FAST TRACK ARTICLE

Screening for Obstructive Sleep Apnea During Commercial Driver Medical Examinations

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***Objective**: To evaluate consensus criteria for screening commercial drivers for obstructive sleep apnea (OSA). **Methods:** Consecutive drivers underwent OSA screening using Joint Task Force consensus criteria at commercial driver medical examinations. Outcomes included: clinical yield of screening; and drivers' compliance with polysomnography (PSG) referrals and OSA treatment. **Results:** Among 456 drivers, 53 (12%) were referred for PSG, and 20/20 were confirmed to have OSA, supporting a high positive predictive value. The other 33 drivers referred for PSG were lost to follow-up but demonstrated no significant differences from those with confirmed OSA. After diagnosis, only one of 20 drivers with confirmed OSA demonstrated treatment compliance. **Conclusions:** Drivers identified by the consensus criteria have a high likelihood of OSA. Drivers' poor compliance with PSGs and OSA treatment support federally mandated screening of commercial drivers.* (J Occup Environ Med. *2009;51:275–282*)

Large truck crashes are an important public health hazard, with half leading to death or incapacitating injury.[1] In 2006 alone, truck accidents caused over 5200 deaths and more than 125,000 injuries.[2] A Federal Motor Carrier Safety Administration (FMCSA) investigation found that truck drivers were at fault in over 80% of these crashes.[3] In 7% of the accidents, the trucker admitted to falling asleep behind the wheel. That figure is likely only the tip of the iceberg with regard to the total proportion of truck crashes attributable to driver somnolence,[4] which has been estimated to be as high as 20%.[5] Therefore, determining which truck drivers are most prone to excessive daytime sleepiness (EDS) should be a major public safety priority.

Obstructive sleep apnea (OSA) is a syndrome characterized by sleep-disordered breathing. OSA produces diurnal and nocturnal symptoms, including EDS, sleep attacks, psychomotor deficits, and disrupted nighttime sleep due to frequent arousals.[6–10] Accordingly, OSA increases the risk of a vehicular accident by 2- to 7-fold.[11–14] Moreover, OSA is common among commercial drivers; with a prevalence estimated to be as high as 17% to 28%.[4,12,15–17] Given that there are roughly 14 million Commercial Drivers License holders in the United States,[2] somewhere between 2.4 and 3.9 million of these professional drivers are expected to have OSA. Unfortunately, OSA often remains unrecognized or unreported by professional drivers and their employers, as well as undiagnosed by primary care clinicians. Occupational medicine

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examinations present a unique opportunity for detecting OSA as part of drivers' fitness for duty determination.

The FMCSA requires medical certification of drivers with Commercial Drivers Licenses at least every 2 years. However, the FMCSA medical examination form only includes a single question on sleep disorders, while strong economic incentives exist for drivers to deny a history or symptoms of a sleep disorder.[18] In fact, recent studies have demonstrated widespread symptom under-reporting among drivers subsequently proven to have significant OSA.[4,19] Although it has been more than 40 years since OSA was first recognized,[20,21] at present the FMCSA still does not require any standard protocol or objective criteria for OSA screening.

In 2006, a "Joint Task Force" (JTF) from the American College of Occupational and Environmental Medicine, the American College of Chest Physicians, and the National Sleep Foundation published consensus recommendations for screening and evaluating OSA in truck drivers.[22,23] This study evaluates the performance of the JTF consensus criteria when applied to a consecutive series of FMCSA-mandated medical examinations at a busy occupational medicine clinic.

Materials and Methods

Study Setting

An occupational medicine clinic implemented the JTF screening recommendations for all FMCSA-regulated Commercial Driver Medical Examinations (CDMEs) after January 1, 2007.

Study Population

Consecutive drivers who presented for CDMEs from January 1, 2007 through March 31, 2008 were eligible. Follow-up data were collected through August 31, 2008. Study approval was granted by the Institutional Review Board of the Cambridge Health Alliance.

