

Research Article

Development of a Falls Risk Assessment and Management Tool for Older Adult Mental Health Units

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Keywords

• Falls risk assessment; Falls risk management; Older adult mental health; Neurocognitive; Mental disorders

Abstract

Fall prevention in Western Australian hospitals is monitored with a monthly generic falls assessment/management tool. Whilst this practice is suitable for bed ridden patients, it fails to capture the falls risk for older adult mental health patients who are predominantly ambulant and frequently confused. This paper describes the development of a specific mental health falls risk management tool (MHRMT) for use in older adult mental health units. The development of this tool evolved from formative focus group research which successfully identified relevant predictors of risks for falls in this population. Corresponding management strategies were then developed for each criterion to the assessed levels of risk. Fall prevention management strategies included referral to physiotherapists for gait and balance testing, referral to occupational therapists for functional ability status and to podiatry for foot care.

The new tool was initially piloted across three older adult mental health units in Western Australia with staff feedback resulting in some formatting revisions. The tool was then piloted at a fourth older adult mental unit with no further revisions required. The result was a new tool encompassing a weekly assessment rather than monthly like the current generic falls form. Staff feedback was mainly about the format of the new tool rather than the content, suggesting that future studies need to focus on investigating the reliability and validity of the MHRMT. Finally, although some staff were not happy with the increased work load associated with a weekly assessment, the weekly reporting highlighted two key issues in this patient group over three weeks: (1) fluctuating cognition and (2) mental state and behaviour changes. Additionally, the medication alert system identified the number of medications that increase falls risk and also indicated the risk alert level associated with each medication.

ABBREVIATIONS

MHRMT: Mental Health Falls Risk Management Tool

INTRODUCTION

The prevention and management of falls across health care and community settings continues to be one of the greatest challenges in older adult nursing [1]. In 2012, an audit conducted across two older adult mental health units (OAMHS) in the metropolitan area of Western Australia identified that a number of environmental and patient related factors contributed to the high number of falls sustained in the units [2]. The inpatients of these units were mostly ambulant with neurocognitive deficits or mental rather than physical health disorders. Researchers found no standardized assessment and management tools were available at either service that adequately reflected the unique population needs [2]. There was a different falls reporting culture across the two units, and discrepancies were found in medication prescribing practices. The generic falls risk assessment tool FRAT [falls risk assessment tool] was used at one site and FRMT [falls risk management tool] at the other. Both these tools have different intervention strategies and are used in all wards of the respective hospitals [2]. The audit identified the use of a generic falls assessment and management form that was completed when the patient was admitted to hospital and reviewed monthly with

minimum standards being identified on the front panel (under 65 years, no history of falling in the past six months) and if ticked, needing no further review [3]. All patients admitted to the OAMHS had a falls assessment completed. In the pre-intervention period the WA state-wide falls assessment FRMT was completed. More than half (52.2%) of those assessed with the FRMT were assessed as being at minimal risk of falling and thus were assessed as only needing standard interventions for falls prevention during their admission to OAMHS [2]. This highlights the lack of specificity of the generic falls risk assessment form in the OAMHS population. The minimum standards on this generic form were related to patients nursed in bed with physical health problems rather than an ambulant population with primarily a mental health problem, and did not adequately identify the specific falls risk associated with an older adult mental health patient such as fluctuating mental state and behaviour, medication side effects and ambulatory difficulties. Risk factors for falls are more prevalent in older people with cognitive impairment than in cognitively intact people: impairments of gait and balance are more severe [4], psychoactive medications are more commonly prescribed [5,6] and orthostatic hypotension is more prevalent [7,8].

Subsequently, six focus groups were conducted between June and November 2012 to address this deficit and develop a new tool/instrument. Twenty eight participants employed in older

adult mental health from the disciplines of nursing, occupational therapy, physiotherapy and pharmacy identified criteria associated with falls risk specifically related to the older adult mental health patient and developed management strategies appropriate to the assessed level of risk. The interdisciplinary participation reflected the importance of the strengths each discipline brought to fall risk prevention and management for this patient group. Results of this study are published elsewhere [3], but the main three themes identified from the transcripts were: "limitations of using generic falls risk assessment and management tools"; "assessment of falls risk not currently captured on standardized tools"; and "population specific causes of falls". These were the key drivers for the development of a specific mental health falls risk management tool (MHFRMT).

