CLINICAL MEDICAL POLICY	
Policy Name:	Scanning Computerized Ophthalmic Diagnostic Imaging
Policy Number:	MP-096-MD-DE
Responsible Department(s):	Medical Management
Provider Notice Date:	08/15/2019
Issue Date:	09/16/2019
Effective Date:	09/16/2019
Annual Approval Date:	07/16/2020
Revision Date:	N/A
Products:	Highmark Health Options Medicaid
Application:	All participating hospitals and providers
Page Number(s):	1 of 25

DISCLAIMER

Highmark Health Options medical policy is intended to serve only as a general reference resource regarding coverage for the services described. This policy does not constitute medical advice and is not intended to govern or otherwise influence medical decisions.

POLICY STATEMENT

Highmark Health Options may provide coverage under the medical-surgical benefits of the Company's Medicaid products for medically necessary scanning computerized ophthalmic diagnostic imagining services.

This policy is designed to address medical necessity guidelines that are appropriate for the majority of individuals with a particular disease, illness or condition. Each person's unique clinical circumstances warrant individual consideration, based upon review of applicable medical records.

The qualifications of the policy will meet the standards of the National Committee for Quality Assurance (NCQA) and the Delaware Department of Health and Social Services (DHSS) and all applicable state and federal regulations.

DEFINITIONS

There are several forms of Screening Computerized Ophthalmic Imaging (SCODI) tests that currently exist. SCODI testing includes scanning laser polarimetry (SLP), optical coherence tomography (OCT), and

confocal scanning laser ophthalmoscopy (CSLO). These testing devices use videographic digitized images to make quantitative topographic measurements of the optic nerve head and surrounding retina. Although these techniques are different, their objective is the same. These methods are described below:

- **Scanning Laser Polarimetry (SLP)**
  The retinal nerve fiber layer (RNFL) is birefringent, causing a change in the state of polarization of a laser beam as it passes. A 780-nm diode laser is used to illuminate the optic nerve. The polarization state of the light emerging from the eye is then evaluated and correlated with RNFL thickness. Unlike CSLO, SLP can directly measure the thickness of the RNFL. GDx® is a common example of a scanning laser polarimeter. GDx® contains a normative database and statistical software package to allow comparison to age-matched normal subjects of the same ethnic origin. The advantages of this system are that images can be obtained without pupil dilation and evaluation can be done in about 10 minutes. Current instruments have added enhanced and variable corneal compensation technology to account for corneal polarization.

- **Optical Coherence Tomography (OCT)**
  OCT is a noninvasive, noncontact imaging system that uses near-infrared light to provide direct cross-sectional measurement of the retinal nerve fiber layer. The principles employed are similar to those used in B-mode ultrasound, except light, not sound, is used to produce the 3-dimensional images. The light source can be directed into the eye through a conventional slit-lamp biomicroscope and focused onto the retina through a typical 78-diopter lens. This system requires dilation of the patient's pupil.

- **Confocal Scanning Laser Ophthalmoscopy (CSLO)**
  CSLO is a laser-based image acquisition technique, which is intended to improve the quality of the examination compared to standard ophthalmologic examination. A laser is scanned across the retina along with a detector system. Only a single spot on the retina is illuminated at any time, resulting in a high-contrast image of great reproducibility that can be used to estimate the thickness of the RNFL. In addition, this technique does not require maximal mydriasis, which may be a problem in patients with glaucoma. The Heidelberg Retinal Tomograph is probably the most common example of this technology.

PROCEDURES

1. Medical Necessity Guidelines
   Anterior segment SCODI will be considered medically reasonable and necessary for evaluation of specified forms of glaucoma (narrow angle, suspected narrow angle, mixed and open angle) and certain disorders of the cornea (corneal edema or opacity), iris, and ciliary body.

   Posterior segment SCODI will be considered medically reasonable and necessary under the following circumstances:
   - For the diagnosis and management of a patient who has mild, moderate, severe, or indeterminate stage glaucoma or who is suspected of having glaucoma.
   - Monitoring patients being treated with chloroquine (CQ) and/or hydroxychloroquine (HCQ) for the development of retinopathy.
   - The evaluation and treatment of patients with conditions affecting the optic nerve (e.g., optic neuropathy) or retinal disease (e.g., macular degeneration, diabetic retinopathy) and in the evaluation and treatment of certain macular abnormalities (e.g., macular edema, atrophy associated with degenerative retinal diseases).

2. Limitations

The following are considered not reasonable and necessary, and therefore will be denied:

- SCODI is usually not medically reasonable and necessary when performed to provide additional confirmatory information regarding a diagnosis which has already been determined. Documentation should support that the SCODI test result was used for establishing a diagnosis, establishing a baseline prior to treatment, or for monitoring purposes.
- Fundus photography and posterior segment SCODI performed on the same eye on the same day are generally mutually exclusive of one another (*National Correct Coding Initiative [NCCI] Policy Manual*). The provider is not precluded from performing both on the same eye on the same day when each service is necessary to evaluate and treat the patient. The medical record should clearly document the medical necessity of each service.
- Screening (patient without signs or symptoms) for any condition is not medically reasonable and necessary.

Notice: This medical policy imposes frequency limitations as well as diagnosis limitations that support diagnosis to procedure code automated denials. However, services performed for any given diagnosis must meet all of the indications and limitations stated in this policy.

3. Documentation Requirements

1) All documentation must be maintained in the patient's medical record and made available to the contractor upon request.
2) Every page of the record must be legible and include appropriate patient identification information (e.g., complete name, dates of service[s]). The documentation must include the legible signature of the physician or non-physician practitioner responsible for and providing the care to the patient.
3) The submitted medical record must support the use of the selected ICD-10-CM code(s). The submitted CPT/HCPCS code must describe the service performed.
4) The medical record documentation must support the medical necessity of the services as stated in this policy.
5) Medical record must include the test results, comparison with prior tests when applicable, computer analysis of the data, and appropriate data storage for future comparison in follow-up exams.
6) If applicable, medical record documentation must clearly indicate the rationale which supports the medical necessity for performing the fundus photography and posterior segment SCODI on the same day on the same eye. Documentation should also reflect how the test results were used in the patient's plan of care.
7) If bilateral studies are performed, the documentation maintained by the provider must demonstrate medical need for the performance of the test for each eye.
8) When reporting ICD-10 code Z79.899, the medical record must reflect the medication administered as well as the underlying condition for which it was given.

4. Utilization Guidelines

<u>CPT code 92132:</u>

No more than two (2) exams per year will be considered medically reasonable and necessary for covered indications.

CPT code 92133:
No more than two (2) exams per year will be considered medically reasonable and necessary for the patient who has or is suspected of having glaucoma.