TABLE 1
Screening Recommendations for Identifying Commercial Drivers With Probable OSA

	Criteria for (+) OSA Screen Drivers Meeting One or More of the Six Criteria are Considered to Have OSA or Probable OSA
Historical findings	Any of the following symptoms: snoring, excessive daytime sleepiness, witnessed apneas History of MVC likely related to sleep disturbance (run off road, at-fault, rear-end collision) Previous OSA diagnosis; prior PSG with AHI >5; reported CPAP prescription or use
Epworth sleepiness scale	ESS score >10
Physical examination findings	Sleeping in examination or waiting room Two or more of the following BMI ≥35 kg/m^2 NC >17 inches in men, 16 inches in women Hypertension (new, uncontrolled, or requiring ≥2 medications for control)

Adapted from *J Occup Environ Med*. 2006;48(9 Suppl):S4–S37 and *Chest*. 2006;130:902–905.
MVC, indicates motor vehicle collision; PSG, polysomnograph; AHI, apnea-hypopnea index; CPAP, continuous positive airway pressure; BMI, body mass index; NC, neck circumference.

Clinic Procedures and Data Collection

The JTF OSA screening criteria are summarized in Table 1. Drivers completed the health history on the CDME form, including a "yes or no" question on "sleep disorders, pauses in breathing while asleep, daytime sleepiness, loud snoring." Drivers also completed an Epworth Sleepiness Scale (ESS).[24,25] Drivers' reported histories were reviewed, clarified, and elaborated by the examining physician.

Drivers' heights (to the nearest 0.25 inch) and weights (to the nearest 0.5 pound) were assessed without shoes and with only light clothes. For screening, nursing staff calculated the initial body mass index (BMI) value from standard height-weight nomograms[26] to the nearest 0.5 kg/m^2. Neck circumference (NC) was assessed with a tape measure to the nearest 0.25 inch. Resting blood pressures were measured in the sitting position and repeated if clinically indicated.

During the CDME examination, the physician determined if the driver met the JTF consensus criteria for further evaluation using examination findings, the criteria in Table 1, and clinical judgment. Drivers with suspect OSA were referred for polysomnography (PSG) through their primary physicians. The PSGs were performed in various laboratories in the Boston area according to driver or treating physician preferences. Because OSA screening is not mandated by the FMCSA and no central registry of examinations or examiners exists, drivers could ignore a PSG referral and seek medical certification from another clinic. The majority of clinics and practitioners performing CDME examinations do not apply the JTF guidelines or other rigorous OSA screening protocols (unpublished observations).

Data Extraction, Primary Variables of Interest and Their Definitions

Data ascertainment for study purposes was done by retrospective chart review and verified by secondary and tertiary reviews of all records. ESS were scored on a 24-point scale.[24,25] BMIs in the charts were verified using the standard formula: [weight (pounds)/height (inches)^2] × 703.[26] Cutoffs for ESS, BMI, and NC are shown in Table 1.

Hypertension was defined as a resting systolic blood pressure ≥140 mm Hg, a resting diastolic blood pressure ≥90 mm Hg,[27] self-re-

ported diagnosis of hypertension, or self-reported anti-hypertensive therapy. The JTF consensus criteria do not specify how "uncontrolled hypertension" should be defined. The FMCSA considers blood pressures up to and including 140/90 as acceptable, even though 140 mm Hg systolic and 90 mm Hg diastolic are hypertensive readings.[27] For purposes of the retrospective study, however, uncontrolled hypertension was considered as present for any subject with blood pressure ≥140 mm Hg systolic or ≥90 mm Hg diastolic. Drivers with a smoking history were classified as current smokers (unless they reported quitting smoking more than 12 months before their examination).[28]

The apnea–hypopnea index (AHI) was defined as the total number of apneas and hypopneas per hour of sleep. The lowest recorded oxygen saturation was also extracted from PSG reports. OSA was defined by an AHI ≥5, and severe OSA by an AHI ≥30.[6,29,30] OSA was also considered present if the driver reported a diagnosis of OSA or continuous positive airway pressure (CPAP) prescription. Adequate compliance with CPAP treatment was defined as an average of at least 4 hours of CPAP use each night[22,23] as documented from time-pressure data generated from the memory chip of the driver's CPAP machine.

