ORIGINAL RESEARCH

Exploring attitudinal barriers to participation in inpatient fall risk assessment using the Theoretical Domains Framework: A survey of providers

Emily L. Carter[1] 🔘 | Sarah A. M. Hallen[1] | Gavin W. Welch[2] | Erin N. Gordon[3] | Mark G. Parker[2,4]

[1]Division of Geriatric Medicine, Maine Medical Center, Portland, Maine, USA

[2]Department of Quality and Patient Safety, MaineHealth, Portland, Maine, USA

[3]Department of Family Medicine, Maine Medical Center, Portland, Maine, USA

[4]Division of Nephrology and Transplantation, Maine Medical Center, Portland, Maine, USA

Correspondence
Emily L. Carter, Division of Geriatric Medicine, Maine Medical Center, 66 Bramhall St., Portland, ME 04102, USA.
Email: Emily.Carter1@mainehealth.org

Abstract

Background and Aims: Lack of provider (physicians and advanced practice providers) participation in fall risk assessment was theorized to be contributing to rising rates of falls with injury at our institution. This project sought to identify if attitudinal barriers to inpatient provider participation in fall risk assessment were similar to those identified in other clinical settings.

Methods: Barriers to provider participation in fall risk assessment were identified in the literature. These were mapped to the Theoretical Domains Framework (TDF) domains to assist with interpretation of the data. A 10-item survey using a 5-point Likert scale (strongly agree to strongly disagree) with two open-ended questions was developed using these barriers. The survey was distributed via email to all providers on the Medical Staff in July 2021.

Results: The response rate was 9.1% (188/2062). 72.6% (95% confidence interval [CI]: 65.6, 78.5) of providers at our institution did agree that fall risk assessment was within their role and 72% (95% CI: 66.1, 78.5) agreed that assessment can prevent falls. Nearly half felt that they lacked formal training in fall risk assessment (48.1% [95% CI: 41.1, 55.1]) and 52.2% (95% CI: 44.6, 58.6) agreed that other aspects of patient care took priority over falls assessment. These barriers correlated best with the TDF domains of Beliefs about Capabilities and Beliefs about Consequences.

Conclusions: Survey results indicate that interventions focused on increasing provider motivation and capability regarding fall risk assessment and helping providers prioritize fall risk assessment are potential targets for future quality improvement projects.

K E Y W O R D S
barriers, falls, inpatient, Theoretical Domains Framework

1 | INTRODUCTION

The Centers for Medicare and Medicaid Services (CMS) define "never events" as serious, preventable, and costly medical errors that occur while patients are hospitalized. Falls with injury are considered never events and have been shown to have significant negative impacts on both patients and hospital systems. At our institution, Maine Medical Center (MMC), a 637-bed tertiary care academic medical center, the rate of falls with injury slowly increased from 0.48 per 1000 patient days in 2018 to 0.73 per 1000 patient days in 2021. To attempt to slow this increase, MMC's Interprofessional Falls Committee (MMC-IFC) conducted a root cause analysis (RCA) to determine why this was happening. An RCA is a common process for identifying the underlying causes of a safety event to specify interventions to prevent future events.[1] The MMC-IFC convened a panel of bedside nursing, administrators, quality improvement specialists, physical/occupational therapists, and providers to perform an RCA with the goal of understanding our institution's increasing rate of falls with injury. This RCA found that while nursing and physical/occupational therapy had the lead roles in fall risk assessment, providers (physicians and advanced practice providers [APPs]) did not appear to have a similar level of engagement.

Our institution felt that it was important to engage providers in inpatient fall risk reduction efforts given their primary role on the care team. Providers can contribute to successful fall reduction strategies by identifying patient-specific clinical factors, educating patients about their unique risk factors, and engaging patients in their own safety.[2,3] To inform future efforts, MMC-IFC decided to explore whether attitudinal barriers to provider participation in fall risk assessment existed.

