

Central Retinal Artery Occlusion

START WITHIN HOURS — in one audit all nine permanent recoveries began inside 10 h

Oxygenates the ischaemic inner retina by diffusion from the choroid, buying time for retinal viability until reperfusion occurs.

TREATMENT PROTOCOL

Pressure	Normobaric oxygen first at the highest FiO2. Then 2.0 ATA ; if no improvement 2.4 ATA (USN Table 9); then 2.8 ATA (Table 6)
Duration	90 min at the depth at which vision returns
Frequency	Escalate by pressure within the session. Then twice or three times daily until angiography normalises or three treatments bring no further gain
Sessions	Not fixed. A prospective series gave 10 — Table 5, then nine on Table 9 twice daily
Review	If treated more than 3 days past clinical plateau

PATIENT SELECTION

Who to treat	Acute central retinal artery occlusion inside the therapeutic window, arteritic or not. Absence of a cherry-red spot favours reversibility.
Who not to treat, or when to stop	Suspected giant cell arteritis: start IV corticosteroids and still treat (UHMS). Branch occlusion: no change in 5 of 5 eyes in one cohort , though UHMS cites case-series benefit. A cherry-red spot predicts a poorer response, not futility: 58% still improved with one against 86% without. If normobaric oxygen brings no response within 15 min, refer. Do not stop after one unresponsive hyperbaric session — UHMS reports responders only after the third, fourth or eighth.
Mechanism	Oxygen diffuses from the choroid to the inner retina while the central retinal artery remains occluded, maintaining tissue viability until reperfusion.
Outcome measure	Best-corrected visual acuity in logMAR; fluorescein-angiographic revascularisation; neovascular glaucoma and stroke incidence.

WHAT THE NUMBERS SHOW

- Elder 2017** (audit, n=31 over a decade): **all nine patients who improved permanently were treated within 10 hours of onset**; the authors' own 9-h cut-point test gave P=0.13.
- Hadanny 2017** (n=128): BCVA **2.14 to 1.61 logMAR, P<0.0001**; 86% improved without a cherry-red spot against 58% with one.
- Elfil 2025** (9 studies, 499 patients): BCVA after sensitivity analysis **MD -0.63 (95% CI -1.14 to -0.12, P=0.01)**; lower neovascular glaucoma (7.9% vs 15.8%) and stroke (4.3% vs 16.6%).
- Rosignoli 2021** (3 studies, 207 vs 89): **no improvement in final visual outcome, P=0.83** — a null on late treatment (own series: mean 18 h to HBOT).
- Chiabo 2024** (n=31, angiography-monitored, uncontrolled): revascularisation in 87% by day 21.

EVIDENCE BASE

Shape and certainty	About 18 records. No randomised trial of hyperbaric oxygen against no treatment exists — the one CRAO randomised trial in the library tests alteplase and has no hyperbaric arm. The meta-analyses of observational data conflict.	
Study	Design	Result and risk of bias
Elfil 2025 — PMID 40739887	SR / meta, 9 studies, 499 patients	Positive but tempered; AMSTAR-2 critically low
Rosignoli 2021 — PMID 34743490	SR / meta, 3 studies	Null , P=0.83
Hadanny 2017 — PMID 28096655	Retrospective cohort, n=128	Before–after only; no control group
ALBalawi 2026 — PMID 42123263	SR / meta, 12 studies	Positive — but the pooled comparison is mis-specified
Gur 2026, Eye — PMID 41667662	Dose comparison	2.8 ATA initial beat 2.0 ATA on 24-h acuity, P<0.001

WHAT THE EVIDENCE DOES NOT SUPPORT

Cautions	No randomised trial against no treatment exists. Heterogeneity is high (I-squared 78%). The 2026 pooled odds ratio entered the same denominator in both arms for most included studies and is not a valid treated-versus-untreated comparison. Bulk-imported ophthalmology topics on the shelf (glaucoma, diabetic retinopathy) are not CRAO evidence.
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STATUS IN SOUTH AFRICA

Status	Accepted indication in South Africa (SAUHMA Level C). Argued as appropriate emergency management of a PMB diagnosis rather than as that pair's named treatment, which is laser surgery.
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Compiled from the **UHMS Hyperbaric Oxygen Therapy Indications Manual, 15th edition (2023)** and the appraised trial evidence held in an HBOT evidence library. All treatments are 100% oxygen. US Navy Treatment Table profiles are named, not reproduced — the US Navy Diving Manual is the operative document at the chamber. Session counts are largely guideline convention rather than dose-finding evidence. This card summarises published parameters and does not replace those source documents or clinical judgement for the individual patient. Generated 03 October 2026. Not a SAUHMA publication and carries no society endorsement.