Data Analyses

Statistical analyses were performed using SPSS 16.0. Independent *t* tests or ANOVA were used to compare means for continuous variables. Proportions for binary variables were compared using χ^2 and Fisher exact tests, as appropriate. For all tests, the level of significance was $P < 0.05$, and all *P*-values were two-sided, assuming unequal variances. For subjects who underwent confirmatory diagnostic testing, the positive predictive value of the screening criteria was estimated as:

(Subjects with confirmed OSA diagnosis/Subjects with a positive OSA screen) × 100%.

Results

Over the 15-month study period, 456 commercial drivers were examined from over 50 different employers. Applying the most inclusive definitions of the JTF consensus criteria by retrospective review, 78 (17%) drivers screened positive for OSA.

Table 2 summarizes the study population and compares drivers with positive and negative OSA screens. Drivers meeting the consensus criteria for suspect OSA were significantly older and more obese with higher average NC and systolic and diastolic blood pressures, but not ESS scores. Among the 78 positive OSA screens, only 12 (15%) answered "yes" on the single sleep-related question on the CDME form. Further clarification of these answers by physicians revealed one case of untreated OSA, 2 drivers who reported pauses in breathing at night, and 11 drivers with snoring. Another 20 drivers checked "no" on the CDME form sleep question but reported snoring as a symptom on further direct questioning by a physician.

Figure 1 illustrates the clinical yields of screening. Of the 78 drivers with positive screens, 53 (68%) received PSG referrals from the examining physician. For the other 25 drivers who retrospectively met the consensus criteria for suspect OSA, the most common reasons for not receiving a PSG referral were as follows. Physicians discounted isolated reports of snoring or a high ESS in the absence of other OSA risk factors usually based on additional sleep hygiene history elicited by the physician. Other drivers' BMIs were ≥35, but they had borderline high blood pressures (140 mm Hg systolic or 90 mm Hg diastolic) likely considered not to be "uncontrolled hypertension" by the examiner.

Of the 53 drivers referred for PSG, 33 did not comply with PSG referral and were lost to follow-up. The remaining 20 subjects with confirmatory diagnostic information were all

TABLE 2
Characteristics of Study Population

Characteristic	All Drivers Examined *n* = 456	Screened (−) for OSA* *n* = 378 (82.9%)	Screened (+) for OSA* *n* = 78 (17.1%)	*P*†
Men, *n* (%)	440 (96.5)	364 (96.3)	76 (97.4)	0.618
Age range, yr	18–73	18–73	20–67	—
Mean age, yr (±SD)	39.22 (11.73)	38.43 (11.84)	43.05 (10.39)	0.001
Mean BMI, kg/m^2 (±SD)	29.07 (5)	27.73 (3.88)	35.54 (4.77)	<0.001
Mean NC, inches (±SD)	16.36 (1.27) (*n* = 394)	16.05 (1.12) (*n* = 320)	17.72 (0.98) (*n* = 74)	<0.001
Mean SBP, mm Hg (±SD)	123.10 (11.65)	122.06 (11.15)	128.10 (12.72)	<0.001
Mean DBP, mm Hg (±SD)	79.11 (8.37)	78.53 (8.45)	81.87 (7.41)	0.001
Mean ESS (±SD)	3.22 (2.77) (*n* = 416)	3.15 (2.68) (*n* = 342)	3.57 (3.14) (*n* = 74)	0.289
Answered "yes" to sleep-related question on the CDME form‡, n (%)	12 (2.6)	—	12 (15.4)	

*According to JTF Guidelines (Table 1) and clinical judgement.

†Unequal variances assumed.

‡Do you have "sleep disorders, pauses in breathing while asleep, daytime sleepiness, loud snoring."

SD indicates standard deviation; BMI, body mass index; NC, neck circumference; SBP, systolic blood pressure; mm Hg, millimeters of mercury; DBP, diastolic blood pressure; ESS, Epworth sleepiness scale; CDME, Commercial Driver Medical Examination.

