EENT • PEDIATRICS • ADULT HEALTH • NGN NCLEX 2026

Visual Acuity Testing *Across the Lifespan*

Age-appropriate vision screening tools, expected acuity benchmarks, and nursing care priorities from newborn red reflex through geriatric assessment. Built for clinical judgment under the NCJMM framework.

NEWBORN → 65+ | 7 STAGES | 11 SECTIONS | HIGH-YIELD NGN

SOURCE TRANSPARENCY

This topic was not present in the user's uploaded personal notes. Content compiled and verified against standard NCLEX references: *Saunders Comprehensive Review for the NCLEX-RN (2026)*, *ATI Nursing Fundamentals & Pediatric Nursing modules*, *Lippincott Illustrated Reviews: Pediatrics*, *AAP Pediatric Vision Screening Guidelines*, and the *American Academy of Ophthalmology Preferred Practice Pattern*.

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DEFINITION & OVERVIEW

What Is Visual Acuity?

- **Visual acuity** = the sharpness/clarity of central vision, measured as the smallest detail the eye can resolve at a given distance.
- Standard adult notation = **20/20** (numerator = test distance in feet; denominator = the distance at which a person with normal vision sees that line clearly). **20/40** means the patient sees at 20 feet what a normal eye sees at 40.
- Acuity testing is the **cornerstone of vision screening**: early detection of amblyopia (lazy eye), refractive errors, strabismus, cataracts, and age-related disease prevents permanent vision loss. The chart and technique must match the patient's developmental level.

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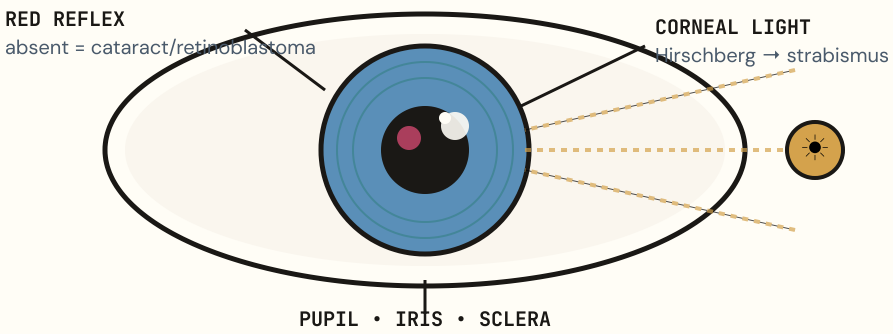
PATHOPHYSIOLOGY / VISUAL DEVELOPMENT

How Vision Matures



BIRTH

Light/dark only • Blink & pupillary reflex • Fixes 8–12 in

~20/400

2-4 MO

Tracks past midline • Recognizes faces

~20/200

6 MO

Binocular vision • Depth perception • Color

~20/100

2-3 YR

Picture/symbol charts feasible

~20/40

6-7 YR

Adult-level acuity • Snellen alphabet

20/20

3

STAGES OF VISION SCREENING

Age-Specific Tests & Nursing Care

STAGE 1

Newborn
0–1 month

~20/400

TESTS USED

Pupillary light reflex • Blink reflex • **Red reflex** (ophthalmoscope) • Corneal light reflex • Visual fixation on bold contrasts at 8–12 inches

NURSING CARE & TEACHING

Document presence/symmetry of red reflex bilaterally — **absent or white reflex (leukocoria) = urgent referral** (cataract, retinoblastoma). Teach parents: hold infant ~8–12 in away; use high-contrast black/white patterns; report no fixation on faces by 1 month.

STAGE 2

Infant
1–12 months

20/200 → 20/50

TESTS USED

Fix-and-follow (visual tracking) • **Hirschberg test** (corneal light reflex for alignment) • Cover/uncover test • Red reflex at well-baby visits

MILESTONES TO VERIFY

2–3 mo: tracks to midline • 3–4 mo: tracks past midline • **6 mo: should be able to fixate and follow with both eyes — refer if strabismus persists past 4–6 months** (after age 6 mo strabismus is never normal).

NURSING CARE & TEACHING

Teach parents to alternate sides when feeding (encourages binocular use). Report constant eye deviation, excessive tearing, or persistent crossing.

STAGE 3

Toddler
1–3 years

~20/40

TESTS USED

Allen picture cards (familiar objects: birthday cake, car, house) • **LEA symbols** (circle, square, apple, house) • Cover/uncover test • Photoscreening

NURSING CARE & TEACHING

Test each eye separately — use an **occluder paddle, not the child's hand** (children peek through fingers). Make it a game; rehearse pictures up close before testing at distance. Teach parents: childproof for eye injury, use sunglasses with UV protection.

