
United Kingdom
Éire

Ophthalmic Service Guidance

Joint RCOphth and UKEGS Glaucoma Risk Stratification Tool

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1 Introduction

There is a currently a clear need and requirement for a simple risk and complexity stratification tool for use in NHS delivered and NHS funded outpatient clinics treating glaucoma patients. This need has several contextual drivers which have come together in recent times to make such a stratification tool important. These are familiar to all clinicians and have been summarised in a series of actions and publications within the NHS in recent times – e.g. High Impact Interventions program Actions 2 and 3, HSIB report on glaucoma follow up and the NHS Long Term Plan ambitions for outpatient reform, often simply reduced to a target to transfer 30% of outpatient activity into the community. COVID -19 and its effects on the ability to deliver appropriate care further strengthens the need. Documenting risk and complexity and subsequently matching these with appropriate clinical skill sets is not a new concept, as both the NICE glaucoma guidelines and the RCOphth glaucoma commissioning guidelines have done this within their recommendations.

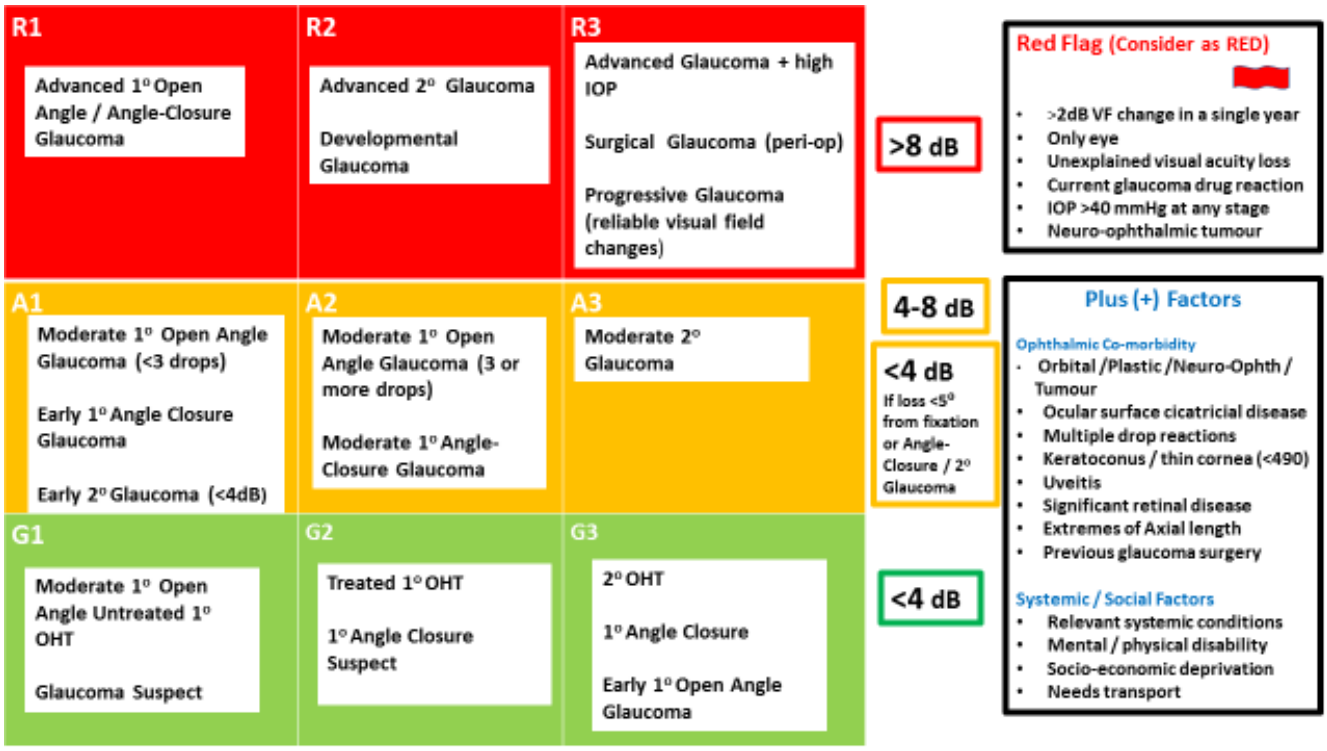
In a purely clinical context a decision as to risk and complexity is taken every time a clinician sees a patient in outpatients and either discharges them or arranges a follow up appointment at a specific interval. This goes further as most units have established virtual, technician, nurse or optometrist run clinics with various levels of skills, supervision and governance to look after patients. It is always difficult to translate 'clinical acumen' into a formalised evidence based process, but clinical acumen is fundamentally informed and governed by evidence and so in principle there is no fundamental conflict in such a process as long as the degrees of ambiguity and uncertainty in any stratification process are acknowledged.

