

VS1: Medical Standards for Safety Critical Workers with Visual Function Evaluation and Requirements



VISUAL FUNCTION EVALUATION AND REQUIREMENTS

1. **Visual acuity testing** – assesses distant and far vision. Distant visual acuity is needed to identify and assess the speed and direction of motion of distant objects; near visual acuity is needed for reading and assessing detail of near objects. A Manifest Refraction is the test done by an ophthalmologist or optometrist to determine the person's corrected visual acuity and to prescribe corrective lenses.

Minimum vision standard for visual acuity for workers in safety critical positions

 - a. Best corrected distant visual acuity of 20/40 or better in each eye is required for train crew and most other safety critical positions. In some situations, based on an individualized evaluation of visual function and job demands, a person may be approved to work with 20/40 distant vision in only one eye.
 - b. Employees who wear contact lenses to meet visual acuity criteria must carry back-up spectacles at work (for train crew this is a FRA requirement). The employee must meet visual acuity criteria with back-up spectacles, and must be able to tolerate use of contact lenses and/or backup spectacles for a full work day.
2. **Visual field testing** – is used to assess the field of vision in central, paracentral, and peripheral visual fields. Central and paracentral visual fields can be assessed using automated equipment (e.g., Humphrey Automated Visual Field Analyzer). Other tests (e.g., Goldmann Perimetry) may be needed to measure full visual fields.

Minimum vision standard for visual fields for workers in safety critical positions

 - a. Normal central, paracentral, and peripheral visual fields (with no clinically significant deficits) are typically required for most safety critical positions.
 - b. Employees with visual field deficits require individual evaluation of visual function and job demands.
3. **Color vision testing** – is done to identify persons with color vision deficiency, which can be either inherited or acquired (e.g., related to certain eye disorders or chronic use of certain medications).

Minimum vision standard for color vision for workers in safety critical positions

 - a. 14-plate Ishihara color vision test is used for initial testing; additional color vision testing may also be done.
 - b. All train crew must meet FRA color vision standards and normal color vision is required for many other jobs.
4. **Other visual function tests** - may be done to assess a person's ability to meet specific visual demands, including working in low light, low contrast, or high glare conditions. These tests include:
 - a. **Contrast sensitivity testing** – assesses ability to see in low contrast and low light situations.
 - b. **Disability glare testing** – assesses visual acuity when substantial glare is present from nearby light sources. This test is often used to assess visual impairment from cataracts or corneal abnormalities.
 - c. **Near and far stereopsis testing** – assesses binocular vision at both near and far distance.

WORK RESTRICTIONS FOR VISUAL FUNCTION IMPAIRMENT

MEDICAL CONDITION / DIAGNOSIS	DURATION
Suspected visual function impairment – but where Thorough Ophthalmic and Functional Vision Evaluations have not been done.	Individually evaluated – may require work restrictions pending test results
Confirmed visual function impairment – based on the findings of Thorough Ophthalmic and Functional Vision Evaluations	Ongoing work restrictions – may require work restrictions based on visual function exam findings

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for impaired visual function:

1. Impairments in visual function may affect the health and safety of the individual employee and/or others, requiring appropriate functional work restrictions (e.g., restrictions from operating vehicles or certain equipment).
2. It is the responsibility of all UPRR employees to ensure they are medically fit-for-duty when they report to work. If an employee has impaired vision, or a condition that poses a risk for sudden or rapid change in vision, then the person must report this to HMS and not perform safety critical work until a fitness-for-duty evaluation has been completed by HMS.

To remove work restrictions for visual function impairment, the following conditions must be met:

1. Employee must complete any minimum waiting period assigned by HMS (e.g., after a surgical procedure).
2. Employee must have recent Thorough Ophthalmic Evaluation by an ophthalmologist or optometrist with appropriate diagnostic testing (as directed by these medical standards and clinical best practice). All eye conditions and visual function issues of concern to HMS should be adequately evaluated.
3. If after reviewing available information, HMS determines the employee's vision and medical conditions pose an acceptable level risk for safety critical work, then HMS may remove or modify work restrictions. HMS may also apply other work restrictions due to safety concerns.
4. If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

1. Medical monitoring may be required by HMS after return to work. Typically, HMS requires the employee to have an annual Thorough Ophthalmic Evaluation by an ophthalmologist or optometrist, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
2. The employee must inform HMS of any Reportable Health Event (i.e., a change in vision or health status that may affect safety at work) as stated in the UPRR Medical Rules.