CPT code 92134
No more than one (1) exam every two (2) months will be considered medically reasonable and necessary to manage the patient whose primary ophthalmological condition is related to a retinal disease that is not undergoing active treatment.*

* Note: Please see next paragraph if undergoing active treatment.
No more than one (1) exam per month will be considered medically reasonable and necessary to manage the patient with retinal conditions undergoing active treatment. These conditions include wet AMD, choroidal neovascularization, macular edema, diabetic retinopathy (proliferative and nonproliferative), branch retinal vein occlusion, central retinal vein occlusion, and cystoid macular edema. With the development of treat and extend protocols for patients with wet AMD treated with antiangiogenic drugs, it is expected that SCODI (unilateral or bilateral) will be used for therapeutic decision making and utilized at maximum of monthly with subsequent less frequency based on the patient treatment protocol and patient response as documented in the medical record.

In addition, other conditions which may undergo rapid clinical changes monthly requiring aggressive therapy and frequent follow-up (e.g., macular hole and traction retinal detachment) may also require monthly scans.

No more than one (1) exam per year will be considered medically reasonable and necessary for patients being treated with CQ and/or HCQ. These patients should receive a baseline examination within the first year of treatment and as an annual follow-up after five years of treatment. For higher-risk patients, annual testing may begin immediately (without a 5-year delay).

5. Post-payment Audit Statement
   The medical record must include documentation that reflects the medical necessity criteria and is subject to audit by Highmark Health Options at any time pursuant to the terms of your provider agreement.

6. Place of Service
   The place of service for scanning computerized ophthalmic diagnostic imaging is outpatient.

GOVERNING BODIES APPROVAL

A number of scanner devices have been approved by the FDA. A few examples include:

- RTVue XR OCT Avanti is a system indicated for the in vivo imaging and measurement of retina, retinal fiber layer, and optic disc as a tool and aid in the diagnosis and management of retinal diseases by a clinician.
- In 2016, the RTVue XR OCT with Avanti and AngioVue software was approved by FDA as an aid in the visualization of vascular structures of the retina and choroid.

- The iExaminer was cleared by the FDA in 2012. This is a device consisting of hardware adapter and software to capture, store, send and retrieve images from the Welch Allyn PanOptic Ophthalmoscope using an iPhone.
- First Coast Service Options, Inc. Local Coverage Determination (LCD): Scanning Computerized Ophthalmic Diagnostic Imaging (L33751).
- Novitas Solutions, Inc. Local Coverage Determination (LCD): Scanning Computerized Ophthalmic Diagnostic Imaging (L35038) with effective date of 04/18/2019.

CODING REQUIREMENTS

Procedure Codes
Group 1

CPT Codes	Description
92132	Scanning computerized ophthalmic diagnostic imaging, anterior segment, with interpretation and report, unilateral or bilateral
92133	Scanning computerized ophthalmic diagnostic imaging, posterior segment, with interpretation and report, unilateral or bilateral, optic nerve
92134	Scanning computerized ophthalmic diagnostic imaging, posterior segment, with interpretation and report, unilateral or bilateral, retina

Diagnosis Codes for CPT code 92132–anterior segment

ICD-10 Codes	Description
C69.01	Malignant neoplasm of right conjunctiva
C69.02	Malignant neoplasm of left conjunctiva
C69.11	Malignant neoplasm of right cornea
C69.12	Malignant neoplasm of left cornea
C69.41	Malignant neoplasm of right ciliary body
C69.42	Malignant neoplasm of left ciliary body
H17.01	Adherent leukoma, right eye
H17.02	Adherent leukoma, left eye
H17.03	Adherent leukoma, bilateral
H17.11	Central corneal opacity, right eye
H17.12	Central corneal opacity, left eye
H17.13	Central corneal opacity, bilateral
H17.811	Minor opacity of cornea, right eye
H17.812	Minor opacity of cornea, left eye
H17.813	Minor opacity of cornea, bilateral
H17.821	Peripheral opacity of cornea, right eye
H17.822	Peripheral opacity of cornea, left eye
H17.823	Peripheral opacity of cornea, bilateral
H17.89	Other corneal scars and opacities
H18.20	Unspecified corneal edema
H18.211	Corneal edema secondary to contact lens, right eye

H18.212	Corneal edema secondary to contact lens, left eye
H18.213	Corneal edema secondary to contact lens, bilateral
H18.222	Degeneration of ciliary body, left eye
H18.223	Degeneration of ciliary body, bilateral
H18.231	Degeneration of iris (pigmentary), right eye
H18.232	Degeneration of iris (pigmentary), left eye
H18.233	Degeneration of iris (pigmentary), bilateral
H21.271	Miotic pupillary cyst, right eye
H21.272	Miotic pupillary cyst, left eye
H21.273	Miotic pupillary cyst, bilateral
H21.301	Idiopathic cysts of iris, ciliary body or anterior chamber, right eye
H21.302	Idiopathic cysts of iris, ciliary body or anterior chamber, left eye
H21.303	Idiopathic cysts of iris, ciliary body or anterior chamber, bilateral
H21.311	Exudative cysts of iris or anterior chamber, right eye
H21.312	Exudative cysts of iris or anterior chamber, left eye
H21.313	Exudative cysts of iris or anterior chamber, bilateral
H21.321	Implantation cysts of iris, ciliary body or anterior chamber, right eye
H21.322	Implantation cysts of iris, ciliary body or anterior chamber, left eye
H21.323	Implantation cysts of iris, ciliary body or anterior chamber, bilateral
H21.89	Other specified disorders of iris and ciliary body
H40.021	Open angle with borderline findings, high risk, right eye
H40.022	Open angle with borderline findings, high risk, left eye
H40.023	Open angle with borderline findings, high risk, bilateral
H40.031	Anatomical narrow angle, right eye
H40.032	Anatomical narrow angle, left eye
H40.033	Anatomical narrow angle, bilateral
H40.061	Primary angle closure without glaucoma damage, right eye
H40.062	Primary angle closure without glaucoma damage, left eye
H40.063	Primary angle closure without glaucoma damage, bilateral
H40.211	Acute angle-closure glaucoma, right eye
H40.212	Acute angle-closure glaucoma, left eye
H40.213	Acute angle-closure glaucoma, bilateral
H40.2211	Chronic angle-closure glaucoma, right eye, mild stage
H40.2212	Chronic angle-closure glaucoma, right eye, moderate stage
H40.2213	Chronic angle-closure glaucoma, right eye, severe stage
H40.2214	Chronic angle-closure glaucoma, right eye, indeterminate stage
H40.2221	Chronic angle-closure glaucoma, left eye, mild stage
H40.2222	Chronic angle-closure glaucoma, left eye, moderate stage
H40.2223	Chronic angle-closure glaucoma, left eye, severe stage
H40.2224	Chronic angle-closure glaucoma, left eye, indeterminate stage
H40.2231	Chronic angle-closure glaucoma, bilateral, mild stage
H40.2232	Chronic angle-closure glaucoma, bilateral, moderate stage
H40.2233	Chronic angle-closure glaucoma, left eye, severe stage