Falls among older adults are often a major cause of increased morbidity and mortality [9,10], and a common and costly complication of hospitalization [11,12], with cognitively impaired older people constituting a high-risk group for accidental falls in hospitals [13]. Approximately 10% of fatal falls for older adults occur in the hospital setting [14] and given the magnitude of falls events in the older adult population, an effective and feasible screening tool and a comprehensive remediation approach is needed [15].

Screening is a process that primarily aims to identify people at increased risk of falls, whereas assessment aims to identify factors that increase the risk of a fall that can be dealt with by subsequent intervention [16]. Several instruments/tools are currently being used clinically in hospitals, residential care facilities and in the community to estimate a patient's risk of falling. The STRATIFY [17], the Morse Fall Scale [18] and the Hendrich II Fall Risk Model [19] are three instruments widely used in clinical practice by nurses [20]. Additionally, the Falls Risk Assessment Tool (FRAT) assesses recent falls, medications, psychological factors, cognitive impairment, vision, mobility, transfers, behaviours, ADLs, environment, nutrition, and continence, whilst the CDC Steadi tool provides an algorithm to measure risk and guide treatment [21]. Many of the well accepted and recognized falls assessment and management tools have been demonstrated to be effective for general patients who are mainly non-ambulant during their hospital admission but appear less relevant in the mental health setting where there are populations of highly ambulant patients [2].

Older adult mental health inpatient populations are frequently diagnosed with a neurocognitive disorder or a mental disorder as outlined in the Diagnostic and Statistical Manual of Mental Health Disorders, Fifth Edition (DSM-V) [22], and the International Classification of Disorders (ICD-10) [23]. Cognitive deficits are the primary indicator of neurocognitive disorders such as dementia and Alzheimer's and a factor or symptom of many mental disorders, for example, schizophrenia, depression and bipolar disorder.

Falls are rarely the result of one factor: for example, age, gender, co-morbidities and symptoms of various disease processes like diabetes, coronary heart disease and dementia can increase the risk for falls [24-29]. While monitoring elderly patients with reduced cognitive functioning using a generic falls risk form has long been viewed as a cost-effective way to

reduce the economic and social burden of falls [30], older adults with neurocognitive and/or mental disorders have specific falls risk factors that benefit from specialized falls assessment and management related to fluctuating mental state, medication side effects that compromise ambulation and cognition and co-morbid medical conditions [2,31,32]. In an American study, the incidence of falls on older adult psychiatric units was higher than that on general acute care units and medication was identified as the strongest relationship to a falls episode [33]. People with neurocognitive disorders, such as dementia were found to be at increased risk of falling [34] and that could be related to the fact that antipsychotics are widely used for the treatment of behavioural and psychological symptoms of neurocognitive disorders [35,36]. The use of these drugs is wide spread with this patient population and patients can experience extra pyramidal side effects that may affect gait, balance, and reaction times to increase the risk of falls [37].

In line with best practice in the care of this patient group these risk factors need to be identified on an assessment form with a corresponding management strategy. Risk assessment tools with corresponding aligned management interventions rather than a stand-alone assessment or management tool have been identified by several researchers as the best option for reducing falls [17,38-42], for example, focussed falls risk management specifically targeted to gait improvement and exercise [43] and early identification of medication side effects and medication prescribing [15].

Furthermore, the areas of importance identified in the focus groups for fall prevention in this patient cohort and essential for staff to assess were: documented changes in the patient's cognitive state since admission and implemented management strategies to address any deficits; an assessment of the patient's fluctuating functional ability; changes in mental state and behaviour at regular intervals throughout hospitalisation; environmental factors such as flooring, wet areas and outdoor obstacles; medical co-morbidities that may compound their mental state and medication side effects such as orthostatic hypotension, extra pyramidal side effects (EPSE) and sedation. Consensus opinion suggested that addressing each assessed criteria with a correlated management strategy would decrease the fall risk and increase the clinical skills of staff to prevent falls in this older adult population. The aim of this paper is to describe the development of a mental health falls risk management tool to address the deficits identified in the current generic risk assessment and management tools.

MATERIALS AND METHODS

Twenty three nurses were surveyed to determine the validity of the 20 items assessed in the MHFRMT. The Survey used a 5 item Likert scale where 1 = Agree and 5 = Do not agree. Chronbach's alpha for the MHFRMT was 0.948 (A Chronbach's alpha of over 0.7 suggests adequate internal consistency for clinical studies) [44].

