

## Introduction

- The visual field is an important tool used to track the progression of glaucoma and its management.<sup>1</sup>
- Due to the needs for highly specialized equipment and technician support, access to visual field testing may limit a patient's ability to obtain adequate glaucoma care.
- Virtual visual field (VVF) testing, instead of traditional Humphrey visual field (HVF) may allow better access to care.
- We explored initial patient experience using this novel technology.

## Methods

### Study population:

48 patients who presented to Weill Cornell Medicine for glaucoma follow-up participated in VVF testing on a voluntary basis. For comparison purposes, VVF testing was only offer to patients who had previously performed at least one reliable HVF.

### Testing Apparatus:

PICO virtual reality headset was used to run Virtual Visual Field application (below). After the test, an anonymous post-test survey was conducted to evaluate patient experiences.



Figure 1: Virtual Visual Field (A) and Visual Field Survey (B)

## Results

Demographics	
Genders	25F: 21M*
Age	63.82 (±12.69)*
Average number of previous HVF	3-4

\*2 patients did not report age or gender

Table 1: Participant Demographics

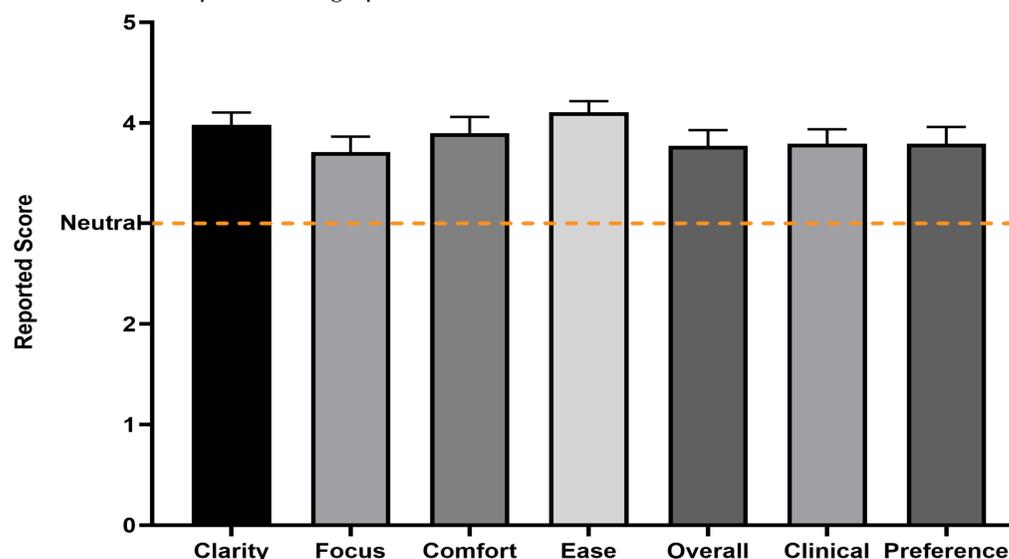


Figure 2: Visual Field Survey Results

- Results showed significantly higher scores in all surveyed aspects, including clarity (3.97,  $p < 0.001$ ), focus (3.71,  $p < 0.001$ ), comfort (3.89,  $p < 0.001$ ), and ease (4.10,  $p < 0.001$ ).
- Almost all categories showed no contribution from gender, age, and previous experiences with HVF based on ANOVA.
- Preference category (whether they preferred VVF for the next visit) showed a trend towards gender predilection (female 4.16 vs male 3.38,  $p = 0.036$ ), but the significance did not survive multiple correction.

## Discussion

- Overall, the VVF testing was well received by the participants, scoring high in all aspects.
- Positive comments were largely focused on comfort – endorsing less constrained head/neck positions, lack of contralateral eye taping, and more comfortable clicker.
- Negative comments included heaviness of the device without adequate head support, lens fogging in the setting of mask use, and frequent automated instructions.
- Patients also expressed confidence in setting up the test by themselves at home, indicating that patient-driven VVF testing at home is a feasible endeavor.
- Home testing may also help resolve some of the negative feedback as patients are in control of head support and will not be wearing masks.

## Future Directions

- Based on the feedbacks from the current survey, PICO virtual reality headset and VVF testing interface can be modified to further improve comfort and accessibility for patients
- Multi-center study comparing the results of VVF to the current gold standard HVF is needed to ensure accurate testing

## Conclusion

- Despite the importance of visual field testing in glaucoma, frequency of testing may be limited by a patient's physical access to the medical facilities and ancillary supports.
- VVF may provide an avenue to transfer part of the glaucoma care to home-based testing by providing patient with an easily accessible and comfortable testing option.

<sup>1</sup>Chauhan BC, Garway-Heath DF, Goñi FJ, Rossetti L, Bengtsson B, Viswanathan AC, Heijl A. Practical recommendations for measuring rates of visual field change in glaucoma. *Br J Ophthalmol*. 2008;92(4):569-573. doi:10.1136/bjo.2007.135012

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