

Nurse Practitioner Perspective

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Sleep Apnea Detection

Lessons from a care program at onsite health clinics

By Brian Lemay, MS-HCA, Hani Kayyali, Kirk Scovill, Sarah Weimer, Eugene Estok, and Ted Bellezza

ALTHOUGH thousands of corporations have implemented programs and incentives to improve employee health, many continue to overlook an issue that negatively affects operational efficiency and may result in unnecessarily high healthcare costs.

Research shows that employees with obstructive sleep apnea (OSA) have persistently lower productivity and higher absenteeism and consume more total healthcare dollars. A recent study¹ found that the overall per member per month healthcare costs for untreated sleep apnea patients were nearly 25% higher than for patients on treatment (\$846 vs. \$645, $p = 0.005$). In addition, employees with sleep apnea are more likely to advance in their spectrum of illness to other costly health conditions.²

This article describes a program at on-site healthcare clinics inside schools and municipalities. Crowne/CareHere runs wellness and onsite healthcare clinic programs for employers and has 31 health centers throughout Florida. Starting in 2013, the company piloted a sleep apnea evaluation protocol within its wellness program at five municipalities and two school systems. The goal was to develop and test a plan that would identify employees at risk for sleep-disordered breathing, provide each at-risk person with an at-home diagnostic tool, and to assist employees who were diagnosed with OSA.

Research has shown that primary care physicians and nurse practitioners, when supported by sleep specialists, can achieve diagnostic accuracy and treatment outcomes similar to those reported by sleep labs.^{3,4} (See the May/June 2014 issue of *Nurse Practitioner Perspective* for this article: Wright WL. Home testing for obstructive sleep apnea. Study finds NP-led testing efficient and effective. 2014;1[2]:37-40.) As noted by Collop and McEvoy,⁵ the success of sleep apnea care by primary care providers lies not only in the clinical understanding of sleep medicine, but also in the ability to successfully add home sleep testing to a busy setting. To be successfully incorporated into the workload of onsite health clinics, diagnostic equipment and protocols must be easy to use in the clinic and in the home and must offer high-quality reports generated by sleep specialists.

Methods

Clinic staff members received education about OSA and home sleep monitor operation from registered polysomnographic technologists (RPSGTs). The nursing staff screened patients using the Epworth Sleepiness Scale, STOP



THINKSTOCK

Technology

BANG questionnaire and body mass index calculation. A healthcare provider reviewed each patient's medical history and engaged him or her in a discussion about sleep habits. Any one of the following resulted in a recommendation for a home sleep study: Epworth Sleepiness Scale score of 10 or higher or answering "yes" to three or more questions on the STOP BANG.

Patients whose evaluation or self-report suggested the presence of OSA were then trained in sensor hookup during the clinic visit and received a monitor (SleepView by CleveMed) for self-administration at home. Written instructions were also provided.

After the home sleep test (HST), the patient returned the monitor to the clinic, where data were uploaded to a secure web portal. For sites that did not handle the returned units, the monitors were mailed directly from the patient's house to CleveMed.

After device data were uploaded to a secure web portal (www.CleveMedSleepView.com), the company ran the data through an automated algorithm to detect respiratory events and sleep time. Medical history and self-reporting of sleep quality, like number of hours of sleep, were also collected from the patient and uploaded to the web portal. The studies were then manually scored by an RPSGT and interpreted by a sleep physician licensed in Florida.

With a formal diagnosis and treatment recommendations in hand, the healthcare provider reviewed the results with the patient and referred him or her to appropriate resources in the community.

Results

HST data from 81 patients were analyzed retrospectively. The population consisted of 48 men and 33 women. Average age was 48.5 years. Seventy-seven patients (95%) had OSA: 49 (60%) exhibited mild

to moderate disease, and 28 (35%) exhibited severe disease. The average apnea hypopnea index was 27.5, which confirms considerable disease severity (on the upper level of the mild to moderate range). BMI also showed considerable obesity in the tested population.

Sixty-seven patients (83%) conducted the home study the same day as the office visit. Four patients generated unscorable studies, thus yielding an incomplete study rate of 4.7% (4/85). The clinic provider reviewed the results with each patient and made a treatment recommendation based on the diagnostic report.

Discussion

The Crowne/CareHere sleep apnea program efficiently and conveniently captured at-risk employees at seven on-site clinics and enrolled them in an HST program. We believe one of the main reasons behind the success of this program was the support of the providers

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at the onsite clinic and employer group.

The careful screening, face-to-face patient education and encouragement from the clinics' providers produced an effective intake process and helped build strong patient commitment.

Of the 81 patients, 95% tested positive for OSA, which indicates an effective screening process. The low failure rate (only four unscorable studies) is of particular importance and can also be attributed to the face-to-face education and easy-to-use home technology.

An extensive review by the Agency for Healthcare Research and Quality⁶ found that research conducted mostly by sleep specialists had inadequate or missing data in 13% to 20% of the studies using Type III monitors.^{7,8}

In other research, Golpe⁹ and colleagues reported data loss that prevented interpretation in 7% of studies in which a technologist applied the sensors, as compared to a failure rate of 33% in

which the patient applied the sensors independently at home.

By comparison, the low failure rate of 4.7% in this study suggests that the nursing staff, with phone support from RPSGTs, are qualified to conduct HST with outcomes similar to those provided in a sleep lab by sleep technologists.

Based on this and other research, we believe that sleep apnea diagnosis and treatment is a natural extension of current diagnostic programs at onsite healthcare clinics that can reduce overall healthcare expenses, enhance patient experience and improve health. ■

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