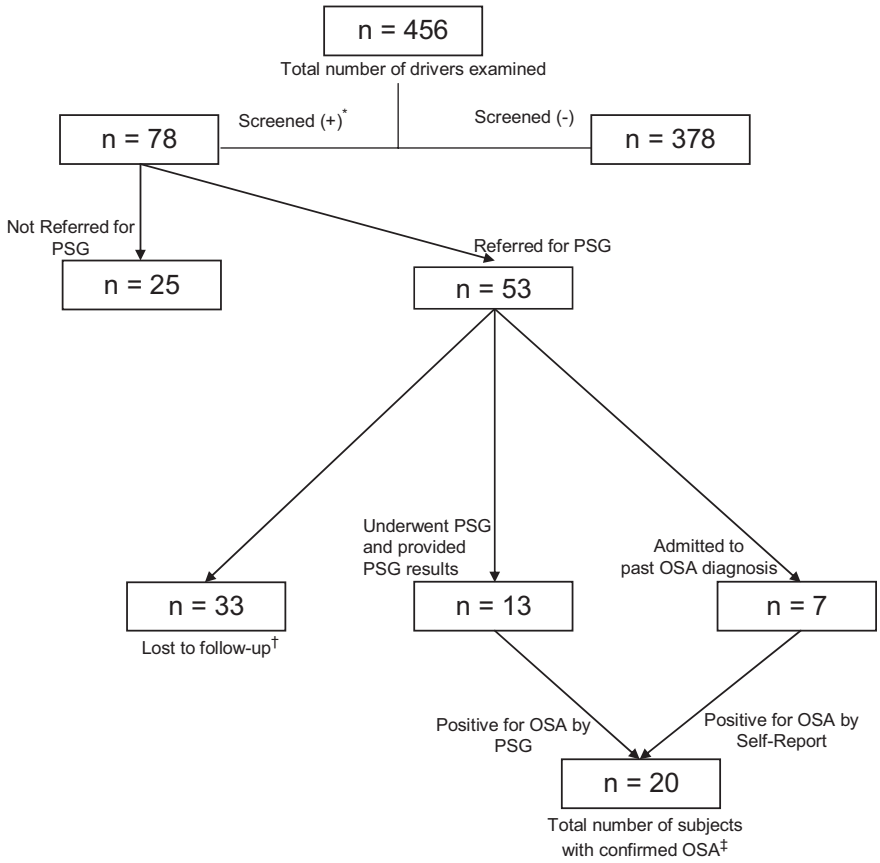

Fig. 1. OSA screening flow chart. *According to JTF Guidelines (Table 1) and clinical judgement; †Subjects "lost to follow-up" defined as having been given temporary Department of Transportation medical certificate to operate a commercial motor vehicle, pending results of PSG, and did not follow-up; ‡OSA confirmed either by PSG (AHI ≥5) or self-reported diagnosis of OSA with physician prescription of CPAP.

documented to have OSA by PSG or further history (Table 3), yielding an estimated positive predictive value of 100% for the screening criteria. Seven of the 20 drivers admitted that they had a prior diagnosis of OSA and had been prescribed CPAP (usually only after being informed that they needed a PSG to rule out OSA). Two of these seven drivers eventually supplied previous PSG reports. The remaining 13 drivers were confirmed as having clinically significant OSA through PSGs. There were no negative PSGs.

The mean and median AHIs for the 15 drivers with confirmed OSA and PSG results were in the severe OSA category, as were 11 of these 15 subjects (Table 3). The remaining four drivers' reported AHI values underestimate the extent of their expected OSA. The PSG report provided by subject 12 was from a sleep study done some time after a tonsillectomy performed to treat excessive snoring. Subject 13 underwent a screening PSG with respiratory and oximetry monitoring but without an electroencephalogram. Thus, the true AHI would have been higher if the number of apneas and hypopneas had been divided strictly by the sleep time alone, as opposed to recording time. In addition, this subject had another 84 events of nocturnal arterial desaturation that were not scored as apneas or hypopneas. Subjects 14 and 15 had the lowest AHIs but spent much of the PSG time on their sides. When supine, their average AHIs were 28 and 42, respectively.

