

# Ishihara Color Vision Test

## Your Comprehensive Guide

### [Ishihara Color Vision Test Overview](#)

The Ishihara Color Vision Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test

Example Ishihara Color Vision Test Report

Billing and Coding for the Ishihara Test

Start Conducting Ishihara Color Vision Tests with Carrot

**Patients can go their entire lives without noticing color blindness, but you can identify over 90% of cases with a single two-minute test.** This test is so well known curious patients may come across Ishihara plates online or in a textbook and come to their own eye-opening conclusions. Despite its familiarity and simplicity, the Ishihara color vision test remains one of the most widely used tools for detecting red-green color vision deficiencies.

This guide will cover the fundamentals of the Ishihara test from an eye care professional's perspective and highlight how Carrot improves on this hundred-year-old testing process.

### Ishihara Color Vision Test Overview

As a diagnostic tool, the Ishihara color vision test is simple: patients are provided a series of images and asked to identify what they see. Each image presents colored dots arranged in a pattern that obscures a number or shape. Depending on the patient's color vision abilities, the image will either be visible, invisible, or altered.

The Ishihara color vision test is iconic. Patients may not know it by name, but it's so common and recognizable that there's a good chance your patients have already seen and completed an Ishihara test on their own. They may even have concluded that they're experiencing red-green colorblindness.

Of course, self-diagnosis isn't reliable, especially when patients experiment with images online or in printed materials. Carrot eliminates the variables of poor lighting, inconsistent printing, inaccurate screen colors, or damaged plates, so you can reach a more accurate diagnosis. If test results are positive, you can move to a more sophisticated test like the Farnsworth D-15.

## [Ishihara Color Vision Test Overview](#)

The Ishihara Color Vision Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test

Example Ishihara Color Vision Test Report

Billing and Coding for the Ishihara Test

Start Conducting Ishihara Color Vision Tests with Carrot

## Academic references and clinical validation



**A longstanding study** evaluated the efficiency of the Ishihara test's transformation and vanishing plates and revealed that it was accurate in 95.5% - 99% of cases. Hidden digit plates required additional testing.



**Research shows** that the Ishihara test is accessible and effective, even among young children. A population study showed that 96.5% of children ages 3 to 6 could complete this test.



The Ishihara test is versatile. Studies show that it can be effectively administered in multiple formats: Traditional printed plates, digital versions on the **internet or smartphone apps**, and **virtual reality**.

**30 days free.**  
**No strings attached.**

We are confident you'll love Carrot just like the 2,400+ doctors who have already made the switch.

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Ishihara Color Vision Test Overview

[The Ishihara Color Vision Test at a Glance](#)

List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test

Example Ishihara Color Vision Test Report

Billing and Coding for the Ishihara Test

Start Conducting Ishihara Color Vision Tests with Carrot

## The Ishihara Color Vision Test at a Glance

The Ishihara test is so straightforward that patients can, and often do, use it to self-diagnose color blindness. Of course, their methodology is probably not accurate, so you'll need to confirm with your own exam. Patients tend to appreciate this test's simplicity and familiarity, but optometrists may feel constrained by its limitations. It can only identify red-green color vision deficiencies, and it can't provide insight into visual acuity, so positive Ishihara test results will require additional testing.

### Pros and Cons of the Ishihara Test

We know the Ishihara test is efficient, useful, and widely used, but there are pros and cons to incorporating this test into your routine.

PROS	CONS
Ishihara testing is simple and widely recognized as an efficient way to detect red-green color blindness.	Ishihara color vision testing is limited and cannot diagnose the cause of color perception.
Patients find the Ishihara test quick and non-invasive. Those with normal color vision may even consider it fun.	For patients with color vision deficiencies, immediate pass/fail results can be an emotional or <a href="#">shocking experience</a> .
For children and people who cannot read numbers, you can administer the Ishihara test using <a href="#">shapes</a> or traceable patterns.	Ishihara testing focuses on red-green deficiency and doesn't assess blue-yellow deficiency (tritanopia) or total color blindness.
With Carrot, the Ishihara test is reliable, fast, and conclusive.	When using traditional plates instead of Carrot, factors like poor lighting, damaged plates, or testing confusion can lead to inaccurate results.
	This test is not individually billable.

