

POLICY TITLE	RETINAL TELESCREENING FOR DIABETIC RETINOPATHY
POLICY NUMBER	MP- 2.086

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I. POLICY

Retinal telescreening with digital imaging and manual grading of images may be considered **medically necessary** as a screening technique for the detection of diabetic retinopathy.

Retinal telescreening is considered **investigational** for all other indications, including the monitoring and management of disease in individuals diagnosed with diabetic retinopathy. There is insufficient evidence to support a conclusion concerning the health outcomes or benefits associated with this procedure.

Policy Guidelines

The 2016 diabetic retinopathy screening recommendations of the American Diabetes Association (see Table PG1) include the following (American Diabetes Association, 2016):

Table PG1. American Diabetes Association Retinopathy Screening Recommendations

Patient Group	First Retinal Examination	Follow-Up
Adults with type 1 diabetes	Initial dilated and comprehensive eye examination by an ophthalmologist or optometrist within 5 y after the onset of diabetes	Every 2 years if no evidence of retinopathy for 1 or more annual eye exams; dilated retinal examinations at least annually if any level of retinopathy is <u>present</u> . ^a
Type 2 diabetes	Initial dilated and comprehensive eye examination by an ophthalmologist or optometrist at the time of diagnosis of diabetes	Every 2 years if no evidence of retinopathy for 1 or more annual eye exams; dilated retinal examinations at least annually if any level of retinopathy is <u>present</u> . ^a
Before pregnancy in preexisting diabetes	Before pregnancy or early in the first trimester of pregnancy	Every trimester throughout pregnancy and for 1 y postpartum

^aMore frequent retinal examinations may be required if retinopathy is progressing or threatens sight.

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Cross-references:

MP 2.085 Optical Coherence Tomography OCT of the Anterior Eye Segment

MP 2.028 Eye Care

MP 2.056 Ophthalmologic Techniques That Evaluate the Posterior Eye Segment for Glaucoma

II. PRODUCT VARIATIONS

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This policy is applicable to all programs and products administered by Capital BlueCross unless otherwise indicated below.

FEP PPO - Refer to FEP Medical Policy Manual MP-9.03.13, Retinal Telescreening for Diabetic Retinopathy. The FEP Medical Policy Manual can be found at: www.fepblue.org.

III. DESCRIPTION/BACKGROUND

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Digital imaging systems use a digital fundus camera to acquire a series of standard field color images and/or monochromatic images of the retina of each eye. 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. The digital images that are captured may be transmitted via the Internet to a remote center for interpretation by trained readers, storage, and subsequent comparison.

Diabetic Retinopathy

Diabetic retinopathy is the leading cause of blindness among adults aged 20 to 74 years in the United States. The major risk factors for developing diabetic retinopathy are duration of diabetes and severity of hyperglycemia. After 20 years of disease, almost all patients with type 1 and greater than 60% of patients with type 2 diabetes will have some degree of retinopathy.¹ Other factors that contribute to the risk of retinopathy include hypertension and elevated serum lipid levels.

Diabetic retinopathy progresses, at varying rates, from asymptomatic, mild nonproliferative abnormalities to proliferative diabetic retinopathy (PDR), with new blood vessel growth on the retina and posterior surface of the vitreous. The 2 most serious complications for vision are diabetic macular edema and PDR. At its earliest stage (nonproliferative retinopathy), the retina develops microaneurysms, intraretinal hemorrhages, and focal areas of retinal ischemia. With disruption of the blood-retinal barrier, macular retinal vessels become permeable, leading to exudation of serous fluid and lipids into the macula (macular edema). As the disease progresses, retinal blood vessels are blocked, triggering the growth of new and fragile blood vessels (proliferative retinopathy). The new blood vessels that occur in PDR may fibrose and contract, resulting in tractional retinal detachments with significant

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vision loss. Severe vision loss with proliferative retinopathy arises from vitreous hemorrhage. Moderate vision loss can also arise from macular edema (fluid accumulating in the center of the macula) during the proliferative or nonproliferative stages of the disease. Although proliferative disease is the main cause of blinding in diabetic retinopathy, macular edema is more frequent and is the leading cause of moderate vision loss in people with diabetes.