Pilot testing

Pilot testing of the mental health falls risk management tool (MHFRMT) initially occurred at three older adult mental health units for three weeks in the South Metropolitan area, with

verbal feedback obtained from staff about the advantages of the trialled MHFRMT and the barriers they identified in using the tool. Occupational therapists, physiotherapists and podiatrists involved with the older adult mental health patients were also given copies of the MHFRMT for comment and feedback. The initial feedback targeted the frequency of recording, given that risk assessment was currently performed monthly rather than weekly and staffs were concerned with the increased workload and accountability. Form usage in practice and formatting issues were solved by a three to one vote by staff for a double sided form with separate medication alert chart. The medication alert chart was well received and considered essential to highlight the prescribing patterns and to potentially reduce poly-pharmacology. Following feedback and amendments to the tool, the MHFRMT was pilot tested a second time at a fourth South Metropolitan Health service site for three weeks with no further adjustments required and the final form was then advanced to the medical records/governance committee meetings at each of the four sites for validation and an assigned trial number consigned for use in the planned clinical trial. The number of beds per unit involved with the clinical trial were A= 8; B=26; C=16; D=10. Units A and C had a mix of patients with both mental and neurocognitive disorders. Unit B had three separate wards: one had patients with high dependency needs and neurocognitive disorders, one a mix of mental and neurocognitive disorders and another with only mental disorders. Unit D had four high dependency beds for patients with neurocognitive disorders and six beds with a mix of mental and mild neurocognitive disorders.

The process of the form development is represented in Figure 1.

RESULTS AND DISCUSSION

Results: The Mental Health Falls Risk Management Tool (MHFRMT)

The final version of the MHFRMT was a four page document used in conjunction with a double-sided laminated medication tool (see Figure 2a and 2b). The form had tick box spaces that allowed staff to assess the patient on three separate occasions (this could be weekly over three weeks, or if the patient fell then an assessment was recommended immediately and continued weekly thereafter). A new form was commenced each third week of admission (for longer stay patients) with current data transferred across forms. The MHFRMT addressed the criteria identified by the focus groups and integrated items recognized as useful in this setting from the commonly used generic Falls Risk Management Tool (FRMT). Routine monthly fall risk audits are completed for all inpatients in hospital in Western Australia, so the newly developed MHFRMT needed to comply with the regular SQUIRE (Safety and Quality Investment in Reform) FRMT audits.

Information captured on the MHFRMT is displayed over tables 1-4 and highlights the key elements of the tool. Table 1 reflects the information deemed most essential and appearing on the front page of the form. Refer to "Clinician Alert Level" found above the medication section directs the nurse to the laminated medication sheet (Figure 2a and 2b) that identifies the fall risk level of the patient's current medication and was a standalone form placed in the inner cover of each patient file for easy access and consultation.

Page two recorded the seven risk criteria identified by staff consensus as relevant for falls; (only 3 criteria: cognitive state, functional ability and mental state and behaviour are displayed as an example in Table 2). The remaining criteria include: mobility, elimination, environmental and medical conditions.

Page 3 - Management interventions for minimum risk, moderate risk and high risk of falling correspond to each of the seven risk criteria evaluated, and are opposite each criteria (page 2 criteria align with page 3 management strategy for that criteria). These management strategies were developed from the multidisciplinary staff focus groups in the formative research and included referrals to occupational therapy, physiotherapy and podiatry as appropriate. Examples of three management strategies are in Table 3.

Page 4 - Medication side effect alert levels for specific falls risk of postural hypotension, extra pyramidal and sedation side effects were identified on the front page with suggested interventions for each altered level: As an example, postural hypotension is presented below (Table 4).

As allied health were a source of referral in the management strategies, a place for them to respond to a referral and action it was added on page four.

The accompanying medication alert tool was crucial for assessing the medication risk to falls (Figure 2a and 2b) and consisted of a double sided laminated table with most used medications (based on available literature) with older adults in the general medical field, e.g. Frusemide, statins and opioids on one side (2a) and regular use psychiatric medication e.g. Risperidone, Sodium Valproate and Diazepam on the other side (2b). Each medication recorded had a corresponding alert code: green for low risk of falls, amber for moderate risk and red for high risk. Those medications yet to be researched for falls risk severity were identified with a grey dot, for example Sodium Valproate. Medications that patients brought into the hospital with a relevant falls alert risk (low, moderate or high as featured on the medication alert chart) were also recorded on the front panel. This gave a clear picture with an instant visual display of falls risk, not otherwise recognised from a mainstream medication chart. Doctors and pharmacists could be alerted to the increased falls risk attributed to medication with this transparency.

