Early detection of diabetic retinopathy in primary care settings

The new front line for preserving vision in diabetic patients

2017
# Table of Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Introduction</td>
</tr>
<tr>
<td>05</td>
<td>The current situation</td>
</tr>
<tr>
<td>06</td>
<td>Changing the paradigm</td>
</tr>
<tr>
<td>08</td>
<td>Everyone benefits</td>
</tr>
<tr>
<td>09</td>
<td>Resources</td>
</tr>
</tbody>
</table>
introduction

ABSTRACT: Teleretinal imaging in primary care settings can provide early detection of diabetic retinopathy in patients with diabetes, helping to:

• Prevent blindness in those patients.
• Improve diabetic retinal exam compliance and improve associated quality metrics.
• Free eye-care specialists to spend more time with the patients who require advanced care or surgery.
• Reduce healthcare costs.

In the United States, diabetes has become an epidemic—80% of patients living with the disease will eventually develop diabetic retinopathy.1

According to Stephen G. Schwartz, MD, MBA, Associate Professor of Clinical Ophthalmology at University of Miami Miller School of Medicine, “...diabetic retinopathy is one of the major causes of blindness in the U.S. today.” Preventive intervention is key, as retinopathy is often asymptomatic; many patients are not even aware of their condition until it is advanced.

Early detection in primary care settings helps to ensure vision-threatening diabetic retinopathy is identified early enough to prevent blindness.2

KEY STATISTICS

29 million Americans have diabetes, with 1.7 million new cases per year.3

By the year 2050, it’s projected there will be more than 14 million patients living with diabetic retinopathy.4 (See table on next page.)

Among working-age adults, diabetic retinopathy is the #1 cause of blindness, despite the availability of effective treatments.5

Early diagnosis is critical before diabetic retinopathy becomes advanced, because early detection and treatment can reduce cases of vision loss or blindness by 95%.2
Stephen G. Schwartz, MD, MBA, is an associate professor of clinical ophthalmology at the University of Miami Miller School of Medicine and the medical director at the Bascom Palmer Eye Institute at Naples in Florida. Previously, he served as an assistant professor of ophthalmology and the residency program director at Virginia Commonwealth University in Richmond, Virginia. He has authored or co-authored more than 100 peer-reviewed publications and 30 textbook chapters.

### Projections for Diabetic Retinopathy in U.S.A. (2010-2030-2050)

<table>
<thead>
<tr>
<th>Year</th>
<th>All</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>7,685,237</td>
<td>5,251,907</td>
<td>826,102</td>
<td>1,194,231</td>
<td>412,997</td>
</tr>
<tr>
<td>2030</td>
<td>11,350,06</td>
<td>6,384,275</td>
<td>1,191,481</td>
<td>2,939,136</td>
<td>835,113</td>
</tr>
<tr>
<td>2050</td>
<td>14,559,464</td>
<td>6,374,626</td>
<td>1,547,724</td>
<td>5,254,328</td>
<td>1,382,786</td>
</tr>
</tbody>
</table>

From 2010 to 2050, the number of Americans with diabetic retinopathy is expected to nearly double, from 7.7 million to 14.6 million. In general, minority populations are more likely to develop diabetic retinopathy than whites in the United States (Lanting et al., 2005; Spanakis and Golden, 2013; Varma et al., 2018).
Primary care physicians typically refer patients with diabetes to an ophthalmologist for an annual retinal exam. Continuing with this protocol, however, is problematic. 50% of those referred to specialists don’t follow through,⁶ and the reasons may vary. The patient may not comprehend the importance of the exam. When patients are asymptomatic, they don’t notice there is a problem; so there is no sense of urgency. There are also geographic and socioeconomic challenges that may prevent many of these patients from complying with referrals.

As a result, annual retinal exam compliance is low. 80% of people with diabetes will eventually develop retinopathy,¹ which means they may need surgical intervention or chronic injections. In later stages of the disease, treatment may not be as effective and could ultimately result in blindness.

Ophthalmologists struggle to keep up with the demand. As the number of diabetic patients continues to grow, ophthalmologists are finding themselves overextended, which could compromise access to care for patients with pathology who really need their expertise.⁷ The reality is that the demand will only increase as the population ages.
MANAGEMENT OF PATIENTS DIAGNOSED WITH DIABETES IN THE U.S. IS COSTLY. $176 billion in direct medical costs with 1/3 paid by private insurance and 2/3 by government healthcare services.8

“Unfortunately, some cases of diabetic retinopathy (DR) are advanced by the time I see them. Advanced DR can lead to diabetic macular edema, proliferative DR and severe visual impairment and blindness...if identified early, the disease pathology of DR can be slowed and patients can often be successfully managed with close observation and good control of blood glucose, blood pressure, and lipid parameters.”
— Dr. Schwartz

The current standard of care is clearly inadequate, as statistics indicate. A paradigm shift is necessary in order to increase patient compliance with annual retinal examinations and decrease the number of people suffering from severe vision loss and blindness as a result of undiagnosed diabetic retinopathy.

