

Putting Sleep Apnea Testing In High Gear

By Brittan
West

Speeding up the screening to diagnosis to therapy process is a win-win for commercial truck drivers with obstructive sleep apnea and their employers.

A key reason obstructive sleep apnea (OSA) remains largely undiagnosed in the commercial truck driver population stems from drivers' fears that diagnosis may affect their economic and employment status. And these fears are not unfounded, according to experts.

"Typically, if a company does not offer a [sleep apnea management] program, a driver can miss many weeks of work—from the point of getting screened to the point of being on therapy with a PAP device. Think about your own experience with trying to schedule an appointment with your physician. It can often take weeks," says Steven Garrish, senior vice president, Business Development and New Ventures at [SleepSafe Drivers](#). Garrish also worked at JB Hunt Transport Company Inc and at Walmart, where he served as senior director—Private Fleet Safety. "When you factor in a typical in-lab test, time to show compliance with the device, and then follow-up visits for the sleep physician to read the machine's smart card, it's not unusual to see 45 days or more of downtime," Garrish says. The result can be a burden of cost and time on both the fleet leader as well as the driver.

Jeffrey Durmer, MD, PhD, adjunct professor at Georgia State University Department of Health Professions, echoes the sense of urgency in Garrish's sentiment, noting that the availability of sleep locations themselves can serve as another obstacle to timely and efficient diagnosis/treatment.

Durmer, cofounder and chief medical officer of [FusionHealth](#), notes that in certain instances, like in western states such as Montana and Wyoming, sleep laboratories are very difficult to find and waiting times can sometimes be months. Once drivers are put onto PAP therapy, they have to demonstrate effective use, often by downloading the data for the certified medical examiner (CME) over the course of weeks, which can lead to their job being in limbo and thus dire financial impact to the driver's family.

Strategies to Minimize Driver Downtime

With so much at stake for truck drivers and commercial transportation employers alike, what can be done to minimize driver downtime and, in turn, risk on the road? One suggestion, says Lynn Meuleners, PhD, professor in the Health Sciences and Research Graduate Studies department at Western Australia's Curtin University, is to implement a compulsory home sleep study, followed by polysomnography in a sleep clinic only if necessary. "There are a variety of validated, easy to use sleep apnea screening devices that truck drivers could use at home," says Meuleners, who also serves as director of the Curtin Monash Accident Research Centre. "These could be given out by general practitioners, pharmacists, or even sent in the mail. Data is then uploaded and interpreted by a sleep technician. This would not result in any downtime for drivers. Only those who tested positive for sleep apnea on the at-home devices would then be required to meet with a sleep clinician and undergo polysomnography in a clinic, resulting in some downtime."

When it comes to strategies to minimize screening/treatment gridlock, Alan Lankford, PhD, FAASM, chief science officer, SleepSafe Drivers, director of the Sleep Disorders Center of Georgia—Northside Hospital, weighs in. He emphasizes the aim to minimize drivers' downtime while safely and efficiently providing appropriate diagnostic and treatment services, "starting from the initial referral to testing and ending with setup on clinically indicated PAP therapy. We recognize the variability in drivers' schedules and make every effort to accommodate this, which may

have an impact on downtime on a case-by-case basis. By comparison, drivers are often given a temporary 30- to 60-day card while they move through the process and other programs require that much time, or longer, to get them back on the road.”

Durmer expands upon this, noting that “in some cases [the drivers] get a 30-day card where they can maybe drive 30 days and get testing done.” But, he adds, drivers will also “sometimes get a zero day card, meaning they’re off the road from that point forward until they come back showing they’ve been put on therapy.”

To combat this, Durmer employs a strategy that combines conventional and telehealth-based fatigue management. “We start by getting drivers into a telehealth testing program or fatigue management program for sleep apnea in a matter of days. This includes performing a mobile version of a laboratory-based test in the cab of a truck, at a rest stop, or in a bunkhouse, depending on wherever [the drivers] naturally sleep,” he says. While not a full polysomnogram, it has all the necessary components, including EEG, EOG, movement and snoring, respiratory inductance plethysmography belts, and oxygen sensing. “Data from mobile testing has all the information we require for an accurate sleep apnea diagnosis, certifying whether or not they have it right in the field,” he says.

Mobile testing is performed by a registered polysomnographic technologist or registered respiratory therapist (depending on the area of the country). The following morning, the data is uploaded to FusionHealth’s telehealth platform for an on-call scorer, Durmer says. Once the scoring is complete, the study goes directly to a physician through the same platform-based workflow. A physician logged onto their system is immediately alerted to the task and an interpretation is performed at that moment.