2 Risk Stratification Tool

The purpose of identifying, treating and monitoring glaucoma is to preserve a sighted lifetime. In the face of high demand and unmet need due to insufficient capacity, and the consequent risk of avoidable blindness from delays in glaucoma care, an agreed mechanism for identification of people at highest risk of sight loss is desirable. The document describes a clinical tool for classification of patients with glaucoma into strata of risk for significant future sight loss and an estimate of resource requirement for managing the patient. The tool was developed collaboratively between the RCOphth and UKEGS and acknowledges diagnosis, stage of disease, complexity of disease, rate of disease progression, life expectancy, ocular and systemic comorbidities, dependency and socio-economic deprivation. Examples of the use of the tool are provided in Appendix 1. An understanding of individual risk stratification supports service design and delivery by allowing the prioritisation of care and the use of an appropriate skill mix.

The approach is based on the 'glauc-strat' glaucoma visual field and clinical staging system (Appendix 2) initially developed by Shah et al., with adjustments to facilitate its use in NHS paper based and/or Electronic Medical Record (EMR) based glaucoma services with various levels of (sub-)specialisation. A Red-Amber-Green (RAG) table with nine subdivisions (1-3 within each band) forms the basis of the tool which is further augmented by red flag indicators and Plus (+) factors. Depending on circumstances and available resources, the tool can be used in its full form or reduced to a basic RAG system. The eye-level classification should be used to stratify patients according to the worse eye which has remaining useful vision, for which the patient is willing to undergo treatment to retain sight.

GLAUC-STRAT-FAST



N.B Intellectual property rights for the Glauc-Strat-Fast risk stratification tool are owned by Professor Peter Shah at the Birmingham Institute for Glaucoma Research.

Notes:

- Clinical judgement remains paramount and each patient should be risk assessed at each monitoring visit as recommended by NICE (NG 81)
- Progression
    - A visual field progression rate sufficiently rapid to threaten sight within the patient's expected lifetime should prompt discussion with the patient and action as appropriate, e.g. a woman aged 55y with a current MD of -5dB and a progression rate of 1dB/y loss would reach -20dB loss by the age of 70y, with a remaining life expectancy of 18y, while a man of 85y with a -5dB defect progressing at 1.5dB/y would reach -11dB within his remaining expected lifetime (average 6 years remaining until death at 91y).
    - Red Flag progression of >2dB loss in any single year indicates a high degree of urgency
    - Optic disc and RNFL features should be considered as is clinically appropriate
- Open Angles
    - Open Angle Glaucoma = NICE Chronic Open Angle Glaucoma (inc. PXF and PDS) and includes patients with and without elevated IOP (POAG & NTG)
    - 2o OHT = Uveitis, trauma, post-vitrectomy (oil) etc. without field or disc damage
- Occludable Angles
    - 1o Angle Closure Suspect = Occludable angles with no PAS or high IOP
    - 1o Angle Closure = Occludable angle with PAS and or high IOP

    - Early 1o Angle Closure Glaucoma as above with disc and/or field changes
    - Untreated angle closure suspects such as those who decline PI should remain in G2
    - If not genuinely occludable (>180o) patients to be discharged from monitoring
    - Successfully treated, resolved 1o Angle Closure and Suspects to be discharged from monitoring
- General
    - Ophthalmic and systemic co-pathology is relevant because a large proportion of patients in the UK are still seen in relatively 'general' clinic settings where the co-pathology will be managed by their treating clinician with a resultant increase in time and required training
    - Transport is used as a proxy indicator of dependency and to reflect the practical challenges encountered in dealing with these patients
    - Mental and physical disability cover a broad range, including dementia and immobility.

