

CATCHING QUALITY BEFORE IT FALLS: PREVENTING FALLS AND INJURIES IN THE ADULT EMERGENCY DEPARTMENT



Authors: Ashley Stoeckle, MSN, RN, AGCNS-BC, Jackeline I. Iseler, DNP, RN, ACNS-BC, Renee Havey, MS, RN, CCRN, ACNS-BC, CEN, and Cassandra Aebersold, BSN, RN, CCRN, CEN, Royal Oak, MI, Ann Arbor, MI, and East Lansing, MI

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Contribution to Emergency Nursing Practice

- The current state of scientific knowledge on falls and injuries in the emergency department is limited. Despite the high risk for falls in the emergency department, majority of the available literature pertains to the inpatient hospital environment.
- The main findings of this paper are that implementation of multi-factorial fall prevention strategies may increase awareness of high-fall-risk patients and enhance communication between the patient/family and ancillary disciplines throughout the emergency department. Continuous evaluation and leadership support are essential to sustain changes and promote a culture of safety.
- Key implications for emergency nursing practice from this project are that emergency nurses are front line for assessing fall risk and proactively implementing appropriate fall precautions in a vulnerable environment.

Abstract

Problem: Although hospital falls and injuries are a significant patient safety concern, research is limited regarding falls and injuries in the emergency department. The purpose of this quality improvement project is to identify and implement evidence-

based interventions to prevent patient falls and injuries in the emergency department.

Methods: Literature was reviewed to identify best practices for fall prevention in the emergency department. Data sources included Journal Storage, PubMed, Cumulative Index for Nursing and Allied Health Literature, and Cochrane Database of Systematic Reviews. A retrospective chart review and root cause analysis was completed on fall-related risk reports over a 19-month period at a specific emergency department. Multifactorial fall prevention interventions were implemented in March 2017, which included nursing educational sessions, patient education handout, and high-fall-risk patient identification signs.

Results: Post-implementation, zero falls were sustained in April 2017. The average number of falls between April and December 2017 was 5.2 falls/month. Completion of the fall-risk assessment tool ranged between 47 to 90 percent. The patient education handout was provided up to 40 percent of the time. The use of fall risk signs outside patient rooms occurred up to 43 percent of the time.

Discussion: The emergency department is a unique environment with complex patient populations. Multifactorial interventions should be used to identify and prevent patient falls and injuries. Multiple change strategies and leadership support are essential to sustain changes. Future research should be conducted regarding the use of fall risk assessments and fall prevention strategies specific to the emergency department.

Key words: Fall; Injury; ED; Adult; Fall prevention; Fall risk

Ashley Stoeckle is Clinical Nurse Specialist at Beaumont Health, Royal Oak, MI. Jackeline I. Iseler is Director of Clinical Nurse Specialist Program at Michigan State University, College of Nursing, East Lansing, MI.

Renee Havey is Clinical Nurse Specialist at Michigan Medicine, Ann Arbor, MI. Cassandra Aebersold is Registered Nurse at Michigan Medicine, Ann Arbor, MI.

For correspondence, write: Ashley Stoeckle, MSN, RN, AGCNS-BC, 3601 W. 13 Mile Road, Royal Oak, MI; E-mail: ashley.stoeckle@beaumont.org.

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Introduction

Unintentional falls resulting in injury account for approximately 2.8 million ED visits per year in the United States and significantly increase the rates of morbidity and mortality among the adult-gerontology population.¹⁻³ This is estimated to cost the health care system \$31.3 billion annually,

with 21% of that cost directly related to the emergency department.⁴ A previous fall is the number-one predictor for a future fall;² thus, falls in the emergency department may occur, especially if it's the chief complaint. At present, falls are not an ED quality indicator⁵ and only include adult critical care, adult step-down, medical/surgical, rehabilitation, pediatric, neonatal, and psychiatric units.⁶ In addition, there is a lack of evidence to determine the number of falls that occur in emergency departments throughout the US. However, 1.3 to 8.9 falls per 1,000 patient days occur in inpatient hospital units and result in approximately 40% of inpatient hospital risk reports.^{3,7}

Falls are caused by both intrinsic and extrinsic factors.³ Intrinsic or physiological factors include—but are not limited to—advanced age, gender, gait disturbances, sensory impairment, medications, previous, urinary incontinence, and medical conditions.^{3,8-11} Extrinsic or environmental factors—including lighting, footwear, sensory aids, mobility equipment, medical devices and equipment, and overall layout of hospital environments^{3,12}—are only some of the factors that increase the risk of falls.