Diabetic Retinopathy Screening

There is potential for value in diabetic retinopathy screening because diabetic retinopathy has few visual or ocular symptoms until vision loss develops. With early detection, diabetic retinopathy can be treated with modalities that can decrease the risk of severe vision loss. Tight glycemic and blood pressure control is the first line of treatment to control diabetic retinopathy, followed by laser photocoagulation for patients whose retinopathy is approaching the high-risk stage. Although laser photocoagulation is effective at slowing the progression of retinopathy and reducing visual loss, it results in collateral damage to the retina and does not restore lost vision. Focal macular edema (characterized by leakage from discrete microaneurysms on fluorescein angiography) may be treated with focal laser photocoagulation, while diffuse macular edema (characterized by generalized macular edema on fluorescein angiography) may be treated with grid laser photocoagulation. Corticosteroids may reduce vascular permeability and inhibit vascular endothelial growth factor (VEGF) production, but are associated with serious adverse effects including cataracts and glaucoma, with damage to the optic nerve. Corticosteroids also can worsen diabetes control. VEGF inhibitors (e.g., ranibizumab, bevacizumab, pegaptanib), which reduce permeability and block the pathway leading to new blood vessel formation (angiogenesis), are being evaluated for the treatment of diabetic macular edema and proliferative diabetic retinopathy.

Because treatments are primarily aimed at preventing vision loss, and retinopathy can be asymptomatic, it is important to detect disease and begin treatment early in the process. Annual dilated, indirect ophthalmoscopy, coupled with biomicroscopy or 7-standard field stereoscopic 30° 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, retinopathy screening is underutilized. This underuse has resulted in the exploration of remote retinal imaging, using film or digital photography, as an alternative to direct ophthalmic examination of the retina.

Digital Photography and Transmission Systems for Retinal Imaging

A number of photographic methods have been evaluated that allow images of the retina to be captured and then interpreted by expert readers, who may or may not be located in close proximity to the patient. Retinal imaging can be performed using digital retinal photographs with (mydriatic) or without (nonmydriatic) dilating of the pupil. One approach is mydriatic standard field 35-mm stereoscopic color fundus photographs. Digital fundus

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photography has also been evaluated as an alternative to conventional film photography. Digital imaging has the advantage of easier acquisition, transmission, and storage. Digital images of the retina can also be acquired in a primary care setting and evaluated by trained readers in a remote location with retinal specialist consultation.

IV. RATIONALE

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SUMMARY OF EVIDENCE

For individuals who have diabetes without known diabetic retinopathy who receive digital retinal imaging with optometrist or ophthalmologist image interpretation, the evidence includes retrospective studies comparing the accuracy of digital screening with standard methods, systematic reviews of these studies, and a randomized controlled trial. Relevant outcomes include test accuracy and validity, change in disease status, and functional outcomes. A number of studies have reported on the agreement between direct ophthalmoscopy and photography and between standard film and digital imaging regarding the presence and stage of retinopathy. The studies have generally found high levels of agreement between retinal examination and imaging. There is limited direct evidence related to visual outcomes for patients evaluated with a strategy of retinal telescreening. However, given evidence from the large Early Treatment Diabetic Retinopathy Study that early retinopathy treatment improves outcomes, coupled with studies showing high concordance between the screening methods used in Early Treatment Diabetic Retinopathy Study and a randomized controlled trial demonstrating higher uptake of screening with a telescreening strategy, a strong chain of evidence can be made that telescreening is associated with improved health outcomes. Digital imaging systems have the additional advantages of short examination time and the ability to perform the test in the primary care physician setting. For individuals who cannot or would not be able to access an eye care professional at the recommended screening intervals, the use of telescreening has low risk and is very likely to increase the likelihood of retinopathy detection. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have diabetes without known diabetic retinopathy who receive digital retinal imaging with automated image interpretation, the evidence includes retrospective studies and a prospective study comparing the accuracy of automated scoring of digital images with standard methods. Relevant outcomes include test accuracy and validity, change in disease status, and functional outcomes. The available studies have tended to report high sensitivity with moderate specificity, although there is variability across studies. Also, available studies have reported on different automated interpretation systems. These scoring systems have potential to improve screening in the primary care setting. However, given the variability in test characteristics across different systems, there is uncertainty about the accuracy of automated scoring systems in practice. The evidence is insufficient to determine the effects of the technology on health outcomes.

