

## The case for HBOT in Idiopathic Sudden Sensorineural Hearing Loss (ISSHL)

### What is ISSHL

Classically defined as hearing loss of at least 30dB occurring within three days over at least three contiguous frequencies (uhms.org). ISSHL is defined as Sudden Sensorineural Hearing Loss (SSHL) without identifiable cause despite adequate investigation; this is the situation in 90% of patients with (SSHL).

**NOTE:** Some studies suggest that HBOT should only be initiated on patients with moderate to severe ISSHL (>40dB). [1]

### Pathophysiology

Inner ear function is maintained by the Cochlea, which is “known to have high oxygen demand.” Cochlear hypoxia is associated with progressive ossification, fibrosis, loss of neurons, endolymphatic hydrops, and hearing loss. [1]

**The issue:** Direct blood supply to the organ of Corti is minimal, so oxygen must diffuse through both the perilymph and cortilymph [1]

**The solution:** HBO can increase perilymph oxygen tension and has been shown to restore hearing in a significant number of patients with ISSHL [1]

### HBOT as treatment for ISSHL per the AAO-HNS

Updated ISSHL treatment guidelines per the AAO-HNS are divided into the three following categories [2]:

1. Strongly recommended
2. Recommended
3. Other options for treatment

\*HBOT falls under category 3

According to the AAO-HNS, **HBOT can be considered an option** (for up to 3 months after symptom onset) for ISSHL treatment under the following conditions:

- (1) Clinicians may offer, or refer to a clinician who can offer, HBOT combined with steroid therapy within 2 weeks of onset of ISSHL [2]
- (2) Clinicians may offer, or refer to a clinician who can offer, HBOT combined with steroid therapy as salvage therapy within 1 month of onset of ISSHL [2]

**NOTE:** “The three most promising treatments include corticosteroids, vasodilators, and HBOT. Of these, only HBO has undergone sufficient randomized controlled trials to show a positive treatment effect in meta-analyses.” [1]

Source:

[1] Murphy-Lavoie, H. M., & Mutluoglu, M. (2017). Hyperbaric Treatment of Sensorineural Hearing Loss.

[2] Chandrasekhar, S. S., Tsai Do, B. S., Schwartz, S. R., Bontempo, L. J., Faucett, E. A., Finestone, S. A., ... & Satterfield, L. (2019). Clinical practice guideline: sudden hearing loss (update). *Otolaryngology–Head and Neck Surgery*, 161(1\_suppl), S1-S45.