Teleretinal
Action Guide

(Prepared by CHV/NACHC Clinical Affairs Division)

NATIONAL ASSOCIATION OF
Community Health Centers

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DIABETIC RETINOPATHY IS THE MOST COMMON CAUSE OF VISION IMPAIRMENT AND BLINDNESS AMONG WORKING-AGE ADULTS IN THE UNITED STATES.

WHY ADDRESS DIABETES CONTROL AND DIABETIC RETINAL EXAMS IN HEALTH CENTERS?

I n 2017, Community Health Centers, with over 11,500 service sites, provided care for more than 27 million people. 2.3 million patients had diabetes (ages 18-75) and 32.95% were considered out of control (Hba1c >9%)[1]. Given that health centers provide primary care to one out of twelve Americans, it is important that they practice early identification and effective treatment of patients with diabetes to bring about glycemic control. Through early diagnosis and aggressive treatment regimens, health centers can help to decrease the incidence of one of the most debilitating sequelae of uncontrolled diabetes: **diabetic retinopathy (DR)**, which affects both type 1 and type 2 diabetic patients and places them at risk for vision impairment or blindness.

According to the Centers for Disease Control and Prevention (CDC), DR is the most common cause of vision impairment and blindness among working-age adults in the United States. From 2010 to 2050, the number of Americans with DR is expected to nearly double, from 7.7 million to 14.6 million. DR occurs when diabetes, through both the duration of the disease and level of control, affects the blood vessels in the retina. If not found and treated early, DR can cause permanent vision loss.[2]

Although early detection and treatment of sight-threatening DR can prevent blinding complications, less than half of all people with diabetes receive recommended yearly eye examinations. While primary health care providers have traditionally referred their patients to eye care providers for annual diabetic retina exams, patients often fail to visit because of:

- Geographic barriers

- Social barriers

- Economic barriers

- Other barriers

Undiagnosed conditions can lead to preventable complications, including:

- Blindness from diabetes

- Glaucoma

- Other diseases

Providing diabetic retinal exams in the primary care setting can effectively detect sight-threatening DR.[3]

This is especially important for health centers, as the populations they serve often have socioeconomic factors that may limit access to eye care specialty clinicians and the services they provide.[4] For health centers, taking action in this critical aspect of care for diabetic populations is of utmost importance, as the vision and well-being of millions of people are at stake.

A GLOBAL EPIDEMIC

There are approximately **425 million people** in the world living with diabetes.

By **2045,** this number is projected to grow to **629 million.**

WHAT DOES A TELERETINAL CARE DELIVERY MODEL LOOK LIKE IN PRIMARY CARE AND HEALTH CENTER SETTINGS?

Primary Care Setting

The Agency for Healthcare Research and Quality's (AHRQ) Health Care Innovations Exchange has several examples of teleretinal care delivery models that successfully facilitated diagnosis and treatment of DR for poor and/or uninsured patients with diabetes. During a two-year study conducted by the University of California Berkeley School of Optometry, diabetic retinal exams were provided to more than 1,200 patients in California's Central Valley, an area where many residents are poor and uninsured and might not ordinarily have access to this type of specialty care.

Study highlights include:

- Over 120,000 consults performed in 194 active clinic sites

- Significant compliance with diabetic retinal exams

- Retinopathy identified in one-half of patients

- 15% of all patients referred for follow-up care[5]

This study received an AHRQ "Moderate" rating, meaning no randomized or controlled experiments were conducted, yet the results show the effectiveness of a teleretinal care delivery model.

Key operational aspects of implementing such a program in the primary care setting are documented in the Diabetic Retinopathy Screening Practice Guide, an outcome of the study.

#1

Diabetic retinopathy is the **number one cause** of blindness among working-age adults.

Diabetic retinopathy occurs when high blood sugar levels damage tiny blood vessels in the retina causing them to leak or hemorrhage, ultimately distorting vision once progressed to severe levels.

Typical Teleretinal Workflow:[5]

Patient identified with no DR exam in past 12 months

Patient referred for teleretinal exam

Images captured under direction of a physician

Images interpreted

Diagnostic report returned to physician

Results communicated to patient

There are a variety of ways to administer teleretinal exams for diabetic patients including appointments in primary care, community events and mobile exams.
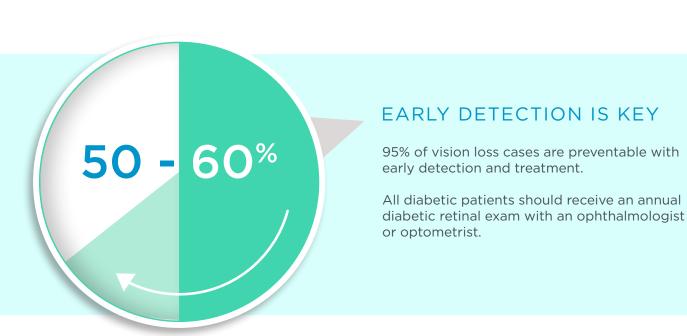
Health Center Setting

Community Health Center, Inc.