STAGE 4

Preschooler 3–5 years

20/30 → 20/25

TESTS USED

HOTV chart (matching letters H, O, T, V) • **Snellen "E" chart / Tumbling E** (child shows direction E points) • **LEA symbols** • Stereo testing for depth

CRITICAL WINDOW

This is the **peak window for amblyopia detection** — visual development largely complete by age 7–9. Untreated amblyopia after this age may be permanent. **Refer if acuity worse than 20/40, or if 2-line difference between eyes.**

NURSING CARE & TEACHING

Test at the chart's specified distance (usually 10 ft for pediatric charts). Always cover one eye fully. Praise effort. Teach families about patching/atropine therapy adherence if amblyopia diagnosed.

STAGE 5

School-Age 6–12 years

20/20

TESTS USED

Standard Snellen alphabet chart at 20 feet • Color vision (Ishihara plates) at school entry • Near-vision card

NURSING CARE & TEACHING

Annual school vision screening. Watch for **squinting, sitting close to TV, holding books close, headaches, complaints of blurry board work** — classic signs of **myopia** (nearsightedness), most common school-age refractive error. Refer for prescription if acuity <20/30 in either eye.

STAGE 6

Adolescent 13–18 years

`20/20`

TESTS USED

Snellen chart • Near-vision card • Color vision • Screen for refractive errors (myopia progression common during growth spurts)

NURSING CARE & TEACHING

Reinforce **protective eyewear for sports** (basketball, racquet sports = highest eye-injury risk). Teach safe contact lens hygiene: never sleep in lenses unless approved, wash hands, no tap-water rinsing, replace per schedule. Counsel on screen-time eye strain (20-20-20 rule).

STAGE 7

Adult 19–64 years

`20/20`

TESTS USED

Snellen chart • Jaeger near-vision card • Tonometry (IOP screening for glaucoma) • Refraction

NURSING CARE & TEACHING

Comprehensive exam every 2 years (annually if diabetic, hypertensive, or family history of glaucoma). **Presbyopia** (loss of near focus) typically begins age 40–45 — teach about reading glasses/bifocals. UV protection, computer ergonomics, screen breaks.

STAGE 8

Older Adult 65+ years

`Variable — screen often`

TESTS USED

Snellen + Jaeger card • Amsler grid (macular degeneration) • Tonometry • Dilated fundoscopic exam • Confrontation visual fields

COMMON FINDINGS

Cataracts (cloudy lens, halos, glare) • **Glaucoma** (peripheral loss, "tunnel vision") • **Macular degeneration** (central distortion on Amsler grid) • **Diabetic retinopathy** • **Presbyopia**

NURSING CARE & TEACHING

Annual comprehensive exam. **Fall-prevention priority**: remove rugs, increase ambient lighting, contrast strips on stair edges. Provide large-print materials, audiobooks, magnifiers. Place items in unaffected visual field; announce presence before touching low-vision patients.

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SIGNS & SYMPTOMS — RED FLAGS

When to Refer Immediately

NEWBORN / INFANT

Absent or asymmetric red reflex • Leukocoria (white pupil) • No fix-and-follow by 3 months

INFANT ≥ 6 MO

Strabismus that persists past 4–6 months • Constant eye deviation at any age • Nystagmus

TODDLER / PRESCHOOL

Head tilt to see • Excessive squinting • 2-line difference between eyes • Acuity worse than 20/40

SCHOOL-AGE

Sitting close to TV • Holding books close • Headaches with reading • Falling grades in board work

ADULT

Sudden vision loss • Curtain over eye • Flashes/floaters (retinal detachment) • Halos around lights (glaucoma)

OLDER ADULT

Central distortion on Amsler grid • Increasing glare/halos (cataract) • Tunnel vision (glaucoma) • Sudden one-sided vision loss (CVA/TIA)

PRIORITY NURSING INTERVENTIONS

5 Safe, Effective Screening Technique

Before the Test

- **Assess** developmental level — choose the matching chart (Allen, LEA, HOTV, Tumbling E, Snellen).
- **Verify** the child wears glasses/contacts if prescribed (test corrected vision unless screening for new error).
- **Position** patient at the chart's specified distance (commonly 10 ft for pediatric, 20 ft for Snellen).
- **Pre-teach** young children: rehearse the pictures or letters up close so they understand the task.

During the Test

- **Test each eye separately** — right eye (OD) first, then left (OS), then both (OU).
- **Use an occluder paddle**, never the patient's hand (peeking through fingers invalidates results).
- **Test at eye level** with adequate room lighting — no glare on the chart.
- **Encourage** guessing if uncertain; record smallest line read with no more than one missed character.