VS2: Medical Standards for Safety Critical Workers with Diabetic Eye Disease



CLASSIFICATION AND DEFINITIONS

1. **Diabetic eye disease** – any eye disorder caused by diabetes mellitus or its treatments including diabetic retinopathy (DR), macular edema (ME), vitreous hemorrhage (VH), or retinal detachment (RD).
2. **Diabetic retinopathy (DR)** – a potentially progressive disease of blood vessels in the retina of the eye; may cause impaired visual function and blindness. DR is due to microvascular changes that cause retinal blood vessels to leak fluid or new blood vessels to develop in the retina. Related to both type 1 and type 2 diabetes.
 - a. **Non-proliferative diabetic retinopathy (NPDR)** – early stage of DR. With mild or moderate NPDR there may be no symptoms and visual function may be normal. On exam, the retina may show blood vessel changes (i.e., microaneurysms) and fluorescein angiography may show areas of ischemia. Severe NPDR may cause impaired visual function including acquired color vision loss or loss of stereopsis, posing safety risks for work.
 - b. **Proliferative diabetic retinopathy (PDR)** – advanced stage of DR, characterized by abnormal retinal blood vessel formation (neovascularization), which can burst causing VH. RD or formation of epiretinal membranes may also occur. UPRR considers any stage of PDR to pose a permanent unacceptable risk for rapid (sudden or acute) vision impairment from ME, VH, or RD.
 - c. **Laser photocoagulation** – may be used to treat DR; laser burns of the retina are intended to decrease retinal oxygen demand and slow neovascularization. This treatment may cause impaired vision.
3. **Clinically significant macular edema (CSME)** – diabetic eye disease where edema forms in the macula (the part of the retina responsible for central vision). CSME may cause rapid or acute vision loss (over hours to days) with no warning. Initially, ME may be reversible, but it may become irreversible.
4. Common diagnostic evaluations for diabetic eye disease (partial list of appropriate evaluations and tests)
 - a. **Thorough Ophthalmic Evaluation** – a comprehensive eye exam by an ophthalmologist or optometrist
 - b. **Optical Coherence Tomography (OCT)** – used to assess retinal thickening and macular edema.

WORK RESTRICTIONS FOR DIABETIC EYE DISEASE

MEDICAL CONDITION / DIAGNOSIS	DURATION
Suspected diabetic eye disease – no recent ophthalmic evaluation If the employee has diabetes, but it is unclear if diabetic eye disease is present, and the person has not provided HMS with records of a recent Thorough Ophthalmic Evaluation (including dilated retinal exam).	Individually evaluated – pending ophthalmic exam may need work restrictions based on findings of the ophthalmic evaluation
Mild or Moderate NPDR If confirmed by ophthalmic exam done within prior 12 months, and person has adequate visual function for safety critical work	No work restrictions needed – requires annual medical monitoring with adequate ophthalmic exam
Severe NPDR If confirmed by recent Thorough Ophthalmic Evaluation.	Individually evaluated – may need work restrictions based on exam
Proliferative diabetic retinopathy (PDR) At any stage, and in one or both eyes, if confirmed by Thorough Ophthalmic Evaluation.	Permanent work restrictions – due to risk of rapid vision loss from VH or RD, and for fixed visual impairment
Clinically significant macular edema (CSME) Any history of CSME in one or both eyes, even if vision has temporarily improved.	Permanent work restrictions – due to risk of rapid vision loss from CSME, and for fixed visual impairment

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for safety critical workers:

1. UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation for vision (in these medical standards) includes a sudden or rapid visual impairment or vision loss that may pose safety risks for work.
2. Work restrictions for sudden incapacitation limit functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
3. Work restrictions may include a “minimum waiting period” (after a health event, or surgical or medical procedure) before consideration for return to safety critical work.