A literature search identified few studies looking at attitudinal barriers specifically applicable to inpatient provider engagement in fall risk assessment and falls prevention.[4,5] However, multiple studies exploring attitudinal barriers in other settings (outpatient/community, assisted living, emergency department, etc.) were identified.[6–17] Common reported barriers in these settings included: lack of time, lack of training, lack of reimbursement, perceived lack of evidence for assessment, unclear role in fall prevention, patient factors, and team factors.[4–17]

Identifying the causes of provider behavior (i.e., lack of participation in prevention efforts) can be complex. One recommendation is to use a comprehensive theoretical framework to account for the influence of multiple contextual factors (individual, organizational, and intervention-related) on behavior.[18] The Theoretical Domains Framework (TDF) is a validated framework created to synthesize and summarize the broad range of evidence-based psychological theories and constructs thought to govern behavior.[18–20] The TDF consists of 14 theoretical domains and has been applied to a wide range of clinical settings and projects (research to implementation).[18] The TDF has also been proposed as a method to provide structure to early exploratory projects by anticipating and identifying potential barriers to target behaviors.[18]

Key points

- The Theoretical Domains Framework can be used in survey development and translation of qualitative data into quality improvement initiatives that are then based on evidence-based behavioral change theory.
- The barriers perceived to have the most impact on provider engagement in fall risk assessment in the inpatient setting included the need to prioritize other aspects of patient care and the lack of training in fall risk assessment.
- These barriers speak to lack of motivation, which may be positively impacted by interventions that balance capability and opportunity, such as an easy tool in the electronic health record.

The purpose of this project was to determine if inpatient providers had similar attitudinal barriers to fall risk assessment as those identified in other clinical settings and to map identified barriers to TDF domains to inform future quality improvement projects.

2 | METHODS

After the MMC-IFC determined that barriers to inpatient provider engagement should be explored, a study team formed. Two team members who were Geriatric Medicine physicians (E.L.C, S.A.M.H.) and experienced in fall risk assessment performed the initial literature review for physician barriers and organized identified attitudinal barriers into themes. These themes were then mapped to seven of the 14 TDF domains: Knowledge, Social/Professional Role and Identity, Beliefs about Capabilities, Optimism, Beliefs about Consequences, Reinforcement, and Environmental Context and Resources. The barrier themes and TDF mapping were presented to the remainder of the study team, whose expertise included quality improvement and data analysis, for approval of the constructs and confirmation of alignment with the TDF domains (Table 1).

The team then used these constructs to develop a 10-item survey using a 5-point Likert scale (strongly agree to strongly disagree) with two open-ended questions. A convenience sample from the 27 providers within the MMC Division of Geriatric Medicine reviewed the survey for clarity and relevance. Feedback supplied by the reviewers indicated that the items were interpreted in a way that was consistent with the intent of the questions and no significant changes were made. The final survey also included demographic information (see Appendix A).

The survey was distributed from July 14 to July 28, 2021 to all providers (physicians, including residents, and APP's) on the Medical Staff and included all specialties within our institution. The sampling frame of eligible respondents was created from email lists of

TABLE 1 Attitudinal barriers identified to provider fall risk assessment by TDF domain.[4–17]

TDF domain	Previously identified barriers	Scale items
Knowledge	Lacking knowledge of guidelines Fall prevention guidelines are not unifying and based on weak evidence (expert opinion)	There are no evidence-based guidelines for inpatient fall prevention
Social/professional role and identity	Not part of a person's workflow Not a physician/APP role Not recognizing the need for collaboration or inconsistent collaboration	My role does not include assessing patient fall risk
Beliefs about capabilities	No formal training in falls assessment	I do not have the formal training to assess patient fall risk
Optimism	Lack of efficacy in specialized populations (dementia) Nihilism	Assessing patients for fall risk does little to prevent falls in my patient population The characteristics of my patients prevent implementation of effective fall prevention strategies
Beliefs about consequences	Prioritization compared to other comorbidities Desensitization of consequences of falls Resistance to using checklists and "cookie cutter medicine" Lack of understanding of consequences (morbidity)	Other aspects of my patient's care take priority over assessing fall risk Falls prevention checklists do not meet the individualized needs of my patients When falls occur, they rarely have a negative impact on my patients
Reinforcement	No mechanism to bill for preventive assessment	There is limited reimbursement for assessing patient fall risk
Environmental context and resources	Absence or limited resources for teams	I do not have the resources available to assess my patients for falls