Discussion

The MHFRMT was developed from research literature around falls risk assessment and management. It incorporated each identified criteria from the focus groups with clinicians and married with evidenced based practice guidelines to meet the specificity of the older adult mental health population. Documentation on the front page of the MHFRMT records any visual impairment, hearing deficit and the use of adequate/correct footwear which is supported by several other researchers [25,45].

Many older adult patients with a mental or neurocognitive disorder may experience poor decision making, planning and judgement; impulsive behaviours; paranoid behaviours; misinterpret their environment; have visual/spatial abnormalities and a fluctuating course of illness that is not captured on the

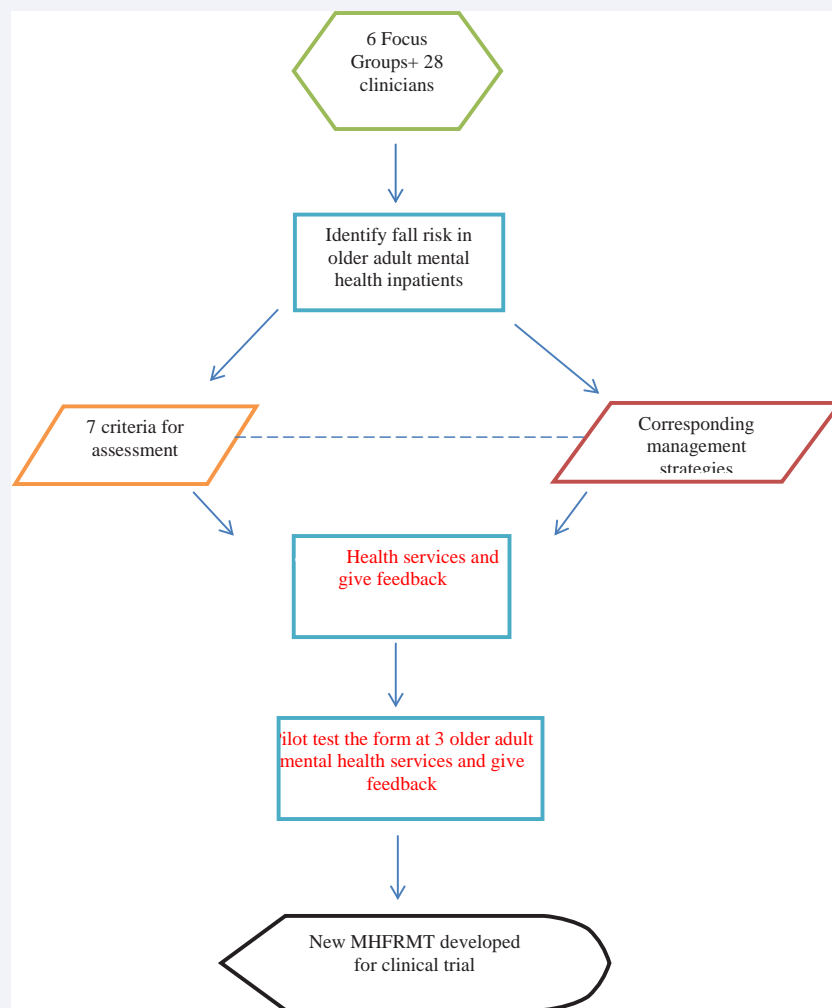


Figure 1 Diagram of form development process.