The risk of falls rises even more in emergency departments because of the high-acuity, fast-paced, and crowded environment.¹³ The busy ED environment increases the risk of falls because of intensified extrinsic risk factors such as long distances between patient rooms and restrooms, crowded hallways, lack of space, increased use of large and emergent medical equipment, and a wide variety of patient populations and acuity levels.¹² Despite the high risk for falls in emergency departments, a majority of research pertains to inpatient hospital falls.^{13,14}

Local Problem

In 2017, at an 87-bed, level-1 trauma emergency department in a large Midwestern hospital, the prevalence of falls was high—averaging about 4.68 falls per month within the last 19 months—according to the hospital's data warehouse. A total of 84 falls were sustained during that period, and 21 charts were randomly selected for a retrospective chart review. Each chart review analyzed intrinsic and extrinsic factors associated with each fall and are described in Tables 1 and 2, respectively. Common intrinsic factors included complaints of pain, multiple comorbidities, a history of falls, and older white women. Interestingly, a large percentage of patients were also positive for alcohol and/or other illicit drugs upon admission. Common extrinsic factors include a high patient acuity level (level 2) upon admission and presence of multiple medical devices. A high number of patients either fell in the bathroom, hit their heads upon falling, or

TABLE 1
Intrinsic factors of ED falls

Characteristic	Number of patients (n = 21)
Pain present upon admission	13
Psychological history	8
Presence of cardiac, neurological, and/or musculoskeletal comorbidities (more than 2)	11
History of falls	10
Gender	
• Male	7
• Female	14
Race	
• White	18
• Black	2
• Other	1
English as primary language	21
Age > 60 years old	8
Chief complaint of fall	6
+ ethanol and/or illicit drugs	8
Narcotic and/or sedative medication administered	7
Mobility at baseline	
• Independent	20
• Dependent	1

had unwitnessed falls. There were no fatal injuries observed; however, a large number of patients experienced minor injuries after the fall. A root cause analysis using a fishbone diagram (Figure 1) identified potential causes of the high rate of falls and injuries in the emergency department.

Methods

DESIGN

Multifactorial fall-prevention interventions over a single intervention were supported in the literature such as patient education, environmental modifications, and purposeful hourly rounding.^{1,8,13,14,17,18-21} The literature also supported visual communication tools as an effective intervention in preventing falls, such as signage, socks, and wristbands.^{1,5} Considering the review of the literature and root-cause analysis, it was proposed that multifactorial interventions would be implemented to reduce falls and injuries

TABLE 2
Extrinsic factors of ED falls

Characteristic	Number of patients (n = 21)
Assigned Acuity Level	
• Level 1 (highest priority)	0
• Level 2	13
• Level 3	6
• Level 4	2
Time of Fall	
• 0700 to 1100	2
• 1100 to 1500	1
• 1500 to 1900	5
• 1900 to 2300	4
• 2300 to 0300	6
• 0300 to 0700	3
Hourly nurse safety checks complete	8
Fall risk assessment complete	
• Yes	4
• No	17
Line(s) present (i.e., IV, urinary catheter, chest tube, NG tube)	18
Fall was witnessed	
• Yes	6
• No	15
Physician notified after fall and assessed patient	
• Yes	20
• No	1
Location of Fall	
• ED patient room	6
• ED triage	2
• ED hallway	3
• ED patient bathroom	9
• Other	1
+ LOC after fall	7
Hit head upon falling	8
Fall resulted in injury	6
Fall resulted in fatality	0

IV, intravenous; NG, nasogastric; LOC, level of consciousness.

in the emergency department. The purpose of this quality improvement project is to promote a culture of safety by identifying and implementing evidence-based interventions to prevent patient falls and fall-related injuries in the emergency department. The Standards for Quality Improvement

Reporting Excellence (SQUIRE 2.0) guidelines on reporting quality, value, and safety in health care were used to prepare this paper.¹⁵

This project took place in the level-1 trauma emergency department at a large Midwestern hospital in 2017. The project included education to nursing staff and ancillary team members of the multifactorial interventions that would be implemented. The hospital's Institutional Review Board deemed the project a quality improvement initiative and not a research initiative.