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V. DEFINITIONS

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ANTERIOR SEGMENT is the front third of the eye that includes the structures in front of the vitreous humour: the cornea, iris, ciliary body, and lens. Within the anterior segment are two fluid-filled spaces: the anterior chamber between the posterior surface of the cornea (i.e. the corneal endothelium) and the iris. The posterior chamber between the iris and the front face of the vitreous. Aqueous humor fills these spaces within the anterior segment and provides nutrients to the surrounding structures

CUP/DISC RATIO in ophthalmology is the mathematic relationship between the horizontal or vertical diameter of the physiologic cup and the diameter of the optic disc.

DIABETIC RETINOPATHY is a disorder of retinal blood vessels characterized by capillary microaneurysms, hemorrhage, exudates, and the formation of new vessels and connective tissue.

INTRAOCULAR PRESSURE refers to the internal pressure of the eye regulated by resistance to the flow of aqueous humor through the fine sieve of the trabecular meshwork.

VI. BENEFIT VARIATIONS

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The existence of this medical policy does not mean that this service is a covered benefit under the member's contract. Benefit determinations should be based in all cases on the applicable contract language. Medical policies do not constitute a description of benefits. A member’s individual or group customer benefits govern which services are covered, which are excluded, and which are subject to benefit limits and which require preauthorization. Members and providers should consult the member’s benefit information or contact Capital BlueCross for benefit information.

VII. DISCLAIMER

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Capital BlueCross’s medical policies are developed to assist in administering a member’s benefits, do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member’s benefit information, the benefit information will govern. Capital BlueCross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

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Note: This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is

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determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

Investigational; therefore not covered, monitoring and management of disease in individuals diagnosed with diabetic retinopathy:

CPT Codes ®							
92228	0380T						

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Covered when medically necessary, screening technique for detection of diabetic retinopathy:

CPT Codes®							
92227							

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ICD-10-CM Diagnosis Codes	Description
E08.00	Diabetes mellitus due to underlying condition with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)
E08.10	Diabetes mellitus due to underlying condition with ketoacidosis without coma
E08.11	Diabetes mellitus due to underlying condition with ketoacidosis with coma
E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy
E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease
E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication
E08.36	Diabetes mellitus due to underlying condition with diabetic cataract
E08.37X1	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, right eye
E08.37X2	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, left eye
E08.37X3	Diabetes mellitus due to underlying condition with diabetic macular edema, resolved following treatment, bilateral
E08.39	Diabetes mellitus due to underlying condition with other diabetic ophthalmic complication
E08.42	Diabetes mellitus due to underlying condition with diabetic polyneuropathy
E08.43	Diabetes mellitus due to underlying condition with diabetic autonomic (poly)neuropathy
E08.44	Diabetes mellitus due to underlying condition with diabetic amyotrophy
E08.49	Diabetes mellitus due to underlying condition with other diabetic neurological complication
E08.51	Diabetes mellitus due to underlying condition with diabetic peripheral angiopathy without gangrene

