

Ophthalmology Times

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Honoree Program

Utilization of Teleretinal Imaging to Detect
Diabetic Retinopathy and Diabetic Macular
Edema in an Urban Population

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No financial interests or relationships to disclose.



MY ROLE IN THIS RESEARCH:

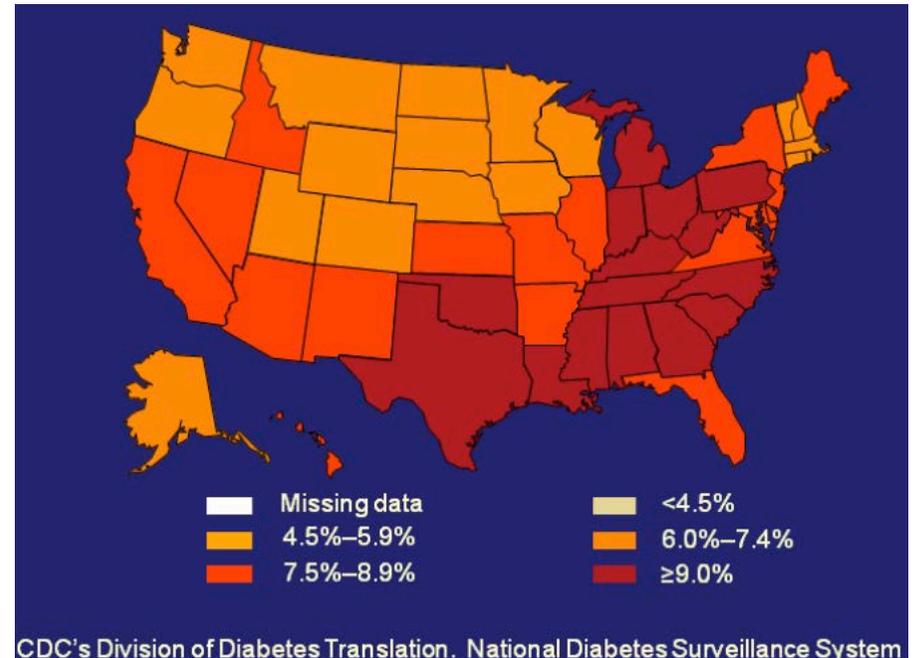
- Conception and design of the work/project
- Acquisition of data
- Analysis and interpretation of data
- Creation and/or critical review of the presentation

Diabetes and Diabetic Retinopathy



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- More than **29 million** people (**9.1% of the U.S. population**) have diabetes mellitus (DM)¹
- Projected to increase by 30% in the next decade¹
- Diabetic retinopathy (DR) is the leading cause of blindness in adult working-age Americans²
- ADA/AAO recommend **annual dilated exams for all diabetic patients**



<http://www.cdc.gov>

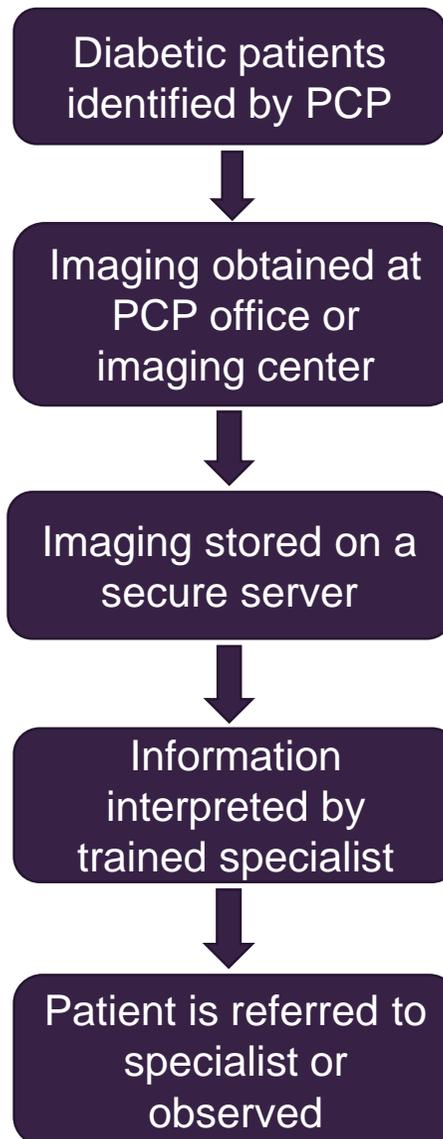


Screening for Diabetic Retinopathy

- Only **50-65%** of diabetics get annual screening for DR³
- Screening rates are particularly low for minorities:⁴
 - **32% of African-Americans**
 - **49% of Hispanics**
- Rate of increase in diabetics (20%) is outpacing the rate of increase in ophthalmologists (2%)⁵
- **Teleretinal imaging** has emerged as a potential solution to this problem



Teleretinal Imaging (TRI)



- Allows for screening diabetics with fundus imaging at primary care sites
- Disease above a certain threshold is referred for clinical exam
- TRI programs have been proven to increase screening rates
- **Utility in a large county population needs to be established**

Harris Health System (HHS) Teleretinal Imaging Program

One of the largest teleretinal screening programs in the U.S.