		● High - Commonly associated as cause of falls			● Moderate – may cause falls especially in combination		● Low - Can cause falls in combination		● Associated with falls - severity not specified		
		A	B	C	D	E	F	G	H	I	
Medications		<i>Drowsiness</i>	<i>Dizziness</i>	<i>Confusion</i>	<i>↑ or ↓ Blood pressure</i>	<i>Gait Disturbances</i>	<i>Cardiac issues</i>	<i>Visual Disturbances</i>	<i>EPSE</i>	<i>Slowed Reactions</i>	
Anticholinergic	Atropine	●	●	●	●		●	●			
	Hyoscine	●	●	●			●	●			
	Orphenadrine	●	●	●			●	●			
	Procyclidine	●	●	●			●	●			
ACE inhibitors	Captopril		●		●						
	Ramipril		●		●						
	Enalapril		●		●						
	Lisinopril		●		●						
Angiotensin-II receptor antagonists	Candesartan		●		●						
	Irbesartan		●		●						
	Losartan		●		●						
Alpha-Blockers	Doxazosin		●		●						
	Prazosin		●		●						
	Clonidine		●		●						
	Moxonidine		●		●						

Anti-arrhythmics	Digoxin		●				●		
	Amiodarone		●				●		
	Flecainide		●				●		
Beta-blockers	Atenolol	●				●			
	Propranolol	●				●			
	Sotalol	●				●			
Diuretics	Furosemide,		●			●			
	Bumetanide,		●			●			
	Bendroflumethia zide		●			●			
Opioid analgesics	Morphine,	●	●	●	●	●		●	●
	Codeine	●	●	●	●	●		●	●
	Dihydrocodeine	●	●	●	●	●		●	●
	Tramadol	●	●	●	●	●		●	●
Anti-histamines	Promethazine,	●						●	
	Chlorphenamine	●						●	
Calcium-channel blockers	Amlodipine		●			●		●	
	Felodipine		●			●		●	
	Nifedipine		●			●		●	
	Diltiazem		●			●		●	
	Verapamil		●			●		●	
Nitrates	Glyceryl trinitrate		●			●			
	Isosorbide mononitrate		●			●			
	Isosorbide dinitrate		●			●			

References: ResourcePharm - Medications associated with falls in the elderly <http://www.resourcepharm.com/>; Medicines and Falls in Hospital -http://www.bgs.org.uk/campaigns/fallsafe/Falls_drug_guide.pdf; Medicines management tool for Antipsychotics NHS Foundation Trust, <http://www.hey.nhs.uk/content/files/prescribingCommittee/guidelines/antipsychotics.pdf>; MIMS online.

Figure 2a Clinician Alert Level – General Medications.

		● High - Commonly associated as cause of falls		● Moderate – may cause falls especially in combination		● Low - Can cause falls in combination		● Associated with falls - severity not specified		
		A	B	C	D	E	F	G	H	I
Medications		Drowsiness	Dizziness	Confusion	↑ or ↓ Blood pressure	Gait Disturbances	Cardiac issues	Visual Disturbances	EPSE	Slowed Reactions
Antidepressants	Amitriptyline	●	●	●	●	●		●		●
	Clomipramine	●	●	●	●	●		●		●
	Doxepin	●	●	●	●	●		●		●
	Dothiepin	●	●	●	●	●	●	●	●	●
	Imipramine	●	●	●	●	●		●		●
	Nortriptyline	●	●	●	●	●		●		●
	Trimipramine	●	●	●				●		
	Mianserin	●	●		●	●		●		●
	Citalopram	●	●	●	●		●	●		
	Escitalopram	●	●	●	●		●	●		
	Fluoxetine	●	●	●	●		●	●		
	Fluvoxamine	●	●	●	●		●	●		
	Paroxetine	●	●	●	●		●	●		
	Sertraline	●	●	●	●		●	●		
	Duloxetine	●	●		●	●				
	Reboxetine	●	●							
	Venlafaxine	●	●		●			●		
	Mirtazapine	●	●		●	●		●		●
	Phenelzine				●					
Tranlycypromine				●						
Moclobemide		●		●						