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ICD-10-CM Diagnosis Codes	Description
E08.52	Diabetes mellitus due to underlying condition with diabetic peripheral angiopathy with gangrene
E08.59	Diabetes mellitus due to underlying condition with other circulatory complications
E08.610	Diabetes mellitus due to underlying condition with diabetic neuropathic arthropathy
E08.618	Diabetes mellitus due to underlying condition with other diabetic arthropathy
E08.620	Diabetes mellitus due to underlying condition with diabetic dermatitis
E08.621	Diabetes mellitus due to underlying condition with foot ulcer
E08.622	Diabetes mellitus due to underlying condition with other skin ulcer
E08.628	Diabetes mellitus due to underlying condition with other skin complications
E08.630	Diabetes mellitus due to underlying condition with periodontal disease
E08.638	Diabetes mellitus due to underlying condition with other oral complications
E08.649	Diabetes mellitus due to underlying condition with hypoglycemia without coma
E08.65	Diabetes mellitus due to underlying condition with hyperglycemia
E08.69	Diabetes mellitus due to underlying condition with other specified complication
E08.8	Diabetes mellitus due to underlying condition with unspecified complications
E08.9	Diabetes mellitus due to underlying condition without complications
E09.00	Drug or chemical induced diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)
E09.10	Drug or chemical induced diabetes mellitus with ketoacidosis without coma
E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy
E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease
E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication
E09.36	Drug or chemical induced diabetes mellitus with diabetic cataract
E09.37X1	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, right eye
E09.37X2	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, left eye
E09.37X3	Drug or chemical induced diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral
E09.39	Drug or chemical induced diabetes mellitus with other diabetic ophthalmic complication
E09.41	Drug or chemical induced diabetes mellitus with neurological complications with diabetic mononeuropathy
E09.42	Drug or chemical induced diabetes mellitus with neurological complications with diabetic polyneuropathy
E09.43	Drug or chemical induced diabetes mellitus with neurological complications with diabetic autonomic (poly)neuropathy
E09.44	Drug or chemical induced diabetes mellitus with neurological complications with diabetic amyotrophy
E09.49	Drug or chemical induced diabetes mellitus with neurological complications with other diabetic neurological complication
E09.51	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy without gangrene

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ICD-10-CM Diagnosis Codes	Description
E09.52	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy with gangrene
E09.59	Drug or chemical induced diabetes mellitus with other circulatory complications
E09.610	Drug or chemical induced diabetes mellitus with diabetic neuropathic arthropathy
E09.618	Drug or chemical induced diabetes mellitus with other diabetic arthropathy
E09.620	Drug or chemical induced diabetes mellitus with diabetic dermatitis
E09.621	Drug or chemical induced diabetes mellitus with foot ulcer
E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer
E09.628	Drug or chemical induced diabetes mellitus with other skin complications
E09.630	Drug or chemical induced diabetes mellitus with periodontal disease
E09.638	Drug or chemical induced diabetes mellitus with other oral complications
E09.649	Drug or chemical induced diabetes mellitus with hypoglycemia without coma
E09.65	Drug or chemical induced diabetes mellitus with hyperglycemia
E09.69	Drug or chemical induced diabetes mellitus with other specified complication
E09.8	Drug or chemical induced diabetes mellitus with unspecified complications
E09.9	Drug or chemical induced diabetes mellitus without complications
E10.10	Type 1 diabetes mellitus with ketoacidosis without coma
E10.21	Type 1 diabetes mellitus with diabetic nephropathy
E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication
E10.36	Type 1 diabetes mellitus with diabetic cataract
E10.37X1	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, right eye
E10.37X2	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, left eye
E10.37X3	Type 1 diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral
E10.39	Type 1 diabetes mellitus with other diabetic ophthalmic complication
E10.41	Type 1 diabetes mellitus with diabetic mononeuropathy
E10.42	Type 1 diabetes mellitus with diabetic polyneuropathy
E10.43	Type 1 diabetes mellitus with diabetic autonomic (poly)neuropathy
E10.44	Type 1 diabetes mellitus with diabetic amyotrophy
E10.49	Type 1 diabetes mellitus with other diabetic neurological complication
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E10.59	Type 1 diabetes mellitus with other circulatory complications
E10.610	Type 1 diabetes mellitus with diabetic neuropathic arthropathy
E10.618	Type 1 diabetes mellitus with other diabetic arthropathy
E10.620	Type 1 diabetes mellitus with diabetic dermatitis
E10.621	Type 1 diabetes mellitus with foot ulcer
E10.622	Type 1 diabetes mellitus with other skin ulcer
E10.628	Type 1 diabetes mellitus with other skin complications

