SLEEP INSTITUTE
Clinical Insights by Resmed

Embedding life context into OSA therapy selection and adherence frameworks

By: Resmed
Publish date: May 18, 2026

In sleep therapy, biology sets the stage, but life circumstances often decide the outcome.

In obstructive sleep apnea (OSA), adherence expectations are typically framed around clinical markers of disease severity such as apnea–hypopnea index (AHI) and daytime sleepiness. However, evidence shows that socioeconomic status and social context are equally strong predictors of continuous positive airway pressure (CPAP) adherence.

A longitudinal population-based study of more than 20,000 patients found that marital status, educational level, household income and cultural background were all weighty predictors of CPAP adherence, with effect sizes comparable to daytime sleepiness and apnea severity.[1] Patients who were married, more educated or had higher household income used CPAP significantly more each night.

Alongside socioeconomic factors, modifiable elements of care delivery also influence adherence. Clinician monitoring of CPAP usage patterns and data, combined with patient-centered education, is essential to improve therapy adherence.[2] Patients receiving somewhat or very frequent clinician monitoring of CPAP data were 36% more likely to meet Medicare's 90–day CPAP compliance criteria.[3]

As a result, patients with identical AHI often experience fundamentally different treatment trajectories based on education, income, social support and follow-up intensity.

This reflects a classification failure: OSA is managed as a psychological condition while its outcomes are determined by socio-behavioral and environmental constraints that remain uncoded and unmeasured. When socioeconomic context predicts adherence as strongly as apnea severity, yet is absent from frameworks, adherence becomes a proxy for privilege. It functions less as a measure of therapeutic effectiveness and more as a stratifier of social and structural advantage.

Similarly, evidence that clinician monitoring improves adherence indicates that monitoring is a core therapeutic component rather than an optional add-on. But since such support is inconsistently implemented or under-reimbursed, adherence outcomes reflect care delivery design as much as patient behavior.

Life context and circadian disruption

Life context influences the effects of positive airway pressure (PAP) on circadian regulation. Evidence suggests that both short-term and long-term PAP use can improve circadian disruption in obstructive sleep apnea, while untreated OSA may itself disturb the biological clock, likely through intermittent hypoxia and sleep fragmentation.[4,5]

However, these circadian gains depend on consistent PAP use within a patient's actual sleep–wake windows. For many patients, those windows are constrained by work schedules, caregiving responsibilities or irregular routines.

In practical terms, PAP can support circadian recovery only when patients have sufficient control over when and how they sleep. This reinforces that treatment effectiveness is not solely device-dependent, but contingent on alignment between therapy requirements and real-world sleep opportunity.

Where treatment assumptions break down

Many of the assumptions that underpin sleep therapy protocols effectively hinge on consolidated nightly sleep in a stable environment. In reality, however, sleep timing, light exposure and recovery opportunities vary dramatically across patients, and those assumptions often collapse in rotating or overnight schedules, on-call roles or households with high caregiving demands.

Sleep medicine already accepts that timing, opportunity and external constraints can define disease when they are formalized as diagnoses. Outside of those narrow cases, the same forces continue to determine treatment outcomes, yet current frameworks exclude them from diagnostic coding, treatment algorithm and adherence criteria.

Being a caregiver, frequent traveler or shift worker is not a diagnosis, but it is central to whether therapy is usable and sustainable.

Frequent travelers experience repeated circadian disruption from time zone changes, inconsistent routines and variable sleep environments. Workers with non-standard or rotating schedules face similar constraints on sleep timing and regularity, while caregivers often experience fragmented and deprioritized sleep driven by external responsibilities.

These are not niche populations. They are people routinely encountered by clinicians, employers and health systems. Prescribing standard treatments for these patients may be technically appropriate, but essentially unworkable in the context of their real life. When guidelines fail to account for this life context, they systematically misclassify structural barriers as patient behavior.

Implications for guidelines and therapy selection

Current quality frameworks in sleep medicine are strongest for OSA. Its quality measures focus on timely diagnosis, evidence-based therapy, adherence monitoring, blood pressure and weight tracking.[6]

These measures have improved standardization, but they still operationalize personalization largely through physiological markers (AHI, oxygen desaturation, comorbidities) rather than through occupational context, socioeconomic status and resources or caregiving demands.

The consequences of excluding life context are not theoretical. Current models end up rewarding patients with stable routines and resources, while penalizing those whose lives constrain when and how therapy can be used. This creates predictable patterns of failure that remain uncorrected.

By contrast, precision medicine frameworks in broader healthcare explicitly call for integrating genetic, environmental and lifestyle variability into treatment decisions.

Bridging this gap in sleep medicine requires a staged shift in how context is measured and integrated into health systems.

- **Phase 1: Measurement and classification**
  Contextual variables (including occupation, shift status, sleep–wake patterns, caregiving demands, mobility, and socioeconomic proxies) should be standardized alongside AHI, BMI, and comorbidities in EHRs and registries.

  Defining a minimum dataset to be documented moves life context from an informal note in the chart to a structured input that can influence modality choice, education intensity and follow-up cadence.

- **Phase 2: Guideline integration**
  Once measured and documented, context should truly shape clinical decisions. Guidelines must mandate that treatment algorithms and care models incorporate contextual variables alongside physiological markers. They should also explicitly define context-stratified follow-up pathways. Integrated care models and digital pathways already show that multidisciplinary teams, remote monitoring and wearables can deliver effective, tailored support at scale.[7]

- **Phase 3: Reimbursement alignment**
  Adherence measures should be risk-adjusted to account for caregiving burden, socioeconomic constraint, and limited sleep opportunity, rather than treating all deviations from use thresholds equally. This will reduce systemic bias toward patients with stable routines and better reflect treatment feasibility across diverse life circumstances.

  At the same time, reimbursement models should incentivize high-touch, resource-intensive care for patient populations with constrained life contexts.

- **Phase 4: System alignment beyond the clinic**
  Employers already shaped sleep health through screening, benefits and occupational-health services. Embedding context-specific referral criteria and tailored sleep disorder support within workplace programs would better connect real-world job conditions to downstream therapeutic decision-making. This could include targeted screening for workers in safety-sensitive roles, benefit designs that support equipment portability and remote follow-up for employees who travel, or additional support pathways for staff with high caregiving burdens.

Context should be treated as core, not adjacent

Effective and sustainable sleep therapy depends as much on life context as on physiology. Occupation, circadian rhythm patterns, caregiving demands, mobility, and aging-related changes are not peripheral influences on treatment outcomes; they are determinants of it.

A physiology-focused approach alone does not fully reflect the realities of modern sleep health. Evidence demonstrates that treatment effectiveness is shaped not only by disease characteristics, but by when, where and under what constraints therapy is used. It is only by building life context into therapy selection, support models, and adherence metrics that sleep medicine guidelines can narrow the gap between clinical trial treatment efficacy and real-world outcomes.

References

[1] Palm A, et al. Chest. 2021;160(4):1481–1491.
[2] Fujita Y, et al. Resp Inv. 2024;62(4):645–650.
[3] Kaye L, et al. Sleep. 2025; Dec 11;48(12):zsaf208.
[4] Gabryelska A, et al. Sci Rep. 2025;15:11273.
[5] Gaspar LS, et al. EBioMedicine. 2021;65:103248.
[6] Lloyd R, et al. J Clin Sleep Med. 2022;18(11):2673–2680.
[7] Salinas GD, et al. Front. Sleep 2025; 3:1534441.