Abbreviations: APP, advanced practice provider; TDF, Theoretical Domains Framework.

providers shared by administrative units within the hospital and two email reminders were sent (one within the first week, and a second for those who had not responded nearing the 2-week survey closure) to nonrespondents. Respondent attributes collected included: service line or department, position (resident/fellow, physician, nurse practitioner, physician assistant), years of practice, and proportion of time spent on inpatient practice. Responses were collected via web browser using the REDCap survey and data management platform.[21]

Survey participants were also asked to fill out open-ended comment fields if they either strongly agreed or disagreed with a statement in the survey or if there were other things that affected their practice in regard to the assessment of fall risk that were not reflected in the survey. This content (146 comments total) was extracted and organized into themes by one of the researchers (S. A. M. H.) and presented to the study group as a whole for discussion and affirmation. Team members were given opportunity for independent review and met as a group to discuss. No significant alterations to categorization resulted.

The precision of the proportion of answers in each response category for survey questions was quantified using bootstrap confidence intervals created by taking the 2.5 and 97.5 percentile values of the estimand generated from 1000 samples with replacement.[22] Bootstrap resampling methods were chosen over parametric methods to accommodate concerns about sample size, distributional assumptions, and nonrandom response rate.[23] Confidence interval width was used as a tool for evaluating precision, not for formal statistical estimation or hypothesis testing. All data analyses were carried out using R version 3.5.3.[24] To prevent sparse strata after stratification, Likert scale question responses were aggregated into three groups: neutral and combined (dis)agree and strongly (dis)agree categories. For the purpose of analysis, a streamlined demographic categorization was performed. Our initial survey demographics questions allowed for identification into 14 different service lines and departments, six different categories for years of practice, and five options for practice time spent inpatient. These data were ultimately condensed into three service line categories (Adult Medicine, Surgical Services, Other), five categories for years of practice (<1 year, 1–5 years, 6–10 years, 11–20 years, 21+ years), and two options for time spent inpatient (<50% and 50+ %). Under each attribute, there was also one additional category for "missing" data.

Institutional review board (IRB) exemption was granted by the MMC IRB before study implementation.

3 | RESULTS

3.1 | Survey results

The survey response rate was 9.1%: 2062 invitations were emailed to eligible participants and 188 responses were received. One survey was excluded from analysis because the respondent was nonclinical. Self-reported characteristics of the respondents are shown in Table 2.

TABLE 2 Respondent characteristics.

Category	Response	n	(%)
Total respondents		187	(100.0)
Service line	Adult Medicine	58	(31.0)
	Surgical Services	25	(13.4)
	Other	104	(55.6)
Role	Attending Physician	112	(59.9)
	Resident/Fellow Physician	39	(20.9)
	Physician Assistant	18	(9.6)
	Nurse Practitioner	17	(9.1)
	Missing	1	(0.5)
Time spent inpatient	<50%	88	(47.1)
	50%+	98	(52.4)
	Missing	1	(0.5)
Years of practice	Less than 1 year	14	(7.5)
	1–5 years	43	(23.0)
	6–10 years	32	(17.1)
	11–20 years	53	(28.3)
	21+ years	44	(23.5)
	Missing	1	(0.5)

When the data were analyzed in aggregate (Table 3), the barriers that appeared to have the most influence on respondents were perceived lack of training and competing priorities. 48.1% (95% CI: 41.1, 55.1) agreed with the statement "I do not have the formal training to assess fall risk" and 52.2% (95% CI: 44.6, 58.6) agreed with the statement "other aspects of my patient's care take priority over assessing fall risk." Responses to the questions "falls prevention checklists do not meet the individual needs of my patients" and "there is limited reimbursement for assessing patient fall risk" were primarily neutral (47.3% (95% CI: 39.7, 54.3) and 67.6% (95% CI: 60.5, 74.1), respectively.

