

# Thermal Burns

EARLY, within hours — but the largest randomised trial (first treatment at a mean 11.5 h) was null

A contested adjunct to burns-unit care and surgery in serious deep burns, aimed at preserving the zone of stasis.

## TREATMENT PROTOCOL

|           |                                                                                              |
|-----------|----------------------------------------------------------------------------------------------|
| Pressure  | 2.0 or 2.4 ATA                                                                               |
| Duration  | 90 min at depth, plus descent and ascent                                                     |
| Frequency | Three treatments in the first 24 h, then twice daily                                         |
| Sessions  | 10–14 days if 40% TBSA or more. Beyond 20–30 is to optimise graft take; rare to exceed 40–50 |
| Review    | After 30 sessions                                                                            |

## PATIENT SELECTION

|                                   |                                                                                                                                                                                                                                                                                  |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Who to treat                      | Serious deep partial- and full-thickness burns, recommended above 20% TBSA and for burns involving the hands, face, feet or perineum, as an adjunct to fluid resuscitation, burns surgery and critical care.                                                                     |
| Who not to treat, or when to stop | Not a substitute for burns-unit care, and not for burns where survival is not expected. <b>Remove mafenide acetate before treatment</b> ; control fever, which raises oxygen-toxicity risk; manage fluids vigilantly for post-chamber hypotension.                               |
| Mechanism                         | Raises oxygen tension in the ischaemic zone of stasis; reduces oedema by vasoconstriction with preserved oxygen delivery; dampens the inflammatory response; supports neutrophil bactericidal function and angiogenesis; may prevent progression from partial to full thickness. |
| Outcome measure                   | Healing time; graft survival; wound complications; length of stay; mortality; burn depth by laser Doppler imaging and histology.                                                                                                                                                 |

## WHAT THE NUMBERS SHOW

- Villanueva 2004 Cochrane: insufficient evidence to support or refute.** Of two poor-quality trials, one showed no difference and one shorter healing (19.7 vs 43.8 days).
- Smolle 2024** (structured review, 47 publications, 94 experiments): 67.4% of experiments positive, and **pressure was the only independent predictor — below 3 ATA beat 3 ATA or above, p=0.0005** — significant in the 76 animal arms, not in the 15 clinical arms (p=0.099).
- Brannen 1997** (prospective randomised, n=125): one third treated within 8 h, **mean 11.5 h to first treatment; no difference in mortality, number of operations or length of stay.**
- Chong 2013** (pilot RCT, n=17): no significant effect on burn depth or cytokines — severely underpowered, and cannot exclude benefit.

## EVIDENCE BASE

|                     |                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shape and certainty | Genuinely contested. The UHMS chapter marshals 12 clinical studies while conceding that no adequately powered multicentre trial exists. Cochrane found the evidence insufficient. A 2026 systematic review of 13 studies called the evidence inconsistent with no clear consensus. The wiki holds this page as <b>guarded</b> . |
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| Study                                             | Design                                                             | Result and risk of bias                         |
|---------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------|
| Villanueva 2004, Cochrane — PMID 15266540         | SR of 2 RCTs                                                       | Insufficient evidence either way                |
| Brannen 1997                                      | Prospective randomised, n=125                                      | <b>No benefit demonstrated</b>                  |
| Chong 2013, Diving Hyperb Med — PMID 24122191     | Pilot RCT, n=17                                                    | Null; underpowered                              |
| Smolle 2024, Undersea Hyperb Med — PMID 38985148  | Structured review, 94 experiments                                  | Vote count; pressure signal in animal arms only |
| Molina-Vega 2026, J Burn Care Res — PMID 41700783 | SR, 13 studies, 566 HBOT-treated patients; AMSTAR-2 critically low | Inconsistent; no consensus                      |
| Waisbren 1982, Burns — PMID 7059858               | Matched pairs, n=72                                                | <b>Mortality 22 vs 21; more bacteraemia</b>     |
| Chiang 2017, Burns — PMID 28034667                | Cohort, n=53 (mass casualty)                                       | No difference in grafting, ICU or hospital stay |

## WHAT THE EVIDENCE DOES NOT SUPPORT

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Cautions | No adequately powered multicentre trial confirms efficacy, and Cochrane rates the evidence insufficient to support or refute. <b>Present the contested evidence accurately</b> — the frequently cited Cianci reviews are advocacy by proponents rather than independent evidence, and any motivation should disclose the gap between the UHMS position and Cochrane. The early matched comparison (Waisbren 1982) found no mortality difference and more bloodstream infection with HBO. |
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## STATUS AND SOCIETY POSITIONS

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|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status                  | Accepted indication in South Africa (NRPL-recognised); no dedicated SAUHMA protocol. Maps to the burns diagnosis-treatment pair, whose coded list carries no threshold qualifier even though its label does. |
| ICD-10 (SA)             | T29.3, T31.1, T31.2, T31.3, T31.4, T20.3, T21.3, T22.3, T23.3, T24.3, T25.3, T20.2, T21.2, T22.2, T23.2, T24.2, T25.2, T29.2                                                                                 |
| SAUHMA 2023             | No protocol (NRPL-recognised; UHMS parameters used)                                                                                                                                                          |
| ECHM 2017 (Type, Level) | Second-degree burns over 20% BSA 2C, specialised centres only                                                                                                                                                |

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 01 November 2026. Not a SAUHMA publication and carries no society endorsement.