- Population: **1.2 million** patients, **15%** with DM
- Established in 2013
- Non-mydriatic fundus cameras in **8** HHS primary care sites
- Referral threshold = **severe NPDR, PDR, or significant DME**



<https://www.centervue.com>

Current screening data

- Screening rate increased from **62 to 80%** in first year of program
- **Over 81,000 screenings** performed to date

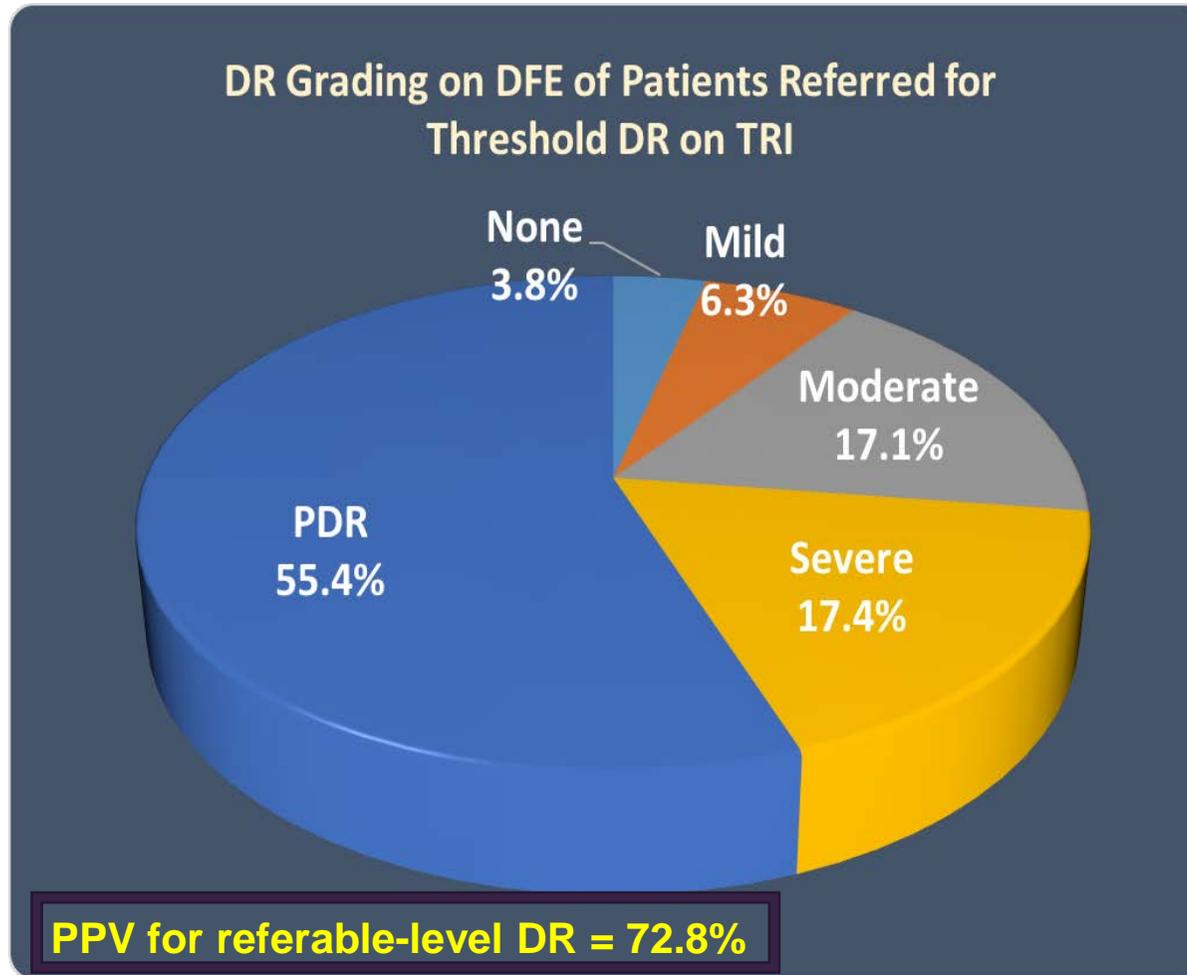


Purpose/Design

- Purpose: to determine the **accuracy of TRI for diagnosing referable-level DR and DME**, and to evaluate **patient compliance with follow-up**
- TRI data of HHS patients screened from July 2014 - July 2016 and referred for in-clinic exam were cross-referenced with data from patient charts
- 19,500 unique patients screened, 2,464 patients referred for in-clinic exam, **1,557 patients** met inclusion criteria
- Inclusion criteria: >18 years old, not already established in HHS, no other confounding pathology