H40.2234	Chronic angle-closure glaucoma, bilateral, indeterminate stage
H40.231	Intermittent angle-closure glaucoma, right eye
H40.232	Intermittent angle-closure glaucoma, left eye
H40.233	Intermittent angle-closure glaucoma, bilateral
H40.241	Residual stage of angle-closure glaucoma, right eye
H40.242	Residual stage of angle-closure glaucoma, left eye
H40.243	Residual stage of angle-closure glaucoma, bilateral
H40.31X1	Glaucoma secondary to eye trauma, right eye, mild stage
H40.31X2	Glaucoma secondary to eye trauma, right eye, moderate stage
H40.31X3	Glaucoma secondary to eye trauma, right eye, severe stage
H40.31X4	Glaucoma secondary to eye trauma, right eye, indeterminate stage
H40.32X1	Glaucoma secondary to eye trauma, left eye, mild stage
H40.32X2	Glaucoma secondary to eye trauma, left eye, moderate stage
H40.32X3	Glaucoma secondary to eye trauma, left eye, severe stage
H40.32X4	Glaucoma secondary to eye trauma, left eye, indeterminate stage
H40.33X1	Glaucoma secondary to eye trauma, bilateral, mild stage
H40.33X2	Glaucoma secondary to eye trauma, bilateral, moderate stage
H40.33X3	Glaucoma secondary to eye trauma, bilateral, severe stage
H40.33X4	Glaucoma secondary to eye trauma, bilateral, indeterminate stage
T86.840	Corneal transplant rejection
T86.841	Corneal transplant failure
T86.842	Corneal transplant infection

Diagnosis Codes Group 3 for CPT code 92134–retina

ICD 10 Codes	Description
A18.53	Tuberculous chorioretinitis
B39.4	Histoplasmosis capsulati, unspecified
C69.21	Malignant neoplasm of right retina
C69.22	Malignant neoplasm of left retina
C69.31	Malignant neoplasm of right choroid
C69.32	Malignant neoplasm of left choroid
D31.31	Benign neoplasm of right choroid
D31.32	Benign neoplasm of left choroid
E08.3211	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, right eye
E08.3212	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, left eye
E08.3213	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema, bilateral
E08.3291	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, right eye
E08.3292	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, left eye
E08.3293	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema, bilateral

E08.3311	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, right eye
E08.3312	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, left eye
E08.3313	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema, bilateral
E08.3391	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, right eye
E08.3392	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, left eye
E08.3393	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema, bilateral
E08.3411	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, right eye
E08.3412	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, left eye
E08.3413	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema, bilateral
E08.3491	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, right eye
E08.3492	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, left eye
E08.3493	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema, bilateral
E08.3511	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, right eye
E08.3512	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, left eye
E08.3513	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema, bilateral
E08.3521	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye
E08.3522	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye
E08.3523	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral
E08.3531	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye
E08.3532	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye
E08.3533	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral
E08.3541	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye
E08.3542	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye
E08.3543	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral
E08.3551	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, right eye
E08.3552	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, left eye

E08.3553	Diabetes mellitus due to underlying condition with stable proliferative diabetic retinopathy, bilateral
E08.3591	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, right eye
E08.3592	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, left eye
E08.3593	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema, bilateral
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
E09.3211	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye
E09.3212	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye
E09.3213	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral
E09.3291	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye
E09.3292	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye
E09.3293	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral
E09.3311	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye
E09.3312	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye
E09.3313	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral
E09.3391	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye
E09.3392	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye
E09.3393	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral
E09.3411	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye
E09.3412	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye
E09.3413	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral
E09.3491	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye
E09.3492	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye
E09.3493	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral
E09.3511	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye

E09.3512	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye
E09.3513	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral
E09.3521	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye
E09.3522	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye
E09.3523	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral
E09.3531	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye
E09.3532	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye
E09.3533	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral
E09.3541	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye
E09.3542	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye
E09.3543	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral
E09.3551	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, right eye
E09.3552	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, left eye
E09.3553	Drug or chemical induced diabetes mellitus with stable proliferative diabetic retinopathy, bilateral
E09.3591	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye
E09.3592	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye
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
E10.3211	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye
E10.3212	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye
E10.3213	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral
E10.3291	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye
E10.3292	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye
E10.3393	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral
E10.3411	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye
E10.3412	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye

E10.3413	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral
E10.3491	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye
E10.3492	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye
E10.3493	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral
E10.3511	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye
E10.3512	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye
E10.3513	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral
E10.3521	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye
E10.3522	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye
E10.3523	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral
E10.3531	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye
E10.3532	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye
E10.3533	Type 1 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral
E10.3541	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye
E10.3542	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye
E10.3543	Type 1 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral
E10.3551	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, right eye
E10.3552	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, left eye
E10.3553	Type 1 diabetes mellitus with stable proliferative diabetic retinopathy, bilateral
E10.3591	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye
E10.3592	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye
E10.3593	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral
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
E11.3211	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye
E11.3212	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye
E11.3313	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral
E11.3391	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye
E11.3392	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye
E11.3393	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral
E11.3411	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye

E11.3412	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye
E11.3413	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral
E11.3491	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye
E11.3492	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye
E11.3493	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral
E11.3511	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye
E11.3512	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye
E11.3513	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral
E11.3521	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye
E11.3522	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye
E11.3523	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral
E11.3531	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye
E11.3532	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye
E11.3533	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral
E11.3541	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye
E11.3542	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye
E11.3543	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral
E11.3551	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, right eye
E11.3552	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, left eye
E11.3553	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, bilateral
E11.3591	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye
E11.3592	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye
E11.3593	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral
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
E13.3211	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye
E13.3212	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye
E13.3213	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral
E13.3291	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye
E13.3292	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye
E13.3293	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral

E13.3311	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye
E13.3312	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye
E13.3313	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral
E13.3391	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye
E13.3392	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye
E13.3393	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral
E13.3411	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye
E13.3412	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye
E13.3413	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral
E13.3491	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye
E13.3492	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye
E13.3493	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral
E13.3511	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye
E13.3512	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye
E13.3513	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral
E13.3521	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye
E13.3522	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye
E13.3523	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral
E13.3531	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye
E13.3532	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye
E13.3533	Other specified diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral
E13.3541	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye
E13.3542	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye
E13.3543	Other specified diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral
E13.3551	Other specified diabetes mellitus with stable proliferative diabetic retinopathy, right eye
E13.3552	Other specified diabetes mellitus with stable proliferative diabetic retinopathy, left eye
E13.3553	Other specified diabetes mellitus with stable proliferative diabetic retinopathy, bilateral