To remove work restrictions, these conditions must be met:

1. Employee must complete any minimum waiting period that applies and have no new health events that pose safety risk.
2. Employee must have recent Thorough Ophthalmic Evaluation with appropriate diagnostic assessment (as per these medical standards and clinical best practice).
3. If after reviewing available information, HMS determines the employee has an acceptable level of risk for safety critical work, then HMS may remove the employee’s work restrictions. However, HMS may apply other work restrictions due to safety concerns.
4. If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

1. Medical monitoring by HMS is required after return to work. Employee must have a Thorough Ophthalmic Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
2. The employee must inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

VS3: Medical Standards for Safety Critical Workers with Cataracts and Corneal Disorders



CLASSIFICATION AND DEFINITIONS

- Cataracts** – are opaque deposits in the lens of the eye that cloud vision. Cataracts develop gradually over years due to various causes. Advanced cataracts impair far and near visual acuity, especially around bright lights (i.e. glare disability) and at night, and may also impair color vision. Early cataracts may not impair functional vision, but advanced cataracts may significantly impair the ability to read, drive, and perform safety critical work. Typical treatment for cataracts is surgical removal and implantation of an artificial intraocular lens (IOL). After surgery, vision typically stabilizes in several months and then corrective spectacles are often prescribed.
- Corneal scars or deformities (not otherwise specified)** – scars and other deformities of the cornea may be due to trauma or other causes. Corneal scars or deformities (especially those in the central field of vision) may impair visual acuity and cause substantial glare disability.
- Keratoconus** – is a disorder that causes deformity of the cornea, which may result in significant visual impairment. The cause of keratoconus is unclear and may be genetic. The disorder typically is bilateral but may progress differently in each eye. Early keratoconus may cause blurry vision that is correctable with prescription eyewear. Advanced keratoconus may have significant uncorrectable impairment in visual acuity and night vision that may be associated with optical aberrations, such as distortion or multiple visual images in one or both eye. The disease may stabilize or progress over time. Advanced keratoconus may require corneal transplant.
- Corneal refractive surgery (CRS)** – may be done to improve visual acuity for individuals who require corrective eyewear. Employees who chose to have CRS that corrects one eye for far vision and the other for near vision, may not be able to meet vision requirements for work without additional eyewear that provides adequate correction for distant visual acuity both eyes.
- Diagnostic tests to assess disorders of the lens or cornea**
 - Thorough Ophthalmic Evaluation** (by ophthalmologist or optometrist) with a Slit Lamp evaluation of the anterior segment of the eye may be sufficient to diagnose cataract, lens, and corneal disorders.
 - Tests of visual function** – (see Table VS-1) useful for evaluating these conditions are tests of visual acuity, contrast sensitivity, stereopsis, glare disability, night vision, and color vision testing.
 - Corneal topography and other corneal imaging** – used to assess the shape and thickness of the cornea, and to evaluate corneal disorders (e.g., for monitoring the progression of keratoconus)

WORK RESTRICTIONS FOR CATARACTS AND CORNEAL DISORDERS

MEDICAL CONDITION / DIAGNOSIS	DURATION
Suspected visual impairment – based on symptoms and a recent Thorough Ophthalmic (ophthalmologist or optometrist) Evaluation has not been done.	Individually evaluated – may require work restrictions pending evaluation
Early cataract or corneal disorder – but no impaired functional vision.	No restrictions – do annual monitoring
Advanced cataract, keratoconus, or other lens or corneal disorder – with substantial impairment in visual function.	Ongoing work restrictions – reassess if surgical treatment is done
After cataract surgery – note: if bilateral cataract surgery is planned, both surgeries may need to be completed before returning to work.	3-month minimal waiting period – then assess vision with new spectacles
Corneal transplant surgery or other corneal surgery	Individually evaluated

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for safety critical workers:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation for vision (in these medical standards) includes a sudden or rapid impairment or loss of vision that may pose a safety risk for work.
- Work restrictions for sudden incapacitation limit functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions may include a “minimum waiting period” (after a health event, or surgical or medical procedure) before consideration for return to safety critical work.

