Incentivizing worker productivity, controlling healthcare spending and offering employee wellness programs are considered factors for business success. A survey of 365 corporations found that only 5% do not have a wellness program or plans for one. Wellness programs vary in scope from health risk assessment for chronic conditions to smoking cessation to on-site exercise options. Despite these laudable efforts, many corporations are overlooking a pervasive health concern that negatively impacts worker efficiency and may result in unnecessarily high healthcare costs. Employees affected by obstructive sleep apnea have persistently lower productivity, consume more total healthcare dollars and experience higher rates of absenteeism. A recent study by a health insurer found that overall healthcare costs (per member per month) for enrollees with untreated sleep apnea were nearly 25% higher than costs for enrollees who received treatment ($846 vs. $645, p = 0.005).

People with sleep apnea are more likely to advance in their spectrum of illness to other conditions, such as obesity, diabetes and heart disease - conditions that will only exacerbate costs. Research also has found that relatively simple techniques such as educational campaigns about sleep apnea may be sufficient to turn a costly undiagnosed and untreated sleep apnea patient into a healthy one. Shouldn’t corporations, in the spirit of improving productivity and healthcare costs, take a more active role in identifying OSA within their own ranks?

Midmark's Mark on Health
Midmark Corporation, a manufacturer of healthcare products based in Versailles, Ohio, is an example of a company that takes action on behalf of employee wellness. When Midmark explored the opportunity of piloting an OSA wellness program for its employees, the leadership learned that up to 80% to 90% of working adults have active sleep-related symptoms. The vast majority does not report these problems to their primary care providers and thus remains undiagnosed for conditions like OSA.

Midmark concluded that a large number of its employees were likely experiencing undiagnosed sleep-related problems. Since the company values healthy and engaged teammates, management decided to proactively address this clinical issue with an action plan. Midmark instructed its human resources department to implement a comprehensive OSA Wellness Initiative using the SleepView system, an OSA diagnostic technology with associated web-based services. The goal was to develop a plan that would identify people at risk for OSA, provide each at-risk employee with a free at-home diagnostic pathway and assist each one in receiving the necessary therapeutic interventions.

Methods
The Midmark team responsible for the sleep apnea testing program divided the actions of the initiative into three parts:

1. Program awareness, promotion and preliminary screening
2. Wellness clinic visit and at-home diagnostic testing
3. Provider consultation and available on-site therapy initiation service.

Throughout the program, careful attention was given to four key areas:

1. Maintaining HIPAA compliance and employee confidentiality at all times
2. Ensuring alignment and transparency with the employees’ personal primary care providers
3. Keeping out-of-pocket costs low

Getting Started
The leadership wanted to encourage wide participation, so the opportunity for sleep diagnostics was prominently featured as a one-time benefit at a forum attended by
all employees. At the forum, teammates were educated by the medical director about sleep apnea symptoms and why diagnosis is so important. Each employee was assured full confidentiality, zero out-of-pocket costs (up to the point of therapy) and, if necessary, the self-determination to choose his or her own path and modality of treatment.

Each employee who completed a one-page screening form was granted a wellness point. Employees were eager for these points because higher quantities made them eligible for a year-end cash bonus. The screening form consisted of standard sleep medicine questionnaires, the Epworth Sleepiness Scale and the Stop-Bang Questionnaire.

For HIPAA compliance and to ensure confidentiality, all information obtained from employees was managed exclusively by Midmark’s occupational health nurse, who is contracted from a local health system. This nurse has no access to the company’s human resources files. The independent relationship between Midmark and the nurse proved to be essential in maintaining HIPAA compliance. Questions that arose about specific situations, variances or problems could be managed in a depersonalized manner by the medical director or director of human resources. The nurse would explain the issue without revealing identifying facts about the employee, allowing the medical director to make decisions on a case-by-case basis.

All raw data and final reports were managed and stored on HIPAA-compliant cloud-based servers with access limited to the occupational health nurse, sleep technologist and sleep physician who scored and interpreted the studies.

Any and all health decisions resulting from the program were managed exclusively by the employee and his or her primary care provider. After the program was completed, a few employees decided to not pursue any therapy for moderate OSA.

Testing

All screening forms were submitted to the occupational health nurse. It was her responsibility to score the forms and determine which employees met the criteria for at-risk status. The medical director at Midmark, using well established clinical criteria, set the following guidelines for determining which patients warranted a diagnostic study. Any one of the following resulted in a recommendation for a home sleep study:

- STOP-BANG score of 3 or higher
- Epworth Sleepiness Scale score of 9 or higher
- Previous diagnosis of OSA and willingness to revisit therapy
- Two or more chronic conditions.

If a participant was found to be at risk, the occupational nurse contacted him or her individually to schedule an appointment at the Midmark Wellness Center. At this visit, the self-reported screening data were verified and additional health information was collected:

- Vital signs
- Oropharyngeal visualization
- Further evaluation of past medical history and medication requirements.

