

SENSORY / OPHTHALMOLOGY

Common *Eye Disorders*

Glaucoma (open & closed angle) · Cataracts · Macular Degeneration · Diabetic Retinopathy — comprehensive NGN NCLEX 2026 review with pathophysiology, priority interventions, pharmacology, and a full clinical judgment scenario.

NCLEX 2026 BLUEPRINT

PHYSIOLOGICAL ADAPTATION

REDUCTION OF RISK

NCJMM INTEGRATED

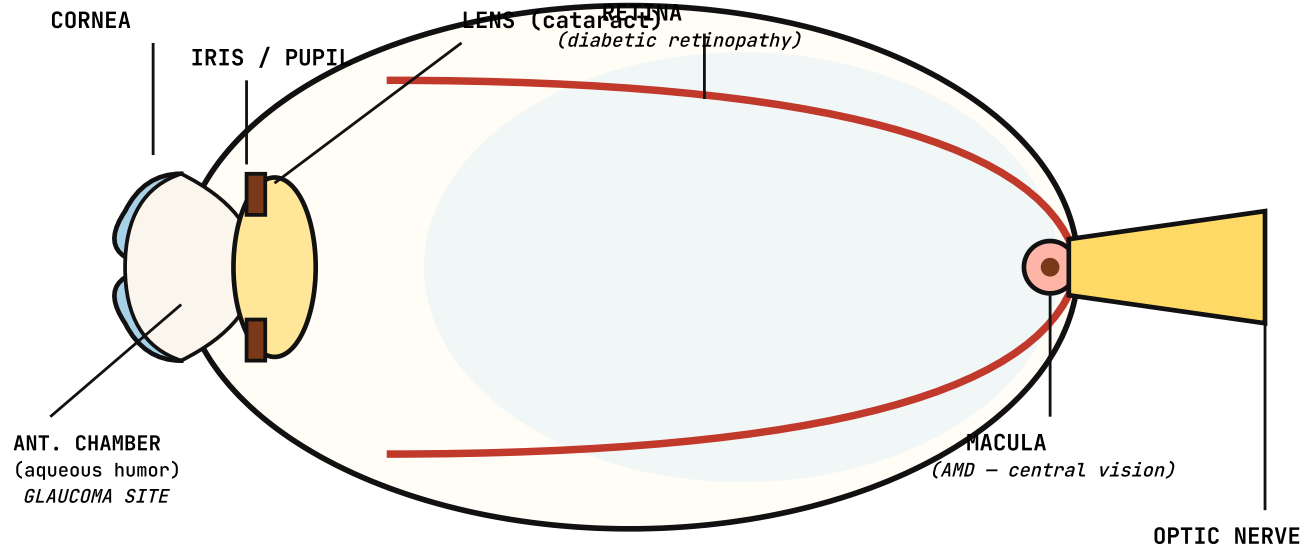
 **Source Note:** These four eye disorders were not present in the uploaded reference notes. Content compiled from standard NCLEX 2026 references: **Saunders Comprehensive Review for the NCLEX-RN (9th ed.)**, **ATI RN Adult Medical-Surgical Nursing**, **Lippincott Illustrated Reviews: Pharmacology**, and the **American Academy of Ophthalmology (AAO) Preferred Practice Patterns (2023)** for glaucoma, AMD, and diabetic retinopathy.

SECTION ONE

1

Definition & Overview

Normal Eye Anatomy — Know These Structures



OPEN-ANGLE GLAUCOMA

Primary Open-Angle Glaucoma (POAG)

"Silent thief of sight." Most common form (~90%). Trabecular meshwork outflow slows → aqueous humor accumulates → **IOP rises gradually** → optic nerve damage and irreversible peripheral vision loss.

- ▶ Bilateral, painless, chronic
- ▶ Normal IOP: 10–21 mmHg
- ▶ Vision loss is permanent — early detection is everything

CLOSED-ANGLE GLAUCOMA

Acute Angle-Closure Glaucoma 🚑

OPHTHALMIC EMERGENCY. Iris bulges forward and physically blocks the drainage angle → **IOP spikes within hours** (often >30 mmHg) → severe pain and permanent blindness if not treated within hours.

