

Utilization and Factors Influencing use of Head CT after In-Hospital Falls

Love Patel, MBBS¹, Kristopher Holaday, MD¹, Tonya Montesinos, RN¹, Catherine A. St. Hill, DVM, PhD², Peter Melchert, MD¹, David Beddow, MD³
¹Abbott Northwestern Hospital, Allina Health; ²Care Delivery Research, Allina Health, ³Unity Campus of Mercy Hospital, Allina Health, Fridley, MN USA

BACKGROUND

- ❑ Falls among patients admitted to the hospital are common.
- ❑ Falls in the hospital lead to additional adverse outcomes for in-patients and add to the financial burden of health care costs.
- ❑ Significant orthopedic and skull injuries are a major concern after the fall (1).
- ❑ A head computed tomography (CT) scan is commonly used to assess injury after falls in the hospital.
- ❑ Studies have indicated that the bulk of cost stems from head CT scans for post-fall imaging (2,3).
- ❑ An evidence based algorithm does not exist to guide clinicians about when to use imaging and when watchful waiting is appropriate after in-hospital falls.

OBJECTIVES

- ❑ Assess the occurrence in-hospital falls
- ❑ Better understand the events that trigger the use of head CT scans
- ❑ Give recommendations to guide appropriate utilization of head CT scans.

METHODS

Setting & Design

- ❑ 670-bed, Abbott Northwestern Hospital, Minneapolis, Minnesota
- ❑ One sample retrospective observational study
- ❑ **Inclusion criteria:** adults ≥ 18 years old, sustained falls while in the hospital, research flag “Yes”
- ❑ **Exclusion criteria:** < 18 years of age, had falls in the Emergency Department, Psychiatry ward or rehabilitation unit, visitors and staff who had falls, patients with partial data, research flag “No” or “Unknown”

Data Collection

- ❑ Data were collected from January 1st 2015 to August 31st 2015:
 - Used patients’ electronic health records
 - **Variables:** age, the presence of a witness at the time of the fall, new external injury to the head or face, anticoagulation status at the time of the fall, and head CT scan use after fall

RESULTS

Table 1. Occurrence of in-patient falls at Abbott Northwestern Hospital from January 1st 2015 to August 31st 2015, n = 128.

Variables	Number (n)	Percentage
Age in years:		
18 – 50	21	16.4%
51 – 64	32	25.0%
65 – 80	40	31.3%
> 80	35	27.3%
Falls witnessed by staff:	40	31.3%
Head CT was ordered	4	10.0%
Hit to head was witnessed:	5	12.5%
Head CT was ordered	3	60.0%
Falls not witnessed by staff:	88	68.8%
Head CT was ordered	14	15.9%
New external injuries to the head or face:	12	9.4%
Head CT was ordered	10	83.3%
Total head CTs ordered	18	14.1%
New head CT abnormalities	0	0%
Therapeutic anticoagulation at the time of the fall:	17	13.3%
Head CT was ordered	3	17.6%



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CONCLUSIONS

- ❑ A head CT scan is commonly ordered after falls
- ❑ Evidence based guidelines to support its use are nonexistent.
- ❑ Clinicians are triggered to order imaging of the head by:
 - Staff witnessing the patient’s fall
 - Noticing the patient hitting the head
 - Unwitnessed falls
 - Observation of new external injuries to the head or face
- ❑ Ordering imaging does not seem to influence a high likelihood of a positive CT scan.
- ❑ Further studies on the use of head CT scans after falls are warranted to assess the appropriateness of the use of this expensive imaging modality.

LIMITATIONS

- ❑ Retrospective nature of study may have allowed selection bias and confounding factors to occur
- ❑ Small sample size

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