E13.3591	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye
E13.3592	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye
E13.3593	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral
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
G45.3	Amaurosis fugax
H30.011	Focal chorioretinal inflammation, juxtapapillary, right eye
H30.012	Focal chorioretinal inflammation, juxtapapillary, left eye
H30.013	Focal chorioretinal inflammation, juxtapapillary, bilateral
H30.021	Focal chorioretinal inflammation of posterior pole, right eye
H30.022	Focal chorioretinal inflammation of posterior pole, left eye
H30.023	Focal chorioretinal inflammation of posterior pole, bilateral
H30.031	Focal chorioretinal inflammation, peripheral, right eye
H30.032	Focal chorioretinal inflammation, peripheral, left eye
H30.033	Focal chorioretinal inflammation, peripheral, bilateral
H30.041	Focal chorioretinal inflammation, macular or paramacular, right eye
H30.042	Focal chorioretinal inflammation, macular or paramacular, left eye
H30.043	Focal chorioretinal inflammation, macular or paramacular, bilateral
H30.111	Disseminated chorioretinal inflammation of posterior pole, right eye
H30.112	Disseminated chorioretinal inflammation of posterior pole, left eye
H30.113	Disseminated chorioretinal inflammation of posterior pole, bilateral
H30.121	Disseminated chorioretinal inflammation, peripheral right eye
H30.122	Disseminated chorioretinal inflammation, peripheral, left eye
H30.123	Disseminated chorioretinal inflammation, peripheral, bilateral
H30.131	Disseminated chorioretinal inflammation, generalized, right eye
H30.132	Disseminated chorioretinal inflammation, generalized, left eye
H30.133	Disseminated chorioretinal inflammation, generalized, bilateral
H30.141	Acute posterior multifocal placoid pigment epitheliopathy, right eye
H30.142	Acute posterior multifocal placoid pigment epitheliopathy, left eye
H30.143	Acute posterior multifocal placoid pigment epitheliopathy, bilateral
H30.21	Posterior cyclitis, right eye
H30.22	Posterior cyclitis, left eye
H30.23	Posterior cyclitis, bilateral
H30.811	Harada's disease, right eye
H30.812	Harada's disease, left eye
H30.813	Harada's disease, bilateral
H30.891	Other chorioretinal inflammations, right eye
H30.892	Other chorioretinal inflammations, left eye
H30.893	Other chorioretinal inflammations, bilateral
H31.021	Solar retinopathy, right eye
H31.022	Solar retinopathy, left eye
H31.023	Solar retinopathy, bilateral
H31.101	Choroidal degeneration, unspecified, right eye
H31.102	Choroidal degeneration, unspecified, left eye

H31.103	Choroidal degeneration, unspecified, bilateral
H31.111	Age-related choroidal atrophy, right eye
H31.112	Age-related choroidal atrophy, left eye
H31.113	Age-related choroidal atrophy, bilateral
H31.121	Diffuse secondary atrophy of choroid, right eye
H31.122	Diffuse secondary atrophy of choroid, left eye
H31.123	Diffuse secondary atrophy of choroid, bilateral
H31.411	Hemorrhagic choroidal detachment, right eye
H31.412	Hemorrhagic choroidal detachment, left eye
H31.413	Hemorrhagic choroidal detachment, bilateral
H31.421	Serous choroidal detachment, right eye
H31.422	Serous choroidal detachment, left eye
H31.423	Serous choroidal detachment, bilateral
H32	Chorioretinal disorders in diseases classified elsewhere
H33.011	Retinal detachment with single break, right eye
H33.012	Retinal detachment with single break, left eye
H33.013	Retinal detachment with single break, bilateral
H33.021	Retinal detachment with multiple breaks, right eye
H33.022	Retinal detachment with multiple breaks, left eye
H33.023	Retinal detachment with multiple breaks, bilateral
H33.031	Retinal detachment with giant retinal tear, right eye
H33.032	Retinal detachment with giant retinal tear, left eye
H33.033	Retinal detachment with giant retinal tear, bilateral
H33.041	Retinal detachment with retinal dialysis, right eye
H33.042	Retinal detachment with retinal dialysis, left eye
H33.043	Retinal detachment with retinal dialysis, bilateral
H33.051	Total retinal detachment, right eye
H33.052	Total retinal detachment, left eye
H33.053	Total retinal detachment, bilateral
H33.111	Cyst of ora serrata, right eye
H33.112	Cyst of ora serrata, left eye
H33.113	Cyst of ora serrata, bilateral
H33.191	Other retinoschisis and retinal cysts, right eye
H33.192	Other retinoschisis and retinal cysts, left eye
H33.193	Other retinoschisis and retinal cysts, bilateral
H33.21	Serous retinal detachment, right eye
H33.22	Serous retinal detachment, left eye
H33.23	Serous retinal detachment, bilateral
H33.311	Horseshoe tear of retina without detachment, right eye
H33.312	Horseshoe tear of retina without detachment, left eye
H33.313	Horseshoe tear of retina without detachment, bilateral
H33.321	Round hole, right eye
H33.322	Round hole, left eye
H33.323	Round hole, bilateral
H33.331	Multiple defects of retina without detachment, right eye
H33.332	Multiple defects of retina without detachment, left eye
H33.333	Multiple defects of retina without detachment, bilateral
H33.41	Traction detachment of retina, right eye
H33.42	Traction detachment of retina, left eye
H33.43	Traction detachment of retina, bilateral
H33.8	Other retinal detachments