Several reported barriers to participation in other settings were not identified as such by respondents. Only 2.2% (95% CI: 0.5, 4.4) agreed with the statement "there are no evidence-based guidelines for inpatient fall prevention" and 4.9% of respondents (95% CI: 2.2, 8.1) agreed with the statement "when falls occur they rarely have a negative impact on my patients." 16.1% (95% CI: 19.8, 22.0) agreed with the statement "my role does not include assessing patient fall risk." In addition, 12.4% (95% CI: 7.5, 17.2) agreed with the statement "assessing my patients for fall risk does little to prevent falls in my patient population."

Observed differences were minimal when data were stratified by service line, years of practice, percent inpatient time, or clinical role (data not shown). While we did not formally test for differences between respondent groups due to overall low response rate leading to limitations on stratification, notable exceptions included: practitioners with <1 year

of experience versus those with more experience (64.3% [95% CI: 42.9%, 85.7%] vs. 46.5% [95% CI: 38.2%, 53.5%]) and providers in surgical services versus those in other services (60.0% [95% CI: 40.0%, 80.0%] vs. 46.2% [95% CI: 38.1%, 53.8%]) were more likely to agree that "I do not have the formal training to assess patient fall risk." Nurse practitioners were more likely than other provider types to disagree with the statement "There are no evidence-based guidelines for inpatient fall prevention." (93.8% [95% CI: 81.2%, 100.0%] vs. 65.7% [95% CI: 58.4%, 72.9%]).

3.2 | Qualitative results

Sample free text comments are supplied in Table 4. Respondents had been asked to comment if they strongly agreed or disagreed with a statement or had other comments to add. In general, comment content appeared congruent with the quantitative data (i.e., questions with high agreement had strongly supportive comments). The one notable exception was that there were multiple contradictory statements regarding provider role in fall risk assessment despite support for this in the quantitative data. For questions with more mixed/neutral responses on the quantitative data, the comments supporting the existence of the perceived barrier were more frequent than those indicating the absence of a barrier.

4 | DISCUSSION

Several attitudinal barriers to fall risk assessment/prevention identified in other clinical settings were not perceived to be barriers to this sample of inpatient providers. Namely, inpatient providers appeared to recognize the impact of falls, the benefit of assessing patient fall risk, and the existence of evidence-based guidelines. Inpatient providers also agreed that fall risk assessment was within their role, although comments supplied by participants indicate this may not be a universal opinion. The barriers perceived to impact their practice the most included the need to prioritize other aspects of patient care and the lack of training in fall risk assessment. The fact that falls assessment checklists may not meet the needs of their patients and the potential lack of reimbursement for falls assessments did not appear to have an effect on their participation either way.

The attitudinal barriers identified in this study map to known TDF domains, namely Beliefs about Capabilities (i.e., I don't think I have the training) and Beliefs about Consequences (i.e., falls cannot be prioritized). Other potential interventions could be considered in the domains of Reinforcement (i.e., there is little cost savings or reimbursement) and Environmental Context and Resources (i.e., the resources do not exist) as neutrality in these responses may indicate room for education. Clarifying attitudinal barriers is an early step in the process of behavior change, however, subsequent work will need to be done to develop impactful interventions.

Prior studies have explored the application of the TDF domains to behavior intervention frameworks, such as the Behavior Change

TABLE 3 Responses to scale items as mapped to TDF domain.[a]