Considerations for Fatigue Management and OSA Screening

According to a commentary in the *Journal of Clinical Sleep Medicine*, an important finding of a study from Meuleners et al is reinforcement of the importance of fatigue management training.¹ The researchers found a reduced crash risk in those drivers who had undergone fatigue management training.

Yet, when it comes to OSA screening methods, Garrish points out, “There are a lot of online questionnaires and other subjective methods that are being used in the marketplace today to try and predict whether a person has OSA or not. The problem with these screening tools is that a person can choose not to answer a question truthfully. The results of these tools are only as good as the answers being entered into them.” SleepSafe Drivers targets an objective approach encompassing education about sleep and sleep dysfunction, as well as consultations with board-certified sleep doctors.

In Western Australia (WA), long-haul vehicle drivers currently undertake the Health Assessment for Fitness to Drive. This includes a health questionnaire and assessment by a doctor. Drivers are asked to self-report a diagnosis of sleep apnea and complete a self-reported sleepiness scale. “However, our study of WA long haul truck drivers found that 42% had undiagnosed sleep apnea. This demonstrates that this basic level of screening is not effective. We suggest that at-home screening, followed by polysomnography if necessary, is a better method,” Meuleners says.

The Health Assessment for Fitness to Drive also asks heavy vehicle drivers to self-report psychiatric disorders. In Meuleners’ study, researchers report that heavy vehicle drivers with a diagnosis of depression were more than six times more likely to be involved in a crash. The results go on to suggest that a more rigorous assessment of depression be added to the assessment² so that drivers with depression can receive necessary treatment and lower their crash risk.

Customizing assessments to meet specific client needs and lower crash risk also resonates with Lankford, who notes that SleepSafe Drivers works to tailor OSA screening to align with the employer’s needs. Lankford states that SleepSafe may use electronic screening, or paper and pen approaches, as appropriate. “In all cases, OSA screening collects data on a variety of associated parameters and risk factors with an emphasis on objective, scientifically validated information, not just self-report data,” he says.

Basic Screening Pre- or Post-Employment

A basic screen is an additional route that may be taken to springboard testing/treatment and reduce potential injury risk. The first stop in this approach is facilitating the screen, either pre- or post-employment.

Encouraging the suggested screening process for all drivers prior to employment is recommended by Meuleners. She also recommends that drivers who are already employed “should also periodically undergo the home sleep study.” This rings particularly true, because “as age increases, the risk of sleep apnea increases,” she says.

Additionally, there are a selection of companies that offer testing to their drivers, Garrish says, whether the driver volunteers or if a CME refers them. The testing is provided as a benefit, offering the opportunity to the driver after the company has hired them.

Despite concerns occasionally expressed by human resources and benefits managers regarding the potential discriminatory liability the approach may create, “basic OSA screening for all drivers can be a very useful and beneficial tool to identify drivers at risk for a condition that can have a negative impact on safety and health. However, it must be done in an impartial and equitable way,” Lankford says.

Ultimately, the decision for basic screening pre- versus post-employment falls to the companies themselves. Durmer says, “Some companies do fitness-for-duty exams prior to employment and at that point in time, a CME may flag people for testing for sleep apnea. That’s a point where we can implement web-based platform screening tools so that the CME can use reliable standards rather than clinical judgment that may or may not be accurate.”

The result is designed to allow for individuals to be put on therapy that is being medically managed on a regular basis, providing the CME an annual validation of exactly how successful the driver has been all year, every night, rather than the last 30 days.

Telehealth: Expectations Today, for Tomorrow

Telehealth represents technology engineered to mitigate the costs of “time” today, tomorrow, and on into the future; across all healthcare spectrums. And like all healthcare spectrums, “in the trucking business, wasting time is costly for everyone,” Garrish emphasizes.

To bridge this cost, a study titled *Telemedicine-Based Approach for Obstructive Sleep Apnea Management: Building Evidence* by Isetta et al explored whether OSA patients could benefit from a telemedicine approach for CPAP therapy management.³ The results indicate that more than 95% of the interviewed patients were satisfied with the teleconsultation; 66% answered that the teleconsultation could replace 50% to 100% of their CPAP follow-up visits.

Regarding the study’s randomized control trial, patients who received the CPAP training via videoconference demonstrated the same knowledge about OSA and CPAP therapy as the face-to-face group (mean 93.6% of correct answers versus mean 92.1%; $P=.935$). Performance on practical skills (mask and headgear placement, leaks avoidance) was also similar between the two groups. The results, researchers say, support the use of this telemedicine-based approach as a valuable strategy for patients’ CPAP training and clinical follow-up.³



For truck drivers, time spent waiting for diagnosis and therapy is in many cases time not spent earning money.

