

Improving Access to Eye Care: Teleophthalmology in Alberta, Canada

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Abstract

Background:

Diabetic retinopathy in Alberta and throughout Canada is common, with a prevalence up to 40% in people with diabetes. Unfortunately, due to travel distance, time, and expense, a third of patients with diabetes do not receive annual dilated eye examinations by ophthalmologists, despite universal health care access. In an effort to improve access, a teleophthalmology program was developed to overcome barriers to eye care. Prior to clinical implementation, teleophthalmology technology was clinically validated for the identification of treatable levels of diabetic retinopathy.

Method:

Patients undergoing a teleophthalmology assessment underwent stereoscopic digital retinal photographs following pupillary dilation. Digital images were then packaged into an encrypted password-protected compressed file for uploading onto a secure server. Images were digitally unpackaged for review as a stereoscopic digital slide show and graded with a modified Early Treatment Diabetic Retinopathy Study algorithm. Reports were then generated automatically as a PDF file and sent back to the referring physician.

Results:

Teleophthalmology programs in Alberta have assessed more than 5500 patients (9016 visits) to date. Nine hundred thirty patients have been referred for additional testing or treatment. Approximately 2% of teleophthalmology assessments have required referral for in-person examination due to ungradable image sets, most commonly due to cataract, corneal drying, or asteroid hyalosis.

Conclusions:

In Alberta and throughout Canada, many patients with diabetes do not receive an annual dilated eye examination. Teleophthalmology is beneficial because patients can be assessed within their own communities. This decreases the time to treatment, allows treated patients to be followed remotely, and prevents unnecessary referrals. Health care costs may be reduced by the introduction of comprehensive teleophthalmology examinations by enabling testing and treatment to be planned prior to the patient's first visit.

J Diabetes Sci Technol 2009;3(2):289-296

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Abbreviations: (CSME) clinically significant macular edema, (ETDRS) Early Treatment Diabetic Retinopathy Study, (HRPDR) high-risk proliferative diabetic retinopathy, (PDR) proliferative diabetic retinopathy

Keywords: diabetic retinopathy, ETDRS, Early Treatment Diabetic Retinopathy Study, screening, teleophthalmology

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