TDF domain	Scale items	Total N	Agree % (95% CI)	Neutral % (95% CI)	Disagree % (95% CI)
Knowledge	There are no evidence-based guidelines for inpatient fall prevention	183	2.2 (0.5, 4.4)	29.5 (23.0, 36.1)	68.3 (61.2, 74.9)
Social/professional role and identity	My role does not include assessing patient fall risk	186	16.1 (10.8, 22.0)	11.3 (7.5, 16.1)	72.6 (65.6, 78.5)
Beliefs about capabilities	I do not have the formal training to assess patient fall risk	185	48.1 (41.1, 55.1)	14.6 (9.7, 20.0)	37.3 (30.3, 44.3)
Optimism	Assessing patients for fall risk does little to prevent falls in my patient population	186	12.4 (7.5, 17.2)	15.6 (10.2, 21.0)	72.0 (66.1, 78.5)
	The characteristics of my patients prevent implementation of effective fall prevention strategies	184	15.8 (10.9, 21.2)	27.7 (21.2, 34.2)	56.5 (49.5, 63.0)
Beliefs about consequences	Other aspects of my patient's care take priority over assessing fall risk	186	52.2 (44.6, 58.6)	19.9 (14.5, 25.8)	28.0 (22.0, 34.9)
	Falls prevention checklists do not meet the individualized needs of my patients	184	14.7 (10.3, 20.1)	47.3 (39.7, 54.3)	38.0 (31.0, 45.1)
	When falls occur they rarely have a negative impact on my patients	185	4.9 (2.2, 8.1)	9.2 (5.4, 13.0)	85.9 (81.6, 90.8)
Reinforcement	There is limited reimbursement for assessing patient fall risk	185	18.4 (13.0, 23.8)	67.6 (60.5, 74.1)	14.1 (9.2, 19.5)
Environmental context and resources	I do not have the resources available to assess my patients for falls	185	25.9 (20.0, 32.4)	25.9 (19.5, 32.4)	48.1 (41.1, 55.1)

Abbreviations: CI, confidence interval; TDF, Theoretical Domains Framework.

[a]Denominators for percentages do not include missing values.

Wheel (BCW), which is a "behavior system" designed to link the factors driving behavior to behavior change techniques.[25] The hub of the comprehensive BCW is the COM-B (Capability, Opportunity, and Motivation to Behavior).[19,25,26] Mapping the TDF domains to the COM-B helps to identify domains that are most likely to lead to behavior change.[25] In the COM-B model, Capability and Opportunity are felt to impact Motivation, which then leads to Behavior Change in an ongoing positive or negative feedback loop.[26] Per Cane et al., Beliefs about Capabilities and Beliefs about Consequences both fall under "Motivation," the M of the COM-B model.[19]

To put this in the context of our findings, we have an opportunity to improve the motivation of our providers to engage in fall risk assessment and want to avoid interventions that may decrease that motivation. Qualitative feedback from our providers indicates that additional time spent on e-learns or trainings, while they may objectively increase capability, may negatively impact motivation to engage (i.e., "worthless mandatory web training" and "please don't add a multipronged assessment required for all patients."). We hypothesize that increased motivation may be seen if an intervention incorporates seamlessly into the workflow of an already busy healthcare provider (opportunity) and provides guidance regarding the role of the provider (capability). Additional qualitative feedback as well as current literature[27] advocate the use of the electronic health record (EHR) for this purpose ("if there was an easy tool in [the EHR] that added less than a minute of work that

would be an idea..."). At MMC, we have a fall risk assessment tool built into the EHR that has been primarily nursing-facing to date. Next steps may include building a provider-facing compliment that highlights their unique role in the interdisciplinary approach to fall risk assessment.

This study has several limitations, first of which is our low response rate (9.1%). At the time of survey release, providers had multiple competing priorities, including pandemic management. They were also at risk of survey fatigue having received several other surveys in preceding months, including safety culture and employee engagement surveys. Regarding the survey itself, while the items were intentionally reflective of the barriers identified in previous literature, the negatively worded questions may have influenced responses. Additionally, the attitudinal barriers noted in the literature were not classified as major or minor contributors. There were also several limitations related to bias: (1) we may have introduced selection bias by including our entire medical staff and asking for voluntary participation (i.e., respondents chose to respond on biases about the importance of fall risk assessment and management); (2) 50% of the sample spent less than 50% of their time in the inpatient setting, which means that their experiences may not reflect those of full-time inpatient providers; (3) there is the potential for social desirability bias, which we attempted to limit by allowing for participants to comment. Lastly, this project was designed to be a preliminary

TABLE 4 Sample respondent comments by TDF domain and barrier perception.