Only one of these 20 subjects demonstrated adequate CPAP treatment compliance subsequent to diagnosis (Table 3). Fourteen were unable or unwilling to provide objective documentation of compliance. Three drivers submitted reports documenting non-compliance, and two drivers refused CPAP. Finally, another driver did not tolerate CPAP and was prescribed "auto-PAP," with compliance data pending at the close of follow-up.

Table 4 summarizes drivers with positive OSA screens and compares those with confirmed OSA to those in whom OSA was unconfirmed (either not referred for PSG or lost to follow-up). No significant differences were observed between confirmed cases and those referred for PSG but lost to follow-up. Subjects not referred by physicians were on average less obese and had slightly smaller necks. Based on the consensus guidelines, the 53 cases with positive screens referred for PSG, and the estimated positive predictive value of 100% in the physician-referred cases, a conservative estimate of OSA prevalence in the study population is 12% (95% CI, 8.68% to 14.56%).

Discussion

OSA is common among commercial drivers and associated with a 2- to 7-fold increased risk of vehicular accidents.[11–14] Commercial drivers with undiagnosed or untreated OSA pose significant public safety risks and significant economic costs.[31–36] The goal of this study was to "field test" consensus screening guidelines for identifying such drivers during actual CDMEs.

Our study had several important findings. First, it confirmed the high positive predictive value of the consensus guidelines, which by extension support a high specificity (no false positive screens) for the BMI, NC, and blood pressure criteria. Second, based on the screening results, a conservative estimate of the prevalence of significant OSA is at least 12%. Third, in agreement with previous observations, OSA patients underreport sleep disorder symptoms and diagnoses, and subjective criteria have low utility in occupational med-

TABLE 3
Characteristics of Subjects With Confirmed OSA (de novo or Previous Diagnosis)

Subject	Age (yr)	Gender	BMI (kg/m^2)	NC (inches)	ESS	Symptoms	AHI	Minimum O_2 Saturation	Diagnosis*	CPAP Compliance†
1	67	Male	35.29	16.5	11	Snoring	115	84	PSG	Not provided
2	47	Male	46.16	18.5	1	Snoring	104	78	PSG	Not provided
3	46	Male	40.60	18.5	4	Denied	75	86	PSG	Not provided
4	52	Male	35.89	17.0	5	Denied	72	86	PSG	3.6 hr/d
5	32	Male	35.77	18.0	1	Snoring	70	53	PSG	Not provided
6	42	Male	38.69	18.0	2	Snoring	70	63	PSG	Not provided
7	20	Male	35.12	19.0	4	Snoring	44	86	PSG	0.13 hr/d
8	35	Male	43.12	18.75	1	Denied	36	74	PSG	Not provided
9	45	Male	36.44	17.5	3	Snoring	34	83	PSG	6 hr/d
10	39	Male	37.46	18.0	3	Denied	34	86	PSG	Refused CPAP
11	41	Male	33.67	16.5	2	Snoring	30	82	PSG	Not provided
12	41	Male	41.65	18.0	10	Snoring	15‡	82‡	PSG	1.27 hr/d
13	45	Female	49.19	18.25	1	Denied	14	86	PSG	Refused CPAP
14	56	Male	33.94	18.5	5	Denied	11	68	PSG	Did not tolerate CPAP
15	27	Male	35.73	18.5	8	Snoring, pauses in breathing	8	81	PSG	Not provided
16	53	Male	35.98	18.5	0	Snoring, daytime sleepiness	—	—	Self-report	Not provided
17	27	Male	37.10	17.5	4	Denied	—	—	Self-report	Not provided
18	42	Male	41.93	19.0	0	Denied	—	—	Self-report	Not provided
19	58	Male	30.56	17.0	1	Denied	—	—	Self-report	Not provided
20	50	Male	26.14	—	1	Denied	—	—	Self-report	Not provided
Mean	43.25	—	37.52	17.97	3.35	—	48.91	78.53	—	—
Median	43.50	—	36.21	18.00	2.50	—	36.40	82.00	—	—

BMI indicates body mass index; NC neck circumference; ESS, Epworth sleepiness scale; AHI, apnea-hypopnea index; PSG, polysomnograph; CPAP, continuous positive airway pressure.