- ▶ Sudden, unilateral, severely painful
- ▶ Triggered by dim light, stress, mydriatic drops
- ▶ Treat as a true emergency

CATARACTS

Cataracts

Progressive **opacification (clouding) of the lens** → light scatters as it passes through → blurred, dim, and yellowed vision. Leading cause of treatable blindness worldwide.

- ▶ Painless and gradual
- ▶ Usually age-related; also from steroids, DM, UV, trauma
- ▶ Treated with surgical lens removal + IOL implant

MACULAR DEGENERATION

Age-Related Macular Degeneration (AMD)

Deterioration of the **macula** (central retina, fovea) → loss of **central vision**, with peripheral vision preserved. Leading cause of blindness in adults >60.

- ▶ **Dry (90%)** — drusen deposits, slow progression
- ▶ **Wet (10%)** — abnormal vessels leak, rapid central loss
- ▶ Hallmark: difficulty reading and recognizing faces

DIABETIC RETINOPATHY

Diabetic Retinopathy

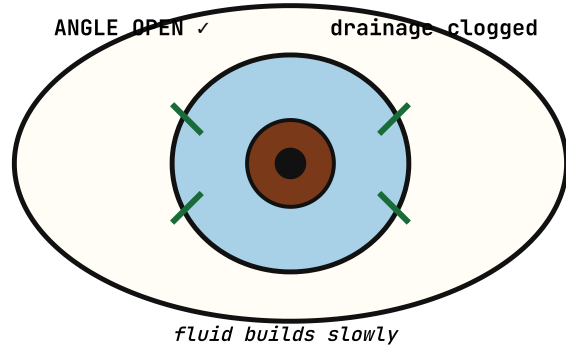
Chronic hyperglycemia damages the retinal microvasculature → leaking capillaries, microaneurysms, hemorrhages, and (in advanced disease) fragile neovascularization that bleeds into the vitreous. **Leading cause of new blindness in adults 20–74.** Two stages: **Non-proliferative (NPDR)** — background changes; and **Proliferative (PDR)** — new vessel growth, vitreous hemorrhage, traction retinal detachment.

SECTION TWO

2

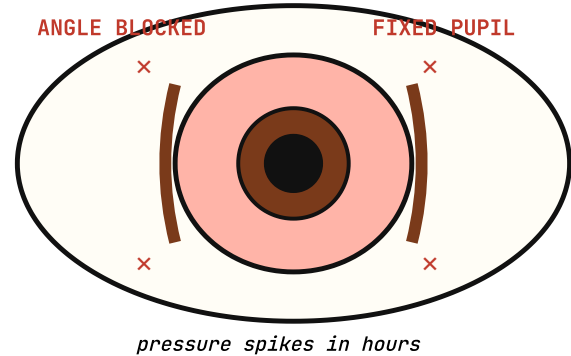
Pathophysiology — Simplified

Open-Angle Glaucoma



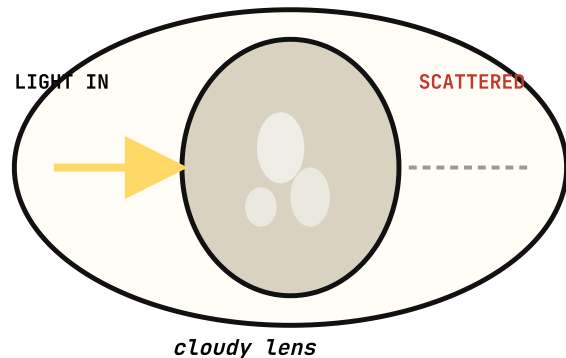
Trabecular meshwork clogged →
aqueous humor cannot drain →
IOP rises gradually →
compresses optic nerve fibers →
peripheral vision lost first →
tunnel vision → blindness