A study of the annual comprehensive exam process for patients with diabetes at Community Health Center, Inc. (CHC, Inc.) in Connecticut, was highlighted in AHQR's Health Care Innovations Exchange. The CHC, Inc. model includes:

- Retinal imaging equipment

- Trained medical assistants who capture and electronically transmit digital retinal images to ophthalmology specialists at the Yale Eye Center

- Remote ophthalmologists who are paid a flat fee per reading offer follow-up care remotely and in person to patients unable to access care locally

The program improved access to diabetic retinal exams, reduced costs, and increased patient convenience and satisfaction.[7] This study received an AHRQ "Moderate" rating.

50 - 60%

EARLY DETECTION IS KEY

95% of vision loss cases are preventable with early detection and treatment.

All diabetic patients should receive an annual diabetic retinal exam with an ophthalmologist or optometrist.

Only about half of patients with diabetes visit the eye specialist for annual retinal exams.

Cherokee Health Systems

Cherokee Health Systems (CHS), a health center with corporate offices in Knoxville, Tennessee, developed a teleretinal program utilizing the Welch Allyn RetinaVue® care delivery model. In 2018, nine CHS sites provided almost 1,300 diabetic retinal exams with RetinaVue, and had the following results:

- **93% readable image rate**

- **Identified 99 patients with age-related macular degeneration or AMD/glaucoma (8%)**

- **Diagnosed 70 patients with not-sight-threatening DR (5%)**

- **Diagnosed and referred 49 patients with sight-threatening DR (4%)**

CHS believes that without the RetinaVue care delivery model, 218 patients (17%) would have probably gone undiagnosed and risked permanent visual impairment or blindness. And, the RetinaVue care delivery model as implemented at CHS is financially sustainable.

Cherokee Health Systems has done extensive work over the past several years to operationalize the use of RetinaVue care delivery model in its health center sites. Key operational tools in its program include (Exhibits 1-4, see page 15):

1. **Diabetic eye exam workflow**

2. **Competency check for retinal photographers**

3. **Pupil dilation protocol**

4. **Welch Allyn RetinaVue Network software EMR Connectivity with NextGen**

These documents and electronic health record processes are easily adoptable in any primary care or health center plan for the implementation of a teleretinal program using RetinaVue care delivery model.

HOW TO IMPLEMENT A TELERETINAL PROGRAM

Steps:

1. Assess incidence of diabetes and need for diabetic retinal exam
2. Convene administrative and clinical leadership to assess adoption
3. Develop a business plan to implement and sustain a teleretinal program
4. Arrange on-site or remote eye specialist support
5. Set up clinical and financial IT systems to monitor and track outcomes
6. Initiate operational implementation plan
7. Assure payment/reimbursement for services

Step 1: Assess incidence of diabetes and need for diabetic retinal exams

Assessing the incidence of diabetes in a particular region or health center service area is the best starting point for a teleretinal program. The rate of poor diabetic control (Hba1c >9%) will determine the need for diabetic retinal exams and can be accessed in the latest Uniform Data System (UDS) reports. To begin, follow the steps below:

1. Go to the latest UDS report portal found at https://bphc.hrsa.gov/uds/datacenter.aspx

2. Click on "View National, State and Program Grantee Data." Enter your state and select your health center.

3. Click on "Clinical Data" to see the percentage of patients with diabetes and trends over the past three years for your health center.

4. Scroll down the page and identify the percentage of patients with poor control or no testing for their diabetes.

5. Calculate the number of patients in these two categories (diagnosis with diabetes and with poor control) by multiplying total patients served by the percentages noted.

6. Click on "Related" links to compare your health center to all health center grantees in your state or on a national level.

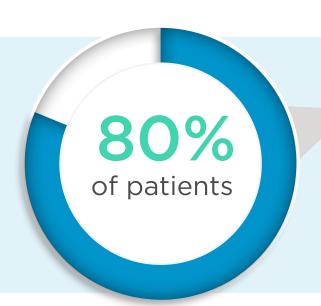These numbers will provide an estimate of the impact diabetes is having in the communities you serve. Keep in mind that the longer a person has diabetes, especially with uncontrolled HbA1c (>9%), the greater the chance of complications, including diabetic retinopathy, visual impairment, and blindness.