H34.01	Transient retinal artery occlusion, right eye
H34.02	Transient retinal artery occlusion, left eye
H34.03	Transient retinal artery occlusion, bilateral
H34.11	Central retinal artery occlusion, right eye
H34.12	Central retinal artery occlusion, left eye
H34.13	Central retinal artery occlusion, bilateral
H34.211	Partial retinal artery occlusion, right eye
H34.212	Partial retinal artery occlusion, left eye
H34.213	Partial retinal artery occlusion, bilateral
H34.231	Retinal artery branch occlusion, right eye
H34.232	Retinal artery branch occlusion, left eye
H34.233	Retinal artery branch occlusion, bilateral
H34.8110	Central retinal vein occlusion, right eye, with macular edema
H34.8111	Central retinal vein occlusion, right eye, with retinal neovascularization
H34.8112	Central retinal vein occlusion, right eye, stable
H34.8120	Central retinal vein occlusion, left eye, with macular edema
H34.8121	Central retinal vein occlusion, left eye, with retinal neovascularization
H34.8122	Central retinal vein occlusion, left eye, stable
H34.8130	Central retinal vein occlusion, bilateral, with macular edema
H34.8131	Central retinal vein occlusion, bilateral, with retinal neovascularization
H34.8132	Central retinal vein occlusion, bilateral, stable
H34.821	Venous engorgement, right eye
H34.822	Venous engorgement, left eye
H34.823	Venous engorgement, bilateral
H34.8310	Tributary (branch) retinal vein occlusion, right eye, with macular edema
H34.8311	Tributary (branch) retinal vein occlusion, right eye, with retinal neovascularization
H34.8312	Tributary (branch) retinal vein occlusion, right eye, stable
H34.8320	Tributary (branch) retinal vein occlusion, left eye, with macular edema
H34.8321	Tributary (branch) retinal vein occlusion, left eye, with retinal neovascularization
H34.8322	Tributary (branch) retinal vein occlusion, left eye, stable
H34.8330	Tributary (branch) retinal vein occlusion, bilateral, with macular edema
H34.8331	Tributary (branch) retinal vein occlusion, bilateral, with retinal neovascularization
H34.8332	Tributary (branch) retinal vein occlusion, bilateral, stable
H35.011	Changes in retinal vascular appearance, right eye
H35.012	Changes in retinal vascular appearance, left eye
H35.013	Changes in retinal vascular appearance, bilateral
H35.021	Exudative retinopathy, right eye
H35.022	Exudative retinopathy, left eye
H35.023	Exudative retinopathy, bilateral
H35.031	Hypertensive retinopathy, right eye
H35.032	Hypertensive retinopathy, left eye
H35.033	Hypertensive retinopathy, bilateral
H35.041	Retinal micro-aneurysms, unspecified, right eye
H35.042	Retinal micro-aneurysms, unspecified, left eye
H35.043	Retinal micro-aneurysms, unspecified, bilateral
H35.051	Retinal neovascularization, unspecified, right eye
H35.052	Retinal neovascularization, unspecified, left eye
H35.053	Retinal neovascularization, unspecified, bilateral
H35.061	Retinal vasculitis, right eye
H35.062	Retinal vasculitis, left eye
H35.063	Retinal vasculitis, bilateral

H35.071	Retinal telangiectasis, right eye
H35.072	Retinal telangiectasis, left eye
H35.073	Retinal telangiectasis, bilateral
H35.09	Other intraretinal microvascular abnormalities
H35.171	Retrolental fibroplasia, right eye
H35.172	Retrolental fibroplasia, left eye
H35.173	Retrolental fibroplasia, bilateral
H35.21	Other non-diabetic proliferative retinopathy, right eye
H35.22	Other non-diabetic proliferative retinopathy, left eye
H35.23	Other non-diabetic proliferative retinopathy, bilateral
H35.3110	Nonexudative age-related macular degeneration, right eye, stage unspecified
H35.3111	Nonexudative age-related macular degeneration, right eye, early dry stage
H35.3112	Nonexudative age-related macular degeneration, right eye, intermediate dry stage
H35.3113	Nonexudative age-related macular degeneration, right eye, advanced atrophic without subfoveal involvement
H35.3114	Nonexudative age-related macular degeneration, right eye, advanced atrophic with subfoveal involvement
H35.3120	Nonexudative age-related macular degeneration, left eye, stage unspecified
H35.3121	Nonexudative age-related macular degeneration, left eye, early dry stage
H35.3122	Nonexudative age-related macular degeneration, left eye, intermediate dry stage
H35.3123	Nonexudative age-related macular degeneration, left eye, advanced atrophic without subfoveal involvement
H35.3124	Nonexudative age-related macular degeneration, left eye, advanced atrophic with subfoveal involvement
H35.3130	Nonexudative age-related macular degeneration, bilateral, stage unspecified
H35.3131	Nonexudative age-related macular degeneration, bilateral, early dry stage
H35.3132	Nonexudative age-related macular degeneration, bilateral, intermediate dry stage
H35.3133	Nonexudative age-related macular degeneration, bilateral, advanced atrophic without subfoveal involvement
H35.3134	Nonexudative age-related macular degeneration, bilateral, advanced atrophic with subfoveal involvement
H35.3210	Exudative age-related macular degeneration, right eye, stage unspecified
H35.3211	Exudative age-related macular degeneration, right eye, with active choroidal neovascularization
H35.3212	Exudative age-related macular degeneration, right eye, with inactive choroidal neovascularization
H35.3213	Exudative age-related macular degeneration, right eye, with inactive scar
H35.3220	Exudative age-related macular degeneration, left eye, stage unspecified
H35.3221	Exudative age-related macular degeneration, left eye, with active choroidal neovascularization
H35.3222	Exudative age-related macular degeneration, left eye, with inactive choroidal neovascularization
H35.3223	Exudative age-related macular degeneration, left eye, with inactive scar
H35.3230	Exudative age-related macular degeneration, bilateral, stage unspecified
H35.3231	Exudative age-related macular degeneration, bilateral, with active choroidal neovascularization
H35.3232	Exudative age-related macular degeneration, bilateral, with inactive choroidal neovascularization
H35.3233	Exudative age-related macular degeneration, bilateral, with inactive scar
H35.33	Angioid streaks of macula
H35.341	Macular cyst, hole, or pseudohole, right eye
H35.342	Macular cyst, hole, or pseudohole, left eye
H35.343	Macular cyst, hole, or pseudohole, bilateral
H35.351	Cystoid macular degeneration, right eye
H35.352	Cystoid macular degeneration, left eye
H35.353	Cystoid macular degeneration, bilateral
H35.361	Drusen (degenerative) of macula, right eye

H35.362	Drusen (degenerative) of macula, left eye
H35.363	Drusen (degenerative) of macula, bilateral
H35.371	Puckering of macula, right eye
H35.372	Puckering of macula, left eye
H35.373	Puckering of macula, bilateral
H35.381	Toxic maculopathy, right eye
H35.382	Toxic maculopathy, left eye
H35.383	Toxic maculopathy, bilateral
H35.40	Unspecified peripheral retinal degeneration
H35.411	Lattice degeneration of retina, right eye
H35.412	Lattice degeneration of retina, left eye
H35.413	Lattice degeneration of retina, bilateral
H35.421	Microcystoid degeneration of retina, right eye
H35.422	Microcystoid degeneration of retina, left eye
H35.423	Microcystoid degeneration of retina, bilateral
H35.431	Paving stone degeneration of retina, right eye
H35.432	Paving stone degeneration of retina, left eye
H35.433	Paving stone degeneration of retina, bilateral
H35.441	Age-related reticular degeneration of retina, right eye
H35.442	Age-related reticular degeneration of retina, left eye
H35.443	Age-related reticular degeneration of retina, bilateral
H35.451	Secondary pigmentary degeneration, right eye
H35.452	Secondary pigmentary degeneration, left eye
H35.453	Secondary pigmentary degeneration, bilateral
H35.461	Secondary vitreoretinal degeneration, right eye
H35.462	Secondary vitreoretinal degeneration, left eye
H35.463	Secondary vitreoretinal degeneration, bilateral
H35.50	Unspecified hereditary retinal dystrophy
H35.51	Vitreoretinal dystrophy
H35.52	Pigmentary retinal dystrophy
H35.53	Other dystrophies primarily involving the sensory retina
H35.54	Dystrophies primarily involving the retinal pigment epithelium
H35.61	Retinal hemorrhage, right eye
H35.62	Retinal hemorrhage, left eye
H35.63	Retinal hemorrhage, bilateral
H35.70	Unspecified separation of retinal layers
H35.711	Central serous chorioretinopathy, right eye
H35.712	Central serous chorioretinopathy, left eye
H35.713	Central serous chorioretinopathy, bilateral
H35.721	Serous detachment of retinal pigment epithelium, right eye
H35.722	Serous detachment of retinal pigment epithelium, left eye
H35.723	Serous detachment of retinal pigment epithelium, bilateral
H35.731	Hemorrhagic detachment of retinal pigment epithelium, right eye
H35.732	Hemorrhagic detachment of retinal pigment epithelium, left eye
H35.733	Hemorrhagic detachment of retinal pigment epithelium, bilateral
H35.81	Retinal edema
H35.82	Retinal ischemia
H35.89	Other specified retinal disorders
H40.831	Aqueous misdirection, right eye
H40.832	Aqueous misdirection, left eye
H40.833	Aqueous misdirection, bilateral

