

Expansion of tele-ophthalmology for diabetic retinopathy screening during the COVID-19 pandemic

Treysi Vargas-Ramos, BS, Blake Snyder, MD, Jonathan Ross, OD, Glenn Yiu, MD, PhD
Department of Ophthalmology, UC Davis Health, Sacramento, CA

BACKGROUND

- Diabetic retinopathy is the leading cause of blindness in working-age adults, ages 20-74.
- The tele-ophthalmology program was launched at UCD Health in 2018 and was expanded during the COVID-19 pandemic to improve early screening for diabetic retinopathy.

OBJECTIVES

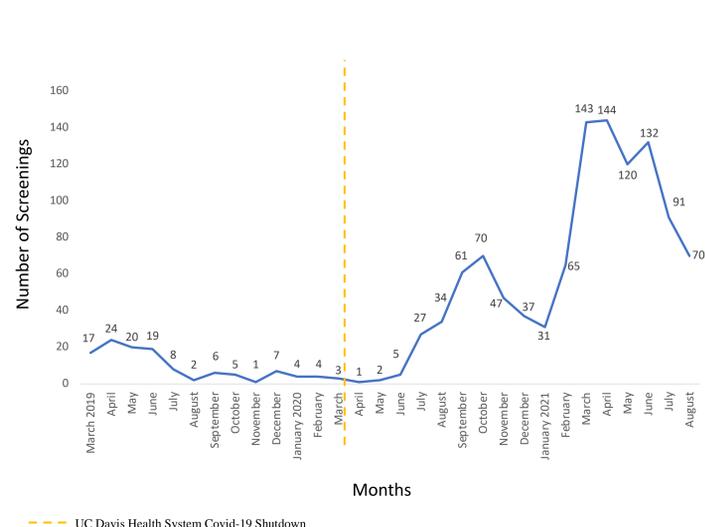
- Assess diabetic retinopathy screening utilization during the COVID-19 pandemic.
- Evaluate follow-up encounters and outcomes.

METHODS

- Retrospective review of 570 medical records for demographics, follow-ups, and clinical outcomes at UC Davis Health from patients screened for diabetic retinopathy through the tele-ophthalmology program from March 2019 to March 2021.
- Retinal images were captured using Topcon NW400, Nikon RetinaStation or Optos Primary fundus cameras at 13 primary care locations.
- Images were graded by optometrists or ophthalmologists using a store-and-forward method.

RESULTS

Figure 1. Tele-ophthalmology utilization



- A significant increase in the number of patients screened per month following the COVID-19 shutdown in March 2020 was observed (5.0 ± 3.1 patients screened per month before and 39.1 ± 34.8 patients per month after the shutdown, $P=0.0004$).

Figure 2. Tele-ophthalmology utilization by location

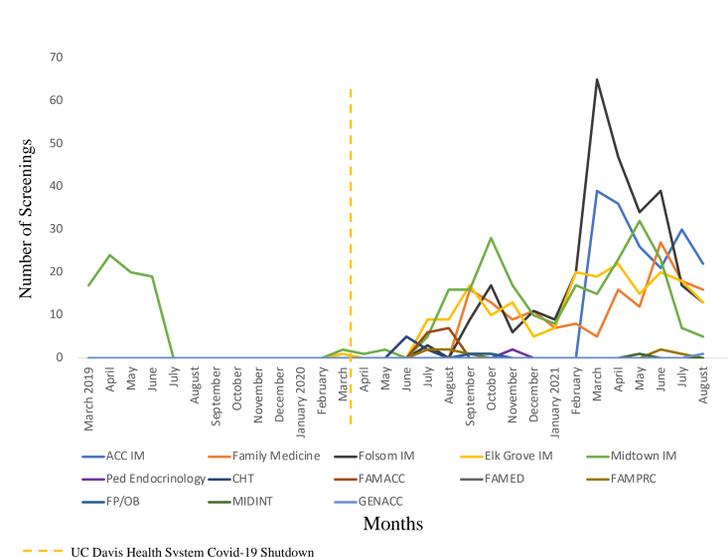


Figure 3. Screening Statistics

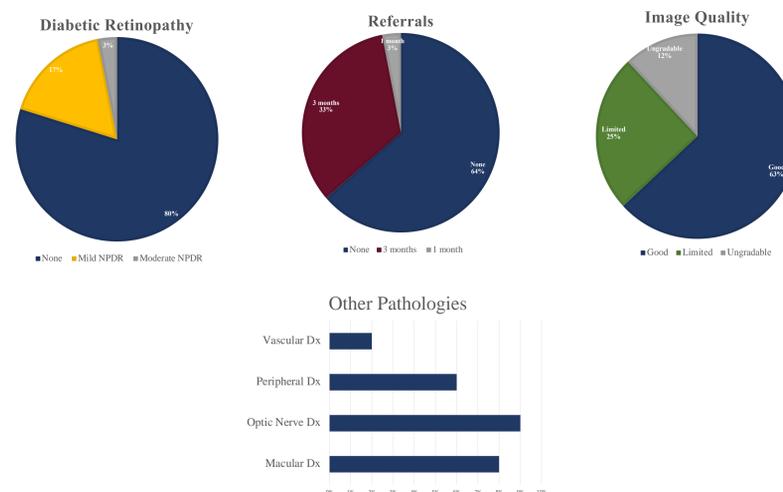
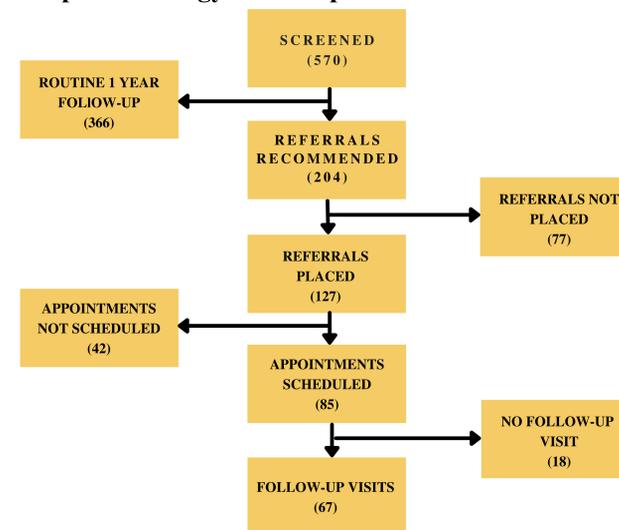


Figure 4. Tele-ophthalmology follow-up



- From March 2019 to March 2021, 570 patients were screened.
- Of the total patients, 64.2% were recommended a routine 1-year follow-up and 35.8% were recommended a referral. Of those recommended to follow-up, 67.2% were lost to follow-up, and 32.8% successfully followed up with an ophthalmologist.
- The mean age of individuals was 63.2 ± 13.7

CONCLUSIONS

- The expansion of this tele-ophthalmology program during COVID-19 pandemic demonstrated improved screening rates, increased referrals and follow-up care for patients screened for diabetic retinopathy.
- Continued implementation of remote screening programs across the health system has the potential to reduce diabetic retinopathy associated morbidity and vision loss in patients.

FUTURE DIRECTIONS

- Further investigation is needed to determine where patients are lost to follow-up in order to ensure that patients are successfully referred to eye specialists and receive the necessary diabetic eye care.
- Examining feasibility and acceptability of diabetic retinopathy screening in primary care locations may inform efforts to sustain and further expand the tele-ophthalmology program.