

Visual Acuity Testing

Your Comprehensive Guide

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Every eye exam begins with a measurement of visual acuity. It's fast, simple, and can open the door for a whole host of further exams and assessments. It is a fundamental component of physical wellness exams, even in non-eye care settings.

To begin routine screenings, choose from a wide range of visual acuity tests, like the Snellen, pinhole, random E, or ETDRS visual acuity chart. Round out your exceptional exams with [Carrot](#) for visual field testing, color vision, pupillometry, and other specialty eye exams. This guide covers the details of visual acuity testing and its applications.

Visual Acuity Testing Overview

Visual acuity measures the eye's spatial resolution under high-contrast conditions by identifying the smallest letters a patient can read at a specified distance. [Standardized charts](#) and procedures ensure consistent testing across clinics. These are a few of the most common:

- **[Snellen chart](#).** In use since 1862, this ubiquitous wall chart presents rows of letters in decreasing size for patients to read aloud.
- **Early Treatment Diabetic Retinopathy Study (ETDRS) visual acuity test.** The ETDRS test is similar to the Snellen chart, but is more precise and often used in clinical trials.
- **Random E.** A repeating letter E appears in different directions while decreasing in size. Less common than the Snellen test, this option is often used for children and individuals who struggle to identify letters.
- **Pediatric visual acuity tests.** Children and people who struggle with reading letters may find it easier to identify common shapes, such as circles, squares, houses, or stars.
- **[Pinhole visual acuity test](#).** You can differentiate between a decrease in vision due to a refractive error or pathology using the pinhole test: have patients use a specialized paddle and ask them to read one of the standard charts above.
- **[Dynamic visual acuity test](#).** DVA can help measure visual acuity while the head is in motion, which is very useful for assessing vestibular function.

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The most common test is the Snellen chart, used at a distance of 20 feet. The result is expressed as a fraction, with 20/20 being the benchmark. Contrary to patients' common belief, 20/20 does not indicate perfect vision but the average. A myopic result of 20/40 means the person sees at 20 feet what a typical person can see at 40 feet. Sharper visual acuity is represented with a lower secondary number.

Visual acuity can be tested with or without correction. Best-corrected visual acuity (BCVA) is used to determine the sharpest vision a person can achieve with corrective lenses, i.e., glasses or contacts. This evaluation can help us identify if the patient's decreased vision is due to an underlying ocular pathology or a refractive error.

Academic references and clinical validation



A recent study showed that smartphone-based eye charts may be a viable alternative for testing when in-office screenings are unavailable. However, a **comparison survey** underscores the importance of caution when comparing different charts.



The **CDC recommends** conducting comprehensive eye exams every two years for adults aged 60 and older, as well as for individuals at risk of glaucoma. Patients with diabetes should undergo annual exams.



Depending on age, the prevalence of vision loss (20/40 or worse) ranges from 0.73% to over 20%. Around one-third of Americans have 20/20 normal vision. High visual acuity is very uncommon, but interestingly, **overrepresented in athletes**.

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Visual Field vs. Visual Acuity at a Glance

Visual acuity testing measures the sharpness or clarity of vision at a specific distance to determine how well one can see fine details. In contrast, visual field testing assesses the full horizontal and vertical range of what a person can see while keeping their eyes fixed in one position. Visual field tests essentially measure a patient's range of peripheral vision, rather than their clarity of vision. Visual field testing assesses the extent to which a patient can perceive their surrounding environment. This insight helps detect issues such as glaucoma or neurological damage, whereas visual acuity measures whether patients require corrective lenses.

Pros and Cons of Visual Acuity Testing

We know that visual acuity testing is efficient, useful, and widely used, but there are pros and cons to incorporating this test into your routine.

PROS	CONS
Testing is quick, inexpensive, and universally available.	Visual acuity testing can be conducted using multiple charts and formats, so it is essential to standardize the data.
This screening helps detect and monitor a wide range of eye conditions.	These tests are limited to high-contrast central vision and cannot provide insight into peripheral vision, contrast sensitivity, night vision, or color vision.
Establish a standardized baseline for patient visual performance with simple acuity tests.	Results can appear normal in patients with significant eye conditions, such as glaucoma or age-related macular degeneration (AMD).
Visual acuity testing is a non-negotiable requirement for licensing, workplace evaluations, school screenings, and most routine physical examinations.	Visual acuity testing relies on the patient's literacy and understanding of the Latin alphabet.

