

Interactive Computer Programs Improve Vision Testing for Ocular Screening, Treatment Evaluation and Post Treatment Surveillance

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Advantages:

Ophthalmologists overall have limited themselves in understanding and treatment of ocular disease because of the limited methods of traditional vision measurement that are physician dependent. Improved screening for earlier detection (both in public sector and professional's office), better evaluation of the impact of treatment, and improved surveillance after treatment would result from changing to computer-interactive, physician-independent programs that measure vision under conditions simulating normal daily living activities.

Methods:

Central vision screening (in office and public sectors) and surveillance after treatment are performed using an automated computer program with instruction set and response pad that threshold for the smallest size of a tumbled Landolt-C that can be correctly observed (double positive/double negative optimized algorithm) for 3 photopic conditions and 3 mesopic conditions about which patients frequently complain (time required approximately 3 minutes). Resultant data is printed to share with the person and readily shows the changes occurring in each environment. Prior to and during treatment, vision is measured in the central 20degree diameter field with the same Landolt-C program at 25 intercepts with fixation monitoring (requires 10 minutes per luminance & contrast environment). Resultant data are plotted (acuity visual field for a single L&C environment), along with deviation from age-matched normal, and global field indices that assist in better understanding the results of treatment and goals of vision rehabilitation.

Effectiveness / Safety:

Screening with such programs in the public sector is conducted by invitation through a non-profit and is well-accepted. Patients take the printout to their eye physician with greater purpose and understanding. Visual acuity fields appear to correlate better with ocular pathology and its change with treatment. The picture presented in the output, blurred and faded according to the sectoral deviations obtained from the test results, assists considerably in the patient and family understanding the overall impact on vision.