TDF domain/barrier	No perceived barrier	Perceived barrier exists
Knowledge: "No evidence-based guidelines"	"There are definitely evidence based fall prevention guidelines."—Nurse Practitioner	"I believe there are evidence-based guidelines but I am not particularly familiar with them. I rely on PT/OT and geriatrics to complete these assessments."—Attending Physician
Social/professional and role identity: "Role does not include assessing patient fall risk"	"Fall risk assessment is an incredibly important activity for all providers"—Attending Physician	"Assessing for fall is not my primary responsibility. It is the responsibility of the care teams with [the] most in person engagement with the care environment—that is virtually everyone except the physician."—Attending Physician
Beliefs about capabilities: "I do not have the formal training"	"We have required training around BMAT/falls prevention so I strongly disagree with the statement that we have no formal training in it."—Resident/Fellow Physician	"I don't have any process for evaluating fall risk. Does make sense to include for the right patient (seems there should be a way to only do when clinically relevant. Please don't add a multipronged assessment required for all patients!)"—Attending Physician
Optimism: "Assessing patients for fall risk does little to prevent falls in my patient population"	"Falls are preventable."—Attending Physician	"Based on the evaluations I have seen, all my patients are fall risks. I have not seen that it really discriminates at all."—Attending Physician
"Falls prevention checklists do not meet the individualized needs of my patients"		"Do not feel that time-consuming "tools" are more effective than clinical judgment."—Attending Physician
"The characteristics of my patients prevent implementation of effective fall prevention strategies"	"I believe it's possible to work with all of my patients regardless of their characteristics to prevent falls. There is always something we can do. When falls occur they can be absolutely life changing for my patients, especially the elderly."—Resident/Fellow Physician	"We can limit falls in children in situations like seizure precautions, using cribs with rails up. but when they're learning to walk... falls happen and are expected."—Attending Physician
Beliefs about consequences: "Other aspects of my patient's care take priority"		"We are all responsible for assessing our patients for falls. I wish I had more time, but there are too many competing and pressing needs."—Attending Physician
"When falls occur, they rarely have a negative impact on my patients"	"Assessing fall risk is a critical part of treatment, especially with older patients who have a higher baseline risk. Falls can have a devastating impact for patients and may be fatal."—Attending Physician	
Reinforcement: "There is limited reimbursement"	"Even a quick assessment of someone's fall risk has significant benefits for preventing injury and harm to the patient, as well as saving costs in the hospital by preventing other tests if there is an injury."—Resident/Fellow Physician	"It would be helpful for providers to know how fall risk assessment is reimbursed by Medicare and MaineCare. Thank you."—Attending Physician
Environmental context and resources: "I do not have the resources available"	"We have adequate resources for assessing fall risk in our department and we take these assessments seriously"—Nurse Practitioner	"Continued difficulty with accurate med reconciliation contributes, lack of carry through from [EHR] at SNF to confirm accurate meds, too many patients..."—Attending Physician

Abbreviations: CI, confidence interval; EHR, electronic health record; OT, occupational therapy; PT, physical therapy; SNF, skilled nursing facilities; TDF, Theoretical Domains Framework.

exploration of barriers to provider engagement in fall risk assessment. Further qualitative studies will be required to explore and identify additional barriers as only seven of the 14 TDF domains were represented. It is therefore unknown if other domains may have a role in provider fall risk assessment behavior.

5 | CONCLUSION

This study was a preliminary exploration of attitudinal barriers to inpatient provider participation in fall risk assessment based on preexisting barriers found in other clinical sites. These barriers were then

mapped to a validated framework created to synthesize and summarize the broad range of evidence-based psychological theories and constructs thought to govern behavior. Survey results indicate that interventions focused on increasing provider motivation and capability regarding fall risk assessment and helping providers prioritize fall risk assessment are potential targets for future quality improvement projects.

AUTHOR CONTRIBUTIONS

Emily L. Carter: Conceptualization; investigation; writing—original draft; methodology; writing—review and editing; validation; visualization; project administration. **Sarah A. M. Hallen**: Conceptualization; investigation; methodology; validation; visualization; writing—review and editing; project administration; data curation. **Gavin W. Welch**: Investigation; funding acquisition; methodology; writing—review and editing; software; formal analysis; data curation. **Erin N. Gordon**: Investigation; writing—review and editing; writing—original draft. **Mark G. Parker**: Conceptualization; investigation; methodology; validation; visualization; writing—review and editing; project administration; data curation.

