ANALYSIS AND PERSPECTIVES

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PERSPECTIVE

Fall-Prevention Policies in Pediatric Sleep Laboratories

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Despite the extensive awareness and prevention strategies of fall risks for adults and children during hospitalization, little information is available on the occurrence, cause, and consequences of falls in sleep laboratories.

A patient fall is defined as any sudden unexpected descent from a standing, sitting, or other position, with or without injury to the patient. Patient falls constitute the most common adverse events reported in hospitals, representing nearly 40% of all incident reports and occur during as many as 13% of hospital admissions.[1]

FALLS IN ADULTS

Adult inpatients who have Alzheimer disease, Parkinson disease, or stroke have been shown to have higher risks of falling, perhaps secondarily to their difficulty with adaptation to novel hospital environments and equipment, in addition to inherent physiologic factors and medications.[1] More than a third of inpatient falls result in single-site or multiple-site injuries, but most are minor in nature (e.g., abrasions, lacerations, hematomas, and contusions). Wide variations in fall rates have been reported for the elderly from institutions and from acute care settings.[1]

In 2002, the Joint Commission for Accreditation of Healthcare Organizations introduced the first set of National Patient Safety Goals designed to define problematic areas within the environment of care and to identify evidence-based solutions to reduce the risk of harm. Based on these goals, hospitals were required to implement a fall-reduction program beginning in 2006 and to evaluate the efficacy of the program. Hospital-based fall-prevention programs for adults have been enacted across the country, consisting of the use of a risk-assessment tool for falls, application of a standardized nursing care plan, and implementation of an ongoing fall-prevention education program and protocol for staff.

FALLS IN CHILDREN

Studies on in-hospital fall risks have also been conducted in children, including toddlers and infants, with estimates of more than 40% of in-hospital pediatric accidents occurring as the result of a fall.[2-4] Falls are the most common cause of accidental injury in neonates outside the hospital, but relatively little has been published regarding in-hospital neonatal falls.[2] Most pediatric falls result from toddlers climbing over bedrails, as most hospital beds are not designed to prevent small children from getting in and out of bed without falling.[3]

The type of injuries that children experience are different from those of adults in that pediatric falls more often result in head trauma (generally with concussion onto hard surfaces), whereas adult falls result in orthopedic injuries with hip or pelvic fractures. Pediatric falls lead to an increase in overall length of stay, pain, disability, and unanticipated treatment of the accompanying injury.[3]

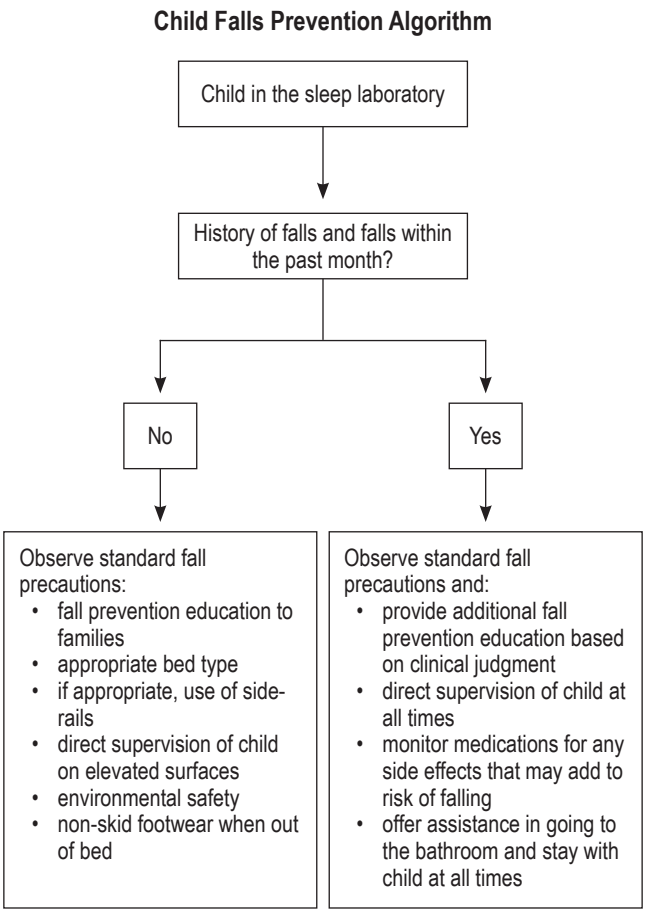
For children, the developmental stage and ambulation capabilities are key potential risk factors for falls. Elective activities, such as going to the bathroom, may also result in falls.[4] Specific risk factors for pediatric falls have been identified, such as length of stay greater than 5 days, an orthopedic diagnosis, the need for physical or occupational therapy, the administration of seizure medication, and not having an intravenous line or heparin lock.[3,4]

Razmus et al.[3] found that change in mental status (episodes of disorientation), history of falling at home, altered mobility, and age less than 36 months are significant predictors of risk for falls during pediatric admissions.

OUR EXPERIENCE

To assess the burden of pediatric falls in our sleep laboratories, we conducted a survey-based study across the United States. At our request, 1565 surveys on bed safety were distributed by the American Academy of Sleep Medicine to all accredited sleep laboratories. The survey primarily focused on fall-prevention policies and the number of falls that occurred during the prior year. Of the 1565 surveys, 262 (16.7%) were completed, and 187 respondents (71%) performed sleep studies on patients younger than 12 years. Of these, only 93 laboratories (55%) had a fall-prevention policy. Personnel at 171 facilities (91%) answered the question of how many children had fallen from the bed or crib in the last year. Five facilities reported having had a pediatric patient fall out of bed. Of note, 2 falls occurred when technicians failed to raise the bed rails, and 1 child slipped through a raised bed rail. Our findings must be interpreted in the appropriate clinical context (e.g., bias may exist regarding survey completion, recall bias, and the fact that

Figure 1—Suggested fall-prevention algorithm for children



only 16% of potential participants completed the survey have to be factored into interpretation of our data).

PREVENTION STRATEGIES AND GUIDELINES

For the adult population, implementing tools for identifying these events and preventing falls (such as the Morse Fall Scale and the Hendrich II Fall Risk Model) have been largely successful. Prevention of pediatric falls also requires an interdisciplinary approach using available screening tools and clinical judgment and providing a safe environment. To date, no validated screening tool for outpatient settings exists. At Children's Hospital Boston, a fall-prevention program was implemented in 2005, and the Graf PIF screening tool[5] was implemented in 2009.[6] This tool is validated and used for the assessment of risk for falls in inpatient areas only; therefore, in the outpatient areas (emergency department, sleep laboratory, clinics), the nursing staff asks a series of screening questions. Children admitted for sleep studies are screened based on these questions, and the appropriate interventions are then implemented (**Figure 1**). Certain populations, such as children with intellectual disability, autism, cerebral palsy, or a seizure disorder, may be at an increased risk for having a fall in either the inpatient or outpatient setting. In general, children who are hospitalized should be closely monitored and assisted with performing activities that may increase their chance for having a fall.

OUTLOOK

Falls during pediatric sleep studies are uncommon but potentially serious, and, more importantly, there is little awareness about the problem. A fall-prevention policy analogous to those used for pediatric patients in hospitals or emergency departments needs to be adapted for pediatric sleep laboratories and should be incorporated into the process of the American Academy of Sleep Medicine's accreditation of sleep centers. Nursing interventions based on both screening questions and clinical judgment must be geared toward educating families and technical staff about increased fall risk during sleep studies.

Further research should be undertaken to develop an effective fall-risk screening tool to be used in outpatient settings, specifically in pediatric sleep laboratories.

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