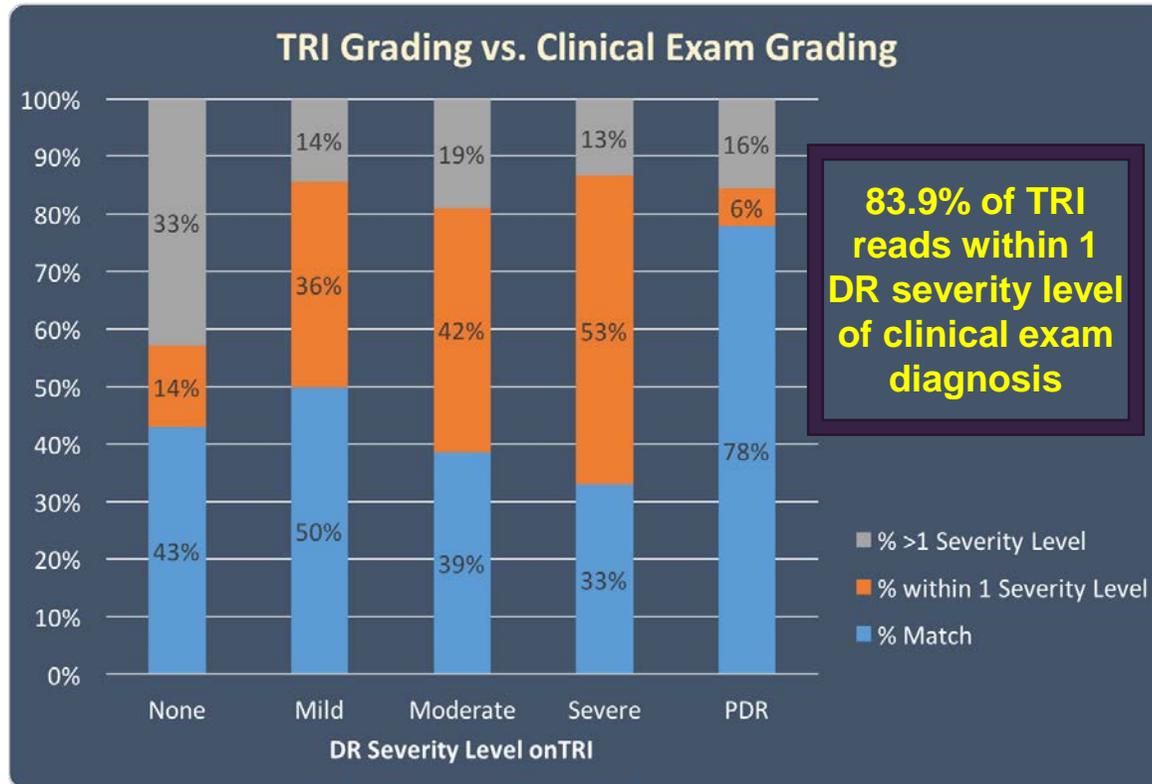


Results: Accuracy of TRI for Detecting DR





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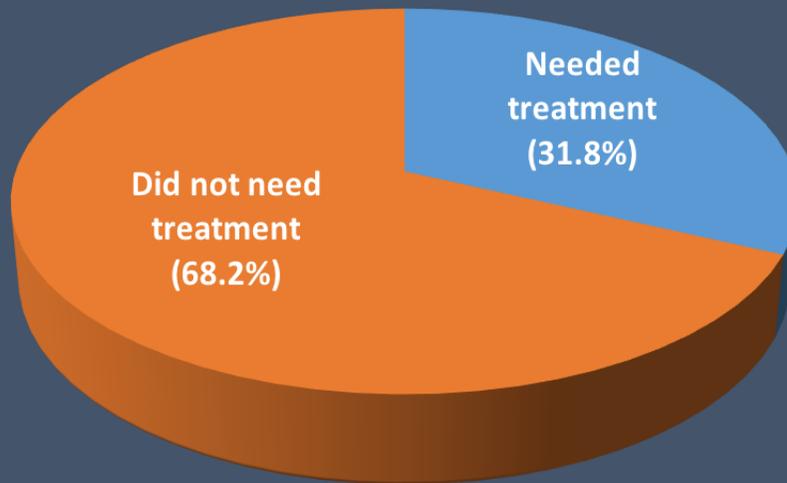
The high accuracy for detecting referable-level DR allows for prioritizing clinic referrals to patients who need the most urgent intervention

Results: Accuracy for Detecting DME



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Patients Referred for DME



- **31.8%** of patients referred for DME were offered treatment (injections, laser)
- Poor predictability likely due to limitation of two-dimensional photos
- Integration of OCT machines in the teleretinal screening pathway could improve accuracy for detecting treatable-level DME

Results: Compliance with Follow-up



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- Of 1,557 patients referred, **809 patients (52.0%)** attended a clinic appt
- Suggests other barriers to ophthalmic care in a county population that might impact the success of a TRI program
- Of the patients told to return within 6 months of first visit, **83.4% of patients** returned for a 2nd appt



Conclusions

Large-scale study of TRI in a county population:

- TRI is highly accurate for detecting referable-level DR
- TRI is limited in detecting treatment-level DME
- Compliance with clinic follow-up after referral from TRI must be improved

Impact

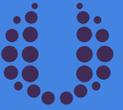
- TRI leads to improved screening rates and allows better triaging of high-severity patients, but barriers to ophthalmic care must be addressed to maximize the success of TRI in a county setting



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References

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Thank You

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