Ishihara Color Vision Test Overview

The Ishihara Color Vision Test at a Glance

[List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test](#)

Example Ishihara Color Vision Test Report

Billing and Coding for the Ishihara Test

Start Conducting Ishihara Color Vision Tests with Carrot

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<p><b>Protanopia and deuteranopia</b></p>	<p>About 8% of men and 0.5% of women have congenital color vision deficiencies. The Ishihara test is specifically designed to reveal protanopia (red blindness) and deuteranopia (green blindness).</p>
<p><b>Acquired color vision deficiencies</b></p>	<p><a href="#">Hydroxychloroquine</a> and other drugs that can impact vision can lead to color vision deficiencies. Patients who experience chemical exposure or radiation may also benefit from the Ishihara test, especially if exposure is ongoing.</p>
<p><b>Macular Degeneration</b></p>	<p>The macula is responsible for central vision and color perception, so over time, age-related macular degeneration can impair a patient’s ability to distinguish colors. The Ishihara test is most useful in the later stages of AMD.</p>
<p><b>Optic Neuropathies</b></p>	<p>Red-green color vision deficiencies are commonly associated with optic nerve damage. The Ishihara test can be an early indicator of optic nerve dysfunction and trigger further evaluation.</p>
<p><b>Other Conditions</b></p>	<p>Metabolic disorders like vitamin A deficiency or Wilson’s disease • Cataracts, retinal detachment, or diabetic retinopathy • Neurological and optic nerve disorders</p>

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The Ishihara Color Vision Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test

**Example Ishihara Color Vision Test Report**

Billing and Coding for the Ishihara Test

Start Conducting Ishihara Color Vision Tests with Carrot

## Example Ishihara Test Reports

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Color Vision | Carrot

**Ji-yoo Park**  
3.7.1970 (55)

MRN	DURATION	PROTAN	DEUTAN	RESULT
pa_f87e8dd3	1:09	0/2	0/2	Normal

Plate Number	Correct Response	Patient Response	Result
1	12	12	Correct
2	15	15	Correct
3	8	8	Correct
4	73	73	Correct
5	None	None	Correct
6	6	6	Correct
7	None	None	Correct
8	3	3	Correct
9	5	5	Correct
10	74	74	Correct
11	16	16	Correct
12	7	7	Correct
13	29	29	Correct
14	5	5	Correct
15	45	45	Correct
16	26	26	Correct
17	42	42	Correct

OUR NOTES

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Page 1 of 1

Ishihara Color Vision  
Test Overview

The Ishihara  
Color Vision Test  
at a Glance

List of Ocular Diseases  
Monitored and  
Diagnoses Identified  
by the Ishihara Color  
Vision Test

Example Ishihara Color  
Vision Test Report

[Billing and Coding  
for the Ishihara Test](#)

Start Conducting  
Ishihara Color  
Vision Tests with Carrot

## Billing and Coding for the Ishihara Test

The Ishihara color vision test isn't billable on its own. It does not qualify for the extended color vision examination (CPT code 92283) and isn't reimbursed.

However, the Ishihara test is often part of a routine, comprehensive eye exam. For new or existing patients, this would be categorized under CPT codes 92004 or 92014, respectively.

### When is the Ishihara color vision test required?

The Ishihara color vision test was [developed in 1918](#) for military use and remains useful today. [The United States military](#) currently administers the Ishihara test as part of its color vision testing standards for military special duty occupations.

This color accuracy test may be required for specific occupations, like pilots and air traffic controllers, police, electricians, engineers, certain healthcare professionals, and even artists. Many optometrists consider it a standard part of routine exams, and it's often administered to children to ensure accommodations at school.

For many healthy patients, one color vision test is sufficient. But for people in certain professions or those who experience changes in visual acuity, it may recur. Patients with diabetes, glaucoma, macular degeneration, neurological conditions, or eye injuries could need additional testing. People exposed to heavy metals, chemicals, or medications that affect vision may be at risk of [acquired color vision deficiency](#).

### Is the Ishihara test required for driver's licenses?

In most states, regular driver's licenses do not require an Ishihara color vision test, despite the need to distinguish red and green colored stoplights. Massachusetts and Hawaii do require all drivers to distinguish traffic colors, but other states only have color vision requirements for [commercial drivers](#). Most U.S. states prioritize visual acuity, field of vision, and the ability to identify the order of signal lights, not necessarily the colors themselves.

Ishihara Color Vision Test Overview

The Ishihara Color Vision Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by the Ishihara Color Vision Test

Example Ishihara Color Vision Test Report

Billing and Coding for the Ishihara Test

[Start Conducting Ishihara Color Vision Tests with Carrot](#)

## Start Conducting Ishihara Color Vision Tests with Carrot

Eye care professionals around the world have trusted the Ishihara test for over a century. It's easy to conduct this exam with traditional plates or a booklet, but these come with unavoidable inconsistencies. Lighting conditions, screen variations, and wear and tear will eventually lead to less accurate results. Carrot gets the brightness just right, and there's never a smudge or missing plate.

Modernize this time-tested tool for more accurate and conclusive test results that fit seamlessly into [your workflow](#). Save your patients' Ishihara test results in your EHR, and if your patient needs additional testing, you can quickly move on to more advanced assessments like the Farnsworth D-15. Carrot brings the Ishihara test into the digital age, and now it's even more reliable and accessible.

## 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.

[Book a demo](#)

[Start your 30-day trial](#)



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