Enhanced Virtual Glaucoma Service – A Novel Model of Care?
An Audit of the Enhanced Virtual Glaucoma Service

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Introduction

The demands placed on hospital eye services (HES) will continue to rise with our ageing population, therefore in NHS Grampian, a novel service was introduced to help alleviate the burden on glaucoma services.[1] Virtual glaucoma clinics (VGC) have become an integral part of the hospital glaucoma service.[2]

The "Enhanced Virtual Glaucoma Clinic" (EVGC) serves as an intermediate step between the virtual glaucoma clinics and consultant-led face-to-face appointments.

The aim of this audit was to ascertain whether the introduction of EVGC was effective in reducing the requirement for face-to-face consultant-led glaucoma clinics.

What is the Enhanced Virtual Glaucoma Service?

The EVGC was set up in October 2022 to alleviate the clinical burden placed on face-to-face (F2F) consultant-led clinics.

The clinic is led by an ophthalmic technician who has been trained to undertake slit lamp and gonioscopy examinations, and Goldmann applanation tonometry (GAT), which allows for additional tests that are not provided in the virtual glaucoma service.

Patients are booked into this service either from the virtual or F2F glaucoma clinics. These results are then documented in electronic patient records and retrospectively reviewed by a glaucoma clinician.

Comparison of Services Offered in the Virtual Glaucoma Service in NHS Grampian

	Virtual Glaucoma Clinic	Enhanced Virtual Glaucoma Clinic
Checks patients' visual acuity and visual fields	☑	☑
Checks patients' intraocular pressure (IOP) using an ocular response analyser (ORA), measuring IOPcc and IOPg	☑	☑
Checks patients' intraocular pressure using the iCare device	☑	☑
Checks patients' retinal nerve fibre layer (RNFL) OCT	☑	☑
Checks patients' intraocular pressure using Goldmann applanation tonometry (GAT)	☒	☑
Provides OPTOS imaging of the optic disc	☒	☑
Provides a slit lamp examination with gonioscopy	☒	☑

Methodology

Retrospective analysis of data of 75 patients who attended EVGC

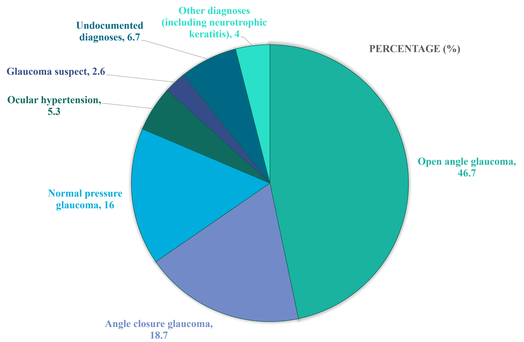
Study period - January to June 2023.

NHS Grampian Quality Improvement and Assurance Team Project ID 6027.

Data collected:
- Patient demographics (age, sex)
- Diagnoses, surgeries, medications, vision
- Pressures (Ocular Response Analyser (ORA), iCare, and GAT)
- Type of follow-up requested (either F2F, virtual, or other)

Results and Discussion

Diagnosis in the Worst Eye



Nearly half of the patients had primary open angle glaucoma.

Previous Glaucoma-Related Laser or Surgery

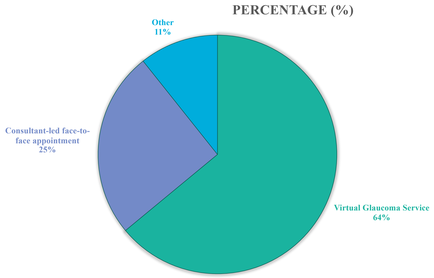
Glaucoma-related surgery or laser treatment	Percentage (%)	Number of Patients
Trabeculectomy	6.7	5
Selective laser trabeculoplasty (SLT)	8.0	6
Laser peripheral iridotomy (PI)	14.6	11
No previous glaucoma-related surgery or laser treatment	70.7	53
Total	100.0	75

Approximately 1/3 of patients had no previous glaucoma-related surgery.

Topical Glaucoma Medication

Eye Drops	Percentage (%)	Number of Patients
One	34.6	26
Two	25.3	19
Three	16.0	12
Four	1.4	1
No glaucoma medication use	16.0	12
No information	6.7	5
Total	100.0	75

Outcome of EVGC Appointments – Follow-Up Booking



An important finding from the audit revealed that **the introduction of the EVGC reduced the requirement for consultant-led appointments by 75%.**

Out of the patient cohort, 64% were suitable to be monitored in the virtual glaucoma service, which includes both the VGC and EVGC. The category titled 'other' refers to patients who did not attend, were discharged from the service, or passed away.

The male-to-female percentage ratio within the group was found to be almost equal. On average, the patients had good visual acuity, of around 0.1 logMAR.
90% of patients were aged above the age of 60 and 10% were below age 60. The mean age was 72 years.

Intraocular pressure readings were analysed by comparing IOPcc using ORA and GAT to iCare readings, with an accepted range of +/- 2mmHg.

It was an incidental finding that nearly 2/3 of all pressures measured using IOPcc on ORA were greater than 2mmHg concordance to iCare readings, with only 1/3 being concordant. Interestingly, 40% of GAT readings were all 2mmHg less than iCare readings, with 39% being concordant.

Before the COVID-19 pandemic, all patients underwent IOP testing by GAT. During COVID, iCare was introduced which was not a recognized standard method of IOP measurement. ORA has been introduced recently for all virtual glaucoma patients to replace iCare.

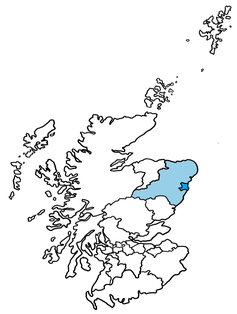
Conclusion and Recommendations

To conclude, the enhanced virtual glaucoma service is a useful model of care which reduces consultant-led face-to-face appointment requirements by 75% from patients in the virtual cohort.

This audit has highlighted **the discrepancies between IOP testing methods**.

This service is useful for monitoring long-term post-operative trabeculectomy patients, and new patients for gonioscopy as slit lamp examination is utilised.

Patients who have stable glaucoma but are unsuitable for VGC; for example, those who require slit lamp examination, or have additional needs, can be followed up in this clinic, reducing the requirement for a consultant-led clinic.



A map of Scotland, highlighting Aberdeen city and Aberdeenshire.

This clinic also benefits patients who may travel from the furthest parts of the shire, as the clinic serves as a one-stop-shop for their glaucoma review.

We recommend that further analysis of this data should be carried out to determine the reliability of and concordance between IOPcc and GAT, as this is the only clinic where both ORA and GAT readings are carried out on the same patient.

References

[1]The Way Forward Glaucoma Options to help meet demand for the current and future care of patients with eye disease [Internet]. Available from: https://www.rcophth.ac.uk/wp-content/uploads/2021/12/RCOphth-The-Way-Forward-Glaucoma-300117.pdf

[2] Gunn PJG, Marks JR, Au L, Read S, Waterman H, Spry PGD, et al. Virtual clinics for glaucoma care - Patients' and clinicians' experiences and perceptions: a qualitative evaluation. Eye [Internet]. 2021 Mar 8 [cited 2021 Apr 13];1-10. Available from: https://www.nature.com/articles/s41433-021-01467-4