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Refractive Errors	Myopia, hyperopia, astigmatism, and presbyopia can be accurately diagnosed through visual acuity testing. From here, you can begin the corrective lens prescription process.
Amblyopia and Strabismus	Underdeveloped visual pathways or vision suppression can occur from misaligned eyes. In some cases, amblyopia isn't noticeable except during visual acuity testing.
Cataracts	Progressive opacity in the lens often causes a gradual decline in visual acuity. Cataract severity is often graded based on visual acuity thresholds.
Macular Degeneration	Early macular degeneration commonly presents with difficulty seeing in low light or scotomas in the visual field. In later stages, visual acuity can be impacted.
Diabetic Retinopathy	In later stages, diabetic macular edema can impair visual acuity. Routine testing helps detect functional changes before they lead to structural damage.
Optic Neuritis	Acute vision loss, especially unilateral, may first be detected as reduced visual acuity. Tracking fluctuations can help monitor recovery or progression.

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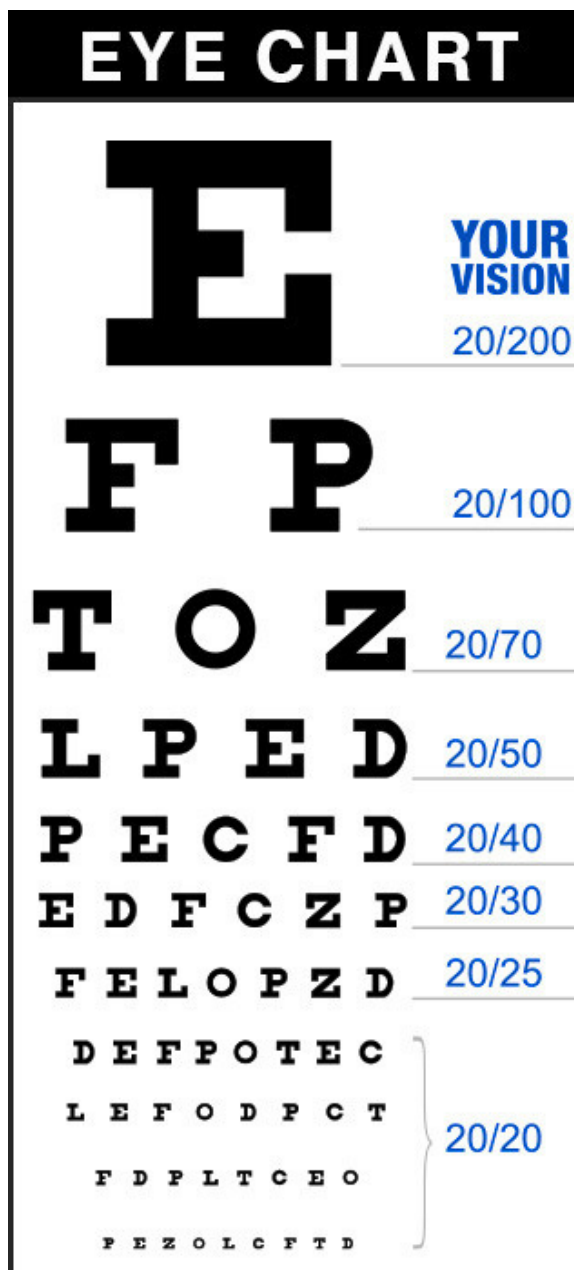
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Example Snellen Visual Acuity Test



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Billing and Coding for Visual Acuity Eye Exams

Use CPT codes 92004 (new patient) and 92014 (established patient) to bill for eye exams. [The CMS fee schedule](#) indicates reimbursement between \$110 and \$184, depending on your practice's location, type, and setting. Note that this fee covers [comprehensive ophthalmologic exams](#), not visual acuity alone.

When is the visual acuity test required?

This test is central to almost every eye exam — it's even a standard component of regular physical checkups. Conduct visual acuity tests for new and returning patients of all ages, people seeking driver's licenses, people who have experienced an injury or surgery that could affect vision, and any patients complaining of visual disturbances or difficulties.

Is visual acuity testing required for driver's licenses?

[Each state has its own threshold](#), but most require a minimum best corrected visual acuity of 20/40 or better in at least one eye. Many also require a visual field of 70 degrees on the horizontal meridian. A few states have low visual acuity thresholds for exceptions and special licenses. The [Esterman exam](#) is one of the most-used tests for driver's licensing, especially when combined with a standard eye chart.

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Exceptional eye exam experiences should be comfortable, patient-friendly, and comprehensive. Start with visual acuity to measure refractive errors, monitor chronic eye conditions, and initiate routine screenings. While it doesn't tell the whole story, it's a solid foundation. Add visual field and functional vision tests with Carrot for a more comprehensive picture of ocular function, enabling you to develop accurate, targeted treatment plans.

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 talk to a Carrot expert today.