In addition to verifying the accuracy and completeness of the collected data in preparation for a diagnostic study, the initial occupational visit served another important purpose. It provided a private, confidential and face-to-face setting to explain the testing, the possible diagnostic outcomes, therapy alternatives, the role of the employee’s primary care provider, and the verification that the employee would consider a therapeutic workup should the study prove positive. The team wanted to avoid testing for the sake of testing because such effort would not result in any health benefit. An employee who
refused to consider therapy was not offered a home study.

Also during this visit, permission was received for Midmark to send all the gathered information about that patient's evaluation to his or her primary care provider. That correspondence explained that the patient was scheduled for a diagnostic study at the Wellness Center no earlier than 2 weeks from the date of the letter. This allowed enough time for that clinician to intervene if necessary. No providers objected to the study.

For the home testing, Midmark used the SleepView system from CleveMed (see photo). The SleepView system consists of a compact, easy-to-use multichannel monitor, a web portal for data upload to an online service platform, a panel of registered sleep technologists and board-certified sleep physicians for diagnostic interpretation, and an online mechanism for reviewing and downloading results.

**Patient Reports**

Each patient who completed a study received a full report that included his or her diagnosis and a recommended therapeutic plan. This information was immediately forwarded to the employee's provider in preparation for the suggested follow-up appointment.

All decisions about therapy were at the discretion of the employee and his or her primary care provider. To gain information outside of Midmark's onsite service, a survey was distributed to all program participants asking them to summarize their therapy types and outcomes.

Midmark facilitated follow-up by paying the copay portion of the office visit for anyone choosing to see a provider as a result of the program. This provided employees a zero-cost program up to the point of therapy. The range of therapies advised by the providers included observation/watchful waiting, continuous positive airway pressure (CPAP), dental appliance use, referral to a specialist and weight loss.

**Results**

Seventy-nine employees filled out the screening questionnaires. Of these, 65 (82%) were found to be at risk for OSA. The STOP-BANG criteria were the most helpful for identifying which employees required investigation. Of the 65 at risk, 55 agreed to follow through with diagnostic testing, resulting in a nearly 85% acceptance rate. Eight employees declined the opportunity and two others had extenuating circumstances that excluded their participation.

The home testing portion of the program went smoothly, with 54 of 55 employees completing a successful study on the first night (98% study success rate). Ease of use was confirmed in a post-test evaluation. Ninety-four percent of the patients said they found the program beneficial. A significant marker for success of the program was the high rate at which employees followed up with their own primary care providers when advised to do so: 72% made an appointment and discussed their condition with a provider.

The results showed high prevalence of OSA in the tested population. Of the 54 completed studies, 45 (83%) had documentable OSA. A positive result was determined by a Respiratory Distress Index (RDI) of 5 or greater as determined by a member of the sleep physician panel.

Treatment data are available from 31 patients (remaining 14 did not return follow-up survey). Nearly one-third of patients with OSA chose to use the on-site CPAP clinic established at Midmark. Total CPAP users may be higher, since some of the nonrespondents to the follow-up survey may have selected CPAP treatment.
Home Testing for Sleep Apnea

elsewhere. This on-site clinic was a popular choice since it was convenient. It was coordinated by a local durable medical equipment provider. Among those who visited the clinic, 11 of the 14 remained on therapy after 2 months and half are more than 60% compliant after 2 full months of usage.

The remaining employees who received therapy are equally divided between dental appliance therapy and weight loss therapy. In the survey, five employees mentioned an intention or desire to start therapy but were unwilling to pay the necessary out-of-pocket costs. A few mentioned their intention to start therapy at the beginning of the year to maximize reaching their deductible early in the calendar year.

One of the most satisfying outcomes of the program was the appreciation expressed by the participants. The many positive comments included “Very beneficial, would not have proceeded with anything without Midmark program home test” and “I want to thank all involved with making this program a reality. It has greatly improved my sleeping. I am now rested when I wake in the morning. My wife can sleep without an iPod in her ears!”

Conclusion
This sleep apnea wellness program efficiently identified employees at risk for OSA. Easy-to-use technologies and web-based solutions yielded a high success rate (98%), eliminating the need for sleep laboratory confirmation. Of the 54 completed studies, 83% yielded positive OSA results, which supports our choice of screening questionnaires, especially the STOP-BANG. At least 34 employees sought consultation with a provider for a sleep-related condition, suggesting serious engagement. With the help of their personal provider and an on-site CPAP clinic at Midmark, dozens of newly diagnosed employees are on new therapies for OSA. We believe this program was successful for two reasons: the intake process and care coordination. The careful and confidential flow of information during the intake process via proper staffing, incorporation of the project within an established wellness program, and the use of validated tools improved participation while gathering necessary clinical information. The second reason behind the project’s success is the insistence on engaging primary care providers in the process.

It is also apparent that the program succeeded in bringing a high level of awareness to a serious health problem. Even those who did not participate developed a new appreciation for the negative health effects of sleep-disordered breathing. Some employees who did not participate in the program reported that they advised their spouse to seek attention for a sleep-related problem.

References


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