Antipsychotics	Amisulpride	●			●				●	
	Aripiprazole	●			●				●	
	Clozapine	●		●	●				●	
	Chlorpromazine	●		●	●	●			●	●
	Olanzapine	●			●	●			●	●
	Paliperidone	●			●				●	
	Quetiapine	●		●	●	●			●	●
	Risperidone	●		●	●	●	●		●	●
	Zotepine	●			●				●	
	Ziprasidone	●			●		●		●	
	Flupentixol	●							●	
	Fluphenazine	●			●	●			●	●
	Haloperidol	●		●	●	●			●	●
	Pipotiazine	●							●	
	Sertindole	●			●				●	
	Sulpiride	●							●	
Trifluoperazine	●			●				●		
Zuclopenthixol	●			●				●		
Sedatives	Diazepam	●		●	●	●		●	●	
	Temazepam	●		●	●	●		●	●	
	Nitrazepam	●		●	●	●		●	●	
	Lorazepam	●		●	●	●		●	●	
	Oxazepam	●		●	●	●		●	●	
	Clonazepam	●		●	●	●		●	●	
	Zopiclone	●				●			●	
	Zolpidem	●				●			●	
Dopamine agents	Co-beneldopa	●		●	●					
	Co-careldopa	●		●	●					
	Bromocriptine	●		●	●					
	Ropinirole	●		●	●					
	Pramipexole	●		●	●					
	Rotigotine	●		●	●					
Anticonvulsants	Phenytoin,	●	●	●		●		●	●	
	Carbamazepine	●	●	●		●		●	●	
	Sodium Valproate	●	●			●	●			
	Lamotrigine	●	●			●				
Opioids	Morphine,	●	●	●	●	●		●	●	
	Codeine	●	●	●	●	●		●	●	
	Dihydrocodeine	●	●	●	●	●		●	●	
	Tramadol	●	●	●	●	●		●	●	

Figure 2b Clinician Alert Level - CNS medications.

Table 1: Front page of MHRMT.

Previous falls within last 6 months (date/injury)						
Date __/__/__ Injury? Yes No	Date __/__/__ Injury? Yes No	Date __/__/__ Injury? Yes No	Date __/__/__ Injury? Yes No	Date __/__/__ Injury? Yes No	Mini Mental State Examination Score (MMSE)(or similar) _____	
Physical observations on admission						
Temp	Pulse	BP sitting/lying	BP standing	Does the patient report unsteadiness/dizziness? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Visual and hearing (tick) <input type="checkbox"/> Normal vision <input type="checkbox"/> Normal hearing <input type="checkbox"/> Wears spectacles Hearing Aid <input type="checkbox"/> Left <input type="checkbox"/> Right						
Foot wear (tick) Does the person have well-fitting footwear with a non-slip sole? <input type="checkbox"/> Yes <input type="checkbox"/> No						
Education Has the patient and family been provided information about the risk of falling and safety Issues? <input type="checkbox"/> Yes <input type="checkbox"/> No						
Medications on Admission						
Is the patient on any medication at admission that is known to cause side effects associated with falls? Refer to 'Clinician Alert Level' and enter the medication and circle alerts according to the code below						
Medication name	Dose	Frequency	Route	Alert level (Circle High and Moderate alerts)		

				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I
				A	B	C	D	E	F	G	H	I

Code

A Drowsiness	B Dizziness	C Confusion	D <input type="checkbox"/> and <input type="checkbox"/> Blood pressure	E Gait disturbance
F Cardiac issues	G Visual Disturbances	H EPSE	I Slowed Reactions	

Medications (tick all that apply)

1	2	3		Implemented level of Intervention			Date	Initial
			Have any medications changed since admission? <input type="checkbox"/> Yes <input type="checkbox"/> No	1	2	3		
			Patient has Postural hypotension (see back page)	1	2	3		
			Patient has Extra Pyramidal Side Effects (EPSE) (see back page)	1	2	3		
			Patient is Sedated (see back page)	1	2	3		

Abbreviations: EPSE: Extrapyramidal Side Effects; MMSE: Mini Mental State Examination

Table 2: Assessment table for cognitive state, functional ability and mobility.

Cognitive State (tick all that apply)								
				Implemented level of Intervention (circle)			Date	Initial
			Normal	1	2	3		
			Disorientated	1	2	3		
			Confused	1	2	3		
Functional Ability (tick all that apply)								
				Implemented level of Intervention (circle)			Date	Initial
			Independent with all tasks	1	2	3		
			Requires reassurance or verbal prompts	1	2	3		
			Requires assistance with ADLs <input type="checkbox"/> 1 person <input type="checkbox"/> 2 person	1	2	3		
Mental state and behaviour (tick all that apply)								
				Implemented level of Intervention (circle)			Date	Initial
			Cooperative/follows direction	1	2	3		
			Uncooperative/unable to follow direction	1	2	3		
			Impaired judgment/poor insight	1	2	3		
			Verbally aggressive	1	2	3		
			Physically aggressive	1	2	3		
			Depressed mood	1	2	3		
			Elevated mood	1	2	3		
			Intoxicated	1	2	3		
			Evidence of psychosis	1	2	3		
			- Perceptual disturbance	1	2	3		
			- Paranoia	1	2	3		
			- Formal thought disorder	1	2	3		

Abbreviations: ADLs: Aids to Daily Living

generic form in current use. The levels of intervention for cognitively impaired older adults in the MHFRMT reflect the outcomes of research by Kallin *et al.*, (2005) who found an intervention strategy would probably have to include treatment of psychiatric and behavioural symptoms, improvement of gait and balance and adjustment of drug treatment [46].

