

TELEMEDICINE AND RETINAL IMAGING: ONE STEP CLOSER TO ENDING PREVENTABLE BLINDNESS

Teleretina can help by increasing patient access and compliance and removing the barriers patients face in receiving retinal imaging exams.

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With recent changes outlined in the Affordable Care Act specifically related to treatment of patients with diabetes, there is a need to improve patient compliance and leverage technology to enhance collaboration

between eye care providers (ECPs) and primary care physicians (PCPs). Telemedicine is one way to address these needs that has been used for more than a decade in closed settings such as the Veterans Administration and the University of Pittsburgh Medical Center. These and similar systems are limited, however, as they can only provide services to patients within that restricted system.

In 2012, Sunil Gupta, MD, a retina specialist based in Pensacola, Florida, recognized the need to expand retinal telemedicine care—ie, teleretinal care—to the community at large. He envisioned fundus photography performed within primary care settings, with eye care specialists then accessing the images for interpretation. To achieve this, he founded Intelligent Retinal Imaging Systems (IRIS), the first and only service cleared by the US Food and Drug Administration to integrate the care between ECPs and PCPs. The IRIS cloud-based application is scalable and designed for use with patients in all health care settings.

THE PROBLEM

Diabetic retinopathy is the leading cause of blindness among adults in the United States. If detected and treated early, blindness due to diabetic eye disease is preventable 90% of the time.¹ However, fewer than 50% of patients with diabetes in the United States receive an annual retinal examination as recommended by the American Diabetes Association and the American Academy of Ophthalmology.² To put this in perspective, that is

approximately 15 million Americans at risk of losing their vision because they are not having their eyes examined.

Patients' compliance with prescribed regimens is a significant challenge in the care of patients with diabetes. There are a number of factors that may contribute to poor adherence, including socioeconomic issues, behavioral characteristics, and access to care. Compliance is a major problem, but it is one that can be at least partially addressed through the deployment of advanced technology and progressive telemedicine approaches.

Telemedicine is an easy and viable way to lessen the burden on health systems when there are large demands on limited resources. The overwhelming majority of patients with diabetes visit their PCPs annually. Most patients, however, have to leave the primary care setting and schedule a separate appointment with an ECP to receive their annual eye exams. As a result, inevitably a large number of patients never make it to the specialist for examination, leaving a significant gap in care.

ADOPTION DRIVERS

With the passage of the Affordable Care Act and the transformation of the US health care system from a fee-for-service to a value-based system, health care organizations are becoming increasingly focused on early detection of disease and coordination of care. To that end, accountable care organizations and similar organizations incentivize practices that demonstrate improved outcomes through the implementation of preventive measures, such as early detection systems for diabetic retinopathy. The potential financial rewards can include shared savings bonuses, higher ratings, and associated higher reimbursement levels.

For example, Healthcare Effectiveness Data and Information Set (HEDIS) performance is the yardstick that the industry has adopted to capture how a practice is per-

forming. HEDIS criteria will likely evolve over time, but the management of patients with diabetes will always be a significant component. The HEDIS program can directly measure the percentage of the diabetic population that is compliant with diabetic retinal assessments, and the target goal is set at a compliance rate greater than 80%. However, the current practices for receiving and documenting diabetic retinal exams create a challenge in reaching that target goal.

Telemedicine – or more specifically, teleretina – can help by increasing patient access and compliance and removing the barriers patients face in receiving retinal imaging exams. Implementing early detection systems such as IRIS in PCP settings, and referring patients to an ECP when appropriate, will allow organizations to significantly improve patient care and clinical outcomes.

Integrated care has become a popular topic in the eye care world in recent years. In 2014, the American Society of Cataract and Refractive Surgery began its Integrated Ophthalmic Managed Eyecare Delivery Model program to better educate and provide guidelines and recommendations for the integration of care between ophthalmologists and optometrists.³ It is imperative that a similar movement be initiated between ECPs and PCPs, who unfortunately often have little interaction outside the referral chain. Telemedicine will help bridge the communication gap between ECPs and PCPs, leading to better management of patients.

