Appendix

An integrated binocular visual field was created using the participant's most recent right and left HVF, using the binocular summation method described by Nelson-Quigg et al.

(Nelson-Quigg JM, Cello K, Johnson CA. Predicting binocular visual field sensitivity from monocular visual field results. Invest Ophthalmol Vis Sci. 2000 Jul;41(8):2212–21.)

The following steps were followed:

1. Threshold values (TV) for all points in the right and left HVFs were converted from logarithmic decibel values to antilogarithmic values.

   Antilog value (S) = $10^{TV/10}$

2. The binocular sensitivity (S_B) was then calculated for each point using the quadratic summation equation

   $S_B = (S_R^2 + S_L^2)^{1/2}$,

   Where S_R represents the sensitivity (antilog threshold value) of a point in the right eye HVF and S_L represents the sensitivity of the corresponding point in the left eye HVF.

3. The S_B values for each point were converted back to their logarithmic decibel to obtain the threshold value for the binocular visual field.

   $S_B db = 10 \log_{10} (S_B)$

4. Binocular Total deviation plot calculation

   a. Expected threshold (e) values for each point in the right (e^{OD}) and left eye (e^{OS}) were calculated by subtracting the threshold value of each point from the total deviation (TD) plot value of each point

      $e = TV - (TD)$

   b. These were converted from logarithmic decibel values to antilog values.

Antilog value = $10^{e/10}$

c. The expected threshold values for the binocular fields were then calculated from the monocular expected threshold values using the same quadratic summation formula described above to calculate the S_B and were reconverted to their logarithmic decibel

$$e^{OU} = \log\sqrt{(e^{OD})^2 + (e^{OS})^2}$$

d. The expected threshold values of the binocular fields (e^{OU}) were converted back to log scale.

e^{OU} db = **10 $\log_{10}$ (e^{OU})**

e. The difference between the logarithmic threshold values (S_B dB) and the expected threshold (e^{OU} dB) was calculated to obtain the binocular total deviation (TD) plot.

Binocular TD plot value = S_B dB - e^{OU}dB

5. <u>Binocular VFI calculation</u>

Binocular VFI was calculated using the method described by Bengtsson and Heijl. *(Bengtsson B, Heijl A. A visual field index for calculation of glaucoma rate of progression. Am J Ophthalmol. 2008 Feb;145(2):343–53)*

a. Test points having a positive value on the total deviation plot were considered normal and were scored 100%.

b. Sensitivity for the remaining points was scored in percent as

100- [(|total deviation|/ age-corrected normal threshold) * 100]

where |total deviation| is the absolute value of the numerical total deviation value and the age corrected normal threshold is the ET value.

c. Bengtsson and Heijl's weighting procedure was applied to the test points to give a higher importance to central and paracentral points as compared to the peripheral points. For this purpose, the test point pattern was divided into five concentric rings of increasing eccentricity. The central four points were allotted a weight of 3.29, and with increasing eccentricity, the weights decreased from 1.29, 0.79, and 0.57 to 0.45 (as shown below).

			0.57	0.57	0.57	0.57			
		0.79	0.79	0.79	0.79	0.79	0.79		
	0.57	0.79	1.29	1.29	1.29	1.29	0.79	0.57	
0.45	0.57	0.79	1.29	3.29	3.29	1.29	0.79	0.57	0.45
0.45	0.57	0.79	1.29	3.29	3.29	1.29	0.79	0.57	0.45
	0.57	0.79	1.29	1.29	1.29	1.29	0.79	0.57	
		0.79	0.79	0.79	0.79	0.79	0.79		
			0.57	0.57	0.57	0.57			

d. The VFI was calculated as a mean of all these weighted points in percentage.