Closed-Angle (Acute) Glaucoma



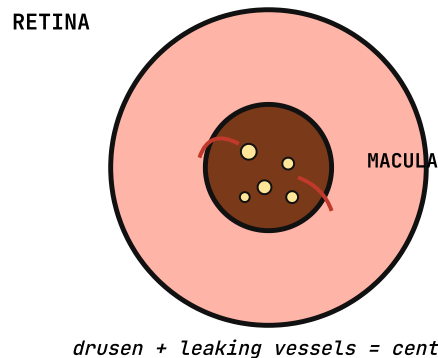
Pupil dilates (dim light, stress, mydriatic) →
iris bulges forward, occludes angle →
aqueous trapped behind iris →
IOP rockets >30 mmHg →
severe pain + nausea →
blindness in hours if untreated

Cataract Formation



Aging / UV / steroids / hyperglycemia →
lens proteins denature & clump →
lens becomes opaque + yellow →
light scatters / cannot focus →
blurred vision, glare, halos →
progressive painless vision loss

Macular Degeneration

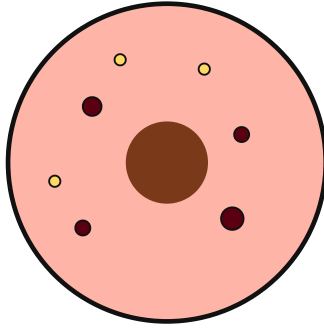


DRY: drusen accumulate under macula → photoreceptors die →
slow central vision loss

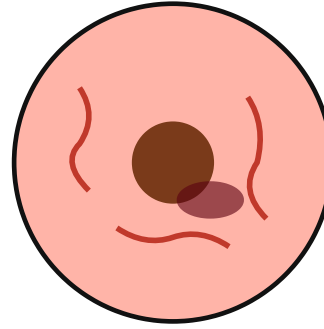
WET: VEGF triggers abnormal vessel growth → vessels leak
blood/fluid → rapid central scotoma + metamorphopsia

Diabetic Retinopathy

NPDR (background)



PDR (proliferative)



progresses

microaneurysms · dot/blot hemorrhages · hard exudates neovascularization · vitreous hemorrhage · traction deta

Chronic hyperglycemia → **damaged capillary endothelium** → microaneurysms + leakage (NPDR) → retinal ischemia releases **VEGF** → fragile new vessels grow on retina (PDR) → vessels rupture → **vitreous hemorrhage · floaters · sudden vision loss**

SECTION THREE

3

Signs & Symptoms — Side by Side

Disorder	Early / Mild	Late / Severe 🚨
Open-Angle Glaucoma	Usually asymptomatic . Mild eye aching, halos around lights at night, slight blurring.	🚨 Loss of peripheral vision · "tunnel vision" · eventual blindness · increased cup-to-disc ratio
Closed-Angle Glaucoma	Brief halos, mild blurring, intermittent unilateral aching.	🚨 SEVERE eye pain · nausea/vomiting · headache · red eye · fixed, mid-dilated, non-reactive pupil · IOP >30 mmHg · "rock-hard" globe on palpation · rapid vision loss
Cataracts	Painless gradual blurring · "looking through dirty window" · faded/yellowed colors · glare or halos at night.	🚨 Severe blurring · monocular diplopia · whitish/gray pupil · functional blindness
AMD — Dry	Mild blurring of central vision · words missing from page · drusen on exam.	🚨 Central scotoma · cannot read or recognize faces · peripheral vision preserved
AMD — Wet	Metamorphopsia — straight lines look wavy on Amsler grid · sudden blurred central vision.	🚨 Rapid loss of central vision · large central scotoma within days/weeks
Diabetic Retinopathy	Often asymptomatic in NPDR · mild blurring · color vision changes · floaters.	🚨 Sudden floaters or "cobwebs" · sudden vision loss (vitreous hemorrhage) · curtain over vision (retinal detachment)