3 References

- 'Glauc-Strat-Fast': Development and implementation of a real-world glaucoma risk stratification tool. Shah et al (in preparation - 2020).
- NICE Clinical Guideline NG81, Glaucoma: diagnosis and management. 2017, https://www.nice.org.uk/guidance/ng81 (accessed 12 May 2020)
- UK Office for National Statistics (ONS) life expectancy calculator https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/articles/whatismylifeexpectancyandhowmightitchange/2017-12-01 (accessed 12 May 2020)

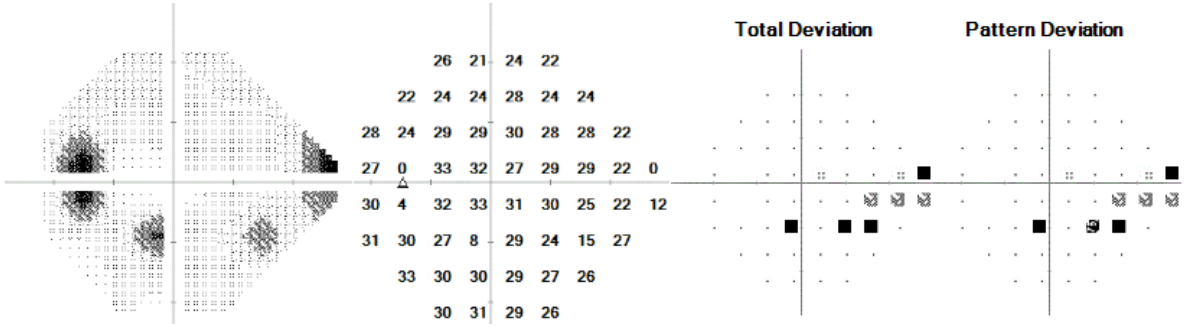
4 Appendix 1: Examples of cases stratified by Glauc-Strat-Fast

Based on Mean Deviation (MD) visual field defect (dB) in worse eye.

[1] Male age 78. Good health.

- MD -2.48 dB - Green

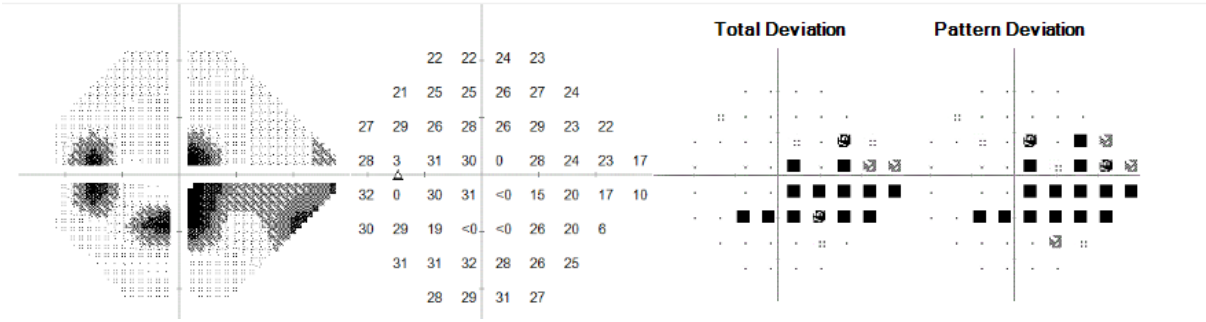
- Early POAG R+L. - G3
- No red flags. - G3 F-
- No Ophthalmic or Systemic factors. - G3 F- / O- / S-



[2] Female age 63. Bilateral panuveitis and CMO. Highest IOPs 54mmHg R+L. Sarcoidosis. T2 DM.