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ICD-10-CM Diagnosis Codes	Description
E10.630	Type 1 diabetes mellitus with periodontal disease
E10.638	Type 1 diabetes mellitus with other oral complications
E10.649	Type 1 diabetes mellitus with hypoglycemia without coma
E10.65	Type 1 diabetes mellitus with hyperglycemia
E10.69	Type 1 diabetes mellitus with other specified complication
E10.8	Type 1 diabetes mellitus with unspecified complications
E10.9	Type 1 diabetes mellitus without complications
E11.00	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)
E11.10	Type 2 diabetes mellitus with ketoacidosis without coma
E11.11	Type 2 diabetes mellitus with ketoacidosis with coma
E11.21	Type 2 diabetes mellitus with diabetic nephropathy
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication
E11.36	Type 2 diabetes mellitus with diabetic cataract
E11.37X1	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, right eye
E11.37X2	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, left eye
E11.37X3	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral
E11.39	Type 2 diabetes mellitus with other diabetic ophthalmic complication
E11.41	Type 2 diabetes mellitus with diabetic mononeuropathy
E11.42	Type 2 diabetes mellitus with diabetic polyneuropathy
E11.43	Type 2 diabetes mellitus with diabetic autonomic (poly)neuropathy
E11.44	Type 2 diabetes mellitus with diabetic amyotrophy
E11.49	Type 2 diabetes mellitus with other diabetic neurological complication
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E11.59	Type 2 diabetes mellitus with other circulatory complications
E11.610	Type 2 diabetes mellitus with diabetic neuropathic arthropathy
E11.618	Type 2 diabetes mellitus with other diabetic arthropathy
E11.620	Type 2 diabetes mellitus with diabetic dermatitis
E11.621	Type 2 diabetes mellitus with foot ulcer
E11.622	Type 2 diabetes mellitus with other skin ulcer
E11.628	Type 2 diabetes mellitus with other skin complications
E11.630	Type 2 diabetes mellitus with periodontal disease
E11.638	Type 2 diabetes mellitus with other oral complications
E11.649	Type 2 diabetes mellitus with hypoglycemia without coma
E11.65	Type 2 diabetes mellitus with hyperglycemia
E11.69	Type 2 diabetes mellitus with other specified complication

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ICD-10-CM Diagnosis Codes	Description
E11.8	Type 2 diabetes mellitus with unspecified complications
E11.9	Type 2 diabetes mellitus without complications
E13.00	Other specified diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)
E13.10	Other specified diabetes mellitus with ketoacidosis without coma
E13.21	Other specified diabetes mellitus with diabetic nephropathy
E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease
E13.29	Other specified diabetes mellitus with other diabetic kidney complication
E13.36	Other specified diabetes mellitus with diabetic cataract
E13.37X1	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, right eye
E13.37X2	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, left eye
E13.37X3	Other specified diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral
E13.39	Other specified diabetes mellitus with other diabetic ophthalmic complication
E13.41	Other specified diabetes mellitus with diabetic mononeuropathy
E13.42	Other specified diabetes mellitus with diabetic polyneuropathy
E13.43	Other specified diabetes mellitus with diabetic autonomic (poly)neuropathy
E13.44	Other specified diabetes mellitus with diabetic amyotrophy
E13.49	Other specified diabetes mellitus with other diabetic neurological complication
E13.51	Other specified diabetes mellitus with diabetic peripheral angiopathy without gangrene
E13.52	Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene
E13.59	Other specified diabetes mellitus with other circulatory complications
E13.610	Other specified diabetes mellitus with diabetic neuropathic arthropathy
E13.618	Other specified diabetes mellitus with other diabetic arthropathy
E13.620	Other specified diabetes mellitus with diabetic dermatitis
E13.621	Other specified diabetes mellitus with foot ulcer
E13.622	Other specified diabetes mellitus with other skin ulcer
E13.628	Other specified diabetes mellitus with other skin complications
E13.630	Other specified diabetes mellitus with periodontal disease
E13.638	Other specified diabetes mellitus with other oral complications
E13.649	Other specified diabetes mellitus with hypoglycemia without coma
E13.65	Other specified diabetes mellitus with hyperglycemia
E13.69	Other specified diabetes mellitus with other specified complication
E13.8	Other specified diabetes mellitus with unspecified complications
E13.9	Other specified diabetes mellitus without complications