Lippitt's change theory was used to guide the change process. There are 7 phases of Lippitt's change theory: problem diagnosis, assess motivation to change, assess the change agent(s) motivation and resources to change, determine the change, determine role(s) of the change agent(s), maintain the change, and termination.¹⁶ The details of each phase are outlined in Table 3. This theory was chosen because it focuses heavily on the change agents,¹⁵ which was essential to motivate, communicate, and ultimately adopt this change across many disciplines in the emergency department.

INTERVENTIONS

Three multifactorial interventions were implemented in the emergency department on March 27, 2017. The first intervention included re-education to nursing staff about the institution's fall-risk assessment tool, universal fall precautions, and high-risk patient populations. The institution's fall-risk tool guides nurses to assess patients' cognition, elimination, balance/gait, sensory deficits, and history of falls within the past 6 months. Universal fall precautions at this institution are to be followed by all hospital staff for every patient and includes toilet assistance, pain assessment, repositioning, stretchers low and locked, personal items within reach, use of call light for assistance, nonskid socks, environmental modifications, use of gait belts, and patient education on preventing falls. Education was delivered in a 10-minute in-service for 2 weeks before implementation, and e-mailed to staff. A poster highlighting high-fall-risk patient populations was also displayed in the ED break room for 2 months.

The second intervention was implementation of a yellow stop sign for patients at high risk for falls. If a patient is identified as a high risk for falls, using the institution's fall-risk assessment scale, the nurse placed a yellow stop sign outside the patient's room and documented this in the patient's electronic health record (EHR). Stop signs were easily accessible at each ED secretary's desk, and the ED secretaries maintained stock.

The third intervention was patient/family education. If a patient was identified as a high risk for falls, the nurse

