

## A Screening Tool to Identify Patients with Sleep Apnea

Netzer NC, Stoohs RA, Netzer CM, Clark K, Strohl KP. Using the Berlin Questionnaire to identify patients at risk for the sleep apnea syndrome. *Ann Intern Med* 1999;131:485-91.

### Study Overview

**Objective.** To evaluate the effectiveness of the Berlin Questionnaire as a means of identifying patients with sleep apnea.

**Design.** Survey followed by sleep monitoring studies in a subset of patients.

**Setting and participants.** 744 adults who responded to the survey, which was given to 1008 consecutive outpatients seen at 5 primary care sites in Cleveland, Ohio.

**Main outcome measures.** Survey items asked about risk factors for sleep apnea: the presence and frequency of snoring behavior, waketime sleepiness or fatigue, and history of obesity or hypertension. Patients with persistent and frequent symptoms in at least 2 of these 3 categories were considered to be at high risk for sleep apnea. Measurement of the number of respiratory events per hour in bed (respiratory disturbance index [RDI]) was conducted by portable unattended sleep monitoring.

**Main results.** Questions about symptoms demonstrated internal consistency (Cronbach correlations, 0.86 to 0.92). Of the 744 respondents, 279 (37.5%) were categorized as high-risk for sleep apnea. For the 100 patients who underwent sleep studies, risk grouping was useful in predicting the RDI. For example, being in the high-risk group predicted an RDI greater than 5 with a sensitivity of 0.86, a specificity of 0.77, a positive predictive value of 0.89, and a likelihood ratio of 3.79.

### Conclusion

The Berlin Questionnaire is an effective means for identify-

ing patients at high risk for sleep apnea.

### Commentary

The obstructive sleep apnea-hypopnea syndrome carries significant morbidity. The condition has been associated with cardiovascular disease, motor vehicle accidents, and impairment of quality of life due to excessive daytime sleepiness [1]. Although prevalence estimates suggest it is a common condition, sleep apnea often goes unrecognized in the primary care setting. The most common methods for detecting sleep apnea are diagnostic testing by a specialist or patient self-report of relevant symptoms during a clinician interview [2]. This study by Netzer et al is the first to report on use of a survey to screen for the condition in the primary care physician's office.

### Applications for Clinical Practice

Before a regular physical examination, patients are often asked to review a list of symptoms and to indicate if they have been bothered by any of symptoms listed. By including symptoms of sleep apnea (eg, snoring, daytime fatigue) on these lists, such a routine symptom review may allow physicians to screen for the condition without having to ask patients to complete a separate survey.

### References

1. Redline S, Strohl KP. Recognition and consequences of obstructive sleep apnea hypopnea syndrome. *Clin Chest Med* 1998;19:1-19.
2. Ball EM, Simon RD Jr, Tall AA, Banks MB, Nino-Murcia G, Dement WC. Diagnosis and treatment of sleep apnea within the community. The Walla Walla Project. *Arch Intern Med* 1997;157:419-24.

Copyright 2000 by Turner White Communications Inc., Wayne, PA. All rights reserved.