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IX. REFERENCES

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1. Garg S, Davis RM. Diabetic retinopathy screening update. *Clin Diabetes*. 2009;27(4):140-145. PMID
2. Early Treatment Diabetic Retinopathy Study Research Group. Fundus photographic risk factors for progression of diabetic retinopathy. ETDRS report number 12. *Ophthalmology*. May 1991;98(5 Suppl):823-833. PMID 2062515
3. Early Treatment Diabetic Retinopathy Study Research Group. Grading diabetic retinopathy from stereoscopic color fundus photographs--an extension of the modified Airlie House classification. ETDRS report number 10. Early Treatment Diabetic Retinopathy Study Research Group. *Ophthalmology*. May 1991;98(5 Suppl):786-806. PMID 2062513
4. Moss SE, Klein R, Kessler SD, et al. Comparison between ophthalmoscopy and fundus photography in determining severity of diabetic retinopathy. *Ophthalmology*. Jan 1985;92(1):62-67. PMID 2579361
5. Kinyoun JL, Martin DC, Fujimoto WY, et al. Ophthalmoscopy versus fundus photographs for detecting and grading diabetic retinopathy. *Invest Ophthalmol Vis Sci*. May 1992;33(6):1888-1893. PMID 1582794
6. Shi L, Wu H, Dong J, et al. Telemedicine for detecting diabetic retinopathy: a systematic review and meta-analysis. *Br J Ophthalmol*. Jun 2015;99(6):823-831. PMID 25563767
7. Mansberger SL, Sheppler C, Barker G, et al. Long-term comparative effectiveness of telemedicine in providing diabetic retinopathy screening examinations: a randomized clinical trial. *JAMA Ophthalmol*. May 2015;133(5):518-525. PMID 25741666
8. Liesenfeld B, Kohner E, Piehlmeier W, et al. A telemedical approach to the screening of diabetic retinopathy: digital fundus photography. *Diabetes Care*. Mar 2000;23(3):345-348. PMID 10868863
9. Tennant MT, Greve MD, Rudnisky CJ, et al. Identification of diabetic retinopathy by stereoscopic digital imaging via teleophthalmology: a comparison to slide film. *Can J Ophthalmol*. Jun 2001;36(4):187-196. PMID 11428527
10. Fransen SR, Leonard-Martin TC, Feuer WJ, et al. Clinical evaluation of patients with diabetic retinopathy: accuracy of the Inoveon diabetic retinopathy-3DT system. *Ophthalmology*. Mar 2002;109(3):595-601. PMID 11874767
11. Rudnisky CJ, Hinz BJ, Tennant MT, et al. High-resolution stereoscopic digital fundus photography versus contact lens biomicroscopy for the detection of clinically significant macular edema. *Ophthalmology*. Feb 2002;109(2):267-274. PMID 11825807