While teleretinal imaging technology is not new and has been proven successful,9 there have been significant barriers to widespread adoption of this technology in primary care settings. The technology itself had to evolve so that a primary care clinician could easily and affordably perform the examination.

“It is very difficult for primary care physicians to perform a retinal examination. Trying to perform a thorough fundus examination in the primary care setting through an undilated pupil with a direct ophthalmoscope is very challenging...solutions or technology that would allow for routine DR screening and early identification of possible DR in the primary care setting will most likely lead to better overall patient outcomes and potentially reduce overall health care costs”
— Dr. Schwartz

IN 2015, WELCH ALYN CREATED A TURNKEY TELERETINAL IMAGING SOLUTION.
The Welch Allyn RetinaVue™ Network is designed specifically for use in primary care settings. The RetinaVue Network:
- Includes desktop or handheld fundus camera options.
  The portable, low-cost RetinaVue™ 100 Imager is the world’s most advanced handheld fundus camera.
• Captures and transmits high-quality retinal images very effectively with minimal training.

• Exam takes less than 5 minutes to perform and generally does not require dilation for 85–90% of patients.

• Delivers a comprehensive diagnostic report and referral/screening plan, complete with relevant ICD codes, in one business day. Also includes any additional comments, signature and license number from the board-certified ophthalmologist performing the interpretation.

• Interfaces with most EMRs.

“RetinaVue Network is a point-of-care solution that can quickly identify patients with diabetic retinopathy right in the primary care office. The system includes a small handheld fundus camera designed to easily capture and transmit images with minimal patient preparation... The image generated by the device is of high quality and is sent to a team of board-certified ophthalmologists who will read it and provide an electronically transmitted diagnostic report within one day. The images captured using the RetinaVue Imager clearly show the optic nerve and the macula, where most of the severe pathology is typically located. When combined with fundus image interpretation, a primary care provider is able to identify most, if not all, patients at highest risk for visual loss. The convenience and accuracy of this device make it a valuable tool for use in the primary care setting, allowing for more timely identification and intervention earlier in the disease course, ultimately resulting in better long-term patient outcomes.”

— Dr. Schwartz
Enabling access to efficient and effective DR exams in primary care settings creates an opportunity where everyone benefits.

**FOR THE PATIENT**
- Offering DR exams during routine primary care office visits is a very convenient and affordable way to ensure patients with diabetes who have not visited the ophthalmologist get a regular eye exam.
- The exam is comfortable, takes under 5 minutes, and is noninvasive.
- Early detection is critical to identify DR before it becomes advanced.
- Up to 95% of vision loss cases can be prevented with early detection and treatment of DR.²

**FOR THE PRIMARY CARE PHYSICIAN**
- Adds a valuable service to their standard of care.
- Can help improve outcomes by potentially identifying disease in noncompliant patients.
- Can increase DR exam compliance to more than 90% within one year, increasing quality scores for the practice.¹⁰ Annual retinal exams are included in NCQA,® HEDIS,® Medicare Advantage STAR and Medicare quality rating programs.

**FOR THE EYE SPECIALIST**
- Reduces the resources dedicated to routine screening appointments for diabetic patients.
- Allows ophthalmologists to focus on delivering higher-value services to patients who need eye-health management plans and/or sight-saving procedures.
“There is general agreement among primary care physicians, endocrinologists, ophthalmologists and optometrists that screening patients with diabetes for diabetic retinopathy is both clinically important and cost-effective. While many patients experiencing visual symptoms will likely go to a prescribed appointment to an ophthalmologist or optometrist, the patients we really worry about are those who may be harboring significant disease but aren’t yet experiencing symptoms. Therefore, routine screening and early detection of DR is important for these patients. Treatment outcomes for patients with DR are always going to be better if DR is identified early and medical intervention and treatment strategies are instituted earlier in the disease process.”

— Dr. Schwartz

resources


For more information on how RetinaVue™ Network can bring value to your patients and your practice, visit www.retinavue.com

© 2017 Welch Allyn®. All rights reserved. Welch Allyn RetinaVue™ Network MC14289