

Implementation of Point-of-Care Diabetic Retinal Exams Using Autonomous AI in a Federally Qualified Health Center

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Background

- Diabetic retinopathy (DR) and diabetic macular edema (DME) are well established complications of diabetes mellitus (DM)
- DR is the leading cause of preventable blindness in the US
- Early detection is crucial and annual diabetic retinal examinations (DRE) are the current standard of care
- Zufall Health Center (ZHC) is a Federally Qualified Health Center (FQHC) serving a low socio-economic patient population with high rates for diabetes and low rates of completion of annual exams

Purpose

- To investigate whether introducing an FDA cleared autonomous AI technology (IDx-DR®) will increase the rate of completion for DREs

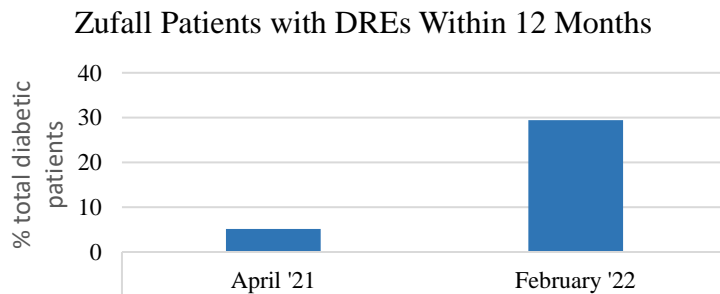


Figure 1. Percentage of DREs before and after IDx-DR implementation

Methods

- All diabetic patients from one Zufall site were contacted and offered point of care exam at their next diabetic visit
- 548 non-pregnant patients with known DM ≥ 22 years of age without preestablished retinopathy were invited for screens
- 161 patients underwent the DRE in which four retinal images were captured and run through the AI software without dilation or need for specialist oversight
- Results were made immediately to the patient and follow up plan made at time of exam

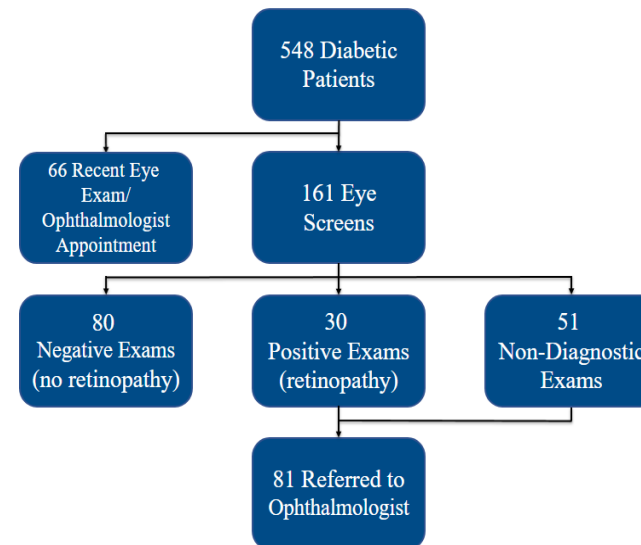


Figure 2. Breakdown of patient results

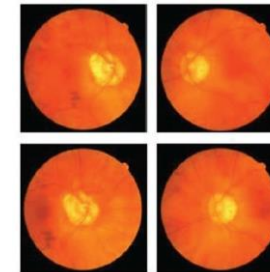


Figure 3. Example images taken by IDx-DR of macula



Figure 4. IDx-DR machine

Results

- 49.7% of patients screened negative and were able to avoid a referral to ophthalmology
- Implemented AI point-of-care testing was associated with increased completion of DREs

Conclusion

- Point of care DREs using autonomous AI technology helps improve diabetic eye screening rates in FQHC

Future Directions

- Future studies would expand the AI point of care DREs to other Zufall sites and maintain sustainable payment models
- Follow-ups with patients are needed to ensure connections to ophthalmologists and to evaluate effects on overall diabetic control

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References:

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2. Savoy, M. (2020). IDx-DR for Diabetic Retinopathy Screening. *American Family Physician*, 101(5), pp 307-308.