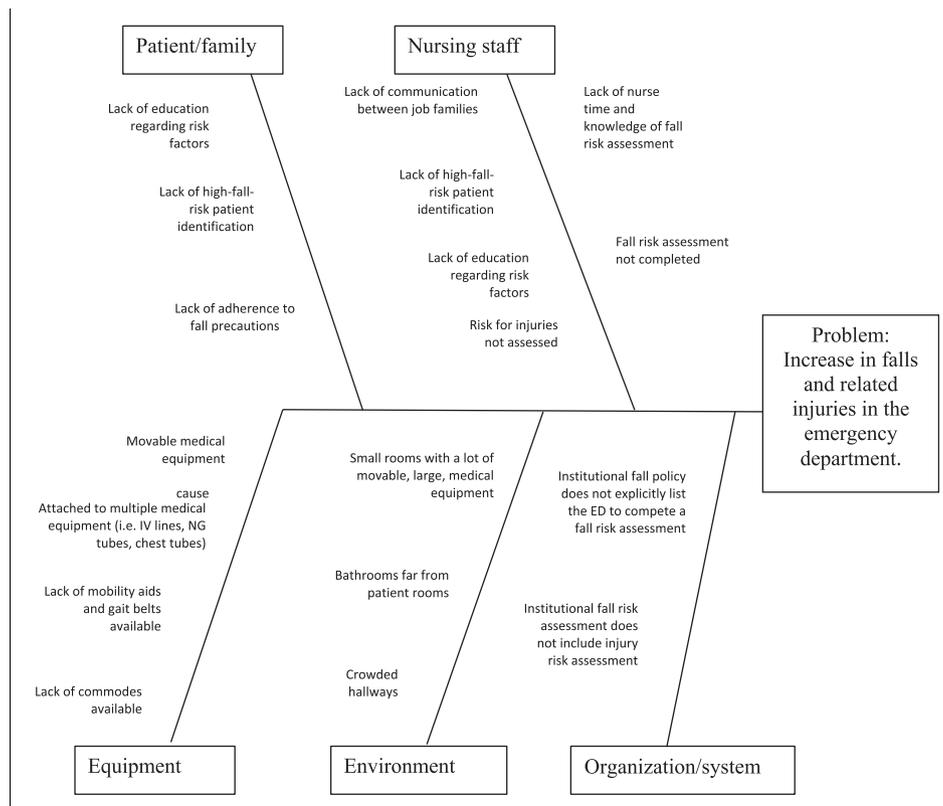


FIGURE 1
Root Cause Analysis Fishbone Diagram.

provided and reviewed a fall-risk handout with the patient/family and documented this in the patient’s EHR. The patient education handout is 1 page, written at the 8th-grade reading level, and was also made available to print in non-English. Handouts were easily accessible at each ED secretary’s desk, and the ED secretaries maintained stock. This was also available through the hospital’s website for printing.

In addition to the ED leadership team supporting this change project, a staff nurse was designated to be the fall champion for the emergency department. The fall champion served as a key agent for this project by continually addressing facilitators and barriers to change. The fall champion also provided staff support, served as a resource for questions/concerns, and completed fall audits.

ADHERENCE TO MULTIFACTORIAL INTERVENTIONS

The leadership team and fall champions conducted weekly rounds to measure staff adherence for the first 2 weeks post-implementation, then on a monthly basis. Rounding included patient interviews, visualization of the yellow

stop sign, and chart audits. Feedback was provided to staff in real time during rounds.

MEASURE AND ANALYSIS

Patient demographics, intrinsic fall factors, and extrinsic fall factors were obtained from the patient’s EHR. Chart audits were reviewed to analyze staff adherence to interventions. The ED fall rates, with and without injuries, were measured on a monthly basis. These data were obtained via online risk reports submitted by staff when a fall occurs. Implementation was deemed successful if a 15% decrease in falls and injuries was observed within 6 months.

Results

STAFF ADHERENCE

Adherence rates to the interventions occurred up to 43%; however, there was a high rate of adherence to universal fall precautions, ranging from 80% to 100%. A 7-question

TABLE 3

Implementation of Lippitt's change theory

Phase of Lippitt's change theory	Implementation into practice
1. Problem diagnosis	<ul style="list-style-type: none"> • Review of safety reports indicated high amount of falls sustained in the emergency department. This problem was further analyzed via retrospective chart reviews and root-cause analysis. • Key stakeholders and roles/responsibilities were determined. Education was provided to all key stakeholders via e-mail, department meetings, and safety huddles.
2. Assess motivation to change	<ul style="list-style-type: none"> • Continue to provide staff education via e-mail, department meetings, safety huddles, and 10- minute rounding unit in-services. • Solicit staff feedback and address potential facilitators and barriers to change
3. Assess change agent(s) motivation and resources to change	<ul style="list-style-type: none"> • Designated fall champions to support the change • Continue to provide staff education, solicit feedback, and address potential facilitators and barriers to change.
4. Determine the change	<ul style="list-style-type: none"> • Interventions were determined by evidence and the specific needs of the ED environment. • Multiple change strategies were determined such as education for the adult-learner, leadership accountability, and availability/accessibility of a change agent.
5. Determine the roles of the change agent(s)	<ul style="list-style-type: none"> • Change agent(s) were a resource for staff that provided staff education, support, and feedback. The change agent(s) also completed audits postimplementation and provided real time staff feedback.
6. Maintain the change	<ul style="list-style-type: none"> • Communicate and motivate staff via discussion of weekly fall reports, display results for staff to view, and acknowledge staff performance. • Continue audits and provide real-time feedback.
7. Termination	<ul style="list-style-type: none"> • Postintervention staff survey • Continue to discuss weekly fall reports and display fall results for staff to view. • Provide education on an as needed basis and promote staff feedback.