ACKNOWLEDGMENTS

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Individual participant data that underlie the results reported in this article, after deidentification (text, tables, figures, and appendices), and study protocol can be made available upon request beginning 9 months and ending 36 months following article publication. Requests should be directed to Emily.Carter1@mainehealth.org. To gain access, data requestors will need to sign a data access agreement.

TRANSPARENCY STATEMENT

The lead author Emily L. Carter affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ORCID

Emily L. Carter http://orcid.org/0009-0002-6061-9019

REFERENCES

1. Rooney JJ, Heuvel LNV. Root cause analysis for beginners. *Qual Prog*. 2004;37(7):45-56.
2. Chang JT, Morton SC, Rubenstein LZ, et al. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. *BMJ*. 2004;328(7441):680.
3. Keuseman R, Miller D. A hospitalist's role in preventing patient falls. *Hosp Pract*. 2020;48(sup1):63-67.
4. Barmentloo LM, Dontje ML, Koopman MY, et al. Barriers and facilitators for screening older adults on fall risk in a hospital setting: perspectives from patients and healthcare professionals. *Int J Environ Res Public Health*. 2020;17(5):1461.
5. Miake-Lye IM, Hempel S, Ganz DA, Shekelle PG. Inpatient fall prevention programs as a patient safety strategy: a systematic review. *Ann Intern Med*. 2013;158(5 pt 2):390-396.
6. Burgon C, Darby J, Pollock K, et al. Perspectives of healthcare professionals in England on falls interventions for people with dementia: a qualitative interview study. *BMJ Open*. 2019;9(2):e025702.
7. Child S, Goodwin V, Garside R, Jones-Hughes T, Boddy K, Stein K. Factors influencing the implementation of fall-prevention programmes: a systematic review and synthesis of qualitative studies. *Implement Sci*. 2012;7:91.
8. Chou WC, Tinetti ME, King MB, Irwin K, Fortinsky RH. Perceptions of physicians on the barriers and facilitators to integrating fall risk evaluation and management into practice. *J Gen Intern Med*. 2006;21(2):117-122.
9. Dickinson A, Horton K, Machen I, et al. The role of health professionals in promoting the uptake of fall prevention interventions: a qualitative study of older people's views. *Age Ageing*. 2011;40(6):724-730.
10. Goodwin V, Jones-Hughes T, Thompson-Coon J, Boddy K, Stein K. Implementing the evidence for preventing falls among community-dwelling older people: a systematic review. *J Saf Res*. 2011;42(6):443-451.
11. Jones TS, Ghosh TS, Horn K, Smith J, Vogt RL. Primary care physicians perceptions and practices regarding fall prevention in adult's 65 years and over. *Accid Anal Prev*. 2011;43(5):1605-1609.
12. Kielich K, Mackenzie L, Lovarini M, Clemson L. Urban Australian general practitioners' perceptions of falls risk screening, falls risk assessment, and referral practices for falls prevention: an exploratory cross-sectional survey study. *Aust Health Rev*. 2017;41(1):111-119.
13. Nyrop KA, Zimmerman S, Sloane PD. Physician perspectives on fall prevention and monitoring in assisted living: a pilot study. *J Am Med Dir Assoc*. 2011;12(6):445-450.
14. Nyrop KA, Zimmerman S, Sloane PD, Bangdiwala S. Fall prevention and monitoring of assisted living patients: an exploratory study of physician perspectives. *J Am Med Dir Assoc*. 2012;13(5):429-433.
15. Parks A, Eagles D, Ge Y, Stiell IG, Cheung WJ. Barriers and enablers that influence guideline-based care of geriatric fall patients presenting to the emergency department. *Emerg Med J*. 2019;36(12):741-747.
16. van Rhyn B, Barwick A. Health practitioners' perceptions of falls and fall prevention in older people: a metasynthesis. *Qual Health Res*. 2019;29(1):69-79.
17. Vlaeyen E, Stas J, Leysens G, et al. Implementation of fall prevention in residential care facilities: a systematic review of barriers and facilitators. *Int J Nurs Stud*. 2017;70:110-121.
18. Atkins L, Francis J, Islam R, et al. A guide to using the theoretical domains framework of behaviour change to investigate implementation problems. *Implement Sci*. 2017;12(1):77.
19. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implement Sci*. 2012;7:37.
20. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A, "Psychological Theory" Group. Making psychological theory useful for implementing evidence based practice: a consensus approach. *Qual Saf Health Care*. 2005;14(1):26-33.
21. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inf*. 2009;42(2):377-381.

