

# Polysomnography Role in Hospitalized Children

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## Opinion

The gold standard for detecting and quantifying Sleep-disordered Breathing (SDB) in children is Polysomnography (PSG), sometimes known as a "sleep study." SDB affects about 12% of children, with symptoms ranging from simple snoring to potentially life-threatening problems such as sleep apnea. In the United States, SDB is also the most prevalent reason for tonsillectomy with or without adenoidectomy. Polysomnography is the electrographic recording of multiple physiologic variables at the same time while sleeping, and it is now the gold standard for objectively assessing sleep problems. Gas exchange, respiratory effort, airflow, snoring, sleep stage, body posture, limb movement, and heart rhythm are some of the physiologic parameters that are commonly assessed. However, despite the fact that a clinical diagnosis of SDB in children is considered to be a poor predictor of disease severity, only around 10% of children have PSG prior to tonsillectomy. As a result, the choice to proceed with PSG is frequently left to the physician or caregiver's judgement.

Polysomnography is crucial in the diagnosis of sleep-disordered breathing in children and adolescents. Children's obstructive sleep apnea criteria have been demonstrated to be inapplicable to adult standards. However, there is a scarcity of information on typical respiratory characteristics during sleep in healthy children and adolescents. The goal of the study was to determine respiratory reference values for paediatric polysomnography and to describe normal polysomnography values in healthy children and adolescents.

## PSG in children with modifiable risk factors or in particular populations

Given the evidence of practice diversity among practitioners and in the literature, a guideline is required. The guideline does not apply to children under the age of two, children over the age of 18, children who have already had tonsillectomy, children who are having adenoidectomy alone, or children who are being considered for CPAP or other surgical therapy for SDB. PSG validates surgical reasons and appropriateness, aids in preoperative planning, establishes a baseline for postoperative PSG, and determines the severity of sleep disturbance. Clinicians must equip caretakers with the knowledge they need to make an informed decision until the clinical consequences of SDB and the intervention threshold are determined. When the diagnosis is questionable, this necessitates requesting a PSG. The objective information received from a PSG will aid in the direction of care and reduce the risk of overtreatment or failure to diagnose appropriately.

The following definitions were used to make the PSG diagnosis of the patients. Hypopnea was defined as a decrease in the amplitude of the airflow signal by >30 percent lasting two respiratory cycles and accompanied by oxygen desaturation of 3% or an arousal; obstructive apnea was defined as a cessation of airflow for two respiratory cycles, with a 90% reduction in airflow for 90% of the event with ongoing respiratory effort; obstructive apnea was defined as a cessation of air. When there was no respiratory effort and the event lasted 20 seconds or at least two breaths with an arousal, awakening, or at least 3% oxygen desaturation, it was evaluated as a central event. Repetitive jerking of the legs during sleep, 0.5–5 seconds in duration, in clusters of four or more spaced by 5–90 seconds, were characterised as periodic limb movements of sleep.

In children with chronic neurological and pulmonary disorders, inpatient PSG is a beneficial tool of sleep evaluation. Inpatient sleep studies may be especially useful in children with risk factors for sleep disordered breathing, such as craniofacial malformations, tracheobronchial tree disorders, developmental delay, genetic syndromes, and metabolic disorders, to help guide immediate medical management, such as positive pressure therapy, ventilator titration, or tracheostomy placement. Furthermore, such information could not be gathered in the outpatient context due to either nursing demands or unstable medical conditions [1-5].

## References

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