After the Test

- **Document** acuity for each eye (e.g., OD 20/30, OS 20/40, OU 20/30) with/without correction.
- **Refer** to ophthalmology for failed screening per criteria (children: worse than age-expected or 2-line difference between eyes).

- **Teach** follow-up: annual school screening, ophthalmology exam every 2 yr (adults) or annually (older adults, diabetics).

Safety Priorities

- **Fall prevention** for low-vision patients: orient to environment, clear pathways, adequate lighting.
- **Announce yourself** before touching a visually impaired patient.
- **Place call light & belongings** in unaffected visual field; describe meal tray using clock positions ("chicken at 12, peas at 3").
- **Never approach a child's face** with the ophthalmoscope or occluder without warning — startle can cause injury.

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PHARMACOLOGY IN EYE EXAMS

Drugs Used During Visual Assessment

DRUG / CLASS	PURPOSE	MECHANISM / EFFECT	KEY NURSING CONSIDERATIONS
Tropicamide (Mydriacyl) Anticholinergic	Pupil dilation for fundoscopic exam	Blocks parasympathetic to iris/ciliary → dilation + cycloplegia (short-acting, 4–6 hr)	Photophobia after — provide sunglasses. Don't drive until vision clears. Watch for tachycardia, dry mouth.
Atropine 1% Anticholinergic	Long-acting dilation; amblyopia "patching" alternative (penalizes the good eye)	Dilation + cycloplegia lasting up to 7–14 days	Extended photophobia. Teach adherence in amblyopia therapy. Systemic effects (flushing, fever, tachycardia) in children — watch closely.
Cyclopentolate (Cyclogyl) Anticholinergic	Cycloplegic refraction in children	Paralyzes accommodation → measures true refractive error	Can cause CNS effects in young children (drowsiness, ataxia, hallucinations) — observe after instillation.
Fluorescein sodium Diagnostic dye	Detect corneal abrasions, foreign bodies, dry eye	Orange dye glows green under cobalt-blue light at sites of epithelial defect	Remove contact lenses before use (stains them). Yellow-orange tears for 1–2 hr. Warn about temporary stinging.
Proparacaine / Tetracaine Topical anesthetic	Numb cornea for tonometry or foreign-body removal	Blocks Na^+ channels in corneal nerves	Patch the eye until corneal sensation returns (~20 min) to prevent inadvertent injury. **Never send the patient home with the bottle** — repeated use damages cornea.

EYE-DROP TECHNIQUE

Place drops in the lower conjunctival sac (not directly on cornea). Apply pressure to the nasolacrimal sac (inner canthus, side of nose) for ~30–60 seconds after instillation to prevent systemic absorption —

especially important for beta-blocker glaucoma drops in older adults. Irrigation always flows **inner → outer canthus**.

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NCLEX TEST TRAPS ⚠

What Students Get Wrong

WRONG ANSWER

Use the Snellen alphabet chart for a 4-year-old.

↓

CORRECT

Preschoolers can't reliably name letters — use **HOTV, LEA symbols, or Tumbling E.** Snellen alphabet starts ~age 6.

WRONG ANSWER

Strabismus at 3 months means urgent referral.

↓

CORRECT

Strabismus can be **normal up to 4–6 months**. Refer if it **persists past 6 months** or is constant at any age.

WRONG ANSWER

Let the child cover one eye with their hand during testing.

↓

CORRECT

Always use an **occluder paddle** — children peek through their fingers, falsely passing amblyopic eyes.

WRONG ANSWER

"20/40 means the patient sees 40 feet away at 20."

↓

CORRECT

20/40 means the patient sees at 20 feet what a normal eye sees at 40. Bigger denominator = worse vision.

WRONG ANSWER

Place eye drops directly onto the cornea for absorption.

↓

CORRECT

Drops go in the **lower conjunctival sac**. Apply pressure to the nasolacrimal sac to minimize systemic absorption.

WRONG ANSWER

"Patient with new low vision — leave them alone to rest."

↓

CORRECT

Orient to room, announce presence, describe meal tray by clock positions, place call light in reach. Falls and depression are priority risks.

WRONG ANSWER

Detect amblyopia at the age 7 well-child visit.

↓

CORRECT

Amblyopia must be detected and treated **before age 7–9** — after that, the visual cortex has matured and damage may be permanent.

8

PATIENT & FAMILY EDUCATION

Teaching by Life Stage

Parents of Infants & Toddlers

- Watch for absent red reflex in photos (white pupil = **leukocoria**, urgent referral).
- Alternate sides when feeding to encourage binocular use.
- Report crossing eyes that persist past 6 months, head tilting, or excessive tearing.
- Childproof to prevent eye injury; sunglasses with UV protection in bright sun.

