

# D-15 Color Vision Test

## Your Comprehensive Guide

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**Color blindness can alter a patient's perception of the world, but they may not realize it until they struggle to match and arrange colors.** The D-15 color vision test can help eye doctors diagnose these red-green and blue-yellow color vision deficiencies by asking patients to order color samples into a rainbow progression. It's a simple task, but the way the patient organizes these colors can reveal key information about their perception.

As an extended color vision test, the D-15 is billable to insurance because it reveals more insight than basic screening tools. Learn when the D-15 is recommended, the range of diagnoses it can support, and how you can incorporate this test into your practice.

### Farnsworth D-15 Color Vision Test Overview

First introduced in 1947, the D-15 color vision test, also known as the Farnsworth D-15 test, assesses the severity of a patient's color vision deficiency. Arranging fifteen colored discs from darkest to lightest, moving from the blue end of the spectrum to red, will reveal subtle differences in perceived color. Despite its simplicity, this can be a revealing test. You can identify protanopia, deuteranopia, and tritanopia, and score these on severity.

Once the patient has arranged the color samples, you can score their accuracy using a circular map. Patients with normal color vision will be able to put the discs in order. Mild blindness will appear as slight deviations from the circle, while more severe color deficiencies will appear as zigzags across the map.

When using traditional, physical discs, you'll need perfect lighting. Fluorescent overhead lights, inconsistent illumination, or dim bulbs can skew patients' color vision. Therefore, many Farnsworth D-15 kits come with lighting or special standardizing glasses.

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## Academic references and clinical validation



Color vision tends to deteriorate with age, and in [this study](#) of older adults, both the Farnsworth D-15 test and Adams desaturated D-15 were shown to help identify blue-yellow defects.



[Research indicates](#) that factors such as time limitations and the brightness or quality of the lighting will significantly impact D-15 test results when administered using physical colored discs.



[A 2024 study](#) found that D-15 color vision testing can be reliably performed on digital screens, even when desaturated. This modality dramatically improves accessibility for both patients and providers.

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## The D-15 Color Vision Test at a Glance

The D-15 can quickly and effectively assess moderate to severe color deficiencies. Unlike the well-known Ishihara plates, the D-15 detects both red-green and blue-yellow color vision deficiencies. The test is beneficial for patients who need color vision testing as part of their occupation. However, it doesn't provide any information about visual acuity, nor does it detect every type of color deficiency. Patients with mild color deficiencies may still need further testing. When using traditional methods, the D-15's accuracy can be complicated by improper lighting, test familiarity, and the patient's fine motor skills.

### Pros and Cons of the D-15 Color Vision Test

PROS	CONS
Patients with good color vision may enjoy the D-15 test and treat it as a puzzle.	Manually manipulating and arranging the color discs can be time-consuming or challenging for patients with limited fine motor skills.
This test is relatively quick to perform, but it can reveal a lot of information about the patient's color vision.	Traditional D-15 testing equipment takes up space in your practice, and the test requires ideal lighting.
Numbered color discs make test results easy, efficient, and objective to score.	With practice, color-blind patients can pass the D-15 test.
Unlike other color vision tests, the D-15 is non-verbal and can be administered to patients regardless of literacy level or language barriers.	The D-15 can identify multiple types of color blindness, but is most effective for moderate to severe deficiencies, which means that mild anomalies can go unnoticed.
The D-15 color vision test is billable to insurance.	Like other color vision exams, this test cannot provide insight into visual acuity, so additional testing is needed for a complete exam.

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## List of Ocular Diseases Monitored and Diagnoses Identified by the D-15 Color Vision Test

<b>Protanopia and deuteranopia</b>	Red-green color blindness accounts for the vast majority of color vision deficiency cases. With the D-15 test, you can identify protanopia and deuteranopia and indicate their severity.
<b>Tritanopia</b>	Blue-yellow color vision deficiency is much rarer, and you can use the D-15 to identify, map, and measure the severity of this uncommon condition.
<b>Retinal toxicity</b>	Drugs like hydroxychloroquine are known to impact vision and lead to color vision changes. Other toxins, like chemical exposure and heavy metals, can also cause color vision disturbances that may be noticeable with the D-15 test.
<b>Optic neuritis</b>	Optic neuritis can cause color vision deficits, especially <a href="#">red desaturation</a> . Because the D-15 asks patients to arrange colors from blue to red, these anomalies become clearer.
<b>Other Conditions</b>	The D-15 can also be used to monitor or diagnose: Retinal vein/artery occlusion, retinal detachment and later-stage retinitis pigmentosa • Glaucoma that impacts blue-yellow color vision • Autoimmune and inflammatory disorders

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## D-15 Color Vision Test Pricing

Traditional disc-based kits remain the lowest-barrier method for running a D-15. A standard Farnsworth D-15 set costs about \$195, while the desaturated Lanthony D-15, often used when you need to pick up subtler blue-yellow defects, runs a little higher at around \$209.

If you want a more streamlined experience and faster setup, magnetic versions add convenience but increase cost. The Magnetic Lanthony D-15 kit lists for roughly \$250, while individual replacement chips for magnetic Farnsworth sets start at \$17 each. All of these costs are one-time capital purchases. It's important to note that over time, you may incur occasional costs to replace faded chips.

Digital solutions represent higher costs but greater modernity. For example, the Waggoner Computerized D-15 is delivered as software for a PC or tablet at \$44.99 per month. Portable tablet testers, such as the ColorCheck Hand-held Tablet, cost around \$173 for the entire unit and include pediatric LEA symbol options.

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## Billing and Coding for the D-15 Color Vision Test

The Farnsworth D-15 color vision test is billed using CPT code 92283, as it is considered an extended color vision examination. This code is used for more rigorous exams than the basic color screening included in routine exams, which are not individually billable.

In the United States, this code is reimbursable under the [Medicare Physician Fee Schedule \(MPFS\)](#). The average allowable fee is \$57, but your location, setting, and other practice factors will impact this amount.

### When is the D-15 color vision test required?

Patients with normal color vision will only need to take the D-15 once. If a patient fails the Ishihara color vision test, the Farnsworth D-15 can provide more conclusive results. Patients with acquired color vision defects may need to take this exam periodically to monitor changes in their vision.

People in certain professional occupations, such as pilots and air traffic controllers, are often required to pass color vision tests. If these patients fail the Ishihara test, the D-15 can be administered as a secondary exam. Signal workers, electricians, police, and certain military personnel may also require the D-15 as part of their profession.

### Is the D-15 test required for driver's licenses?

Regular driver's license requirements vary from state to state, but most focus on visual acuity and visual field tests. Color vision is required only in Massachusetts and Hawaii, but no state explicitly mandates the use of the D-15. Color vision may be required for commercial driver's licenses, but they do not explicitly require the D-15 test. An Ishihara test or a similar one is usually sufficient.

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## Start Conducting Comprehensive Exams with Carrot

The D-15 test depends heavily on the environment and the patients' abilities. Patients will not be able to participate in a traditional D-15 test without physically moving the discs into their correct positions, and you will be required to ensure each one is in good condition. And of course, lighting has to be ideal.

Carrot's visual field tests can provide more insight and help monitor disease progression. You can [add Carrot to your testing routines](#) for comprehensive, precise, and patient-friendly eye exam experiences on a larger scale.

## Ready to get started?

Schedule a demo or begin your 30-day free trial of Carrot to offer an exceptional eye exam experience in your practice.

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Questions? Contact [sales@carrot.io](mailto:sales@carrot.io) talk to a Carrot expert today.