22. Selvin S. *Modem Applied Biostatistical Methods Using S-Plus*. Oxford University Press; 1998.

23. Chong H, Yu CH. Resampling methods: concepts, applications, and justification. *Practical Assessment, Research & Evaluation*. 2003;8:19.

24. R Core Team. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing; 2021.

25. Cowdell F, Dyson J. How is the theoretical domains framework applied to developing health behaviour interventions? A systematic search and narrative synthesis. *BMC Public Health*. 2019;19(1):1180.

26. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci*. 2011;6:42.

27. Moskowitz G, Egorova NN, Hazan A, Freeman R, Reich DL, Leipzig RM. Using electronic health records to enhance predictions of fall risk in inpatient settings. *Jt Comm J Qual Patient Saf*. 2020;46(4):199-206.

How to cite this article: Carter EL, Hallen SAM, Welch GW, Gordon EN, Parker MG. Exploring attitudinal barriers to participation in inpatient fall risk assessment using the Theoretical Domains Framework: a survey of providers. *Health Sci Rep*. 2024;7:e2000. doi:10.1002/hsr2.2000

APPENDIX

This survey is part of a research project (*Exploring Provider Attitudes toward Falls Prevention in the Inpatient Setting; IRB Approval #1744013-1*). By filling out this survey, you will be volunteering to be part of this study.

Participation is voluntary and you may choose not to answer any questions and can stop at any time. All responses will be kept anonymous.

All data will be presented and analyzed in aggregate. The survey has 16 questions and should take less than 5 min to complete.

If you have any questions, please contact Emily Carter, MD (ECarter@mmc.org)

1	Please indicate your primary service line or department	☐ Adult Medicine ☐ Surgical Services ☐ Neuroscience ☐ Oncology ☐ Cardiovascular ☐ Pediatrics ☐ Women's Health ☐ Critical Care ☐ Emergency Department and Urgent Care ☐ Primary and Community Care ☐ Orthopedics ☐ Behavioral Health ☐ Radiology ☐ Anesthesiology
2	Are you a resident or fellow?	☐ Yes ☐ No
3	If no, please indicate your primary role	☐ Physician ☐ Nurse Practitioner ☐ Physician Assistant
4	Please indicate years of practice (including residency and fellowship as applicable)	☐ ≤5 years ☐ 6–10 years ☐ 11–15 years ☐ 16–20 years ☐ 21–25 years ☐ ≥26 years
5	Please estimate how much of your time is spent in inpatient (hospital-based) practice	☐ ≤10% ☐ 11%–25% ☐ 26%–50% ☐ 50%–75% ☐ ≥75%

Please indicate the extent to which you agree with the following statements regarding patient fall risk assessment in the hospital:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My role does not include assessing patient fall risk					
Other aspects of my patient's care take priority over assessing fall risk					
Assessing patients for fall risk does little to prevent falls in my patient population					
I do not have the formal training to assess patient fall risk					
There is limited reimbursement for assessing patient fall risk					
The characteristics of my patients prevent implementation of effective fall prevention strategies					
There are no evidence-based guidelines for inpatient fall prevention					
I do not have the resources available to assess my patients for falls					

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Falls prevention checklists do not meet the individualized needs of my patients					
When falls occur, they rarely have a negative impact on my patients					

If you either strongly agree or strongly disagree with any of these statement, please elaborate below:

Are there other things that affect your practice in regard to assessment of fall risk? Please explain:

We deeply appreciate your time and effort to inform this important patient safety issue.