Teleretinal Screening for Diabetic Retinopathy

A Novel Approach to Reduce Screening Burden on the Healthcare Systems within Central Texas

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200

Amputations
136
Develop Kidney Disease
1795
Severe Diabetic Retinopathy
Leading Cause of Blindness in younger patients in the US

Traction Retinal Detachment with Diabetic Retinopathy
ADA Guidelines

Type 1: Annual screenings within 5 years of onset

Type 2: Annual screenings immediately following diagnosis

Then, yearly follow up exams.
PAINPOINT

Patients don’t get screened

In Travis County
25% made appointments
After vigorous calling, still only 50% made appointments
Stakeholder: Patient

Burden to the patient
- Travel
- Time off work
- Cost
Stakeholder: Doctors

Burden to the Doctor

Primary Care Doctor Needs
Unused appointment slot in Specialists office
Stakeholder: Healthcare System

Cost Burden to the Healthcare System
Elements of Disruptive Innovation

1. Sophisticated technology that simplifies
2. Low-cost, innovative business models
3. Economically coherent value network

Solution: Teleretinal Screening
How Diabetic Teleretinal Screening Works
Patient Instructions
Based on the findings, the following is recommended for this patient:

- **Moderate Diabetic Retinopathy Found:**
  Refer for next available appointment at ophthalmology for comprehensive examination.

<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>Management Options</th>
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</thead>
<tbody>
<tr>
<td>One year risk for early PDR: 26.3%.</td>
<td>Optimize medical therapy of glucose, blood pressure and lipids. Manage under supervision of ophthalmologist</td>
</tr>
</tbody>
</table>

Images and Findings
The original images are shown with the findings above each image.

<table>
<thead>
<tr>
<th>Right Eye</th>
<th>Left Eye</th>
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<tbody>
<tr>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>- Diabetic Retinopathy: Moderate</td>
<td></td>
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<tr>
<td>Images</td>
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</tbody>
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Unavailable Image

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NOTE: Any pathology noted on this diabetic retinal evaluation should be confirmed by an appropriate ophthalmic examination.
## Our Study

<table>
<thead>
<tr>
<th>Austin Regional Clinic</th>
<th>CommUnity Care / Central Health</th>
</tr>
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<tbody>
<tr>
<td>5 Locations</td>
<td>2 locations</td>
</tr>
<tr>
<td>3620 diabetics screened</td>
<td>1830 diabetics screened</td>
</tr>
<tr>
<td>12 month period</td>
<td>6 month period</td>
</tr>
<tr>
<td>99% had insurance</td>
<td>Uninsured or underinsured</td>
</tr>
<tr>
<td>Private practice patients</td>
<td>Safety net population</td>
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</tbody>
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1. Prevalence and Severity of Diabetic Retinopathy
2. Prevalence of Diabetic Macular Edema
3. Capture Rate: % of patients with pathology that attended appointment with retinal specialist
Overall Prevalence in Travis County

5450 patients screened

Total Prevalence of Retinopathy: 22.7%
Total Prevalence of Macular Edema: 6.3%
Patients requiring Urgent Referral: 11.8%
Capture Rate: 65.0%
Reduced Burden

1558 CommUnity Care patients (85.1%) did not require further evaluation by a retinal specialist.

3249 ARC patients (89.9%) did not require further evaluation by a retinal specialist.
Those that needed to come in... we got in

Capture Rate at CC was 65.4%
Capture Rate at ARC was 65.5%

Previous reports in literature ~30%
Differences?

Retinopathy and Macular Edema were higher in CommUnity Care patients than Austin Regional Clinic

- DR: 26.6% versus 20.7%  \( p < 0.0002 \)
- DME: 8.6% vs 5.1%  \( p < 0.0002 \)
Does Geography make a difference?

CommUnity Care

Southeast Location had worse retinopathy than North-Central

DR: 28.9% versus 24.0%
DME: 10.1% versus 6.9%
Future Directions

Better understand demographic data and biomarkers to account for differences

Collaborate with Seton Medical Center

Collaborate with Intelligent Retinal Imaging Systems to create a nationwide map of diabetic retinopathy
Make information available to Stakeholders

Patients
Physicians
Epidemiologists

Government
Industry
Tech

Seton Medical Center at The University of Texas

CENTRAL HEALTH

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