

SENSORY • OPHTHALMOLOGY • ADULT HEALTH

Macular Degeneration

Age-Related Macular Degeneration (AMD) — the leading cause of central vision loss in adults over 60. NGN NCLEX 2026 high-yield review with clinical judgment scenario.

 **Source Disclosure:** This topic was not present in Diane's uploaded reference notes. Content compiled from standard NGN NCLEX 2026 references: Saunders Comprehensive Review (Silvestri), ATI RN Adult Medical-Surgical Nursing, Lippincott Illustrated Reviews, and current clinical guidelines from the American Academy of Ophthalmology (AAO) and the AREDS2 Research Group (NEI/NIH).

1 Definition & Overview

- **Macular degeneration (AMD)** = progressive deterioration of the **macula** (the central portion of the retina responsible for sharp, detailed central vision).
- Causes **CENTRAL vision loss** — peripheral vision remains **intact**.
- **#1 cause of legal blindness** in adults over age 60 in the United States.
- Two types: **Dry (Non-exudative, 85–90%)** and **Wet (Exudative/Neovascular, 10–15%)**.

TYPE 1 — MOST COMMON

DRY AMD

- ▶ **85–90%** of all AMD cases
- ▶ **Drusen** (yellow lipid/protein deposits) accumulate under the retina
- ▶ **Slow, gradual** central vision loss over years
- ▶ **No cure** — AREDS2 vitamins slow progression
- ▶ Can convert to wet AMD at any time