H40.89	Other specified glaucoma
H43.811	Vitreous degeneration, right eye
H43.812	Vitreous degeneration, left eye
H43.813	Vitreous degeneration, bilateral
H43.821	Vitreomacular adhesion, right eye
H43.822	Vitreomacular adhesion, left eye
H43.823	Vitreomacular adhesion, bilateral
H44.2A1	Degenerative myopia with choroidal neovascularization, right eye
H44.2A2	Degenerative myopia with choroidal neovascularization, left eye
H44.2A3	Degenerative myopia with choroidal neovascularization, bilateral eye
H44.2B1	Degenerative myopia with macular hole, right eye
H44.2B2	Degenerative myopia with macular hole, left eye
H44.2B3	Degenerative myopia with macular hole, bilateral eye
H44.2C1	Degenerative myopia with retinal detachment, right eye
H44.2C2	Degenerative myopia with retinal detachment, left eye
H44.2C3	Degenerative myopia with retinal detachment, bilateral eye
H44.2D1	Degenerative myopia with foveoschisis, right eye
H44.2D2	Degenerative myopia with foveoschisis, left eye
H44.2D3	Degenerative myopia with foveoschisis, bilateral eye
H44.2E1	Degenerative myopia with other maculopathy, right eye
H44.2E2	Degenerative myopia with other maculopathy, left eye
H44.2E3	Degenerative myopia with other maculopathy, bilateral eye
H47.11	Papilledema associated with increased intracranial pressure
H47.12	Papilledema associated with decreased ocular pressure
H47.13	Papilledema associated with retinal disorder
H47.141	Foster-Kennedy syndrome, right eye
H47.142	Foster-Kennedy syndrome, left eye
H47.143	Foster-Kennedy syndrome, bilateral
H53.15	Visual distortions of shape and size
H53.411	Scotoma involving central area, right eye
H53.412	Scotoma involving central area, left eye
H53.413	Scotoma involving central area, bilateral
H53.421	Scotoma of blind spot area, right eye
H53.422	Scotoma of blind spot area, left eye
H53.423	Scotoma of blind spot area, bilateral
H53.431	Sector or arcuate defects, right eye
H53.432	Sector or arcuate defects, left eye
H53.433	Sector or arcuate defects, bilateral
H53.451	Other localized visual field defect, right eye
H53.452	Other localized visual field defect, left eye
H53.453	Other localized visual field defect, bilateral
H53.481	Generalized contraction of visual field, right eye
H53.482	Generalized contraction of visual field, left eye
H53.483	Generalized contraction of visual field, bilateral
H59.031	Cystoid macular edema following cataract surgery, right eye
H59.032	Cystoid macular edema following cataract surgery, left eye
H59.033	Cystoid macular edema following cataract surgery, bilateral
Z79.899*	Other long term (current) drug therapy

Group 3 Medical Necessity ICD-10 Codes Asterisk Explanation:

*Note: Z79.899 is to be reported for the baseline evaluation and for annual monitoring of patients on CQ and HCQ.

REIMBURSEMENT

Participating facilities will be reimbursed per their Highmark Health Options contract.

SUMMARY OF LITERATURE

Scanning computerized ophthalmic diagnostic imaging (SCODI) allows for the early detection of glaucomatous damage to the nerve fiber layer or optic nerve and has demonstrated clinical utility in facilitating earlier diagnosis and treatment as well as monitoring for progression and response to treatment. Evidence-based guidelines (2015 Academy of Ophthalmology [AAO] Preferred Practice Pattern [PPP] on Primary Open-Angle Glaucoma and 2010 American Optometric Association [AOA] Optometric Clinical Practice Guideline on Care of the Patient with Open Angle Glaucoma) identify SCODI as one technique that may be used to examine the optic nerve head (ONH) and/or retinal nerve fiber layer (RNFL). SCODI is often used to provide quantitative information to supplement the clinical exam of the optic nerve. SCODI is widely used in the posterior segment, whereas in the anterior segment, the use is still limited.

The evidence-based guideline from the AAO (2015 AAO PPP on Primary Angle Closure) indicates that anterior segment imaging should be considered when angle anatomy is difficult to assess on gonioscopy. There is good evidence demonstrating general agreement between findings on gonioscopy and anterior segment imaging, including ultrasound biomicroscopy and anterior segment optical coherence tomography (AS-OCT). However, AS-OCT is limited to evaluating the iridocorneal angle. AS-OCT is one technology that may prove useful in evaluating secondary causes of angle closure and elucidating plateau iris.

SCODI is also a valuable tool for the evaluation of patients with retinal disease, especially those with macular abnormalities. SCODI is often used in conjunction with clinical examination of the eye. It is at times used as a baseline and also used in monitoring for progression or response to treatment. The clinical utility of OCT imaging in retinal conditions has been demonstrated as providing an objective, accurate assessment of the amount and location of retinal thickening. Evidence-based guidelines from the AAO (PPP Diabetic Retinopathy [2016] and the PPP Idiopathic Macular Hole [2014, updated 2017]) support that in clinical practice, decisions are often based on OCT findings.

Finally, Marmor et al. (AAO Statement 2016) published recommendations on screening patients who are being treated with chloroquine and hydroxychloroquine. A baseline test is performed, and then ongoing monitoring at regular intervals is recommended. Marmor et al. recommend beginning annual screening after 5 years for patients on acceptable doses of chloroquine or hydroxychloroquine and without any major risk factors.

In an observational case study, Leite et al. (2010) looked at 99 patients with glaucomatous eyes and 47 control patients. The severity of disease was graded using the visual field index (VFI) from standard automated perimetry. The authors looked to determine if disease severity had any impact on the diagnostic accuracy of OCT. The average VFI was 85.5% for the glaucomatous eyes and 99.4% for the control eyes, indicating very minimal visual field loss. The results show that for those with mild disease (VFI near 100%) the sensitivity of OCT was 47% and the specificity was 95%. For those patients with a VFI of 70%, the sensitivity increased to 84% and the specificity was 95%.

