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USPSTF Recommendation for Obstructive Sleep Apnea Screening in Adults

Kathleen Yaremchuk
Henry Ford Health, KYAREMC1@hfhs.org

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EDITORIAL

USPSTF Recommendation for Obstructive Sleep Apnea Screening in Adults

Kathleen Yaremchuk, MD, MSA

The US Preventive Services Task Force (USPSTF) was created in 1984 as an independent, volunteer panel of national experts in prevention and evidence-based medicine. It works to improve the health of all Americans by making evidence-based recommendations about clinical preventive services such as screenings, counseling services, and preventive medications. Any USPSTF recommendation on a clinical service is based on a review of existing peer-reviewed medical evidence, and the clinical service is then assigned a grade of A through D, where A recommends for and D against the service, or an "I statement" when evidence is insufficient or of too poor quality to assess the balance of benefits and harms. USPSTF recommendations do not consider the costs of a preventive service.

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The USPSTF method for guideline development is an evidence-based approach (ie, a review of the literature rather than expert opinion).[1] A Topic Work Group leads development of the review and recommendation, which includes members of USPSTF, staff from evidence-based practice centers, and staff from the Agency for Healthcare Research and Quality.

For obstructive sleep apnea (OSA), the USPSTF recently reviewed the literature[2] and published a recommendation statement concluding "that the current evidence is insufficient to assess the balance of benefits and harms of screening for OSA in asymptomatic adults"[3] and issued an I statement in this regard. For OSA, the evidence-based practice center had produced a draft evidence review that is 363 pages long and includes 293 references.[2] The references reviewed validated screening tools for OSA in asymptomatic adults; detection, benefits, and harms of early detection and intervention or treatment; accuracy of screening and diagnostic tests; effectiveness of early detection and treatment; potential harms of screening and treatment; and, most importantly, an estimate of magnitude of net benefit.[2]

The USPSTF considered an intermediate outcome for OSA a decrease in the apnea-hypopnea index (AHI), improvement in the Epworth Sleepiness Scale (ESS), or a reduction in blood pressure (BP).[3] Final health outcomes in OSA were considered to be decreased mortality, cardiovascular and cerebrovascular events, and an increase in quality-of-life measures.[3]

In making this recommendation, USPSTF follows a generic analytic framework for evaluation of screening topics that includes key questions. In this Editorial, I review the salient points of the recommendation.[4]

Burden of Disease

The importance of evaluating for a target condition, such as OSA, is based on the prevalence in the population. Data indicate the estimated prevalence of OSA in the United States to be 10% for mild OSA and 3.8% to 6.5% for moderate to severe OSA.[5-7] Prevalence may be increasing owing to increased rates of obesity. Observational studies have reported a 2-fold increased risk of all-cause mortality in patients with severe untreated OSA. The proportion of individuals with severe OSA who are asymptomatic or have unrecognized symptoms is unknown.

Is There a Validated Screening Tool for an Asymptomatic OSA Population?

The ability to screen for OSA depends on the use of validated screening questionnaires in asymptomatic adults (or adults with unrecognized symptoms). Many of the tools combine questions about symptoms with objective findings (eg, body mass index [BMI]). Screening questionnaires that could be used in primary care include the ESS, the STOP questionnaire (snoring, tiredness, observed apnea, high BP); STOP-Bang questionnaire (STOP questionnaire plus BMI, age, neck circumference, and gender); the Berlin questionnaire; and the Wisconsin Sleep Questionnaire. Most of these were validated in referral settings and not in the general population.

The USPTF reviewed data on 2 tools that were used in primary care or general populations, the Berlin questionnaire and the Multivariable Apnea Prediction (MVAP) instrument. The Berlin tool had poor accuracy, and the studies using the MVAP had been conducted in populations with high prevalences of OSA and a high risk of spectrum bias.[8,9]

Does Early Detection of OSA and Treatment Result in Reduced Morbidity and/or Mortality?

The USPSTF found no studies that evaluated the effect of screening for OSA on mortality, quality of life, and cardiovascular and cerebrovascular events.

Do Current Treatments or Interventions Demonstrate an Effect on Health Outcomes?

Consistent evidence from prospective cohort studies supports the association between elevated AHI and all-cause mortality: people with severe OSA (AHI, ≥30) die at about twice the rate of controls (pooled hazard ratio, 2.07; 95% CI, 1.48-2.91; 5 studies, N = 11 003 participants).[2] It is not known if OSA contributes to this increase in mortality independently, beyond

the contributions of BMI, increased age, hypertension, and general lifestyle. Despite the findings of an association between severe OSA and increased mortality, USPSTF identified no studies that reported on change in AHI and associated change in mortality.[3]

The most evidence reviewed evaluated continuous positive airway pressure (CPAP) as treatment for OSA.[2,9] However, the studies were determined to be underpowered and otherwise inadequate owing to short duration of follow-up. Thirty-one trials (N = 2673) reported on the effect of treatment with CPAP on mortality; most trials (29 of 31) followed up with the patients for only 12 weeks or less, and most trials (27 of 31) had no deaths in either study group.[9]

Does Current Treatment or Interventions Demonstrate an Effect on Intermediate Outcomes, Including AHI, ESS, and Blood Pressure?

