



CLINICAL EVIDENCE SUMMARY FOR REFERRING PHYSICIANS

Oral Appliance Therapy Works Across All Severity Levels — Including Severe OSA

A short, readable summary of what the current evidence says about mandibular advancement device (MAD) therapy in OSA — including severe disease — for patients who can't tolerate or won't use CPAP. Full citations at the end.

The short version

If a patient has severe OSA, many of us were taught they need CPAP and an oral appliance isn't really on the table. That teaching is out of date. **For a patient who won't wear CPAP, the real choice isn't appliance vs. CPAP — it's appliance vs. nothing.** And the evidence now shows an oral appliance does the job across all severity levels, severe included, for patients who can't tolerate PAP.

CPAP is still first-line, and we say that to every patient. This isn't an argument against CPAP. It's an argument against leaving a severe patient untreated just because they couldn't tolerate the mask.

Why "CPAP lowers the AHI more" doesn't settle it

CPAP does lower the AHI more than an oral appliance — that's true, and it's where the "CPAP only for severe" instinct comes from. But AHI reduction on a chart isn't the same as a patient who's actually better. What helps a patient is the treatment they **use, all night, every night** — and that's where the two therapies even out.

The reason is about behavior, not statistics: **people wear oral appliances more than they wear CPAP.** A machine that works beautifully but sits in the closet helps no one. A smaller device the patient keeps in all night can deliver just as much real-world benefit. On the outcomes patients care about — blood pressure, daytime sleepiness, quality of life — CPAP and oral appliances come out about the same, because the appliance's better wear-time makes up for its smaller per-night effect.

- A head-to-head trial comparing a month of each found **the same improvement in blood pressure, sleepiness, and quality of life**, even though CPAP dropped the AHI more (Phillips 2013).
- A large review pooling 51 studies and nearly 5,000 patients found **no meaningful difference between CPAP and oral appliances on blood pressure** (Bratton 2015).

What the evidence says specifically about SEVERE OSA

This is the part that matters for the patient you were told to send back to CPAP no matter what.

- **Appliances still work at severe levels.** A 2024 analysis of 42 studies (2,265 patients) found oral appliances cut the AHI by about **48% in mild, 67% in moderate, and 62% in severe** OSA — an average drop of ~32 events/hour in the severe group. Severe patients are less likely to reach "normal," but they get a large improvement (Liao 2024).
- **Head-to-head in severe patients, the outcomes match.** Pooling the randomized trials in severe-only OSA, CPAP lowered the AHI more, but **sleepiness and quality of life improved just as much with the appliance** — and patients stuck with the appliance better. The authors call it an effective option for CPAP-intolerant patients "including those with severe OSA" (Trzepizur 2021).
- **A recent severe-only trial made the point vividly.** 144 severe patients randomized to appliance or CPAP for a year. CPAP crushed the AHI far more on paper (to ~2 vs. ~21) — but the **appliance group had the better overnight blood pressure**, and far more used it 6+ hours a night (56% vs. 28%). The therapy that looked weaker on the AHI delivered the better BP result, because it was the one being worn (CRESCENT 2025).

- **Long-term, the survival numbers line up too.** Following severe-OSA patients ~6.5 years, appliance and CPAP were **about equal at reducing fatal cardiovascular events** vs. no treatment — even though the appliance left a higher AHI on paper (Anandam 2013).

The point the AHI alone misses

A newer wrinkle explains why appliances "underperform" on paper but not in patients. The AHI just counts breathing events — it doesn't measure how much oxygen actually drops, the part most tied to heart risk. Measuring that oxygen strain instead ("hypoxic burden"), oral appliances looked far better than the AHI suggested: judged the old way, **~75% of patients were treated successfully; judged by the oxygen measure that tracks heart risk, ~95% were** — and in severe patients, the share with dangerous oxygen strain fell from 94% before treatment to 15% after (Mosca 2025).

Plain version: an appliance can leave a few more events on the report while still fixing the part that actually threatens the heart.

And to be fair about the evidence on both sides

If someone objects that appliances don't have big trials proving they prevent heart attacks — that's true, but **CPAP doesn't clear that bar either**. The largest CPAP trial (SAVE, 2016) didn't show fewer heart events overall; the benefit appeared only in patients who actually used it enough. Since appliances get used more, that "only helps if you use it" finding may quietly favor the appliance in the real world. The honest bottom line: we shouldn't hold the appliance to a standard CPAP itself hasn't met.

What this means for your referral

- ✓ **CPAP stays first-line.** We never pitch an appliance as better than CPAP the patient tolerates well.
- ✓ **A severe AHI, by itself, is not a reason to rule out an appliance** for a patient who can't or won't use CPAP. The guideline supports it, and so does the outcome data. The alternative to consider is an appliance — not no treatment.
- ✓ **You keep the medicine.** We don't diagnose OSA or run/read sleep studies. We fit and titrate the appliance, follow the patient, send objective data back to you, and route any follow-up sleep testing through your office.
- ✓ **Best severe candidates:** the patient who's already failed or refused CPAP and would otherwise go untreated; often alongside weight loss and positional measures; sometimes as combination therapy.

THE STUDIES BEHIND THIS SUMMARY

1. **Guideline:** Ramar K, et al. Clinical Practice Guideline for the Treatment of OSA and Snoring with Oral Appliance Therapy: An Update for 2015. *J Clin Sleep Med*. 2015;11(7):773–827. (Recommends appliances for CPAP-intolerant patients with no severity limit.)
2. **Head-to-head outcomes:** Phillips CL, et al. *Am J Respir Crit Care Med*. 2013;187(8):879–887.
3. **Blood pressure review:** Bratton DJ, et al. *JAMA*. 2015;314(21):2280–2293.
4. **Severity-stratified effectiveness:** Liao J, et al. *Otolaryngol Head Neck Surg*. 2024;170(5):1270–1279.
5. **Severe-OSA head-to-head:** Trzepizur W, et al. *Sleep*. 2021;44(7):zsab015.
6. **Severe-OSA trial (CRESCENT):** Colpani JT, et al. *J Dent Res*. 2025 (Epub); print 2026;105(1):112–119. Main trial: Ou YH, et al. *J Am Coll Cardiol*. 2024;83(18):1760–1772.
7. **Long-term survival:** Anandam A, et al. *Respirology*. 2013;18(8):1184–1190.
8. **Hypoxic burden:** Mosca EV, et al. *J Clin Sleep Med*. 2025;21(7):1185–1190.
9. **CPAP's own evidence bar (SAVE):** McEvoy RD, et al. *N Engl J Med*. 2016;375(10):919–931.

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