Likert survey was created and distributed via e-mail to staff 3 months postimplementation. The survey was distributed electronically to approximately 250 RNs with 70 respondents (response rate of 28%). The survey revealed that majority of staff agreed that the fall precautions sign and fall-education handout were applicable to emergency nursing practice and patients cared for in the emergency department. The time required to initiate the fall sign and provide education did not interfere with the overall patient care. Approximately 50% of respondents thought the sign and education were easy to locate and use. Only 39% thought the sign and education improved communication and partnership to reduce patient falls.

FALL RATES

Between April and December 2017, a fall rate of 5.2 falls per month was observed, as depicted in [Figure 2](#). Zero falls occurred in April 2017, the lowest number of falls observed postimplementation. Nine falls occurred in

August 2017, the highest number of falls observed postimplementation.

Discussion

The emergency department is a crowded, unpredictable, fast-paced environment with a constant movement of patients throughout the department. A retrospective chart review was completed at this emergency department, which indicated that a high volume of movement occurs in the patient room to and from procedural areas and to and from the bathroom. Implementing a yellow stop sign on all patients at high risk for falls will aid in quicker identification of these patients, indicating to all health care personnel that the patient requires extra assistance to prevent a fall and related injuries. This intervention cannot occur alone; it must occur in conjunction with individualized patient education. This will aid in increased patient awareness and, it is hoped, instill motivation to ask for additional assistance even if the patient

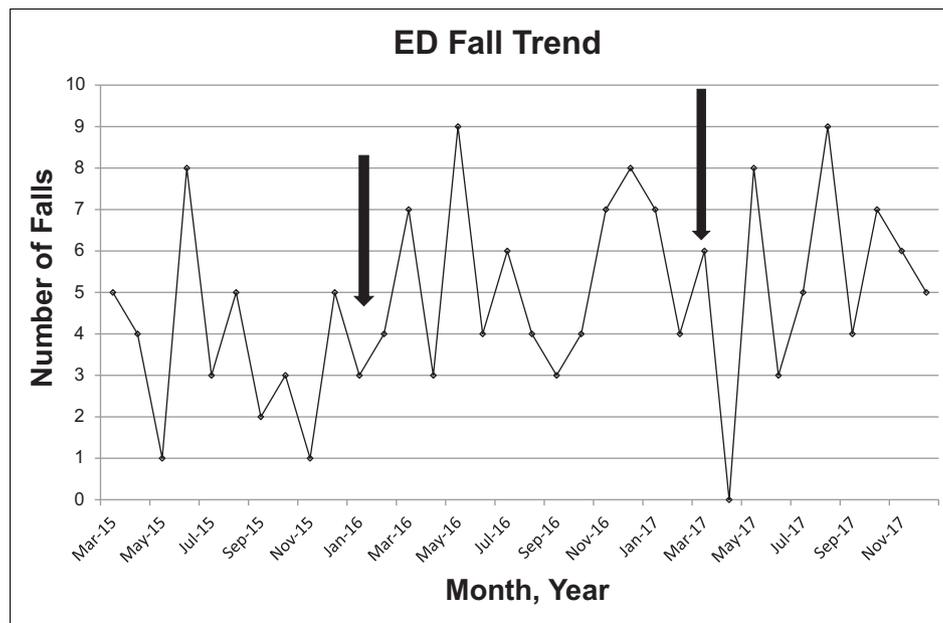


FIGURE 2
ED Fall Rate Pre and Post Implementation.

ambulated independently at baseline. These interventions are relevant to patient safety in terms of preventing injury and associated costs, as well as nursing practice, as falls are considered preventable and reflect the quality of nursing care.

Potential barriers to implementation of this quality improvement project may include lack of supplies, storage space, funding, and sign fatigue. Resistance to change from ED staff and/or the organization as a whole may also be a barrier. Finally, lack of support from the leadership team and fall champions may limit implementation efforts. To address these barriers proactively, fall champions and the leadership team must play active roles throughout implementation. The use of Lippitt's change theory helped address some of the potential barriers by providing a strong support system and clearly defining the roles and responsibilities of key stakeholders throughout the large emergency department.