The most evidence for treatment was available for CPAP, which reduced AHI, ESS, and BP.[2] Mandibular Advancement Devices (MAD) reduced AHI and ESS, but no evidence was found for decreased BP. Five studies were included that evaluated upper airway surgery for OSA.[2] Each used a different surgical technique and showed that the effects on AHI were inconsistent, and no significant improvements in ESS score or BP were found. Few studies reported on the effect of treatment with MAD (508 patients in 6 studies) or upper airway surgery (187 patients in 4 studies) on any health outcomes.[3]

Are There Potential Harms Associated With Screening and Treatment for OSA?

The USPSTF was unable to find studies that directly evaluated the harms of screening for OSA.[2,3] Studies were reviewed that reported on the harms of treatment with CPAP, MAD, and surgical interventions. Studies of CPAP reported oral or nasal dryness, eye or skin irritation, rash, epistaxis, and pain.[3] For MAD, several trials reported oral mucosal, dental, or jaw symptoms or excessive salivation vs comparator groups.[3] In the review of 4 trials (n = 205), reported harms with upper airway surgery included pain, postoperative bleeding, difficulty speaking and swallowing, change in vocal quality, hematomas, ulcerations, infections, and velopharyngeal insufficiency. Surprisingly, no deaths were reported.[3]

A recent randomized clinical trial of patients with moderate to severe OSA and established cardiovascular disease, not included in the review by USPSTF, concluded that CPAP did not prevent cardiovascular events.[10] The participants had a mean AHI of 29 and were randomized to CPAP or usual care. The CPAP group experienced an AHI of 3.7 at follow-up. After a mean follow-up of 3.7 years, no significant effect on death from cardiovascular causes, myocardial infarction, or stroke or hospitalization for unstable angina, heart failure, or transient ischemic attack was observed in the CPAP group. The CPAP group demonstrated significantly reduced snoring and daytime sleepiness and improved health-related quality of life and mood.

Surgical interventions were not prominent in USPSTF recommendation[3] owing to a lack of articles that had consistency in upper airway surgical procedures, reporting metrics, and numbers of participants. One study that did report on long-term survival of patients with OSA was a retrospective cohort study of all patients treated with CPAP or uvulopalatopharyngoplasty in Veteran Affairs facilities.[11] Relative to uvulopalatopharyngoplasty patients, CPAP patients demonstrated an independent 31% (95% CI, 3%-67%) increase in all-cause mortality.[11]

Summary

It is sensible that the USPSTF did not recommend screening of asymptomatic individuals for OSA. While observational studies demonstrate that patients with severe OSA have a 2-fold increased risk of all-cause and cardiovascular mortality,[3] the most commonly accepted treatment with CPAP has not demonstrated an improvement in health outcomes. The majority of studies evaluating outcomes for treatment with CPAP are underpowered and have short follow-up periods.

There is no argument that untreated individuals with OSA and hypersomnolence have an increased risk of motor vehicle and other accidents, cognitive impairment, lost work days, work disability, impaired work performance, and decreased quality of life. Treatment for these individuals is necessary and beneficial.

The USPSTF guideline recommendation process identified several critical research needs and gaps.[3] Otolaryngologists need to participate with their sleep colleagues in contributing to the literature through analysis of long-term health outcomes. A systematic evaluation of the effect of OSA treatment or interventions, whether CPAP, MAD, or surgery, on long-term outcomes is long overdue and should be possible through evaluating the Centers for Medicare & Medicaid Services and Social Security databases. The role of surgical intervention vs other interventions should be evaluated, and such evaluation may assist in determining the biological marker that causes morbidity and mortality in OSA. It may not be AHI, as we have believed for many years, but instead a laboratory value that represents chronic disturbances in gas exchange, sympathetic nervous system arousal, and fragmented sleep patterns.

The value proposition requires us to determine if what we do makes a difference in health outcomes for the population with OSA.

ARTICLE INFORMATION

Author Affiliation: Department of Otolaryngology–Head and Neck Surgery, Henry Ford Hospital, Detroit, Michigan.

Corresponding Author: Kathleen Yaremchuk, MD, MSA, Department of Otolaryngology–Head and Neck Surgery, Henry Ford Hospital, 2799 W Grand Blvd, Detroit, MI 48202 (kyaremc1@hfhs.org).

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