Bowd et al. (2017) published a study that looked to estimate the measurement floors for spectral-domain optical coherence tomography (SD-OCT) measurements (minimum rim width [MRW], ganglion cell-inner plexiform layer thickness [GC-IPLT], and circumpapillary retinal nerve fiber layer thickness [cpRNFLT]), and compared global change over time in advanced glaucoma eyes. The study included a variability group of 41 eyes of 27 glaucoma patients with moderate to advanced glaucoma to estimate the measurement floors and 87 eyes of 59 patients with advanced to severe glaucoma in a longitudinal group. Average structural loss of MRW, macular GC-IPLT, and cpRNFLT in the variability group eyes (over 5 weeks of follow-up) and the longitudinal group eyes (over 2 years of follow-up) was presented. The results indicated the mean percentage of image area that did not reach the floor in the baseline images of eyes in the longitudinal group (i.e., the image percentage that changed after 2 years of follow-up) was 19% for MRW, 36% for GC-IPLT, and 14% for cpRNFLT, indicating that GC-IPLT likely is the most robust measurement for assessing localized changes in eyes with advanced glaucoma. Authors concluded that a significant percentage of SD-OCT-measured retinal tissue is spared from the measurement floor in advanced glaucoma eyes. In addition, progressive thinning of the spared tissue is observable well into late-stage disease, particularly when GC-IPLT is the structural parameter measured. These results indicate that optical imaging, particularly SD-OCT imaging, has a place in detecting structural change in eyes with advanced glaucoma.

Belghith et al. (2016) did a study to compare SD-OCT standard structural measures MRW, ganglion cell-inner plexiform layer (GC-IPL), and cpRNFL and a new three-dimensional (3D) volume optic nerve head (ONH) change detection method for detecting change over time in severely advanced-glaucoma (open-angle glaucoma [OAG]) patients. The study included three groups of participants. The first group was composed of 35 eyes of 35 advanced-glaucoma patients followed for an average of 3.5 years. The stable glaucoma group consisted of 50 eyes from 27 early-, moderate-, and advanced-glaucoma patients with five serial OCT exams imaged every week for 5 weeks. A third group of 46 eyes from 30 healthy subjects followed for an average of 2.8 years was used to estimate the aging effects. Results suggest that even in very advanced glaucoma, structural loss can be detected in some eyes using standard global structural measures. Specifically, macular GC-IPL had the highest proportion of eyes with detectable change (31%), followed by MRW (11%) and cpRNFL (4%). In addition, the 3D whole-volume Bayesian-kernel detection scheme (BKDS) change method, which does not require extensive retinal layer segmentation, detected change in 37% of eyes. The authors concluded the results suggest that even in very advanced disease, structural change can be detected, and that monitoring macular GC-IPL and 3D whole-volume patients BKDS change shows promise for identifying progression in advanced glaucoma. However, a larger sample of advanced-glaucoma patients with longer follow-up is needed to validate these findings.

In a retrospective case note review, Hau et al. (2015) compared AS-OCT with ultrasound B-scan (USB) in evaluating iris and iridociliary body lesions. Patients with other anterior or posterior segment lesions or tumors were excluded from this study. The study included 126 patients (126 eyes), the mean age of the patient group was 57.8, who were imaged with both AS-OCT and USB presenting to the same ocular oncology center over a 2 year period of time. The three most common diagnoses were iris naevi, iris pigment epithelial cysts, and iris melanoma. The aim of the study was to evaluate which imaging modality (AS-OCT vs. USB) provided better visualization and characterization of a large cohort of iris and iridociliary body lesions. High-frequency ultrasound biomicroscopy (UBM) was not included in this study, but was referenced as having some distinct advantages over USB and AS-OCT as well as limitations on use. The results revealed that USB was better than AS-OCT in visualizing all tumor margins, posterior tumor margin, and producing less posterior shadowing. USB was slightly better for resolving the overall tumor and posterior tumor surface, but AS-OCT was better for resolving the anterior and lateral tumor surface. In total, AS-OCT was able to detect more lesions than USB, especially in imaging iris lesions, but it was unable

to detect any of the ciliary body lesions. The authors concluded that AS-OCT is superior to USB for imaging small lesions pertaining to the anterior iris, but USB is better for imaging larger iris lesions with posterior or ciliary body extension.

Janssens et al. (2016) conducted a systematic review to determine how accurate AS-OCT and UBM are in determining tumor margins and tumor depth of conjunctival and corneal tumors and if either of these techniques can provide additional information regarding the diagnosis. Fourteen sources were selected to analyze corneal and conjunctival tumor thickness and internal characteristics and extension in depth and size and shape measured by either of these two noninvasive techniques, AS-OCT or UBM, or a combination of both. The study designs included retrospective analysis, retrospective interventional case series, retrospective noninterventional case series, prospective studies, and unknown study designs. The number of patients in articles using UBM (alone) in conjunctival and corneal tumors totaled 44, the number of patients in articles using AS-OCT (alone) in conjunctival and corneal tumors totaled 211 (212 eyes), and the number of patients in articles using both UBM and AS-OCT in conjunctival and corneal tumors totaled 235 (238 tumors). The results show that both AS-OCT and UBM imaging techniques provide useful information about the internal features, extension, size, and shape of tumors. There is not enough evidence on the advantages and disadvantages of AS-OCT and UBM in certain tumor types. The authors concluded that more comparative studies are needed to investigate which imaging technique is most suitable for a certain tumor type.

Analysis of Evidence
The clinical utility of SCODI has been established and validated in evidence-based guidelines and literature for early detection of glaucomatous damage to the retinal nerve fiber layer or optic disc, differentiation and diagnosis of other disorders of the optic nerve, as well as monitoring for progressive optic neuropathy, monitoring retinal conditions, and drug-related ocular toxicity.

A number of studies have been published to evaluate the usefulness of posterior OCT for individuals with advanced glaucomatous damage as well as the potential applications of anterior segment OCT (AS-OCT and SD-OCT with anterior segment imaging capabilities) to image and provide measurements of anterior segment structures in a number of clinical situations. Overall, these studies have small sample sizes, relatively limited follow-up, and no documentation of improved health outcomes.

POLICY SOURCE(S)

Aetna Clinical Policy Bulletin Number 0749. Anterior Segment Scanning Computerized Ophthalmic Diagnostic Imaging. Effective 03/21/2008, Last review 10/13/2016. Last Accessed 05/03/2019.

American Academy of Ophthalmology (AAO). Cataract in the Adult Eye. Preferred Practice Pattern. San Francisco, CA: AAO; 2016. Last accessed 05/01/2019.