Parents of Preschoolers & School-Age

- **Vision screening at 3, 4, 5 years** and annually in school.
- Patch/atropine adherence is critical for amblyopia — therapy fails without it.
- Report squinting, sitting close to TV, headaches with reading.
- Protective eyewear for sports and chemistry/shop class.

Adolescents & Adults

- **20-20-20 rule**: every 20 minutes, look at something 20 feet away for 20 seconds.
- Contact lens hygiene — no tap water, no sleeping in lenses unless approved, replace per schedule.
- Comprehensive eye exam every 2 years (annually if diabetic, hypertensive, or family history).
- UV-protective sunglasses; safety glasses for high-risk work.

Older Adults

- **Annual comprehensive dilated exam** — screens for glaucoma, cataracts, AMD, diabetic retinopathy.
- Home safety: lighting, remove throw rugs, contrast strips on stairs, grab bars.
- Use Amsler grid weekly at home — report any wavy lines or central blank spots.
- Adherence to glaucoma drops (lifelong); apply punctal pressure to minimize systemic effects.
- Driving safety — voluntary limit at night, no driving if vision worse than state minimum.

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MEMORY BOOSTERS

Mnemonics & Pattern Recognition

"A L H S" — Charts by Age

A	Allen pictures (age 2-4)
L	LEA symbols (age 2.5-5)
H	HOTV / Tumbling E (age 3-6)
S	Snellen alphabet (age 6+)

"20/20 Decoder"

Top = distance YOU stand from chart

Bot = distance a normal eye sees that line

Big
bottom
number
=
bad
vision

20/200 = legally blind (with correction)

"4 Things on Cover-Uncover"

1. Cover one eye
2. Watch the OTHER eye for movement
3. Uncover — watch the COVERED eye
4. Any movement = misalignment (refer)

"GLAUCOMA = Tunnel"

G	Gradual peripheral loss
L	Lights with halos

A Asymptomatic early

UCON'S Use drops for life — apply punctal pressure

"AMD = Amsler Distortion"

A Age-related

M Macular (central) loss

D Distorted lines on Amsler grid

Peripheral vision PRESERVED

"O.D. & O.S." — Document Right

OD Oculus Dexter = Right eye

OS Oculus Sinister = Left eye

OU Oculus Uterque = Both eyes

Always chart OD first, then OS

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CLINICAL JUDGMENT — NGN CASE

NCJMM Six-Step Scenario

CASE

A 4-year-old girl is at her preschool vision screening. Mom reports the child "sits very close to the TV" and "her right eye sometimes drifts in." On testing with the HOTV chart at 10 feet, the child reads OD: 20/80, OS: 20/30. The corneal light reflex shows asymmetry — the light reflects on the medial iris of the right eye. The child has no other symptoms.

1

RECOGNIZE CUES

2-line difference between eyes (OD 20/80 vs OS 20/30) • OD acuity worse than 20/40 (the preschool threshold) • Asymmetric corneal light reflex = strabismus • Persistent eye drift at age 4 (past normal age 6 months) • Sits close to TV (visual compensation behavior).

2

ANALYZE CUES

Cluster suggests **amblyopia ("lazy eye")** in the right eye secondary to **strabismus**. The brain is suppressing the misaligned eye's image, preventing normal visual cortical development. The window for treatment is rapidly closing (most plasticity ends by age 7–9).

3

PRIORITIZE HYPOTHESES

#1 Strabismic amblyopia (highest priority — time-critical for treatment). Lower priority differentials: refractive amblyopia, congenital cataract (would expect absent red reflex), retinoblastoma (would expect leukocoria).

4

GENERATE SOLUTIONS

Refer urgently to pediatric ophthalmology • Anticipate cycloplegic refraction with cyclopentolate • Likely treatment: **patching the GOOD (left) eye** or atropine drops in the good eye to force use of the amblyopic eye • Possible corrective lenses • Possible strabismus surgery for alignment.

5

TAKE ACTION

Notify the provider with screening results and red flags. Document acuity (OD 20/80, OS 20/30) and Hirschberg findings. Educate mother: explain that patching the GOOD eye is correct — this is counterintuitive but trains the weak eye. Stress **adherence**: 2–6 hours/day of patching, full school days if prescribed. Provide written referral and timeline.

EVALUATE OUTCOMES

Successful outcomes: OD acuity improves toward 20/30–20/40 within months • Symmetric corneal light reflex (alignment achieved with surgery if indicated) • Child tolerates patching/atropine • Family demonstrates understanding of treatment rationale. **If acuity fails to improve, reassess adherence first** — most treatment failures are nonadherence, not biology.