Step 2: Convene administrative and clinical leadership to assess adoption

Assessing the costs and benefits of a teleretinal program is essential. Convening a meeting of health center leadership, both administrative and clinical, will determine commitment levels. Some things to consider:

- **Be objective:** Use the calculations from the prior step to compare your health center's diabetic population to those in your state or nationally. If your patient panel is at or well above the state or national average, your team may decide it is important enough to initiate a teleretinal program.

- **Consider the risk to a single patient:** Some health center leadership teams have decided that for any population or number of patients with diabetes, it is worth their investment to prevent a large percentage (17 percent in the CHS example above) of their patients from developing impaired vision or blindness.

- **Can it pay for itself:** Others evaluate the numbers in terms of reimbursement (depending upon their payer mix and reimbursement mechanisms) and decide whether they would have a volume high enough to cover the costs for equipment, staff time, and eye specialist fees.

- **Walk before you run:** If the answer to adoption is yes, you may want to pilot the teleretinal program at a manageable number of sites to start. Measure costs, revenue, compliance rates with DR exams, and follow-up monitoring and treatment by eye specialists. Then optimize process and workflow and expand the program to additional sites when appropriate.

80%
of patients

WHO IS AT RISK?

80% of diabetic patients, type 1 and type 2, will eventually develop some stage of diabetic retinopathy.

The longer a person has diabetes, the more likely they are to develop diabetic retinopathy.

Step 3: Develop a business plan to implement and sustain a teleretinal program

Knowing the costs incurred by your health center related to specific services and compared to reimbursement levels is critical to your organization's overall health. This is especially true when introducing a new service and any review should always include a break-even or positive margin reimbursement analysis of:

- **Payer-specific reimbursement under:**

  > Medicaid

  > Medicare

  > Commercial insurance

  > Chronic Care Management (CCM) fees

  > Sliding fee co-pays

  > Outside grant/foundation funding

Some things to consider:

Reading retinal images: Using on-site personnel to interpret and diagnose retinal images can be a cost savings if you have eye specialists or certified ophthalmic readers on staff. Alternatively, there are many local or remote eye specialists who will cost effectively interpret retinal images and provide a diagnosis and report.

In the case of Cherokee Health Services, they noted:

- Average cost for a teleretinal examination was about $50.00 per patient

- A traditional in-person exam cost $77.80

- Using CPT® code 92250 (Fundus Photography with Interpretation and Report) CHS charges $123.00 per visit

- Reimbursement from insurance companies ranges from $37.68 to $77.26 per exam

Sliding fee: For their sliding fee patients, co-pays for Community Health Center, Inc. (CHC, Inc.) and Cherokee Health Services (CHS) range from $20.00 to $40.00 depending upon annual income and family size.

These figures are starting points for comparison and each organization needs to perform a full financial assessment to determine the exact charges/reimbursement to seek for exams.

Both CHC, Inc. and CHS found that these reimbursement models sustained the teleretinal program for their facilities.

KNOWING THE COSTS INCURRED BY YOUR HEALTH CENTER RELATED TO SPECIFIC SERVICES AND COMPARED TO REIMBURSEMENT LEVELS IS **CRITICAL TO YOUR ORGANIZATION'S FINANCIAL HEALTH.**

Step 4: Arrange on-site or remote eye specialist support

According to the 2017 UDS report, almost 340 health centers have ophthalmology/optometry professionals on staff (about 25% of all health centers). If your health center is one of those fortunate facilities, the reading and interpretation of retinal images might be done using your own staff. If your facility does not provide these services, other options include:

- Initiating relationships with an academic medical center that provides retinal image reading services or local eye specialists who may want to participate in your teleretinal program

- Contracting with national medical service providers such as RetinaVue, P.C., the first tele-ophthalmology provider to receive ambulatory care accreditation through The Joint Commission

Other things to consider:

Rural dilemma:
Utilizing internet-based retinal image reading services might be the only option depending upon your geographic location (rural, frontier, or remote locations).

Set a fee schedule that works for you:
Once identified, establish a payment schedule (monthly, quarterly, etc.) that makes sense for your volume of exams, reimbursement mechanisms, and payer mix.

Step 5: Set up clinical and financial IT systems to monitor and track outcomes

Only when an organization accurately and regularly monitors clinical and financial information related to teleretinal programs in EHR and Practice Management Systems will it keep on track (process measures) and assure desired outcomes (outcome measures). Examples of process measures include:

- The percentage of patients with the diagnosis of diabetes who receive an annual retinal exam

- The percentage of patients who keep their diabetic eye appointments

- The percentage of patients who follow up after being referred to an eye specialist

- Collection rates for co-pays

- Denial rates for insurance billing

- Actual break-even analysis for the teleretinal program overall

Clinical outcome measures might include the number of patients for whom age-related macular degeneration/glaucoma, DR, and sight-threatening DR have been identified and referred.