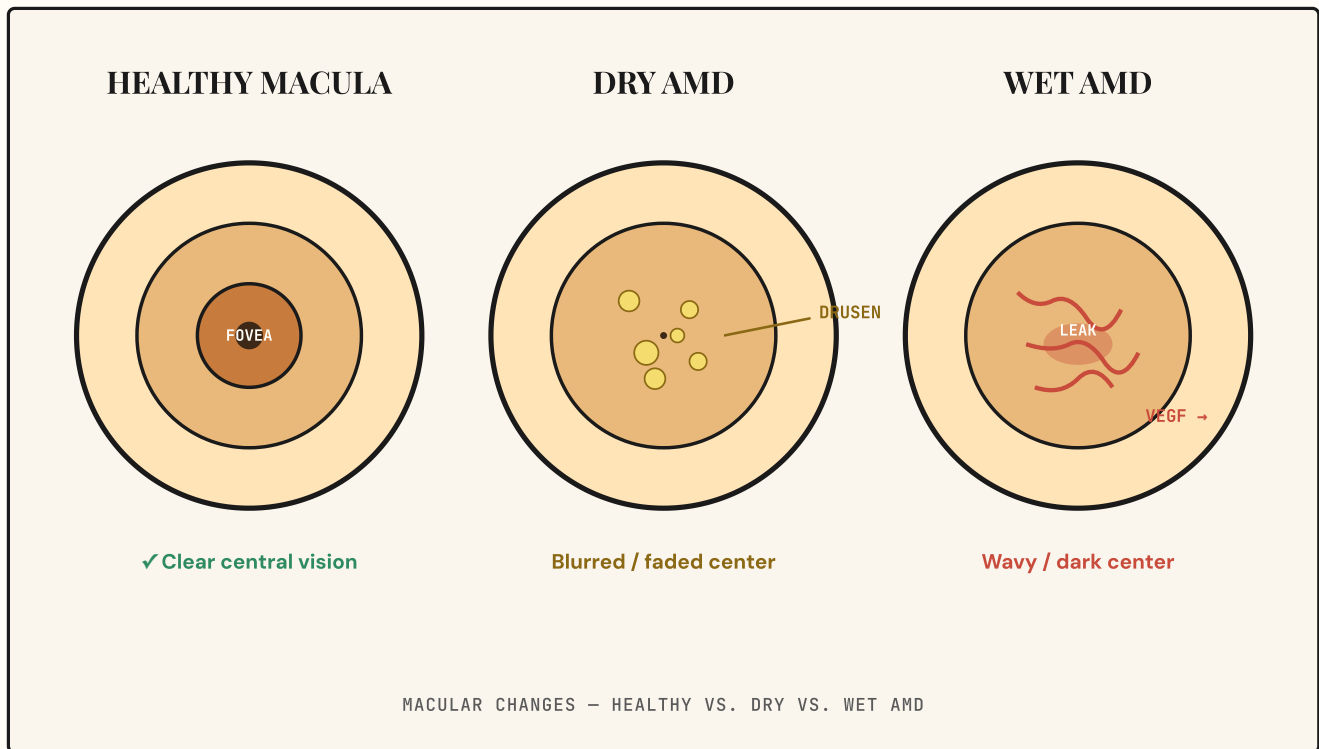
TYPE 2 — MORE AGGRESSIVE

WET AMD

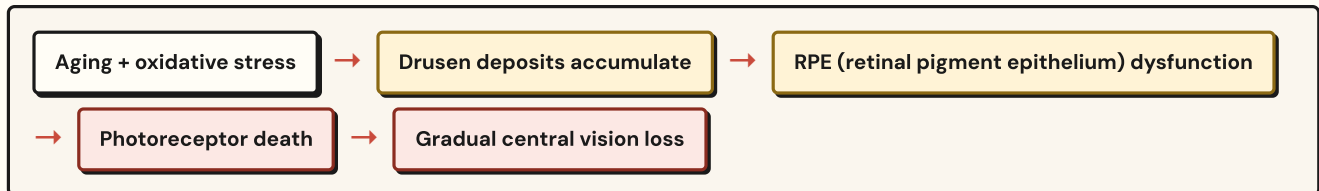
- ▶ **10–15%** of cases, but accounts for most severe vision loss
- ▶ Abnormal blood vessels grow under retina (**choroidal neovascularization**)
- ▶ Vessels **leak blood & fluid** → rapid damage
- ▶ **Sudden, dramatic** vision changes (days–weeks)
- ▶ Treated with **anti-VEGF injections**

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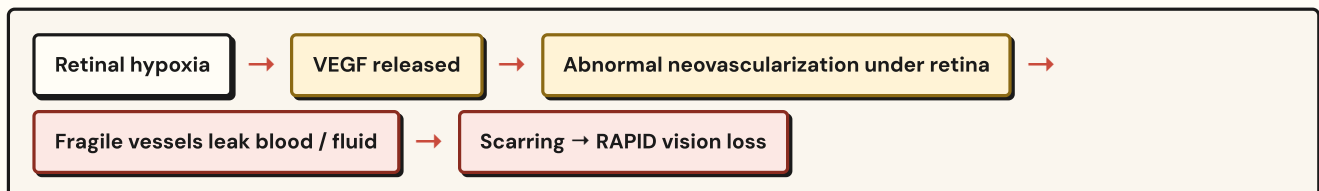
Pathophysiology



● DRY AMD CASCADE



● WET AMD CASCADE



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Signs & Symptoms

EARLY / MILD FINDINGS

● Early Signs

- ▶ Blurred central vision
- ▶ Difficulty reading small print
- ▶ Need for brighter light
- ▶ Faded or washed-out colors
- ▶ Trouble adapting to dim light
- ▶ Difficulty recognizing faces

LATE / SEVERE FINDINGS

● Advanced Signs

- ▶ **Central scotoma** (dark/blind spot in center)
- ▶ Severe loss of central vision
- ▶ Inability to read, drive, recognize faces
- ▶ Loss of independence with ADLs
- ▶ **Peripheral vision intact** throughout

🚨 **METAMORPHOPSIA** — straight lines appear wavy, distorted, or bent. This is the **HALLMARK** red flag of **WET AMD** and indicates active leakage. Call ophthalmologist immediately.

🚨 **SUDDEN** central vision loss or new dark spot = possible conversion from dry → wet AMD. Urgent referral within 24–48 hours.

⚠️ RISK FACTORS

NON-MODIFIABLE

- ▶ Age > 60 (#1 risk)
- ▶ Family history
- ▶ Caucasian race
- ▶ Female sex
- ▶ Light-colored irises

MODIFIABLE

- ▶ **Smoking (biggest)**
- ▶ HTN / cardiovascular disease
- ▶ Obesity
- ▶ High-fat diet
- ▶ UV light exposure

PROTECTIVE

- ▶ Smoking cessation
- ▶ Dark leafy greens (lutein)
- ▶ Omega-3 fatty acids (fish)
- ▶ UV-blocking sunglasses
- ▶ BP / weight control

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Priority Nursing Interventions (ABC + Safety)

PRIORITY	INTERVENTION	RATIONALE
Safety (#1)	Assess fall risk — clear walkways, contrast tape on stairs, adequate lighting	Loss of central vision impairs depth perception & reading hazards
Assessment	Teach & verify daily Amsler grid use at home; document changes	Early detection of wet AMD conversion = vision-saving
Referral	Refer to low-vision specialist & occupational therapy	Maximizes remaining vision with magnifiers, large-print, audio aids
Education	Reinforce smoking cessation (#1 modifiable factor)	Smokers have 2–4× higher risk of progression
Pharmacology	Administer AREDS2 supplements (dry) or prepare for intravitreal anti-VEGF injection (wet)	Slows progression / suppresses neovascularization
Post-Injection	Monitor for endophthalmitis — eye pain, redness, decreased vision, discharge	Sight-threatening infection — call MD STAT
Psychosocial	Assess for depression & isolation ; involve family	Vision loss strongly linked to depression in elderly
Home Safety	Teach to use peripheral vision ("look slightly to the side")	Compensates for central scotoma