SECTION FOUR

4

Priority Nursing Interventions

A

AIRWAY / ASSESS

- Assess vision acuity & visual fields each shift
- Assess pain — acute angle-closure = ophthalmic emergency
- Document baseline IOP if available; monitor trends
- Check for halos, sudden floaters, curtain over vision — red flags for retinal detachment

B

BLEEDING / BARRIER

- Post-op cataract / vitrectomy: avoid bending, lifting >5–10 lb, coughing, straining, Valsalva
- Do NOT sleep on the operative side
- Eye shield over operative eye at night × 1 week
- Report sudden severe pain, decreased vision, or bleeding immediately

C

CALM / COMFORT / CONTROL

- Control IOP — administer glaucoma drops on schedule, never skip
- Quiet, well-lit environment; orient frequently
- Maintain glucose & BP control for diabetic retinopathy
- Approach from unaffected side to prevent startle

OPEN-ANGLE GLAUCOMA

Lifelong IOP Control

- ✓ Administer topical drops **exactly on schedule** — non-adherence is #1 cause of progression
- ✓ Teach **nasolacrimal occlusion** × 1 min after drops to prevent systemic absorption
- ✓ Avoid mydriatic drops in any patient with narrow angles
- ✓ Annual dilated eye exam + IOP measurement

CLOSED-ANGLE GLAUCOMA

Emergency Response

- ✓ **NOTIFY HCP IMMEDIATELY** — vision loss within hours
- ✓ Place client supine with face up to allow lens to fall posteriorly
- ✓ Administer prescribed: **IV acetazolamide, mannitol, topical pilocarpine, timolol, brimonidine**
- ✓ Prepare for **laser peripheral iridotomy** — definitive treatment
- ✓ Antiemetic for nausea/vomiting (vomiting raises IOP further)

CATARACTS — POST-OP

After Phacoemulsification + IOL

- ✓ Semi-Fowler's or on **non-operative side**
- ✓ Eye shield at night × 1 week; sunglasses outdoors
- ✓ **No bending below waist, no lifting >5–10 lb, no straining or coughing**
- ✓ Antibiotic + steroid drops as ordered
- ✓ Report: sharp pain, flashes/floaters, decreased vision, purulent drainage

MACULAR DEGENERATION

Preserve & Adapt

- ✓ Provide **Amsler grid** — teach daily home use; report any new waviness or scotoma
- ✓ Refer to **low-vision services** — magnifiers, large print, voice-activated devices
- ✓ Wet AMD: prepare for **intravitreal anti-VEGF injections** (ranibizumab, bevacizumab, aflibercept)
- ✓ AREDS-2 vitamins for dry AMD (vit C, E, lutein, zeaxanthin, zinc)
- ✓ Smoking cessation — #1 modifiable risk factor

DIABETIC RETINOPATHY

Prevent & Treat

- ✓ **Tight glycemic control** — target A1C as prescribed; glucose control slows progression more than any drug
- ✓ BP control <130/80 and lipid management
- ✓ **Annual dilated fundoscopic exam** for all patients with diabetes (start at diagnosis for T2DM, 5 yrs after diagnosis for T1DM)
- ✓ Prepare for **panretinal photocoagulation (laser)**, intravitreal anti-VEGF injections, or vitrectomy
- ✓ Report sudden floaters, flashes, or "curtain" → suspect vitreous hemorrhage or retinal detachment

