Outcomes From a DR Screening Study Implemented in Clinic, Community Settings

The objective of this study was to demonstrate the feasibility and outcomes of a telemetric screening program using nonmydriatic technology.

BY LAURA A. BETTENCOURT, MPH

Redesigning diabetic retinopathy (DR) screenings may provide mechanisms for a higher yield of disease by diagnosing more patients and a means of efficient referral to an ophthalmologist for treatment.[1]

With timely diagnosis and treatment, the dreaded complication of blindness associated with DR is preventable in >50% of cases. Access to screening or adherence to screening recommendations, however, is often problematic for patients. Many patients live in rural areas with poor access to eye care. Nonmydriatic fundus photography provides an effective mechanism for screening, particularly in these individuals.

The objective of our study was to demonstrate the feasibility and outcomes of a telemetric screening program using nonmydriatic fundus photography. Images were transmitted automatically from remote sources using the Internet to a reading center and then graded according to the degree of retinopathy found.

RECOMMENDATION FOR FOLLOW-UP

Depending on the readings, each patient received a recommendation regarding appropriate timing for follow-up with an ophthalmologist. Patients were also given a list of ophthalmologists in their area and who accepted their health plan.

We used the Topcon TRC-NW6S (Topcon Medical Systems, Inc., Paramus, NJ) nonmydriatic fundus camera that provides a viewing angle of 45° and produces nonstereoscopic fundus images (see sidebar). We recruited 589 adults with known diabetes from three sites in Pittsburgh; a general internal medicine clinic (site A, n=158), an endocrinology clinic (site B, n=110), and a mobile unit that traveled to screening events in communities (site C, n=321).

Patients received a recommendation regarding follow-up care, and then investigators assessed patient compliance with the recommended follow-up plan by phone

Each patient underwent nonmydriatic fundus photography of both eyes, and information on comorbidities, demographics, and medications were self-reported at the time of imaging. Images were transmitted telemetrically to a reading center and graded. Patients received a recommendation regarding follow-up care, and then investigators assessed patient compliance with the recommended follow-up plan by phone.

AGE AND COMORBIDITIES

The patients' mean age was significantly higher at site C (mean, 61.4 years), as was the age at diagnosis of diabetes (mean 53.7 years). The comorbidities of hypertension (73.4%, *P*=.0001), neuropathy (37.9%, *P*=.0001), renal disease (12.0%, *P*=.0001), and depression (31.7%, *P*= 0.02) were significantly higher at site A. The majority of patients, 47.5%, 44.6%, and 52.8% had their last dilated eye exam >12 months prior for each site, respectively, A, B, and C.

Successful implementation of a clinic- and community-based screening program could facilitate access for people with diabetes to screening eye exams and timely treatment.

Although it was recommended that the majority of patients see an eye doctor in 1 year (47.5%, 59.1%, and 67.3%, respectively), a small percentage of patients received a recommendation to see a doctor as soon as possible for immediate evaluation or treatment (1.3%, 1.8%, and 0.6%), respectively.

SUCCESSFUL IMPLEMENTATION IS NEEDED

We concluded that redesigning diabetic retinopathy screenings may provide mechanisms for a higher yield of disease and efficient referral to an ophthalmologist for treatment. Although numerous studies have been done to validate the use of single-field nonmydriatic fundus photography for DR screening, implementation of an effective large-scale screening program has not been successfully undertaken.

Successful implementation of a clinic- and community-based screening program could facilitate access for people with diabetes to screening eye exams and timely treatment of DR. The establishment of such a program will also enhance awareness of the importance of routine eye examinations among the diabetic population as well as the physicians who care for them. ■

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1. Bettencourt LA, Zgibor J, Silowash R, et al. Outcomes from a diabetic retinopathy screening study implemented in clinic and community settings. Presented at the American Diabetes Association 67th Scientific Sessions. June 22-26, 2007. Chicago.

TOPCON'S TRC-NW6S

The TRC-NW6S is well-suited for the growing market in telemedicine and diabetic screening, featuring nine fixation points, 45° and 30° fields, and five programmable flash settings, according to Topcon literature.

Key Features Include:

- Five selectable flash settings
- Eight peripheral fixation points and one built-in standard central fixation point
- Dual magnification mechanism allows for digital video capture of either 45° or 30° fields
- Small pupil capability of 3.7 mm by using 30° angle of coverage
- In addition to retinal images, the TRC-NW6S easily captures anterior photography
- Electric chinrest
- External digital camera ensures that you have the latest resolution, current resolution is 10.1 megapixel