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Pharmacology

ANTI-VEGF INTRAVITREAL INJECTIONS — FOR WET AMD

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Ranibizumab (Lucentis) Aflibercept (Eylea) Brolucizumab (Beovu) Faricimab (Vabysmo) Bevacizumab (Avastin, off-label)	Block vascular endothelial growth factor → prevent neovascularization & reduce leakage	Eye pain, floaters, ↑ intraocular pressure, conjunctival hemorrhage, endophthalmitis 🚑, retinal detachment, stroke risk (rare)	Aseptic technique; given by ophthalmologist q4–8 wks; teach signs of infection & report pain/redness/vision loss immediately ; no rubbing the eye

AREDS2 SUPPLEMENTS — FOR DRY AMD (INTERMEDIATE TO ADVANCED)

AREDS2 FORMULA

- ▶ **Vitamin C** 500 mg
- ▶ **Vitamin E** 400 IU
- ▶ **Zinc** 80 mg (or 25 mg)
- ▶ **Copper** 2 mg (prevents zinc-induced anemia)
- ▶ **Lutein** 10 mg
- ▶ **Zeaxanthin** 2 mg

KEY TEACHING

- ▶ **NO beta-carotene** in AREDS2 — original AREDS had it but ↑ lung cancer risk in smokers
- ▶ Slows progression by ~25% in intermediate/advanced dry AMD
- ▶ **Does NOT cure or restore vision**
- ▶ Not effective for early AMD or prevention
- ▶ Lifelong daily supplementation

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NCLEX Test Traps ⚠️

❌ WRONG ANSWER TRAP

"Loss of peripheral vision"

AMD = **CENTRAL** vision loss. Peripheral loss = **glaucoma**. Don't confuse these two diagnoses on NCLEX.

✅ RIGHT ANSWER PATTERN

"Loss of central vision; peripheral intact"

Classic finding — patient sees the wall but not the face directly in front of them.

❌ WRONG ANSWER TRAP

"AREDS2 will restore my vision"

Vitamins **slow progression** — they do NOT cure, reverse, or restore lost vision.

✅ RIGHT ANSWER PATTERN

"AREDS2 slows progression of intermediate dry AMD"

Reinforce realistic expectations; only beneficial for moderate/advanced dry AMD.

❌ WRONG ANSWER TRAP

"Wavy lines on the Amsler grid are normal aging"

NEVER normal. Metamorphopsia signals **wet AMD conversion** — emergency referral required.

✅ RIGHT ANSWER PATTERN

"Report wavy/distorted lines on Amsler grid immediately"

Early anti-VEGF treatment saves sight — time is retina.

❌ WRONG ANSWER TRAP

Confusing drusen with cataracts

Drusen = yellow deposits in **retina** (AMD). Cataracts = clouding of the **lens**. Different structures, different diseases.

✅ RIGHT ANSWER PATTERN

Drusen + central vision loss = AMD

Clouding behind the pupil + glare sensitivity = cataracts. Know the location of the pathology.

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Patient & Family Education

LIFESTYLE & PREVENTION

- ▶ **STOP SMOKING** — single most impactful change
- ▶ Wear **UV-blocking sunglasses** outdoors
- ▶ Eat **dark leafy greens** (kale, spinach), **fatty fish** (salmon, tuna)
- ▶ Maintain healthy BP, weight, glucose
- ▶ Take AREDS2 supplement daily if prescribed
- ▶ Limit saturated fats

HOME MONITORING

- ▶ Use **Amsler grid daily** — one eye at a time, 14 inches away, with reading glasses
- ▶ Cover one eye, focus on center dot, note any wavy, blurry, or missing areas
- ▶ **Report new distortion or dark spots immediately**
- ▶ Annual dilated eye exams (more often if at-risk)