“We believe that telehealth solutions will continue to advance in the area of sleep apnea programs into the future. Five years from now, machines will be smarter, will give more data points to review, and we’ll have better connectivity and care for our drivers who can have great care without taking a great amount of time away from work,” Garrish says.

Lankford further highlights telehealth's potential to streamline services to drivers, noting, "Several of our sleep centers offer virtual consults for drivers, enabling the therapist or physician to see and evaluate that driver on a virtual face-to-face basis, eliminating the delays that can be associated with in-person appointments."

Telehealth's ability to streamline these services could hold promise not only for the trucking industry, experts say, but for the transportation industry as a whole. Also according to experts, it is feasible that after diagnosis with polysomnography, CPAP training and follow-up visits could potentially all take place through video technology, reducing the burden on drivers to physically attend appointments.

Data from CPAP machines can be transmitted electronically to clinicians, improving patient adherence to treatment and allowing identification of any issues with the machine or its use, Meuleners says. She designates the methods as "the way of the future for this group, reducing the burden of treatment and fitting around difficult work schedules."

While telehealth may serve as "the way of the future," Isetta et al are careful to acknowledge the limitations of their telehealth study and note that additional large multicenter randomized studies are needed to further clarify the role of telemedicine in OSA management. While the findings of cost-effectiveness of telemedicine-based strategies in several fields including OSA diagnosis are encouraging, the researchers recommend these be confirmed also for CPAP therapy management.³

Resolving Device Issues on the Road

Truck drivers with OSA should receive special training about how to use CPAP on the road. A tightly knit network of support can complement this training when drivers face a challenge. Providing coaches who are available and can be reached regarding any number of concerns, questions, or needs is essential.

Thanks to a network of clinics, and expedited mail, Garrish notes that SleepSafe Drivers quickly gets care and supplies that may be needed while drivers are out on the road. This is intended to eliminate the need to wait until they come home.

The use of telemedicine can also be woven into the tapestry of support options for drivers, allowing for mobile communications. "Typically, we start drivers with sleep apnea on APAP," Durmer says. "These devices can be set to a CPAP setting, for those who find a continuous pressure more comfortable. The key thing is that the data we get back from every breath that's being analyzed throughout their use of it provides us with the data necessary to run algorithms that help us understand how effective it is and predict problems before they arise with PAP therapy."

Durmer recounts the situation of a driver who was regularly using his therapy but displaying a slowly elevating apnea index over the course of a few nights. After observing this trend for several nights, a sleep coach proactively reached out to him. The driver stated that he was noticing problems with his breathing at night and then revealed that he was driving through the western part of the United States, and as a result he was experiencing allergies and, in turn, issues with his upper airway. "Within the next few hours, we called in a prescription for a nasal inhaled steroid. He picked it up at the next truck stop and was using it that night so his apnea index went right back down to normal," Durmer says.

Coupling training, a support network, and a touch of telemedicine with the provision of spare parts and after-hours contact numbers can serve as a key blend for drivers who experience problems with the devices while on the road.

Cornerstone of a Culture

In spite of OSA's prevalence, and its ability to be identified and treated, an article by Gurubhagavatula emphasizes a persistent and "pressing need for the transportation industry to advance a culture of health and safety."⁴ Advancing this type of culture would target the ability of drivers to seek testing and treatment without fear of job loss, the article states.

The article notes that employers then may also realize that screening programs can lead to large return on investment thanks to reduction in healthcare costs and disability claims.⁴ To meet this goal, the cornerstone of such a culture would owe much of its composition to the education of both a workforce and their employer. As Becky Simmons, RRT, BSRT, clinical respiratory consultant for PAP accessory manufacturer Contour Products, notes, “Restorative sleep is crucial to overall wellness. Untreated OSA inhibits restorative sleep that we need to heal and recover from everyday activities. Aside from the obvious safety concerns of truckers with untreated OSA, we must raise concern for the time also missed treating other illnesses as a result of either untreated OSA or non-compliant treatment of OSA. These individuals are at risk for high blood pressure, diabetes, chronic fatigue, obesity, depression, and the list goes on. Time is of the essence!”

Transportation companies should include everyone from recruiters to safety managers and upper level executives in order to forge “a real cultural understanding that the longevity and success of every individual and the company as a whole is tied to [successful sleep], because it is how we all recover each day,” Durmer says.

Brittan West is a healthcare journalist based in Los Angeles. This is her first article for Sleep Review.

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