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12. Heaven CJ, Cansfield J, Shaw KM. The quality of photographs produced by the non-mydrionic fundus camera in a screening programme for diabetic retinopathy: a 1 year prospective study. *Eye (Lond)*. Jan 1993;7(Pt 6):787-790. PMID 8119435
13. Peters AL, Davidson MB, Ziel FH. Cost-effective screening for diabetic retinopathy using a nonmydrionic retinal camera in a prepaid health-care setting. *Diabetes Care*. Aug 1993;16(8):1193-1195. PMID 8375251
14. Scanlon PH, Malhotra R, Thomas G, et al. The effectiveness of screening for diabetic retinopathy by digital imaging photography and technician ophthalmoscopy. *Diabet Med*. Jun 2003;20(6):467-474. PMID 12786681
15. Bragge P, Gruen RL, Chau M, et al. Screening for presence or absence of diabetic retinopathy: a meta-analysis. *Arch Ophthalmol*. Apr 2011;129(4):435-444. PMID 21149748
16. Rasmussen ML, Broe R, Frydkjaer-Olsen U, et al. Comparison between Early Treatment Diabetic Retinopathy Study 7-field retinal photos and non-mydrionic, mydrionic and mydrionic steered widefield scanning laser ophthalmoscopy for assessment of diabetic retinopathy. *J Diabetes Complications*. Jan-Feb 2015;29(1):99-104. PMID 25240716
17. Murgatroyd H, Ellingford A, Cox A, et al. Effect of mydriasis and different field strategies on digital image screening of diabetic eye disease. *Br J Ophthalmol*. Jul 2004;88(7):920-924. PMID 15205238
18. Mizrachi Y, Knyazer B, Guigui S, et al. Evaluation of diabetic retinopathy screening using a non-mydrionic retinal digital camera in primary care settings in south Israel. *Int Ophthalmol*. Aug 2014;34(4):831-837. PMID 24292883
19. Sanchez CI, Niemeijer M, Dumitrescu AV, et al. Evaluation of a computer-aided diagnosis system for diabetic retinopathy screening on public data. *Invest Ophthalmol Vis Sci*. Jun 2011;52(7):4866-4871. PMID 21527381
20. Oliveira CM, Cristovao LM, Ribeiro ML, et al. Improved automated screening of diabetic retinopathy. *Ophthalmologica*. Aug 2011;226(4):191-197. PMID 21865671
21. Abramoff MD, Folk JC, Han DP, et al. Automated analysis of retinal images for detection of referable diabetic retinopathy. *JAMA Ophthalmol*. Mar 2013;131(3):351-357. PMID 23494039
22. Abramoff MD, Lou Y, Erginay A, et al. Improved automated detection of diabetic retinopathy on a publicly available dataset through integration of deep learning. *Invest Ophthalmol Vis Sci*. Oct 01 2016;57(13):5200-5206. PMID 27701631
23. Tufail A, Kapetanakis VV, Salas-Vega S, et al. An observational study to assess if automated diabetic retinopathy image assessment software can replace one or more steps of manual imaging grading and to determine their cost-effectiveness. *Health Technol Assess*. Dec 2016;20(92):1-72. PMID 27981917