Knowing where your health center stands at all times relative to both process measures and outcome measures is necessary to monitor progress or maintain performance levels. This is especially important in value-based reimbursement systems.

Step 6: Initiate operational implementation plan

Initiate the teleretinal program through the concurrent purchase of RetinaVue retinal cameras, staff training, and EHR order entry and report reception mapping.

Having moved through the previous five steps and utilized the tools provided in Exhibits 1-4, a health center will have taken concrete steps towards operational implementation of a teleretinal program. Some things to consider:

Create a patient process map: Be sure to include each step a patient might take prior to, during, and after their visit for a diabetic retinal exam.

- Couple the patient process map with an equivalent staff-focused version that helps to develop a well-balanced approach and avoids missteps or work duplication.

- Be keen users of EHR population management software functions.

Utilizing the EHR and Practice Management System can help:

- Identify patients who need a diabetic retinal exam or re-imaging

- Make and complete orders for appointments

- Follow up on referrals, consultant reporting, and communications with patients regarding results

Population management software can also assist in:

- Generating reports to assess compliance with annual diabetic retinal exams

- Tracking patient follow up with the eye specialist and diagnostic outcomes

- Comparing all metrics to network, state, or national measures

Step 7: Assure payment/reimbursement for services

Tracking, monitoring, and improving accuracy and timeliness for payment/reimbursement is key to implementing and sustaining a teleretinal program. Only by such close and accurate reporting will an organization be able to assure financial viability and use these mechanisms to identify inadequate coding, poor documentation, delayed claim submissions, and receipt of payment.

Billing, coding, and submitting accurately for payment are the bedrock for financial stability. Maintaining high performance in this area requires ongoing monitoring and updating of processes when inefficiencies or problems are identified.

Once an organization is at the break-even or positive margin point, it can begin to consider scale and spread of these services within sites and in other locations.

TRACKING, MONITORING, AND IMPROVING ACCURACY AND TIMELINESS FOR PAYMENT/REIMBURSEMENT IS **KEY TO IMPLEMENTING AND SUSTAINING A TELERETINAL PROGRAM.**

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THE VALUE IN IMPLEMENTING A DIABETIC TELERETINAL PROGRAM

Health Centers play a key role in helping to manage the chronic diseases that affect their 27 million patients. Diabetes afflicts more than 2.3 million of those patients, with one-third considered out of control.

These patients are at high risk of developing DR and its sequelae of decreased visual acuity or blindness. This Action Guide lays out the key steps to implement proven models of clinical care in a financially responsible manner with systems developed to monitor and maintain performance, to receive reimbursement for services provided, and to sustain teleretinal programs.

These services not only help to reduce the burden of vision loss and blindness, but also contribute to the overall health center mission to fulfill the Quadruple Aim goals to improve health outcomes, improve patient and staff experiences, and to reduce cost.

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EXHIBITS GUIDE

Diabetic Eye Exam Best Practices

Best Practices to Administer a Diabetic Retinal Exam with the RetinaVue with the RetinaVue care delivery model

VIEW DOCUMENT

Competency Check for Retinal Photographers

Welch Allyn RetinaVue 100 Imager
Competency Evaluation Checklist

VIEW DOCUMENT

Pupil Dilation Protocol

Pupil Dilation Protocol
Overview, Background, and Procedures

VIEW DOCUMENT

Welch Allyn RetinaVue Network software EMR Connectivity with NextGen

RetinaVue Network software* Workflow and Integration

VIEW DOCUMENT

REFERENCES

[1] BPHC 2017 UDS Report. https://bphc.hrsa.gov/uds/datacenter.aspx?q=t7&year=2017&state=

[2] https://www.cdc.gov/features/diabetic-retinopathy/index.html

[3] DRS in primary care can also identify other previously undetected diseases.

[4] http://www.caltrc.org/wp-content/uploads/2013/10/09-0636-final_ctec_practice_guide_design.pdf

[5] http://innovations.ahrq.gov/profiles/remote-retinal-screening-facilitates-diagnosis-and-treatment-retinopathy-poor-andor

[6] Yogesan, K.; Goldschmidt, L.; Cuadros, J. (Eds.). Digital Teleretinal Screening: Teleophthalmology in Practice. 2012, X, 231 p.,Hardcover ISBN: 978-3-642-25809-1

[7] https://innovations.ahrq.gov/profiles/telemedicine-based-eye-examinations-enhance-access-reduce-costs-and-increase-satisfaction

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