SECTION FIVE

5

Pharmacology

Drug / Example	Class	Mechanism	Key Side Effects	Nursing Considerations
Timolol (Timoptic)	Beta blocker	↓ aqueous humor production	Bradycardia, bronchospasm, hypotension, fatigue	Hold for asthma, COPD, heart block, HR <60. Apply nasolacrimal occlusion × 1 min.
Latanoprost (Xalatan)	Prostaglandin analog	↑ aqueous outflow via uveoscleral pathway	Iris darkening (permanent), eyelash growth/darkening, periorbital pigmentation, stinging	First-line for POAG. Once-daily dosing — usually at bedtime. Warn about cosmetic changes.
Brimonidine (Alphagan)	Alpha-2 agonist	↓ aqueous production + ↑ outflow	Dry mouth, drowsiness, allergic conjunctivitis, hypotension	Avoid in infants/children < 2 (CNS depression). Caution with MAOIs.
Acetazolamide (Diamox) Dorzolamide (Trusopt)	Carbonic anhydrase inhibitor	↓ aqueous humor production	Diuresis, paresthesias, metabolic acidosis, hypokalemia, sulfa allergy risk	IV acetazolamide used for acute angle-closure. Hold for sulfa allergy. Monitor K ⁺ .
Pilocarpine	Miotic / cholinergic	Constricts pupil → opens trabecular meshwork → ↑ outflow	Miosis, blurred vision, brow ache, photophobia, contact dermatitis	Used in acute angle-closure to pull iris out of the angle. Warn about dim vision and night driving.
Mannitol	Osmotic diuretic	Pulls fluid from vitreous into vasculature → rapid IOP reduction	Pulmonary edema, electrolyte shifts, headache	Emergency use for acute angle-closure. Monitor I&O, lung sounds, electrolytes, CV status.
Ranibizumab (Lucentis) Bevacizumab (Avastin) Aflibercept (Eylea)	Anti-VEGF	Blocks vascular endothelial growth factor → stops abnormal vessel growth	Endophthalmitis, retinal detachment, intraocular inflammation, transient ↑ IOP	Intravitreal injection. Used for wet AMD , PDR, diabetic macular edema. Sterile procedure. Report eye pain, redness, vision changes immediately.

SECTION SIX

6

NCLEX Test Traps ⚠️

TRAP #1 — VISION LOSS PATTERN

WRONG: "Glaucoma causes central vision loss."

RIGHT: Glaucoma = **peripheral vision loss** ("tunnel vision"). AMD = **central vision loss**. Do not switch these.

TRAP #2 — MYDRIATICS

WRONG: "Give atropine drops to dilate the eye before exam."

RIGHT: Mydriatics (atropine, phenylephrine) are **CONTRAINDICATED** in **closed/narrow-angle glaucoma** — dilation can trigger acute angle-closure.

TRAP #3 — PRIORITY POST-CATARACT

WRONG: "Mild eye discomfort post-op is expected — reassure."

RIGHT: Sudden sharp pain + decreased vision after cataract surgery = increased IOP or hemorrhage. **Notify HCP immediately.**

TRAP #4 — TIMOLOL SAFETY

WRONG: "Topical drops don't have systemic effects."

RIGHT: Beta-blocker drops absorb systemically. **Hold for HR <60, asthma, COPD.** Teach nasolacrimal occlusion to reduce absorption.

TRAP #5 — ANGLE-CLOSURE POSITIONING

WRONG: "Place semi-Fowler's to reduce IOP."

RIGHT: In **acute angle-closure**, place client **supine, face up** — gravity pulls the lens posteriorly and helps reopen the angle.

TRAP #6 — AMD RED FLAG

WRONG: "Wavy lines on Amsler grid are normal aging."

RIGHT: **Metamorphopsia (wavy lines) = wet AMD until proven otherwise.** Refer urgently — anti-VEGF can preserve vision.

TRAP #7 — RETINAL DETACHMENT

WRONG: "Floaters after surgery or in diabetes are common; recheck in a week."

RIGHT: Sudden floaters, flashes, "curtain," or "cobweb" = **retinal detachment**. Emergency referral. Keep client still, affected side **down** if detachment confirmed.

TRAP #8 — DM EYE SCREENING

WRONG: "Eye exam only if patient reports vision changes."

RIGHT: **Annual dilated exam** for ALL patients with DM — even asymptomatic. Most retinopathy is silent until advanced.