*PSG, AHI ≥5; self-report, self-reported diagnosis of OSA with physician prescription of CPAP.

†Objective CPAP compliance measured by machine recording time on pressure (at least 4 hr of CPAP use per night); Not provided, subject who failed to provide CPAP compliance data on request.

‡Subject previously had tonsillectomy for snoring.

TABLE 4
Comparison of Characteristics of Subjects Screened Positive for OSA*: Confirmed Diagnosis† vs No Confirmation of Diagnosis by Polysomnography

Characteristic	Screened (+) for OSA* and Diagnosis Confirmed† (n = 20)	Screened (+) for OSA* But Diagnosis Unconfirmed: Referred for PSG but Lost to Follow-Up‡ (n = 33)	Screened (+) for OSA* But Diagnosis Unconfirmed: Not Referred for PSG (n = 25)	P
Men, *n* (%)	19 (95.0)	33 (100.0)	24 (96.0)	0.461
Age range, yr	20–67	25–66	27–61	—
Mean age, yr (±SD)	43.25 (11.43)	43.12 (11.26)	42.80 (8.57)	0.989
Mean BMI, kg/m^2 (±SD)	37.52 (5.22)	36.92 (3.86)	32.14 (3.69)	<0.001
Mean NC, inches (±SD)	17.97 (0.78) (n= 19)	17.9 (1.01) (n= 32)	17.27 (0.98) (n= 23)	0.026
Mean SBP, mm Hg (±SD)	128.40 (15.24)	126.73 (10.95)	129.68 (13.05)	0.682
Mean DBP, mm Hg (±SD)	79.30 (9.14)	81.39 (6.07)	84.56 (6.89)	0.052
Mean ESS, (±SD)	3.35 (3.17)	3.35 (3.02) (n= 31)	4.04 (3.36) (n= 23)	0.688

PSG indicates polysomnograph; AHI, apnea-hypopnea index; CPAP, continuous positive airway pressure; SD standard deviation; BMI, body mass index; NC, neck circumference; SBP systolic blood pressure; mm Hg, millimeters of mercury; DBP, diastolic blood pressure; ESS Epworth sleepiness scale.

*According to JTF guidelines (Table 1) and clinical judgement.

†OSA confirmed either by PSG (AHI ≥5) or self-reported diagnosis of OSA with physician prescription of CPAP.

‡Subjects "lost to follow-up" defined as having been given temporary Department of Transportation medical certificate to operate a commercial motor vehicle, pending results of polysomnography, and did not follow-up.

icine settings.[4,37] Finally, drivers' documented low compliance with PSGs referrals and CPAP treatment demonstrate that OSA screening in this population will be ineffective unless the FMCSA mandates it and prohibits doctor-shopping. Therefore, currently, most cases of significant OSA in commercial drivers are likely to go unreported, undiagnosed, or untreated and are reasonably expected to contribute to significant public safety risks.

Our results were in general agreement with those of a similar study of the JTF consensus criteria performed in Tennessee, supporting the generalizability of the findings across regions.[4] In that investigation, the proportion of drivers who met the consensus criteria for suspect OSA was 13%, and the estimated predictive value of a positive screen was 95%. Our findings are comparable at 12% to 17% and an estimated predictive value of 100%, respectively. Another very important common finding in both studies was the low utility of the ESS and other self-reports in drivers found to have significant OSA. Similarly, an Israeli study performing PSGs on all drivers with a BMI $\geq$32 kg/m^2 determined significant OSA and EDS by sleep laboratory measures in 78% of those commercial drivers despite uniformly negative symptom reports.[19] Collectively, these three studies demonstrate that OSA screening strategies that refer professional drivers for a PSG only in the presence of symptoms or a high ESS will be ineffective.

