EDITORIAL

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Testing, Testing…

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I've been contemplating writing about this topic for some time, but what finally prompted me was attending the SLEEP meeting in Houston this June. I'll explain more about that later.

Have you ever encountered this scenario? You test your patient with an ambulatory testing device, the numbers appear promising, and the patient feels significantly better. But, when the patient returns to the sleep specialist for a follow-up test, the report indicates that the sleep apnea persists and the patient is recommended to try continuous positive airway pressure (CPAP). You're left wondering what happened between your test and the physician's follow-up. Initially, I attributed these discrepancies to variations in specificity and sensitivity among different brands of sleep testing devices,[1,2] which seemed a plausible explanation. However, recent findings suggest there may be another factor at play.

Over the past two years, a group of Australian researchers published compelling studies using a consumer-grade, under-the-mattress testing device.[3] This device has been clinically validated to show good agreement with polysomnography-derived Apnea-Hypopnea Index (AHI).[4] Their extensive data collection, involving more than 67,000 individuals over an average of 170 nights—totaling 11.7 million nights—revealed significant night-to-night variability in test results. According to their findings, the likelihood of misdiagnosis based on a single night's study ranged from 20% to 50%.[3] This underscores the importance of multi-night studies to accurately assess AHI.

These results raise several critical questions:

- What is the validity of research that relies on one-night ambulatory tests? Should our research protocols evolve accordingly?
- Since technology has advanced beyond in-lab PSGs, should multi-night ambulatory tests become the standard of care?
- Given the shortcomings of AHI as a definitive metric for OSA severity,[5,6] should we consider testing more nights or looking for new metrics?[3]

Moreover, isn't it time we reconsider how we approach sleep apnea diagnosis and monitoring? If technology now allows for daily assessment of treatment efficacy, akin to monitoring blood glucose levels in diabetic patients, shouldn't we adopt such practices? Current dental sleep medicine methods often involve initial testing for diagnosis, a follow-up test after appliance calibration, and periodic assessments every few years. Imagine the uproar if diabetics were similarly monitored. Why should OSA patients receive different treatment, especially when non-invasive, economically feasible technology could enhance care?

To conclude, as technology advances, new devices will inevitably emerge, with each requiring both consideration and validation. For example, at the SLEEP meeting, I was able to see examples of radical advances in monitoring technology that could at minimum allow patients to continuously monitor their symptoms in the comfort of their own homes and potentially become a new diagnostic tool. While these types of technologies are in their infancy, they could allow us to better follow our patients and possibly learn more about OSA.

In summary, the advent of new technologies demands our attention. These innovations could profoundly influence the future of dental sleep medicine, offering opportunities to help a greater number of patients by refining how we diagnose and treat sleep disorders, allowing us to focus on using our clinical expertise and judgment to provide individualized care in the best way possible. I for one am excited to see how these innovations impact us all.

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