

Evidence Based Guideline

Diabetic Retinopathy Telescreening

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Description of Procedure or Service

Diabetes is a disease that affects the body's ability to produce or respond to insulin, a hormone that allows blood glucose (blood sugar) to enter the cells of the body and be used for energy. Diabetes falls into two main categories: type 1, which usually occurs during childhood or adolescence, and type 2, the most common form of the disease, which usually occurs after age 45, but is increasingly being diagnosed in children and adolescents. The major cause of blindness in people with diabetes is diabetic retinopathy. Diabetic retinopathy is a term used for all the abnormalities of the small blood vessels of the [retina](#) caused by diabetes. Diabetic retinopathy is estimated to be the most frequent cause of new cases of blindness among adults aged 20 to 74 years. All individuals with type I or type II diabetes are at risk for diabetic retinopathy.

Because diabetic retinopathy has few visual or ocular symptoms in its early stages, many people do not seek annual retinal examinations as recommended. The value of screening for diabetic retinopathy is well established. Laser photocoagulation is effective at retarding the progression of the changes but uncommonly is able to restore lost vision. Because treatments are aimed at preventing vision loss, it is important to detect disease and begin treatment early in the process.

An annual eye exam consisting of dilated indirect [ophthalmoscopy](#) coupled with [biomicroscopy](#) or stereoscopic [fundus photography](#) has been considered the screening technique of choice. Because these techniques require a dedicated visit to a competent eye care professional, typically an ophthalmologist, there is underutilization of this screening recommendation by at risk members. The under-use rate is estimated to be 30% or higher, which has resulted in the exploration of retinal imaging, using film or digital photography, as an alternative to direct ophthalmic examination of the [retina](#). This type of retinopathy screening and risk assessment is proposed as an alternative to conventional dilated [fundus](#) examination, particularly in diabetic individuals who are not compliant with the recommended periodic retinopathy screenings.

Diabetic retinopathy telescreening is a diagnostic test, which uses a digital [fundus](#) camera and the internet to transmit digital images of the [retina](#) to another location for evaluation by trained readers. Screening can be performed in the medical doctor's office rather than having to make an additional appointment. Results are sent back to the medical doctor's office with recommendations for follow-up with an eye specialist if necessary.

Several digital camera and transmission systems are currently available:

- ♦ The Diabetic Retinopathy Digital Disease Detection and Tracking (3DT) System (Inoveon Corp., Oklahoma City, OK)
- ♦ DigiScope® (EyeTel Corp., Columbia, MD) in conjunction with the Wilmer Eye Institute at Johns Hopkins Medicine
- ♦ The [Fundus](#) AutoImager™ (Visual Pathways Inc., Prescott, AZ)
- ♦ ImageNet™ Digital Imaging System (Topcon Medical Systems Inc., Paramus, NJ)

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- ◆ Zeiss FF450 [Fundus](#) Camera and the VISUPAC® Digital Imaging System (Carl Zeiss Meditech Inc., Dublin, CA)

NOTE: Also refer to separate policy "Telemedicine", MED1395 regarding legislation.

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Diabetic Retinopathy Telescreening may be appropriate as a screening technique for the detection of diabetic retinopathy for those patients diagnosed with type 1 or type II diabetes at a frequency according to the American Diabetes Association's retinopathy screening recommendations. The images should be of sufficient resolution for judgement regarding the presence or absence of pathology.

The current diabetic retinopathy screening recommendation of the American Diabetes Association includes:

| Patient Group | First Examination Recommendation | Minimum Follow-up Recommendation |
|-----------------------------------|--|--|
| Type 1 diabetes | Within 3–5 years after diagnosis of diabetes once patient is 10 years or older | Annually |
| Type 2 diabetes | At time of diagnosis of diabetes | Annually |
| Pregnancy in preexisting diabetes | Prior to conception and during first trimester | Physician discretion pending results of first trimester exam |

Medical Evidence regarding Diabetic Retinopathy Telescreening indicates it is not recommended in the following situations:

When the above criteria is not met.

Benefits Application

Please refer to certificate for availability of benefit. This guideline relates only to the services or supplies described herein. Benefits may vary according to benefit design; therefore certificate language should be reviewed before applying the terms of the policy.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: S0625

Medical Term Definitions

Biomicroscopy

examination of the cornea, aqueous humor, lens, vitreous humor, and retina by use of a slitlamp combined with a binocular microscope.

Fundus

the interior lining of the eyeball, including the retina, optic disc, and macula. This portion of the inner eye can be seen during an eye examination by looking through the pupil.

Fundus photography

documents the retina, the neurosensory tissue in our eyes which translates the optical images we see into the electrical impulses our brain understands. The retina can be photographed directly as the pupil is used as both an entrance and exit for the fundus camera's illuminating and imaging light rays. Fundus photography can be performed with colored filters, or with specialized dyes including fluorescein and indocyanine green. Ophthalmologists use these retinal photographs to follow, diagnose, and treat eye diseases.

Ophthalmoscopy

an examination of the back part of the eyeball (fundus), which includes the retina, optic disc, choroid, and blood vessels.

Retina

the part of the eye that carries light and images to the brain through the optic nerve.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual [Electronic Version]. 9.03.13, 4/1/05

ECRI Hotline Response - Tele-screening for Diabetic Retinopathy (06/4/2005) retrieved on 6/4/05 from http://www.ta.ecri.org/Hotline/Prod/summary/detail.aspx?doc_id=8835&q=Diabetic+retinopathy&anm

National Coordinating Centre for Health Technology Assessment (NCCHTA). Value of digital imaging in diabetic retinopathy. Technology assessment report. [11/2003]. retrieved on 8/1/05 from <http://www.nchta.org/execsumm/summ730.htm>

American Academy of Ophthalmology Retina Panel, Preferred Practice Patterns Committee. Diabetic retinopathy. [2003]. Retrieved on 5/19/2005 from <http://www.aao.org/education/library/ppp/upload/Diabetic-Retinopathy.pdf>

Francisco Gómez-Ulla, Maria I. Fernandez, Francisco Gonzalez, Pablo Rey, Marta Rodriguez, et al. Digital Retinal Images and Teleophthalmology for Detecting and Grading Diabetic Retinopathy. *Diabetes Care* 25: 1384-1389. Retrieved on 4/4/2005 from <http://care.diabetesjournals.org/cgi/content/full/25/8/1384>

American Diabetes Association. Diabetes and Retinopathy (Eye Complications). Retrieved on 5/19/2005 from http://www.diabetes.org/utills/printthispage.jsp?PageID=STATISTICS_233192

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Specialty Matched Consultant Advisory Panel review - 1/25/07

American Diabetes Association. Standards of Medical Care in Diabetes-2008. *Diabetes Care* 31: S12-S4S. Retrieved on December 15, 2008 from http://care.diabetesjournals.org/cgi/reprint/31/Supplement_1/S12?maxtoshow=&HITS=1.

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inopathy. San Francisco, CA: American Academy of Ophthalmology; 2008. Retrieved on December 17, 2008 from <http://www.aao.org/ppp>.

Specialty Matched Consultant Advisory Panel review - 4/6/09.

Policy Implementation/Update Information

9/15/05 Original policy issued.

8/28/06 Medical Policy changed to Evidence Based Guideline.

2/26/07 Specialty Matched Consultant Advisory Panel review. No changes to guidelines. Reference sources added. (pmo)

4/27/09 No changes to guidelines. Reference sources added. (pmo)

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