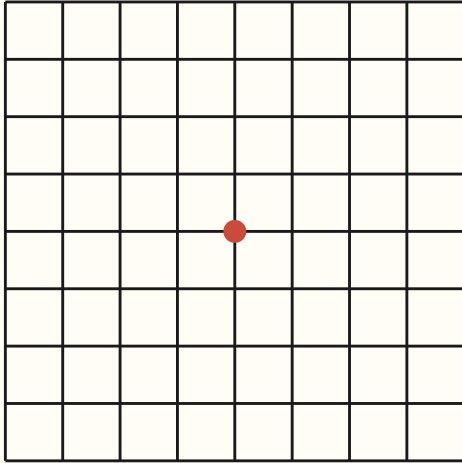
DAILY LIVING ADAPTATIONS

- ▶ Use **magnifiers**, large-print materials, audiobooks
- ▶ **Bright, glare-free lighting** for reading
- ▶ High-contrast labels on medications/appliances
- ▶ Use **peripheral vision** ("look beside the object")
- ▶ Refer to low-vision rehab
- ▶ Driving safety evaluation — may need to stop

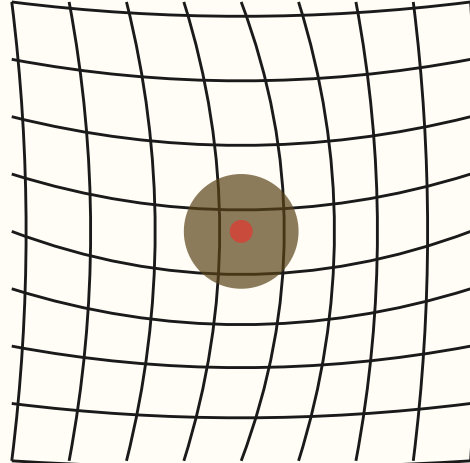
AFTER ANTI-VEGF INJECTION

- ▶ Expect mild redness, foreign-body sensation, floaters (24–48 hrs)
- ▶ **DO NOT rub the eye**
- ▶ Use prescribed antibiotic drops
- ▶ Report STAT: **severe pain, vision loss, ↑ redness, discharge** → endophthalmitis
- ▶ Resume normal activities next day

■ AMSLER GRID QUICK REFERENCE



✓ NORMAL — STRAIGHT, EVEN LINES



✗ ABNORMAL — WAVY LINES + DARK SPOT (WET AMD)

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Memory Boosters & Mnemonics

MNEMONIC — DISTINGUISHING THE TYPES

"DRY = Drusen, slow Reduction in Yield"

Yellow drusen + gradual, slow vision loss. Most common (85–90%).

MNEMONIC — WET AMD HALLMARK

"WET = Wavy lines, Edematous retina, Treatment urgent"

Wavy lines on Amsler = wet AMD = anti-VEGF emergency.

MNEMONIC — CENTRAL VS PERIPHERAL

"MACULA = Middle vision Affected, Coronal vision Untouched, Loss in center, Always central"

Pair with: **Glaucoma = Goes around the edges** (peripheral loss).

MNEMONIC — AREDS2 INGREDIENTS

"Cute Elephants Zoom Carrying Lutein & Zeaxanthin"

Copper • E (Vit E) • Zinc • C (Vit C) • Lutein • Zeaxanthin → NO beta-carotene.

PATTERN RECOGNITION — TOP MODIFIABLE RISK

"If they SMOKE → AMD will STROKE"

Smoking is the #1 modifiable risk factor — always pick smoking cessation if it's an answer option.

RED FLAG RECOGNITION

"WAVY + SUDDEN = Wet AMD until proven otherwise"

Either finding alone = call ophthalmology. Sight-saving window is days.

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NCJMM Clinical Judgment Scenario

Patient Scenario:

A **74-year-old female** with a 6-year history of **dry AMD (intermediate stage, both eyes)** presents to the eye clinic stating, *"For the past 4 days, the lines on my bathroom tiles look wavy in my right eye, and there's a dark spot in the middle when I look at my granddaughter's face."* She has missed her last 2 scheduled appointments. PMH: HTN, hyperlipidemia, 50-pack-year smoking history (still smokes 1 PPD).

Vital signs: BP 162/94, HR 88, RR 18, SpO₂ 96%. **Visual acuity:** R 20/200 (down from 20/60 last visit), L 20/80. Amsler grid: distorted central area with central scotoma in R eye.

STEP 1 — RECOGNIZE CUES

What stands out?

- ▶ **Metamorphopsia** (wavy lines) — new symptom in R eye
- ▶ **New central scotoma** (dark spot)
- ▶ **Sudden ↓ visual acuity** (20/60 → 20/200 in R eye over weeks)
- ▶ Active smoker, uncontrolled HTN (162/94)
- ▶ Known intermediate dry AMD — high conversion risk
- ▶ Missed appointments — delay in care

STEP 2 — ANALYZE CUES

What's happening?

