

# Setting Up a Child-Friendly Sleep Laboratory

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## KEYWORDS

- Pediatric polysomnography • Family-centered approach • Electroencephalogram
- Electrooculogram (EOG) • Electromyogram • Safety • Functionality

## KEY POINTS

- Environmental concerns include adequate spacial concerns for all family members and employees to provide a safe and functional facility in which to perform polygraphic testing on children.
- Personnel considerations specific to pediatric polysomnography that require specific training in pediatrics using a family-centered approach include schedulers, managerial, technical, and medical staff, but may also include emergency personnel, nursing personnel, social workers, transportation, translators, and security personnel.
- Considerations that contain specific concepts for those sleep laboratories performing pediatric polysomnographic evaluations include the data acquisition system, technological staffing and approaches, the sleep study request or order form, the reporting of findings, and the follow-up.
- The evaluation of polysomnograms in the pediatric population includes accepted scoring guidelines by personnel specifically trained to perform this task and are aware of the different facets found in pediatric sleep that may or may not conform to the accepted guidelines.

## INTRODUCTION

There are many developmental, operational, and environmental aspects to consider when structuring a safe environment in which to perform procedures intended to assist in the diagnosis and treatment of sleep disorders in the pediatric population. This article will outline some of the basic current concepts that are important in establishing a consensus within either a new pediatric sleep medicine team, or in a well-established team looking for more guidance or information on how to improve services for children. This consensus building within the sleep laboratory team is necessary to function efficiently on all operational levels; basic concepts include but are not limited to challenges in the scheduling, performance,

scoring, and interpretation of diagnostic pediatric polysomnograms (PSG) and treatment studies (eg, positive airway pressure titration).

In those laboratories that are currently studying children, there is likely already an awareness of specific challenges that can lead to frustration and stress within the team, as well as those that impact on the quality of the sleep laboratory experience for children and their families. This article is geared both toward more and less experienced laboratories in regards to treating children (ie, laboratories that exclusively serve adults and older adolescents, mixed laboratories, and those that are solely pediatric-focused); however some presumptions have been made in regards to the reader having a basic level of knowledge about policies and procedures instrumental to operating a sleep

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Conflict of Interest: None.

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laboratory. Finally, a detailed discussion of the interpretation of pediatric sleep studies, while vitally important, is beyond the scope of this article, as are special considerations in managing children on positive airway pressure treatment<sup>1</sup> (see article by Marcus and colleagues in this issue.)

In order for a laboratory to function optimally when working with the pediatric population, the team should consist of personnel specifically trained and experienced in working with children and families, from the point of initial contact throughout the entire process of conducting, scoring, and interpreting the study.<sup>2</sup> At all of the stages there are opportunities to incorporate a family-centered approach. It is especially important to recognize not only the differences between conducting polysomnography in adults and children, but also the variety of issues raised within different pediatric subpopulations; these include children across the developmental spectrum and with a variety of medical and psychiatric conditions. These considerations are particularly important, because in recent years more primarily adult sleep laboratories have been considering expanding services to the pediatric population; this is at least, in part, a means of off-setting the decline in in-laboratory adult studies due to the transition to in-home portable monitoring. Thus, these laboratories may not be adequately equipped to handle children and families. On the other hand, adequate numbers of pediatric laboratories to handle the numbers of children needing sleep studies do not yet exist. Thus, a compromise that ensures that all sleep laboratories purporting to study children meet minimum standards is imperative.

### **SETTING UP A CHILD-FRIENDLY SLEEP LABORATORY**

In order to comprehensively cover the fundamental aspects necessary to establish and maintain a safe and child-friendly sleep laboratory, it will be necessary to provide a discussion of such issues as pediatric-specific environmental and safety considerations, personnel requirements, basic procedural guidelines, management strategies, and some specific technical/equipment aspects.

#### ***Environmental Considerations***

Environmental concerns that will need to be addressed for the successful pediatric sleep laboratory include functional as well as safety aspects as follows, with some overlap between the two:

- The proper planning of the laboratory environment will include bedrooms that have

adequate space for several reasons. First, the caregiver, usually the parent, should remain in the laboratory for the duration of the study for the comfort of the child as well as his or her safety. Moreover, in most states, children less than 18 years old cannot give consent to medical procedures unless they are an emancipated minor, and thus must be accompanied by an adult. Therefore, a separate and comfortable bed for caregivers is a necessity.

- Another universally recognized requirement for any sleep laboratory environment is that the bedroom size must be adequate for technologists and emergency personnel to function properly. However, in the pediatric population additional personnel who may be involved in providing adequate safety and comfort measures include nurses, social workers, transportation personnel, translators, and even security personnel. The more complex the medical, developmental, and familial situation of the child who is being seen in the laboratory, the more likely these personnel will be needed and will need to be readily available during the duration of patient's visit.
- In addition to providing adequate space, the bedrooms should have soundproofing adequate to minimize sound from carrying into other areas of the laboratory, particularly if the laboratory serves both adults and children. The soundproofing process may add significantly to construction costs but should be considered a critical aspect of the planning of any sleep laboratory evaluating pediatric patients.
- Whether the physical location of the sleep medicine clinic and the sleep laboratory are to be separate or one in the same, decisions about optimal structure and workflow are important considerations. In regards to these considerations, there may be advantages to dual use of the sleep laboratory space for PSG testing by night and clinical evaluation (ie, sleep clinic) by day. These include improved cost: benefit ratios due to sharing of administrative personnel and repurposing unused space into revenue-generating space during the day, and promotion of a more family-centered approach by providing patients and caregivers with an increased comfort level with the physical location and arrangement. Rooms that double as both a clinic and polysomnographic laboratory space can be efficiently converted for either use with prefabricated wall systems (eg,

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