

Choroidal Neovascularization (CNV) — Comprehensive KB Entry

1 — Short definition

Choroidal neovascularization (CNV) is a process in which abnormal blood vessels grow from the choroid through breaks in Bruch's membrane into sub-RPE and/or subretinal spaces, causing fluid leakage, haemorrhage, and disruption of normal retinal architecture visible on OCT.

2 — Pathophysiology

New vessels originate from the choroid and invade across Bruch's membrane. Leakage from these vessels produces subretinal fluid (SRF), intraretinal fluid (IRF), and subretinal hemorrhage; chronic leakage causes scarring and photoreceptor loss.

3 — Imaging modalities

Spectral-domain OCT (SD-OCT) / Swept-source OCT — primary imaging for structural changes (fluid, PEDs, SHRM).

OCT Angiography (OCTA) — visualizes CNV networks and detects flow within lesions.

Fluorescein angiography (FA) — useful when OCT or OCTA are inconclusive.

4 — OCT appearances — layer-level description

Subretinal Hyperreflective Material (SHRM): hyperreflective dome/elevation above RPE; often contains neovascular tissue.

Pigment Epithelial Detachment (PED): elevation of RPE from Bruch's membrane; often irregular in CNV.

Subretinal Fluid (SRF): hyporeflective space between retina and RPE.

Intraretinal Fluid (IRF): cystoid hyporeflective pockets inside the retina.

5 — Diagnostic criteria

Symptoms + OCT structural evidence (SRF/IRF/SHRM/PED) + confirmation of neovascular flow on OCTA or leakage on FA when needed.

6 — Staging / activity

Active CNV: presence of new or worsening SRF or IRF.

Inactive CNV: absence of fluid, presence of stable scar tissue.

7 — First-line treatment — Anti-VEGF agents

Ranibizumab: 0.5 mg intravitreal monthly or treat-and-extend.

Aflibercept: 2 mg; loading phase monthly $\times 3$ then every 8 weeks or T&E.;

Bevacizumab: 1.25 mg intravitreal (off-label).

8 — Other therapies

Photodynamic therapy (PDT) for select cases (less common today).

9 — Procedural precautions

Use povidone-iodine antisepsis, sterile technique, avoid routine antibiotics, counsel patient on warning signs of endophthalmitis.

10 — Complications

Endophthalmitis, inflammation, retinal detachment (rare), IOP spikes.

11 — Patient precautions

Report sudden vision worsening immediately. Maintain follow-ups. Control systemic vascular risks. Expect mild discomfort post-injection.

12 — Prognosis

Timely anti-VEGF treatment stabilizes or improves vision in many cases; prognosis depends on chronicity and photoreceptor layer integrity.

13 — Decision flow (for chatbot logic)

If OCT shows active fluid → urgent retina care + anti-VEGF standard.

If OCT shows no fluid → observe or extend treatment interval.

14 — Disclaimer

Educational information only; not a substitute for professional medical advice.