- MD -6.71 dB - Amber

- Moderate SOAG R+L. - A3
- Red flag for highest IOP >40 mmHg. - A3 F+
- Ophthalmic (Uveitis / CMO) & Systemic factors (Sarcoid / DM). - A3 F+ / O+ / S+

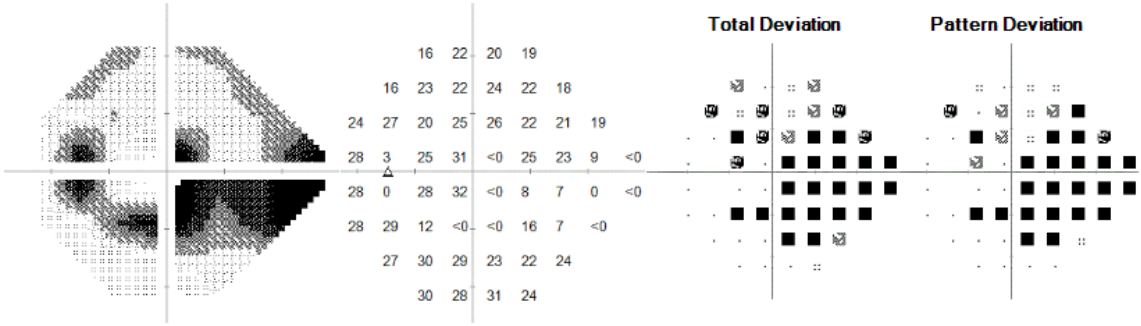


[3] Female age 57. Fit. R+L PACG. Short AXLs – 19.5mm. R+L PIs. Multiple severe drop allergies.

- MD -10.77 dB - Red

- Advanced PACG R+L. - R1
- Red flag for severe drop allergies. - R1 F+

- Ophthalmic (AXL 19.55) but no Systemic factors. - R1 F+ / O+ / S-



5 Appendix 2: Glauc-Strat Fast Team, Development History and Intellectual Property

- The Glauc-Strat project was a 4-year research program to develop and implement a glaucoma staging tool that acts to stratify the risk of progressive loss of vision and the level of resource needed.
- The project is based in Birmingham, UK and is lead by Professor Peter Shah through the Birmingham Institute for Glaucoma Research in the Institute of Translational Medicine at University Hospitals Birmingham NHS Trust.
- The core research team includes Mr Imran Masood, Ms Freda Sii, Prof Graham Lee, Mr Jim Kirwan and Mr Simon Dulku.
- UK and international collaborators on the project include:

Mr Joe Abbott UK	Prof Alastair Denniston UK	Mr Jim Kirwan UK	Mr Alan Rotchford UK
Dr Ashish Agar Aus	Mr Simon Dulku UK	Dr Mitchell Lawler Aus	Prof Pete Shah UK
Mr Faisal Ahmed UK	Prof Paul Foster UK	Prof Graham Lee Aus	Mr Tarun Sharma UK
Ms Nishani Amerasinghe UK	Prof Gus Gazzard UK	Mr Alastair Lockwood UK	Ms Freda Sii UK
Prof Augusto Azuara-Blanco UK	Prof Ivan Goldberg Aus	Prof Keith Martin Aus	Mr John Somner UK
Mr Imad Badran UK	Prof Paul Healey Aus	Mr Imran Masood UK	Prof George Spaeth USA
Prof Philip Bloom UK	Prof Roger Hitchings UK	Mr Shabbir Mohamed UK	Prof John Sparrow UK
Prof Rupert Bourne UK	Dr John Horsburgh Aus	Prof Tony Molteno NZ	Mr Andrew Tatham UK
Mr Mike Burdon UK	Mr Wojciech Karwatowski UK	Dr Desiree Murray Trinidad	Ms Marie Tsaloumas UK
Dr Jenn Burr UK	Prof Peng Khaw UK	Dr Katia Papastavrou Cyprus	Prof Robert Weinreb USA
Ms Lydia Chang UK	Mr Anthony Khawaja UK	Mr Heiko Philippin Tanz / Ger	Prof Andrew White Aus
Prof David Crabb UK	Prof Anthony King UK	Dr Ioanna Psalti UK	Mr Richard Wormald UK
Prof Jon Crowston Singapore			

- Between 2015 and 2020 the initial Glauc-Strat concept tool has gone through many iterations using a combination of 1:1 and focus discussion groups within the UK and abroad.
- Between 2017 and 2020 the tool has been implemented and extensively test-driven and refined in Birmingham, UK and Sydney, Australia.
- In 2020 the tool has been further developed and critically peer-reviewed by the UK and Eire (UKEGS) faculty.
- Glauc-Strat Fast is now undergoing further validation studies within the West Midlands region.