Analysis software for Goldmann Visual Fields

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Technology description

Unmet Need

Kinetic visual fields provide an important quantitative measure of peripheral retinal function and are commonly used as an outcome measure in clinical trials, especially in those for outer retinal and neuro-ophthalmic disorders. Traditionally were collected manually, but now these maps of retinal sensitivity can n be collected by automated perimeters as well. However, quantitative analysis of the results is often limited to area calculations of seeing areas in the visual field map. Even if expressed as solid angles (in degrees squared or steradians) this analysis ignores the geometric distortions caused by lack of conformity between the eyeball and perimeter bowl. There is a need for a better way of gathering the information.

Technical Details

JHU scientists have developed software that corrects for this distortion and presents areas in the visual field in terms of square mm of seeing retina as well as in solid angles, based on Drasdo & Fowler's optical ray tracing in the Gullstrand model eye. All seeing and non-seeing isopters in a visual field map are manually digitized on-screen, and the resulting areas are computed and stored, along with the digitized coordinates and field map. The reproducibility of this process has been demonstrated to be within 1%, making the method highly suitable for quantitative analysis of longitudinal visual field maps in clinical trials.

Institution

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