SECTION SEVEN

7

Patient & Family Education

Glaucoma — Lifelong Management

- Take eye drops **every day, even when you feel fine** — vision loss is irreversible
- Wait 5–10 minutes between different eye drops
- Press on inner corner of eye × 1 minute after drops (nasolacrimal occlusion)
- Avoid drugs labeled "may cause pupil dilation" with narrow angles
- Inform every provider you have glaucoma before any new prescription
- Annual eye exam with IOP measurement

Acute Angle-Closure — When to Call 911

- Severe eye pain + nausea/vomiting + headache = emergency
- Halos around lights, sudden blurred vision = emergency
- Do not wait — vision can be lost in hours
- After laser iridotomy: report pain or vision changes; continue prescribed drops

Post-Cataract Surgery

- Wear eye shield at night × 1 week
- NO bending below the waist, lifting >5–10 lb, straining, sneezing with mouth closed**
- Sleep on back or non-operative side
- Wear dark sunglasses outdoors
- Use all prescribed drops on schedule
- Call HCP for: sharp pain, decreased vision, flashes/floaters, redness, discharge

Macular Degeneration

- Use the **Amsler grid daily** — cover one eye at a time; report any new wavy lines or dark spots
- Stop smoking** — biggest modifiable risk factor
- Eat dark leafy greens, fish high in omega-3
- Take AREDS-2 vitamins if prescribed
- Use magnifiers, large-print materials, audiobooks, voice-activated devices
- Wear UV-blocking sunglasses outdoors

Diabetic Retinopathy

- Strict glucose control is the single most important intervention** — keep A1C at prescribed target
- Control blood pressure <130/80 and manage cholesterol
- Annual dilated eye exam every year — even if vision is fine
- Pregnancy can accelerate retinopathy — plan ahead with your eye doctor
- Call HCP urgently for: sudden floaters, flashes, "curtain" over vision, or sudden blurring
- After laser or anti-VEGF injection: report pain, light sensitivity, redness, or vision loss

SECTION EIGHT

8

Memory Boosters & Mnemonics

"Peripheral = Glaucoma"

Glaucoma → Goodbye peripheral vision (tunnel vision)

AMD → loss of Area you're looking at (central)

Cataracts → Cloudy/Curtain over whole view

"SUDDEN" Emergency

Severe pain = angle-closure glaucoma

Unilateral red eye = acute glaucoma

Dilated fixed pupil = angle-closure

Decreased vision suddenly = retinal detachment, vitreous hemorrhage

Emesis with eye pain = ↑ IOP

Notify HCP IMMEDIATELY

"DR" CARE

Diabetes control (A1C, BP, lipids)

Retinal exam annually (dilated)

Coagulation/bleeding watch (floaters, flashes)

Anti-VEGF or laser as prescribed

Report sudden changes immediately

Educate: NO smoking, no skipping exams

Drops: "BAP-CM"

Beta blockers (timolol) — ↓ production

Alpha-agonists (brimonidine) — ↓ production + ↑ outflow

Prostaglandins (latanoprost) — ↑ outflow (1st line)

Carbonic anhydrase inhibitors (acetazolamide) — ↓ production

Miotics (pilocarpine) — ↑ outflow (emergency)

Post-Op: "NO BS"

No bending below the waist

Ocular shield at night × 1 week

Blowing nose / Valsalva — avoid

Sleep on unaffected side

+ No lifting >5–10 lb · no straining · no rubbing eye

Amsler: "Wavy = Wet"

Wavy lines on the grid = Wet AMD

Daily home check, one eye at a time

New scotoma or distortion → URGENT referral

Anti-VEGF injections can preserve vision if caught early

SECTION NINE

9

NCJMM Clinical Judgment Scenario

Case Stem: A 68-year-old female with type 2 diabetes (A1C 8.4%), hypertension, and primary open-angle glaucoma arrives at the ED with her daughter. She reports that 3 hours ago, while at the movies, her **right eye began to ache severely**. She is nauseated and has vomited twice. She states, "There are **rainbow circles around the lights** and I can't see clearly out of that eye." On exam: right eye is red, the pupil is **fixed, mid-dilated**, the globe feels firm, and she cannot count fingers at 3 feet. Vital signs: BP 168/92, HR 96, RR 22, T 37.0 °C, SpO₂ 97% on room air.