Despite multifactorial interventions and compliance with universal fall precautions, the fall rate remained high postimplementation. Additional areas identified in the root cause analysis should be addressed to have a stronger impact on prevention of falls. For example, although patients were identified as high risk for falls with a yellow stop sign, this sign did not travel with patients throughout the emergency department. Therefore, considering a mobile identification system (such as a fall-risk wristband, gown, and socks) may further increase communication and aware-

ness of patients at high risk for falls.¹ Increasing the accessibility of mobility aids (i.e., gait belts) and equipment (i.e., bedside commodes) are also valid options.

Future research is needed for the prevention of falls and injuries in the emergency department. In this quality improvement project, the current fall-risk assessment tool was used; however, it may not be representative of the specific ED population. Perhaps creation of a new fall-risk assessment tool should be considered to be more reflective of the ED patient population and also identify those at high risk for injury from falls. Although nurses were educated about patients at high risk for fall related injuries, the assessment and documentation did not indicate this. ED-specific fall-risk assessment tools should be revised to capture the populations that are also at high risk for injuries (i.e., coagulation disorders, recent surgeries, history of fractures, and osteoporosis). Patient identification and education was relevant for any patient who scored positive on the fall-risk assessment tool; however, perhaps future interventions could be specific to the highest scored category (e.g., gait belt use for gait/balance disturbance).

Summary

Multifactorial fall-prevention interventions were implemented on a large scale, at low cost, and promoted an "all hands on deck" approach in the emergency department.

Despite efforts to decrease falls and injuries in the emergency department, the rate of falls remained high, with 5.2 falls per month between April and December 2017. Although staff adherence to fall-prevention interventions was low, universal fall precautions were consistently practiced. In this quality improvement project, the most significant decrease in falls and injuries sustained in the emergency department occurred during the initial implementation period. Ongoing support and engagement from the leadership team in the emergency department is essential to sustain changes and continually promote a culture of safety.

Limitations

Generalizability of these interventions may be limited to large Midwestern emergency departments in the US that use EHRs and similar fall-risk assessment tools. The current fall-risk assessment tool itself posed a limitation to this study, as it is not ED-specific but used on all inpatient units. Another limitation of the current fall-risk assessment is that it is not inclusive of patients at high risk for fall-related injuries. Although chart reviews were conducted, a larger amount of chart reviews could have provided additional information regarding intrinsic and extrinsic fall-risk factors.

Implications for Emergency Nursing

The emergency department is a unique environment in which many internal and external factors may affect the rate of falls.¹² Multifactorial evidence-based interventions should be considered to ensure a culture of safety across the multidisciplinary teams encountered in the emergency department. Implementation of high-fall-risk signs may increase awareness and communication between ancillary disciplines in the emergency department. Both the patient-education handout and fall-risk sign may help establish a partnership between the patient/family and ancillary disciplines to prevent falls and injuries.

Conclusions

The incidence of falls and related injuries and appropriate nursing interventions are lacking in the emergency department.^{13,22} The combination of the crowded, fast-paced, high-acuity emergency department with the specific ED pa-

tient population increases the risk for falls and injuries to occur.¹³ These risk factors make emergency nurses the front line for assessing risk of falls and implementing appropriate interventions and precautions early on.

Multifactorial fall-prevention interventions are more successful than implementing a single intervention and should be a combination of a fall-risk assessment and associated prevention method.^{8,13,14,17-22} The use of communication and identification methods to prevent falls and injuries is also supported.¹ Because of the high frequency of patient movement and number of health care providers seen in this emergency department, effective communication of patients at high risk for falls plays a key role in prevention of falls and injuries. Implementation of a fall-precautions sign and patient education may enhance communication and identification of patients at high risk for falls in the emergency department as well as establish a partnership among ED personnel, the patient and family, and ancillary disciplines to prevent falls in the emergency department. Implementation of these multifactorial interventions will aid in future research and benchmarking that is needed to maintain patient safety in the ED environment.

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