Regarding loss to follow-up, we observed a rate of 62% among drivers referred for PSG, whereas 29% of drivers referred in the study by Talmage et al.[4] were lost to follow-up. This difference is likely attributable to the fact that most of the latter sample came from a single employer that had endorsed and supported OSA screening (J. B. Talmage, oral communication, March 2008). However, we experienced significant concern and even anger from some drivers, as well as some employers. Our findings of resistance to the consensus criteria and loss to follow-up due to doctor-shopping are in agreement with anecdotal reports from others attempting to implement the JTF guidelines.[38] Our study extended the findings of these previous studies by demonstrating very low compliance with CPAP treatment among drivers found to have OSA.

Our study does have a number of limitations. Most are explained by the study design: we performed a "field test" of the JTF criteria among driver-clients receiving CDMEs, rather than a clinical laboratory experiment with volunteer subjects. Therefore, our investigation lacked PSG data on subjects with negative OSA screens, precluding precise estimates of sensitivity and specificity. In addition, physicians did not refer all drivers meeting the strictest definitions of the consensus criteria for PSGs. On retrospective review, this seemed to be primarily due to the JTF consensus paper's lack of a numerical definition of "uncontrolled" blood pressure, as well as at what point, with regard to intensity, chronicity, and frequency, a self-report of snoring by itself should prompt referral. In the absence of explicit parameters, physicians inevitably make more subjective or arbitrary decisions. Next, among those referred for PSGs, significant loss to follow-up limits our ability to compare screening guideline performance versus PSG and to better estimate OSA prevalence. However, drivers lost to follow-up did not show significant differences on OSA predictors when compared with those with confirmed OSA. Nonetheless, the true prevalence of OSA is expected to be higher because the consensus guidelines are driven by a BMI cut point of $\geq$35 kg/m^2, whereas the relative risk of OSA has been shown to be greater than 10-fold in persons with a BMI $>$29.[39,40] Because of the robust relationship between obesity and OSA risk, the FMCSA is currently considering a motion from its medical review board to mandate a more sensitive approach, referring all drivers with a BMI $\geq$30 kg/m^2 for a PSG.[41] The latter screening criterion would have affected 34% of our study population, resulting in a much higher prevalence estimate.

Although loss to follow-up was a relative limitation to our study, it was also an important finding. We have every reason to believe that the majority of drivers with suspect OSA who were lost to follow-up and those with confirmed OSA who were noncompliant with treatment continue to drive professionally. Our experience with poor driver compliance with PSG referrals and CPAP treatment highlights and supports federally mandated objective OSA screening in concert with the elimination of doctor-shopping, which are currently being deliberated by the FMCSA.[41] Some clinicians avoid OSA screening because they fear losing clients. Even more often, clinicians provide examinations without appropriate training or consideration of medical conditions' impact on driving abilities. Logically, many drivers and their employers are likely to seek out clinics that conduct less rigorous examinations without OSA screening. A recent federal report highlights the fact that many drivers with very serious health conditions are able to obtain medical certification without proper scrutiny under the current system.[2]

Other critical barriers to the diagnosis and treatment of OSA in drivers should be recognized as well. First, there is the failure of drivers and some physicians to appreciate OSA as a serious condition that threatens safe driving. Second, the issues of PSG cost, access (including health insurance coverage), and wait times are important concerns for many commercial drivers.[4] Similar obstacles exist regarding the implementation of CPAP treatment. Detecting and treating OSA would be much easier in settings where drivers' employers not only require screening but also facilitate PSGs and treatment, when indicated,

through insurance or coverage of costs. The FMCSA should also develop driver, medical examiner, and employer information campaigns to increase awareness and appreciation of the risks of untreated OSA.[13]

In conclusion, we confirmed that drivers identified by the JTF consensus guidelines have a very high likelihood of OSA. Our experience also strongly suggests that significant OSA is common among drivers and most of the affected drivers continue to drive without adequate treatment either because they remain undiagnosed or because they are noncompliant with treatment. Thus, any OSA screening strategy in this population will be ineffective unless the FMCSA mandates the strategy and prohibits drivers from doctor-shopping. Breaking down cost and access barriers to drivers for obtaining OSA diagnosis and treatment must also be addressed through innovative solutions. The latter points are especially relevant given that the FMCSA is considering more sensitive OSA screening guidelines that would affect 2 to 3 times the number of drivers affected by the JTF criteria.

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