

COMMENTARY

Regional differences in PAP care: more questions than answers

Commentary on Dunietz GL, Yu Y, Levine RS, et al. Obstructive sleep apnea in older adults: geographic disparities in PAP treatment and adherence. *J Clin Sleep Med*. 2021;17(3):421–427. doi:10.5664/jcsm.8914

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PAP, the most effective therapy for OSA, is limited by less-than-optimal use.¹ System-level factors contributing to adherence patterns have been underevaluated determinants of PAP use, especially because low PAP use can also ultimately lead to loss of coverage for the device and supplies.² The Centers for Medicare & Medicaid Services (CMS)—and many private insurers—mandates that beneficiaries use PAP for an average of ≥ 4 hours on at least 70% of days over a 30-day consecutive period. Only those beneficiaries meeting this adherence threshold qualify for PAP and supply coverage after the initial 90-day trial period.³ Claims data for PAP supplies thus can serve as a good proxy for adherence in large administrative databases using these requirements for payment. This information facilitates an understanding of patterns of PAP use in real-world settings among large populations with a single payor.

In this issue of the *Journal of Clinical Sleep Medicine*, Dunietz et al⁴ examined the proportions of beneficiaries with an OSA diagnosis by *International Classification of Diseases, Ninth Revision* codes who obtained PAP treatment and supplies using CMS claims data by geography. Dunietz et al⁴ evaluated patterns of PAP treatment and adherence by state and by hospital referral regions (HRRs) or health care markets. Among Medicare beneficiaries aged ≥ 65 years with an OSA diagnostic code (from a random sample of 5% of older adults enrolled in Medicare fee-for-service), rates of PAP treatment and adherence were highest in the Midwest. A lower proportion of beneficiaries diagnosed with OSA were treated with PAP in the southwestern and mid-Atlantic HRRs, such as Southern California, New Mexico, West Virginia, and western Pennsylvania. Lowest rates of adherence were observed in the southwestern, mid-Atlantic, and southeastern HRRs.⁴

Regional differences in care among Medicare recipients are well documented, with a generally greater utilization of care and costs in regions with a greater density of hospital-based specialists and fewer primary care providers.^{5,6} Work by the Dartmouth Atlas Project has identified overuse of care in regions with greater Medicare spending and poorer-quality care by health metrics.⁷ HRRs with lower per capita spending are in the northwestern and central United States; regions with greater expenditures cluster in the Southeast and are not associated with better health outcomes.⁸ Interestingly, these HRR patterns somewhat

parallel PAP adherence patterns found by Dunietz et al,⁴ with greater adherence in regions with lower Medicare spending.

Patel and colleagues⁹ performed a similar study evaluating differences in adherence by geography using telemonitoring data gathered by Philips Respironics in 714,270 patients aged 18–90 years. They identified, in preliminary analysis, differences in 90-day adherence by HRR, with higher levels of adherence in the central Midwest and lower levels in urban northeastern and southwestern regions. In this large general population of patients with OSA, the regions with higher adherence to PAP were similar to those found by Dunietz et al⁴ among Medicare beneficiaries aged ≥ 65 years. This finding suggests that health care system features, in addition to provider and patient factors, contribute to PAP adherence.

CMS PAP claims data have also been utilized to evaluate the predictors of PAP adherence and the health care costs of OSA. Using a random 5% sample of all Medicare claims data, a recent cohort of beneficiaries aged ≥ 65 years studied by Wickwire, Jobe, et al¹⁰ used similar methods to measure PAP adherence via claims data for PAP equipment charges. Low SES, identified by proxy as Medicaid eligibility, was found to be a strong predictor of CPAP adherence, with 48% greater odds of poor adherence among Medicare beneficiaries aged ≥ 65 years who were eligible for Medicaid. An earlier CMS cohort (from 2006–2010) evaluated PAP treatment among patients diagnosed with OSA and subsequent treatment costs.¹¹ The researchers identified higher costs in patients with OSA compared with those without OSA but lower costs in those adherent to PAP, according to claims data, compared with those with untreated OSA. One could hypothesize that the system-level factors driving up costs in the regions with fewer primary care providers may be the same factors leading to greater expenditures for untreated OSA. In other words, cost-effective models of OSA care with primary care management of PAP¹² may explain cost savings in these lower-per-capita HRRs.

It is notable that per Dunietz et al,⁴ the HRR in the United States with the highest proportion of PAP treatment and adherence, in the central upper Midwest, serves a predominantly white population. In addition, the patient sample in their study was 89% white, a much greater fraction than the general CMS population aged ≥ 65 years, which is 75% white.⁴ Because of

systemic racism and historic housing policies, nonwhite populations in the United States are geographically patterned and more often reside in low-socioeconomic-status neighborhoods. Structural racism also contributes to differences in access and quality of health care.^{13,14} Racial and ethnic minorities are less likely to be diagnosed with sleep apnea and are less often treated.^{15,16} Historically disadvantaged, vulnerable populations also tend to use PAP less than higher-socioeconomic-status and white patients. Randomized trials and observational cohort studies have revealed consistent differences according to race, ethnicity, and socioeconomic status.^{17–21} A recent study examined a large sample of PAP use data using residential socioeconomic data; PAP users living in the lowest median household income ZIP codes had significantly lower PAP adherence levels than those living in the highest, at 40% vs 47%, respectively.²² These individual and neighborhood factors may contribute to the differences observed by HRR, with the regions with greater PAP adherence having the least diversity. However, regional differences in socioeconomic status do not follow HRR patterns of PAP adherence. The proportion of the sample of patients in each HRR with Medicaid eligibility may provide some insight into this question. Similarly, it would be useful to evaluate whether observed differences by region persisted after adjustment of the sample of patients by race/ethnicity, Medicaid eligibility, age, and sex.

This study examining a large sample of CMS beneficiaries⁴ provides the first step in exploring regional differences in sleep apnea care. The described variations in OSA treatment with PAP and differences in adherence, by state and HRR, add a new, larger geographic and system-level layer to the understanding of adherence. Furthermore, regional variations likely contribute to sleep health disparities; addressing these systemic factors is crucial in reducing inequalities in care. Further studies are needed to understand how system-level factors interact with patient-level and neighborhood-level factors contributing to PAP adherence and sleep apnea care.

CITATION

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