- ▶ Cluster of symptoms = **conversion from dry to wet AMD** in R eye
- ▶ VEGF-mediated neovascularization is leaking → central retinal damage
- ▶ Modifiable risk factors (smoking, HTN) accelerated progression
- ▶ Time-sensitive: each day delays anti-VEGF therapy → irreversible scarring

STEP 3 — PRIORITIZE HYPOTHESES

What's the priority concern?

- ▶ **#1 (Highest):** Active wet AMD with progressive vision loss in R eye — need same-day ophthalmology evaluation & likely anti-VEGF injection
- ▶ **#2:** Uncontrolled HTN — accelerates AMD & cardiovascular risk
- ▶ **#3:** Smoking — strongest modifiable risk factor
- ▶ **#4:** Fall & safety risk from acute vision loss
- ▶ **#5:** Psychosocial — coping, depression, ADL impact

STEP 4 — GENERATE SOLUTIONS

What interventions are needed?

- ▶ Urgent referral to retinal specialist for OCT, fluorescein angiography, & anti-VEGF injection
- ▶ Initiate or reinforce **Amsler grid daily** for both eyes
- ▶ Smoking cessation counseling & nicotine replacement options
- ▶ Address BP with primary care; medication compliance review
- ▶ Home safety assessment; low-vision rehab referral
- ▶ AREDS2 supplementation review (continued for L eye)
- ▶ Caregiver/family education & psychosocial support

STEP 5 – TAKE ACTION

Nursing actions, in priority order:

- ▶ **1st:** Notify ophthalmologist STAT — arrange same-day evaluation
- ▶ **2nd:** Reinforce do NOT rub or pressure the eye; provide eye shield if needed
- ▶ **3rd:** Prepare patient for intravitreal anti-VEGF injection & teach post-injection care
- ▶ **4th:** Document new visual acuity, Amsler findings, BP, symptom onset
- ▶ **5th:** Provide smoking cessation resources, schedule PCP follow-up for HTN
- ▶ **6th:** Assess home environment, fall risk; refer to low-vision specialist & OT
- ▶ **7th:** Schedule structured follow-up Amsler grid teaching & written instructions

STEP 6 – EVALUATE OUTCOMES

What indicates success?

- ▶ Patient receives anti-VEGF injection within 24–48 hours of presentation
- ▶ Amsler grid distortion stabilizes or improves at follow-up (4–6 wks)
- ▶ R eye visual acuity stabilizes (no further decline)
- ▶ BP < 140/90 at next visit
- ▶ Patient enrolled in smoking cessation program; verbalizes quit plan
- ▶ Patient demonstrates correct daily Amsler use & verbalizes when to call
- ▶ No falls, ADLs maintained with adaptive devices
- ▶ L eye remains dry AMD (no new conversion)

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Quick Reference — AMD vs. Other Eye Diseases

FEATURE	AMD	GLAUCOMA	CATARACTS	DIABETIC RETINOPATHY
Vision Loss	CENTRAL	PERIPHERAL ("tunnel vision")	Cloudy / blurred all over	Floaters, dark spots, blurred
Structure Affected	Macula (retina)	Optic nerve (↑ IOP)	Lens	Retinal blood vessels
Key Finding	Drusen, wavy lines	↑ IOP, cupping	Cloudy lens	Microaneurysms, hemorrhages
Treatment	AREDS2 / anti-VEGF	Eye drops (timolol, latanoprost), surgery	Surgical lens replacement	Tight glucose control, laser, anti-VEGF
Onset	Slow (dry) / sudden (wet)	Gradual / painless	Gradual	Gradual

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Top 10 NCLEX Takeaways

1. **AMD = CENTRAL vision loss.** Peripheral vision stays intact.
2. **Dry (85–90%)** = drusen, slow. **Wet (10–15%)** = neovascularization, rapid.
3. **Wavy lines + dark spot** on Amsler grid = wet AMD until proven otherwise = STAT referral.
4. **Smoking** is the #1 modifiable risk factor — always prioritize cessation.
5. **AREDS2** slows progression of intermediate dry AMD — it does NOT cure or restore vision.
6. **Anti-VEGF injections** (Ranibizumab, Aflibercept) are the standard for wet AMD.
7. **Endophthalmitis** after injection = severe pain + ↓ vision + redness = emergency.
8. **Amsler grid daily** at home, one eye at a time — patient must report changes immediately.
9. **Safety first:** fall prevention, contrast lighting, low-vision rehab.
10. **Differentiate from glaucoma** (peripheral loss) & cataracts (cloudy lens). Know the location of pathology.