

Intracranial Abscess

EARLY, alongside surgery and antibiotics — no specific window is stated

An adjunct to neurosurgical drainage and culture-directed antibiotics in selected high-risk intracranial abscess.

TREATMENT PROTOCOL

Pressure	2.0–2.8 ATA
Duration	60–90 min of oxygen
Frequency	Once or twice daily. Twice daily in the initial or life-threatening phase
Sessions	Optimal number unknown — individualise. Reasonable to extend to 40 or beyond with concomitant skull or spinal osteomyelitis
Review	After 20 treatments

PATIENT SELECTION

Who to treat	After CT or MRI diagnosis: multiple abscesses; deep or dominant location; compromised host, especially fungal; surgery contraindicated or the patient a poor surgical risk; GCS below 9; or deterioration despite standard aspiration and antibiotics.
Who not to treat, or when to stop	Surgery and antibiotics remain primary — this is adjunctive only, within a multidisciplinary team. Seizure and raised-intracranial-pressure risk apply despite the low reported rate of cerebral oxygen toxicity.
Mechanism	Inhibits anaerobic organisms; reduces perifocal oedema without steroids, preserving blood-brain-barrier antibiotic penetration; enhances neutrophil phagocytosis; augments oxygen-dependent transport of cephalosporins and aminoglycosides across the bacterial wall, which fails below a tissue pO ₂ of 20–30 mmHg.
Outcome measure	Reoperation rate; recurrence; Glasgow Outcome Scale; mortality; resolution on surveillance imaging.

WHAT THE NUMBERS SHOW

- Bartek 2016** (controlled cohort, n=40, 20 against 20): reoperations **10% vs 45% (P=0.03)**; recurrence **14% vs 58% (P<0.01)**; good outcome **80% vs 45% (P=0.04)**.
- 25-patient consecutive series** (348 treatments): **0% mortality, 73% complete recovery**, no cerebral oxygen toxicity.
- Kutlay series** (n=13 adults, no comparator): infection controlled in all, no late recurrence, but 2 of 13 (15.3%) needed early re-aspiration.
- Larsson 2002** (39 consecutive post-operative cranial and spinal infections, no comparator): healed with bone flap or implant retained in **27 of 36 (75%)**; side effects minor.
- Case reports 1980–2026** (17 patients given HBO₂: undrainable deep, multiple, fungal, leukaemic-child or infant abscesses): most recovered, a transplant recipient with invasive aspergillosis died, and every case had concurrent drainage, antibiotics, antifungals or steroids.

EVIDENCE BASE

Shape and certainty	Observational only — no randomised trial, and the page states the disease and its adjunctive context preclude one. The best designs are two retrospective comparative cohorts (Bartek 2016, Brunner 2025). The governing UHMS review concludes the risk-benefit balance favours adjunctive use in selected patients.
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Study	Design	Result and risk of bias
Bartek 2016, Acta Neurochir — PMID 27113742	Population-based comparative cohort, n=40	Positive on all three outcomes; ROBINS-I serious
Tomoye 2021, Undersea Hyperb Med — PMID 33648039	Narrative governing review	Risk-benefit favours adjunctive use
Brunner 2025, Neurosurg Rev — PMID 40731157	Retrospective comparative cohort, n=55 (25 vs 30)	Mixed ; ROBINS-I serious
Larsson 2002, Neurosurgery — PMID 11844263	Consecutive case series, n=39	Positive; no comparator (JBI)
Ferguson 1988, Rev Infect Dis — PMID 3393782	Historical-control series, rhinocerebral mucormycosis, 13 episodes	Deaths 2/6 vs 4/7 (p=0.59); ROBINS-I critical
Bilic 2012, Neurol Res — PMID 22943556	Animal RCT (rat), n=80	Early histological effect only; SYRCLE high

WHAT THE EVIDENCE DOES NOT SUPPORT

Cautions	No randomised evidence exists for this indication. Hyperbaric oxygen must not replace surgery or antibiotics. Brunner 2025 is mixed: fewer residual abscesses at 6 months (80% vs 46.7%, p=0.009) but longer hospital stay with HBOT (29.9 vs 23.2 days, p=0.010), and the radiological difference had gone by 12 months (p=0.477). Fungal and case-level reports are confounded by concurrent drainage, antifungals or steroids; 64% survival with HBO ₂ among 929 published zygomycosis cases is unadjusted (Roden 2005).
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STATUS AND SOCIETY POSITIONS

Status	Accepted indication in South Africa (NRPL-recognised). Maps directly to the intraspinal and intracranial abscess diagnosis-treatment pair, a PMB-level diagnosis.
ICD-10 (SA)	G06.0, G06.2, G08
SAUHMA 2023	No protocol (NRPL-recognised; UHMS parameters used)
ECHM 2017 (Type, Level)	1C for multiple or deep abscesses, a compromised host, no surgical option or failed care

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 31 October 2026. Not a SAUHMA publication and carries no society endorsement.