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EDITORIALS

Opportunities and unknowns in adapting pediatric sleep practices to a pandemic world

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BACKGROUND

The adult sleep medicine community has adapted quickly to mitigate the risk of transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by utilizing more telemedicine, home sleep apnea tests (HSATs), and when possible, empiric positive airway pressure (PAP) treatment. However, these strategies have not been as widely adopted in pediatric sleep practices. A recent 2017 American Academy of Sleep Medicine position paper on HSATs in pediatrics states that, "Use of a home sleep apnea test is not recommended for the diagnosis of obstructive sleep apnea in children" due to limited literature comparing HSATs to polysomnography in children. However, the statement also noted that "the ultimate judgment regarding propriety of any specific care must be made by the clinician, in light of the individual circumstances presented by the patient, available diagnostic tools, accessible treatment options, and resources."[1]

The quandary facing many pediatric sleep practices and laboratories, for whom fewer options exist, came to the attention of the American Academy of Sleep Medicine's COVID-19 Task Force. Currently, experience and evidence are insufficient to guide pediatric health care workers in infection-control practices that promote patient and worker safety. Questions remain for pediatric sleep facilities regarding the following: a priori testing of family members before their arrival at the sleep practice or laboratory; keeping pediatric facilities open for urgent needs, including ventilator titrations; managing accompanying adults who themselves use continuous PAP therapy during the child's testing; HSATs in postpubertal adolescents, or in select cases of younger children with neurodevelopmental challenges; and prescribing empiric auto-adjusting PAP therapy, among other concerns.

NEXT STEPS

First and foremost, while data and expert opinion are emerging to support the use of HSATs as part of an approach to evaluate for obstructive sleep apnea in children,[2–4] more longitudinal data and clinical trials are needed to establish best practices for the diagnosis and treatment of sleep disorders in pediatric patients who require sleep diagnostic testing. HSATs have limitations regarding both sensitivity and accuracy, so further work is needed to understand how to integrate this tool in a broader framework of assessment.

We recognize, however, that acquiring such data takes time and expense. In the interim, multicenter registries may offer insight and experience to help answer broad questions, such as whether a multistep testing approach increases access to care and whether adherence rates and clinical outcomes are noninferior with the use of empiric PAP therapy in certain pediatric patients.

In the absence of such data, pediatric sleep health care providers have long had to use sensible, good practice when clinical circumstances demanded creative, patient-centered problem-solving. While helpful in paving the way for best practice, robust data are often unavailable to direct medical decision making and do not alleviate the need to use clinical judgment. Even in the absence of sufficient data to support, for example, a clinical practice guideline, an HSAT may be a sensible choice for certain individuals in the pediatric age range and in certain situations (eg, for patient or parent reluctance to sleep overnight in the center due to possible coronavirus disease 2019 (COVID-19) or seasonal flu exposure, concerns regarding the use of public transportation, COVID-19–associated housing or job insecurity, lack of access to sleep centers in rural areas, new caregiving responsibilities, or any other conditions that could increase the risk for transmission of infection to at-risk patients, family members, or health care workers). Pediatric sleep medicine is not alone in the need to adapt care practices to address risks related to SARS-CoV-2, as the medical community serving patients with neuromuscular disease has demonstrated.[5]

As an example, an HSAT may be a reasonable initial assessment among typically developing postpubertal teens with

clear symptoms of sleep-disordered breathing; in this group, an HSAT may be a useful option for ruling in sleep-disordered breathing. Home-based options may be beneficial for those with coexisting delayed sleep phase, and also a relevant infection-control strategy for some sleep laboratories. Perhaps, too, an HSAT might be a sensible first assessment tool in children manifesting developmental delays, a group for whom in-laboratory testing may pose added challenges. In such a situation, the risks and COVID-associated stressors associated with in-laboratory testing may outweigh the benefits. When considering a simpler in-home assessment first, one must acknowledge the greater likelihood of poor-quality data, false positives, and false negatives than are commonly seen in adult populations. However, a caregiver can be supported in real-time at home during the application of HSAT devices to increase the usefulness of HSATs.

