A Retrospective Analysis of Falls in Hospitalized Children

Deborah Spoerner, DNP, MSN, APRN, CPNP-PC
Purdue University School of Nursing

Introduction

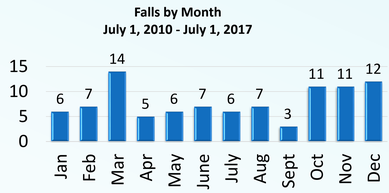
- Although the incidence of falls in hospitalized children is less than adults, pediatric falls remain a challenging quality and safety issue in hospitals.
- Regulatory agencies and third party payers mandate hospitals track falls, reduce injury from falls, implement and evaluate fall prevention programs across the lifespan.
- Fall risk assessment tools are intended to help identify children at risk and provide specific interventions designed to reduce falls.
- Risk factors identified on pediatric fall risk screening tools are inappropriate because selection was based on risk factors found on adult fall risk assessment tools.
- Lack of consensus in risk factors for falls in hospitalized children has called into question the validity of multiple pediatric fall risk assessment tools.
- The purpose of this study is to identify risk factors and characteristics in children who fell while hospitalized, assess injury, and evaluate the sensitivity of three pediatric fall risk assessment tools.

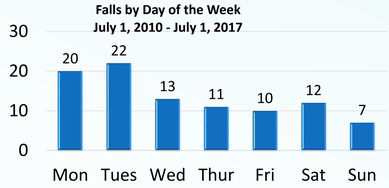
Methods

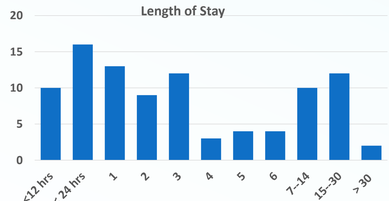
A retrospective study design was used to identify characteristics and risk factors of hospitalized children who fell. Fall risk was assessed at admission, once per shift, with change in status, and after a fall. Children 0 – 18 yrs of age (*n=106*) in the ED, PICU, Med-Surg, and short stay units who experienced a fall from July 1, 2010 to July 1, 2017 were evaluated for inclusion in the study. Ninety-five eligible patients were identified through a master list and fall event report submitted by staff. Repeat falls and accidental infant drops were included in the study. Children who experienced a developmental fall were excluded from the study. The nurse's fall risk assessment score preceding the fall was collected. Scores for each of the three fall risk assessment tools were calculated by

Results

Comparison of Fall Risk Assessment Tools			
	HDFS	GRAF-PIF	CFS
Age	X		
Gender	X		
Diagnosis	X	X	X
Cognitive Impairements	X		X
Length of Stay		X	
Environment	X	X	
Response to Surgery, Sedation	X		X
Equipment	X	X	X
Medication Usage	X	X	X
History of fall	X	X	X
High Risk Score	12--23	≥ 2	8+
Low Risk Score	7--11	≤ 1	1--7
No Risk			0-
Reported Sensitivity	85%	75%	α 0.68*
Reported Specificity	24%	76%	none







Characteristics of Fall Event	n = 95 (%)
Hospital Unit	
Emergency Department A	3 (3.2)
Pediatric Intensive Care Unit B	7 (7.4)
Pediatric Unit C	45 (47.4)
Pediatric Unit D	40 (42.1)
Specific Location	
Patient room	71 (74.7)
Bathroom	18 (18.9)
Hallway	5 (5.3)
Other	1 (1.1)
Witness the fall	
Yes	70 (73.7)
No	25 (26.3)
Adult Present	
Yes	81 (85.3)
No	14 (14.7)
Lighting	
Yes	4 (4.2)
No	91 (95.8)
Time of Event	
0700-1900	57 (60)
1901-0659	38 (40)

Lines/Tubes/Attachments	n= 95	%
Zero	3	3.2
One	9	9.5
Two	30	31.6
Three	36	37.9
Four	11	11.6
Five or more	6	6.3
Activity Level		
Bedrest	22	23.2
Up ad lib	63	66.3
Up to chair	1	1.1
Up with assist	9	9.5
Number of Hospital Units		
One	49	51.6
Two	40	42.1
Three	6	6.3

Characteristics of Fallers	n = 95	%
Gender		
Male	54	56.8
Female	41	43.2
Age		
Infant (0 -12mo)	8	8.4
Toddler (13mo -35mo)	26	27.4
Preschool (36 mo-5 yrs)	12	12.6
School-Age (6-12 yrs)	22	23.2
Adolescent (13-18 yrs)	27	28.4
Primary Diagnosis		
Hematology/Oncology	26	27.4
Neurology	20	21.1
Pulmonology	16	16.8
General Pediatrics	7	7.4
Cardiology	6	6.3
Gastroenterology	5	5.3
Orthopedic	5	5.3
Surgical	5	5.3
Ears, Nose, Throat	2	2.1
Psychological	2	2.1
Infectious Disease	1	1.1
Comorbidities		
Zero	22	23.2
One	17	17.9
Two	15	15.8
Three	17	17.9
Four	4	4.2
Five or more	20	21.1
Developmental Delay		
Yes	27	28.4
No	68	71.6
Altered Physical Mobility		
Yes	35	36.8
No	60	63.2
History of ADHD		
Yes	11	11.6
No	84	88.4
Altered Mental Status		
Yes	20	21.1
No	75	78.9
Procedure Previous 24hr		
Yes	19	20
No	76	80
Restraint use		
Yes	8	8.4
No	85	89.5
Sitter	2	2.1

How well did the three fall risk tools identify children who fell as high risk?

Sensitivity of the 3 Tools

HDFS -**90.5%**- 9 scored low risk and fell; 86 scored high risk and fell

GRAF-PIF -**34.7%**-62 scored as low risk and fell; 33 scored high risk and fell

CFS -**47.4%** -50 scored low risk and fell; 45 scored high risk and fell

Discussion

Patient safety is the foundation of high quality health care. Properly identifying hospitalized children at risk for fall ensures better patient outcomes and meets requirements established by accrediting organizations. Although fall risk assessment tools are often used for children, lack of consensus exists on sensitivity and specificity of these tools. Findings in this study highlight the need for additional testing to standardize fall risk assessment tools and to identify characteristics of children who fall and pursue interventions which reduce fall risk.

Limitations & Recommendations

- Data obtained in a single Children's Hospital after the fall event. No comparison group was utilized.
- Risk assessment is ongoing and does not end with the screening tool
- Addition of an alert system to the EHR would be helpful to identify history of fall.
- In this study, the majority of children who fell had adult supervision (85%); therefore, including caregivers in fall prevention education could prove beneficial.
- Target staff for falls education in Oct-Nov-Dec
- A national or regional fall data base could help establish consensus for pediatric patients at risk for falling while hospitalized.

References