To remove work restrictions, these conditions must be met:

- Employee must complete any minimum waiting period that applies and have no new health events that pose safety risk.
- Employee must have recent Thorough Ophthalmic Evaluation with appropriate diagnostic assessment (as per these medical standards and clinical best practice).
- If after reviewing available information, HMS determines the employee has an acceptable level of risk for safety critical work, then HMS may remove the employee’s work restrictions. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. Employee must have a Thorough Ophthalmic Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

VS4: Medical Standards for Safety Critical Workers with Glaucoma and Other Eye Disorders



CLASSIFICATION AND DEFINITIONS

- Glaucoma** – is an eye condition that may cause progressive damage to the optic nerve from increased intraocular pressure, resulting in visual field, color vision, or visual acuity losses. Initially the visual field losses are peripheral, but as the disease progresses central visual field loss occurs and may lead to blindness. Acquired color vision deficiency may also be an early effect of glaucoma. Treatment may slow the disease. Open angle glaucoma progresses slowly, but closed angle glaucoma may result in sudden onset of impaired vision.
- Age-related macular degeneration (ARMD)** – is a disease causing deterioration of the macula, resulting in an irreversible loss of central vision, which eventually makes it difficult to read, drive, or recognize faces. Risk factors for ARMD include age over 50, smoking, and genetic factors. Treatment may slow progression of the disease. With early ARMD, vision deteriorates slowly, but with advanced ARMD rapid vision loss may occur.
- Other retinal disorders** – including hypertensive retinopathy, other retinopathies, retinal detachment, traumatic injury, degenerative conditions, or other causes. Retinal disorders often cause permanent vision impairment.
- Corneal refractive surgery (CRS)** – may be done to improve visual acuity for individuals who require corrective eyewear. Employees who chose to have CRS that corrects one eye for far vision and the other for near vision, may not be able to meet vision requirements for work without additional eyewear that provides adequate correction for distant visual acuity both eyes.
- Diagnostic tests to assess glaucoma, ARMD, and other optic nerve or retinal disorders**
 - Visual field (VF) testing** – to assess VF loss. Automated VF testing can be used to assess central and paracentral VFs. Goldmann Perimetry (or similar testing) is needed to assess the full range of vision.
 - Optical Coherence Tomography (OCT)** – to assess retinal thickening, macular edema, and the optic nerve.
 - Visual evoked potentials (VEP) and electroretinography** – to assess optic nerve and retinal function.

WORK RESTRICTIONS FOR GLAUCOMA AND OTHER EYE DISORDERS

MEDICAL CONDITION / DIAGNOSIS	DURATION
Suspected vision impairment of unknown cause – with no recent Thorough Ophthalmic Evaluation (by ophthalmologist or optometrist)	Individually evaluated – may require work restrictions pending exam
Early open angle glaucoma or ARMD – provided a recent Thorough Ophthalmic Evaluation finds no vision impairment	No restrictions – but start annual monitoring
Advanced open angle glaucoma – when Thorough Ophthalmic Evaluation finds impairment in visual fields, color vision, or visual acuity	Individually evaluated
Closed angle glaucoma – may pose a risk for rapid vision loss	Individually evaluated
Advanced ARMD – with significant vision impairment or any stage of Wet ARMD	Permanent work restrictions
Other eye conditions – with or without vision impairment	Individually evaluated

WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

UPRR work restrictions for safety critical workers:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation for vision (in these medical standards) includes a sudden or rapid impairment or loss of vision that may pose a safety risk for work.
- Work restrictions for sudden incapacitation limit functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions may include a “minimum waiting period” (after a health event, or surgical or medical procedure) before consideration for return to safety critical work.

To remove work restrictions, these conditions must be met:

- Employee must complete any minimum waiting period that applies and have no new health events that pose safety risk.
- Employee must have recent Thorough Ophthalmic Evaluation with appropriate diagnostic assessment (as per these medical standards and clinical best practice).
- If after reviewing available information, HMS determines the employee has an acceptable level of risk for safety critical work, then HMS may remove the employee’s work restrictions. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. Employee must have a Thorough Ophthalmic Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.