With the COVID-19 pandemic afoot, the time has come to reconsider how we best serve the needs of our pediatric patients, and at the same time maintain safety for our pediatric patients, their caregivers, and the workforce. Time- and cost-efficient options include relying entirely on bedside assessment (no testing) or, if testing is needed, considering the use of HSATs in adolescents and children on a case-by-case basis, weighing clinical judgment, pretest probability, and potential patient-specific limitations of home testing. In selected pediatric patients, an HSAT could be part of a multistep pathway of diagnostic testing, which starts with home testing and moves to in-laboratory testing in cases of negative or failed HSATs, as is current practice with adult patients.

Similarly, the use of clinical judgement in the prescription of PAP therapy may also help expand access to treatments. For example, in the absence of clear-cut evidence or clinical practice guidelines, use of auto-adjusting PAP and/or home PAP titration for obstructive sleep apnea in older children is a practice that has been used among some subpopulations. Consideration of auto-adjusting PAP could be helpful in some cases to avoid risks, reluctance, or unavailability of in-laboratory titrations, with in-laboratory studies used when home empiric titration fails. Such a stepped model can still incorporate one-on-one opportunities for PAP acclimatization and desensitization in populations who require it.[6]

A combination of pragmatism and prudence is essential as we weigh employee and patient safety during the pandemic, as well as individual patient needs. Payer policies would need to be adapted to accommodate newer approaches that are considered reasonable by usual clinical standards. For example, the HSAT pathway already exists and is applied upon the teen patient's 18th birthday; foregoing this expeditious approach for a 17-year-old may, in some cases, be arbitrary. Work is needed to refine patient selection criteria and to support individual clinicians who navigate the available information, without having critical decisions regarding management options driven instead by payer policies. The sleep medicine health care community bears the ownership of gathering outcome data when newer care models are needed or implemented, to help inform the future management of pediatric and adolescent patients.

CONCLUSIONS

The COVID-19 pandemic has taught us much about how to extend sleep services at a distance; we must consider the needs of vulnerable pediatric patients and families. As a field, we should remain focused on supporting clinicians with tools they need to care for their patients. The American Academy of Sleep Medicine's previously published position paper places the ultimate judgment regarding the appropriateness of any specific care on the clinician. COVID-19 has provided a reprieve from business-as-usual: despite the headwinds posed by the uncertainty of the future, lack of clarity about payer decisions, and gaps in scientific knowledge, we must persist in exercising sound clinical judgement and direct the future toward one that improves access and outcomes for our pediatric patients.

CITATION

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REFERENCES

1. Kirk V, Baughn J, D'Andrea L, et al. American Academy of Sleep Medicine position paper for the use of a home sleep apnea test for the diagnosis of OSA in children. *J Clin Sleep Med.* 2017;13(10):1199–1203.
2. Tan HL, Kheirandish-Gozal L, Gozal D. Pediatric home sleep apnea testing: slowly getting there! *Chest*. 2015;148(6):1382–1395.
3. Gozal D, Kheirandish-Gozal L, Kaditis AG. Home sleep testing for the diagnosis of pediatric obstructive sleep apnea: the times they are a changing...! *Curr Opin Pulm Med.* 2015;21(6):563–568.
4. Ross KR, Redline S. Is it time to head home for the night? Home sleep testing in young children. *Ann Am Thorac Soc.* 2020;17(10):1207–1209.
5. Esposito I, Chatwin M, Accurso G, et al. Ventilator configuration in children on long term home ventilation during the COVID19 pandemic. *Pulmonology*. Published online July 16, 2020. Available at: https://doi.org/10.1016/j.pulmoe.2020.06.010
6. Zhou J, Liu DB, Zhong JW, et al. Feasibility of a remote monitoring system for home-based non-invasive positive pressure ventilation of children and infants. *Int J Pediatr Otorhinolaryngol.* 2012;76(12):1737–1740.

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DISCLOSURE STATEMENT

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