PRACTICAL APPLICATION

When a standard method of operations is used, the performance of teleretinal examinations in primary care settings can be an efficient and streamlined process. This has been demonstrated at the Harris Health System in Houston, Texas. Harris Health System comprises three major hospitals, 18 community health centers, and a standalone dialysis center, serving more than 300,000 unique patients annually; nearly 50,000 of their patients have been diagnosed with diabetes.

When a patient with diabetes arrives at Harris Health for an appointment, the PCP orders a retinal imaging test through the electronic health record system, and the patient is sent to a trained technician in the facility to have fundus photographs taken using a nonmydriatic camera. The imaging process takes less than 10 minutes, and most patients generally do not require dilation. The images are then automatically uploaded to the IRIS cloud server and virtually interpreted by an ECP located at the IRIS reading center. Patients without referable diabetic retinopathy are able to bypass an additional ECP visit and are simply reimaged again in 12 months. Patients found to have more advanced stages of diabetic retinopathy are expeditiously referred to an ECP for a comprehensive examination and appropriate treatment.



AT A GLANCE

- Fewer than 50% of patients with diabetes in the United States receive an annual retinal examination as recommended by the American Diabetes Association and the American Academy of Ophthalmology.
- Teleretina can help by increasing patient access and compliance and removing the barriers patients face in receiving retinal exams. Implementing early detection systems in a PCP setting and referring patients to an optometrist or ophthalmologist when appropriate, will lead to improved patient care and better clinical outcomes.
- In the first 12 months after the implementation of teleretinal imaging, we conducted more than 18,000 exams and raised the examination rate from below 50% to greater than 80%.

With teleretinal imaging, PCPs refer only patients who have detected pathology and need treatment. If there is no referable retinopathy or further evaluation needed, patients can continue to be cared for in primary care settings at their regular appointments, saving time for patients and resources for the system. If implemented properly, a teleretinal imaging program would improve access and increase referrals to ECPs.

A VIABLE SOLUTION

In 2012, more than 29.1 million people in the United States—9.3% of the population—had diabetes, and that number is projected to double in the next 20 years.⁴ With this growing prevalence, shifts in health care insurance reimbursement structures, and an increasing focus on preventive care, all health care providers are faced with the challenge of ensuring that patients with diabetes receive appropriate vision-saving eye treatment in the midst of complex technological and medical infrastructure changes. The IRIS system is compliant with the Health Insurance Portability and Accountability Act, and is a widely compatible teleretinal imaging platform that has been adopted successfully by multiple large health care networks, such as the Harris Health System, one of the largest medical communities in the United States.

Aside from the cost savings and coordination of care that result from its use, possibly the most important consequence of teleretinal imaging system use is the improvement in patients' care. Since Harris Health adopted IRIS, it is better serving its large diabetic population, and the impact has been striking.

In the first 12 months after implementation of the IRIS teleretinal imaging program, we at Harris Heath/Baylor College of Medicine, have conducted more than 18,000 exams and raised the examination rate from well below 50% to greater than 80%. Of those screened, approximately 65% of patients were found to have some degree of retinal pathology, and 3,400 patients were identified to have findings of moderate nonproliferative retinopathy or worse. Nearly all of these patients would not have received this important diagnostic test if it were not for this program and, thus, would not have been aware of their risk for vision loss. These 3,400 patients were given referrals for an in-person clinical examination with an ECP and subsequently received the appropriate treatment that likely saved them from impending blindness.

HOW THIS AFFECTS YOUR PRACTICE

If you are part of an organization for which quality is a priority, you can improve your performance and outcomes with relative ease by implementing a telemedicine system for diabetic retinal screening. A system such as IRIS can provide a conduit for you to interact more effectively within your referral network.

As health care providers strive to manage the growing number of patients with diabetes, PCPs will become more cognizant of eye health and its importance in the care of

this chronic disease. Similarly, as diabetic retinal examination compliance rates improve, patient awareness of eye disease will increase. This overall heightened awareness translates to more patients being managed at all levels of health care and should lead to a reduction of preventable blindness. ■

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