1 RECOGNIZE CUES

Identify the relevant client data — separate findings that matter from background noise.

Cues of concern:

- Severe unilateral eye pain that began suddenly in a dim environment (movie theater)
- Halos/"rainbow circles" around lights + acute blurred vision
- Nausea and vomiting accompanying eye pain
- Red eye with **fixed, mid-dilated pupil** and firm globe
- History of glaucoma (likely narrow-angle predisposition)
- Elevated BP 168/92 (pain response + possible chronic uncontrolled HTN)

2 ANALYZE CUES

What do these cues mean clinically? Cluster and interpret.

- Sudden severe pain + halos + N/V + fixed mid-dilated pupil + firm globe = **classic acute angle-closure glaucoma**
- Dim theater dilated the pupil → iris bulged forward → blocked drainage angle → IOP spiked
- The vomiting is from the IOP-mediated vagal response, not GI pathology
- BP elevation is most likely a pain/sympathetic response — treat the eye, the BP should improve
- Her POAG history likely means narrow angles bilaterally — the **left eye is also at risk**

3 PRIORITIZE HYPOTHESES

Rank the most likely and most dangerous explanations.

- **#1 (highest priority):** Acute angle-closure glaucoma of the right eye — vision-threatening emergency
- #2: Severe migraine with aura — possible but does not explain fixed pupil or firm globe
- #3: Acute uveitis — usually causes a constricted, not dilated, pupil
- #4: Hypertensive urgency — BP is elevated but the eye findings are the driver

Top priority hypothesis: Acute angle-closure glaucoma — minutes matter. Optic nerve damage and irreversible vision loss can occur within hours.

4 GENERATE SOLUTIONS

Plan expected outcomes and interventions.

- Lower IOP rapidly — target normal range (10–21 mmHg)
- Relieve pain and nausea (vomiting worsens IOP)
- Place client supine, face up — gravity may help lens fall back and open angle
- Prepare for emergent ophthalmology consult and **laser peripheral iridotomy**
- Anticipate orders: **IV acetazolamide, IV mannitol, topical timolol, topical pilocarpine, topical brimonidine, topical prednisolone, antiemetic**
- Plan prophylactic iridotomy for the left (unaffected) eye after the acute episode resolves

5

TAKE ACTION

Execute the priority interventions in order.

- **Notify ophthalmology STAT** and the ED provider
- Place supine, dim the room, low-stimulation environment
- Establish IV access; administer **IV acetazolamide 500 mg** and **IV mannitol** as prescribed
- Instill topical drops in the order ordered, ~5 min apart: **timolol** → **brimonidine** → **pilocarpine** → **prednisolone** (apply nasolacrimal occlusion × 1 min after each)
- Give antiemetic (e.g., ondansetron) to control vomiting
- Monitor pain, visual acuity, IOP, and vital signs every 15–30 minutes
- Keep NPO in anticipation of laser iridotomy
- Reinforce teaching: this is an emergency, vision can be preserved with prompt treatment, and the other eye will also need prophylactic treatment

6

EVALUATE OUTCOMES

Did the interventions work? Reassess and adjust.

- **Expected (improving):** Pain decreases, nausea resolves, vision begins to clear, pupil becomes reactive, IOP trends downward toward 21 mmHg, BP returns toward baseline
- **Unexpected (worsening):** Persistent pain, IOP remains >30 mmHg, vision continues to deteriorate, pupil remains fixed — escalate to ophthalmology immediately; may need surgical iridectomy
- After acute resolution: confirm **follow-up for laser iridotomy of the contralateral eye**, reinforce avoidance of mydriatic-containing medications (cold/allergy OTCs, anticholinergics), and reinforce lifelong glaucoma drop adherence
- Reassess A1C and BP at discharge — both contribute to ongoing diabetic eye disease and overall vascular risk

Outcome statement: The acute episode is resolved when pain is controlled, IOP is within normal range, visual acuity returns to baseline, and the pupil becomes reactive — with a clear plan for definitive laser iridotomy and prevention of the contralateral attack.