ASSESSING THE ACCURACY AND QUALITY OF CARE OF THE HARRIS HEALTH SYSTEM DIABETIC RETINOPATHY TELERETINAL SCREENING PROGRAM

Lead Author: Christina Y. Weng, MD, MBA
Contributing Authors: Rishabh C. Date, MD, Angela J. Verkade, MD, Kevin L. Shen, MD, Yvonne I. Chu, MD, Beena M. Shah, BBA, Nhon T. Le, BS, Cynthia K. McClard, PhD
Category: Population and Public Health

Background
Teleretinal imaging (TRI) is valuable in screening for diabetic retinopathy (DR), but its utility as a screening tool in large, underserved populations with barriers to care still needs to be established.

Objectives
The aim of our study was to 1) determine the accuracy of TRI diagnoses in this population with regards to DR severity and presence of diabetic macular edema (DME), 2) evaluate the compliance with follow-up of TRI patients referred for in-clinic examination, and 3) assess patient perceptions of this type of ocular care provision.

Methods
Retrospective review of TRI data and medical records of patients screened for DR via the Harris Health System (HHS) TRI program who had also undergone an in-clinic examination between November 2014-July 2016. DR severity grades based on TRI were compared to those based on dilated fundus examination (DFE). Additionally, a telephone-based survey study was conducted of a subset of these patients to inquire about their satisfaction with the TRI experience.

Results
Of the 806 patients meeting inclusion criteria, 690 (85.6%) had a TRI grade within 1 DR severity level of DFE grade while 116 (14.4%) patients had at least a 2-level discrepancy. The positive predictive value (PPV) for detecting referable-level DR was 71.8% (95% CI 60.3-81.1%). The PPV for detecting center-involving DME was 20.6% (95% CI 9.3-38.4%). Only 52.0% (809/1,557) of those patients referred for in-clinic examination actually presented. Of those requiring a second follow-up appointment within 6 months, 83.4% attended this follow-up visit.
Of 257 surveys collected for a subset of screened patients, 21% had not planned on receiving a DFE prior to screening. 94% had an overall favorable impression of screening. Most dissatisfied responses pertained to the quality of education received about DR and the TRI process (12%) as well as follow-up instructions (23%).

Discussion
TRI was highly predictive for categorizing DR, but poorly predictive for detecting DME. Integration of supplemental diagnostic modalities (e.g., optical coherence tomography) may improve the accuracy of TRI in the future. Fewer than half of referred TRI patients presented for a clinic appointment, suggesting there may be additional barriers to ophthalmic care in a county population. Patient satisfaction with the teleretinal screening process is generally high at our site. More than one-fifth of patients captured by the program had not scheduled an eye examination otherwise. Patient education was identified as an area for process improvement.