Home Sleep Testing for Diagnosing Obstructive Sleep Apnea

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Clinical Question

Given its significantly lower cost, can home sleep testing serve as an alternative to laboratory testing for diagnosing obstructive sleep apnea (OSA)?

Evidence-Based Answer

Home portable monitoring can be used as a substitute for in-laboratory polysomnography for the diagnosis of OSA in patients with a high pretest probability. Most patients prefer home monitoring, and clinical outcomes among patients diagnosed by either method are comparable regarding sleepiness, sleep-related quality of life, and compliance with continuous positive airway pressure (CPAP) therapy. (Strength of Recommendation: B, based on randomized controlled trials.)

Evidence Summary

A 2014 randomized crossover study evaluated home portable monitoring vs. in-laboratory polysomnography and in-laboratory portable monitoring in 75 patients with a high pretest probability of OSA.[1] Patients were assigned to a home portable monitoring session or an in-laboratory polysomnography and portable monitoring session. All patients performed both sessions. The intraclass correlation coefficient (ICC) was used to evaluate consistency between multiple observers in comparing the Apnea-Hypopnea Index. A score of 0.6 or greater indicates good intraindividual agreement. The ICC for the Apnea-Hypopnea Index using polysomnography vs. home portable monitoring was 0.73 (95% confidence interval [CI], 0.61 to 0.82). There was also good intraindividual agreement between simultaneous in-laboratory portable monitoring vs. polysomnography (ICC = 0.79; 95% CI, 0.67 to 0.86) and home portable monitoring vs. in-laboratory portable monitoring (ICC = 0.75; 95% CI, 0.62 to 0.84). Using polysomnography as the diagnostic standard, the sensitivity of home portable monitoring was 90% or more for all forms of sleep apnea. Home portable monitoring was preferred by 82% of patients.

A multicenter randomized controlled trial of 373 patients with a high pretest probability for moderate or severe OSA compared laboratory-based polysomnography and home-based, unattended portable monitoring.[2] Outcomes included CPAP acceptance, usage, and adherence using a noninferiority intention-to-treat analysis. CPAP acceptance rates were similar between groups (93% vs. 94%; $P = 1.02$). There was higher CPAP usage in the portable monitoring group (281 vs. 219 minutes per night; mean difference = 62 minutes; 95% CI, 15 to 108). CPAP adherence, defined as the percentage of nights with at least four hours of CPAP usage, was higher in the home portable monitoring users (63% vs. 49%; mean difference = 13%; 95% CI, 2 to 25).

A randomized controlled trial of 102 patients compared subjective sleepiness, quality of life, blood pressure, and CPAP compliance after four weeks among those diagnosed and treated with home portable monitoring vs. in-laboratory polysomnography.[3] Patients were assigned to home monitoring followed by one week of home CPAP therapy and three weeks of fixed-pressure CPAP, or to overnight polysomnography followed by home monitoring and in-laboratory CPAP titration. After four weeks, there were no statistically significant differences between groups in sleepiness,

quality of life, or blood pressure. The rate of CPAP compliance between home portable monitoring vs. polysomnography groups was not significantly different (5.4 vs. 5.6 hours per night; $P = .49$). Home monitoring was preferred by 76% of patients.

The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. government.

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