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24. Tufail A, Rudisill C, Egan C, et al. Automated diabetic retinopathy image assessment software: diagnostic accuracy and cost-effectiveness compared with human graders. *Ophthalmology*. Mar 2017;124(3):343-351. PMID 28024825
25. Bawankar P, Shanbhag N, Smitha KS, et al. Sensitivity and specificity of automated analysis of single-field non-mydratic fundus photographs by Bosch DR Algorithm- Comparison with mydratic fundus photography (ETDRS) for screening in undiagnosed diabetic retinopathy. *PLoS One*. Dec 27 2017;12(12):e0189854. PMID 29281690
26. Walton OBT, Garoon RB, Weng CY, et al. Evaluation of automated teleretinal screening program for diabetic retinopathy. *JAMA Ophthalmol*. Dec 17 2015;1-6. PMID 26720694
27. American Diabetes Association. Standards of medical care in diabetes--2010. *Diabetes Care*. Jan 2010;33(Suppl 1):S11-61. PMID 20042772
28. Fong DS, Aiello L, Gardner TW, et al. American Diabetes Association position statement: retinopathy in diabetes. *Diabetes Care*. 2004;27(Suppl 1):S84-S87. PMID
29. American Diabetes Association. 9. Microvascular Complications and Foot Care. *Diabetes Care*. Jan 2016;39(Suppl 1):S72-80. PMID 26696685
30. Handelsman Y, Mechanick JI, Blonde L, et al. American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for developing a diabetes mellitus comprehensive care plan. *Endocr Pract*. Mar-Apr 2011;17(Suppl 2):1-53. PMID 21474420
31. American Academy of Ophthalmology Retina/Vitreous Panel. Preferred Practice Pattern® Guidelines: Diabetic Retinopathy. San Francisco, CA: American Academy of Ophthalmology; 2017.
32. American Academy of Ophthalmology. Preferred Practice Pattern: Diabetic Retinopathy. San Francisco, CA: AAO; 2003.
33. American Academy of Ophthalmology. Information Statement: Screening for diabetic retinopathy. 2014; <https://www.aao.org/clinical-statement/screening-diabetic-retinopathy>. Accessed February 21, 2018.
34. Li HK, Horton M, Bursell SE, et al. Telehealth practice recommendations for diabetic retinopathy, second edition. *Telemed J E Health*. Dec 2011;17(10):814-837. PMID 21970573
35. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) for Intraocular Photography (80.6). 1979; <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=56&ncdver=1&bc=AgAAQAAAAAAAA&>. Accessed February 21, 2018.
36. Blue Cross Blue Shield Association Medical Policy Reference Manual. 9.03.13 Retinal Telescreening for Diabetic Retinopathy, March 2018.

POLICY TITLE	RETINAL TELESCREENING FOR DIABETIC RETINOPATHY
POLICY NUMBER	MP- 2.086

X. POLICY HISTORY

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MP 2.086	CAC 10/25/11 New policy. Adopt BCBSA. Information related to digital imaging systems extracted from MP 2.056 and a new, separate policy created. Minor wording changes in policy statement. Remains medically necessary as a screening technique for the detection of diabetic retinopathy. Added statement indicating retinal telescreening for other indications is investigational including the monitoring and management of disease in individuals diagnosed with diabetic retinopathy.
	CAC 1/29/13 Consensus review. References updated; no changes to the policy statements. Codes reviewed. 11/28/12
	Admin change 1/2014 deleted retired LCD, Novitas Medicare Services Local Coverage Determination LCD L27498 Fundus Photography.
	CAC 1/28/14 Consensus review. References updated; no changes to the policy statements. Rationale added.
	11/1/14 Administrative change. Deleted L27498 from reference list.
	CAC 1/27/15 Consensus review. No change to policy statements. Changed FEP variation to reference 9.03.13 Retinal Telescreening for Diabetic Retinopathy. References and rationale updated. Codes reviewed.
	9/1/15 Administrative Change. Added reference to LCD L31686, Services that are not Reasonable and Necessary.
	11/2/15 Administrative change. LCD number changed from L31686 to L35094 due to Novitas update to ICD-10.
	CAC 1/26/16 Consensus review. No change to policy statements. References and rationale updated. Coding reviewed.
	Administrative Update 11/10/16 Variation reformatting
	CAC 3/28/17 Consensus review. Policy statements unchanged. Medicare variation to LCD L35094 added. Policy Guidelines, Description/Background, Rationale and Reference sections updated. Coding reviewed.
	Admin update 10/1/17: Added new ICD 10 codes effective from 10/1/17.
	1/1/18 Admin Update: Medicare variations removed from Commercial Policies. Coding Reviewed. Admin coding review 2/28/18: No changes.
	4/11/18 Consensus review. No changes to the policy statements. References updated. Rationale revised. Coding reviewed.
8/1/18 Admin update. Diagnosis codes updated.	

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