American Academy of Ophthalmology (AAO), Glaucoma Panel. Primary Angle Closure. Preferred Practice Pattern. San Francisco, CA: AAO; 2015. Last accessed 05/01/2019.

American Academy of Ophthalmology (AAO), Glaucoma Panel. Primary Open-Angle Glaucoma. Preferred Practice Pattern. San Francisco, CA: AAO; 2015. Last accessed 05/03/2019.

American Academy of Ophthalmology (AAO), Glaucoma Panel. Primary Open-Angle Glaucoma Suspect. Preferred Practice Pattern. San Francisco, CA: AAO; 2015. Last accessed 05/03/2019.

American Academy of Ophthalmology Retina/Vitreous Panel. Preferred Practice Pattern® Guidelines. Idiopathic Macular Hole. San Francisco, CA: American Academy of Ophthalmology; 2014 (updated 2017).

American Academy of Ophthalmology. Web Extra: CPT code 92133 (SCODI). EyeNet Magazine. June 2015.

American Glaucoma Society and American Academy of Ophthalmology. Glaucoma Stage Definitions. Glaucoma Quick Reference Guide. Revised 02/17/2015.

American Optometric Association (AOA), Optometric Clinical Practice Guideline. Care of the Patient with Open Angle Glaucoma. St. Louis, MO: revised 2010.

American Optometric Association (AOA), Optometric Clinical Practice Guideline. Care of the Patient with Primary Angle Closure Glaucoma. St. Louis, MO: revised 1998.

Angmo D, Nongpiur ME, Sharma R, et al. Clinical utility of anterior segment swept-source optical coherence tomography in glaucoma. *Oman J Ophthalmol*. 2016 Jan-Apr;9(1):3-10.

Bakri SJ, Berrocal A, Capone A, et al. Posterior Vitreous Detachment. Retinal Health Series – Facts from the ASRS. The Foundation American Society of Retina Specialists. 2016.

Belghith A, Medeiros FA, Bowd C, et al. Structural Change Can Be Detected in Advanced-Glaucoma Eyes. *Invest Ophthalmol Vis Sci*.2016 Jul 1;57(9):OCT511-8.

Bowd C, Zangwill LM, Weinreb RN, et al. Estimating Optical Coherence Tomography Structural Measurement Floors to Improve Detection of Progression in Advanced Glaucoma. *Am J Ophthalmol*. 2017 Mar;175:37-44.

de Moraes CG, Liebmann JM, Medeiros FA, et al. Management of advanced glaucoma: Characterization and monitoring. *Surv Ophthalmol*. 2016 Sep-Oct;61(5):597-615.

Fernandez-Vigo JI, Fernandez-Vigo C, Martinez de la Casa JM, et al. Identification of iridocorneal angle structures assessed by Fourier domain optical coherence tomography. *Arch Soc Esp Oftalmol*. 2016 Feb;91(2):74-80.

Florida Blue Medical Coverage Guideline 01-92000-17 Scanning Computerized Ophthalmic Diagnostic Imaging; effective 04/17/2000; revised 10/01/2016.

Han SB, Liu YC, Noriega KM, et al. Applications of Anterior Segment Optical Coherence Tomography in Cornea and Ocular Surface Diseases. *J Ophthalmol*. 2016;2016:4971572.

Hau SC, Papastefanou V, Shah S, et al. Evaluation of iris and iridociliary body lesions with anterior segment optical coherence tomography versus ultrasound B-scan. *Br J Ophthalmol*. 2015 Jan;99(1):81-6.

Janssens K, Martens M, Lauwers N, et al. To Study and Determine the Role of Anterior Segment Optical Coherence Tomography and Ultrasound Biomicroscopy in Corneal and Conjunctival Tumors. *J Ophthalmol*. 2016;1048760. doi: 10.1155/2016/1048760. Epub 2016 Dec 6.

Kim KE, Oh S, Jeoung JW, et al. Spectral-domain Optical Coherence Tomography in Manifest Glaucoma: Its Additive Role in Structural Diagnosis. *Am J Ophthalmol*. 2016 Nov;171:18-26.

Kreda SH. Diagnosis and Management of Optic Disc Elevation. Optometric Management. 2009.

Leite MT, Zangwill LM, Weinreb RN, et al. Effect of Disease Severity on the Performance of Cirrus Spectral-Domain OCT for Glaucoma Diagnosis. *Invest Ophthalmol Vis Sci.* 2010 Aug;51(8):4104-4109.

Marmor MF, Kellner U, Lai TY, et al. American Academy of Ophthalmology. Recommendations on screening for Chloroquine and Hydroxychloroquine retinopathy (2016 Revision). *Ophthalmology*. 2016 Jun;123(6):1386-1394.

National Institutes of Health (NIH), National Eye Institute (NEI). Retinal Disease Program – National Plan for Eye and Vision Research [NEI Strategic Planning].

Nongpiur, ME, Aboobakar IF, Baskaran M, et al. Association of Baseline Anterior Segment Parameters with the Development of Incident Gonioscopic Angle Closure. *JAMA Ophthalmol*.2017 Mar 1;135(3)252-258.

Rao HL, Addepalli UK, Chaudhary S, et al. Ability of different scanning protocols of spectral domain optical coherence tomography to diagnose preperimetric glaucoma. *Invest Ophthalmol Vis Sci*. 2013 Nov 1;54(12):7252-7.

Rao HL, Yadav RK, Addepalli UK, et al. Comparing spectral-domain optical coherence tomography and standard automated perimetry to diagnose glaucomatous optic neuropathy. *J Glaucoma*. 2015 Jun-Jul;24(5):e69-74.

Suda K, Hangai M, Akagi T, et al. Comparison of Longitudinal Changes in Functional and Structural Measures for Evaluating Progression of Glaucomatous Optic Neuropathy. *Invest Ophthalmol Vis Sci*. 2015 Aug;56(9):5477-84.

Thomas BJ, Galor A, Nanji AA, et al. Ultra high-resolution anterior segment optical coherence tomography in the diagnosis and management of ocular surface squamous neoplasia. *Ocul Surf*. 2014 Kam;12(1):46-58.

Tun TA, Baskaran M, Tan SS, et al. Evaluation of the Anterior Segment Angle-to-Angle Scan of Cirrus High-Definition Optical Coherence Tomography and Comparison With Gonioscopy and With the Visante OCT. *Invest Ophthalmol Vis Sci*. 2017 Jan;58(1):59-64.

Xu BY, Israelsen P, Pan BX, et al. Benefit of Measuring Anterior Segment Structures Using an Increased Number of Optical Coherence Tomography Images: The Chinese American Eye Study. *Invest Ophthalmol Vis Sci*. 2016 Nov; 57(14):6313-6319.

Policy History

Date	Activity
05/02/2019	Initial policy developed. Agreed-upon policy transferred from Payment Integrity due to clinical criteria.
07/16/2019	QI/UM Committee approval
09/16/2019	Provider effective date