Elimination and continence were important criteria to assess for falls risk as more frequent toileting needs increased the falls risk. With older adult mental health inpatients this could be associated with an increased thirst related to medication-induced dryness of the mouth, and lead to a greater need to urinate multiple times at night, further increasing the prospect for falls [47]. With an ambulant population the need for environmental control and good hospital design is paramount [28]. Some environmental factors associated with falls risk are obstructed walkways, inadequate lighting, slippery floors and surfaces and lack of handrails in stairways [25], and these are highlighted in the MHFRMT criteria with corresponding management strategies to reduce the risk.

The strength of the MHFRMT is the comprehensive covering of all domains identified as important and relevant in the formative research and from current literature. The medication panel with a visual display of high, moderate or low alert for falls risk is an innovative addition that allows all staff to immediately see the number of medications that carry a falls risk alert and the strength of those alerts. This can highlight the need for prescribing changes that may have gone unnoticed. Two drug categories that proved to carry a statistically significant, independent fall risk were antiepileptic and benzodiazepine medications, thus, a patient taking one of these drugs could be at greater risk for falling than a patient taking five or six medications from other

drug categories [48]. The medication panel on the front page would identify that risk.

Many older adult mental health patients have multiple co-morbidities and the combination of medications used to treat their primary presenting illness and their co-morbidities is a specific falls risk factor for these patients [3]. Medication with strongest links to an increased risk of falling include antidepressants [49], antipsychotic agents [50], benzodiazepines, anticonvulsants [37,51] and anti arrhythmics [52]. The recognition of this is evident in the MHFRMT with a separate section devoted to these medication side effects with appropriate management strategies. Nurses must be taught to vigilantly observe patients for side effects of medications, especially after recent changes. Careful assessment and tracking of vital signs for patients on complex or new medication regimens may provide advance warning of physiological instability leading to falls. Orthostatic hypotension increases the risk for falls by inhibiting balance and mobility [53], and lying and standing blood pressure monitoring was recommended on the MHFRMT as routine for this patient cohort. Nurses should be particularly concerned about postural blood pressure changes greater than 20 mmHg and pulse rates greater than 100 [54].

A limitation of the MHFRMT is associated with staff feedback which was mainly about the format of the new tool rather than the content, suggesting that future studies need to focus on investigating the reliability and validity of the MHFRMT.

CONCLUSION

The MHFRMT incorporated all the criteria suggested from previous studies to capture the total picture of risk for the older adult mental health patient. The weekly reporting regime

Table 3: Management strategies for Cognitive state, functional ability and mental state and behavior.

Cognitive State		
Level 1 Reorientate as required Use clear concise communication Assess and document need for supervision in toilet and shower	Level 2 As for level 1 + Assess /consider 15/60 or 30/60 visual observations Supervise toilet and shower at all times Assess mental state and commence behaviour observation chart as appropriate Review medications with team Place bed against the wall and use appropriate equipment (alarm mat, low bed etc if appropriate to mental state) Refer to OT for cognitive assessment	Level 3 As for level 1 and 2 + Nurse in communal areas where possible Segregate from other patients if appropriate Supervise toilet and shower at all times Review behaviour observation chart and mental state – medical review if indicated Consider nursing 1:1 with identified management plan
Functional Ability		
Level 1 Assess areas of patient’s strength and try to encourage activity in these areas. Encourage physical and cognitively challenging activities Provide appropriate aids for ADLs	Level 2 As for level 1 + Occupational therapy assessment for aids Assist with mobilisation and ADL’s as necessary	Level 3 As for level 1 and 2 + Consider nursing 1:1 with identified management plan
Mental state and behaviour		
Level 1 Routine visual observations Use clear concise communication rapport Educate patient and family Supportive normative behaviours Ongoing mental state assessment	Level 2 As for Level 1 + Review medications – effective Engage in diversional/distracting activities Consider 15/60 or 30/60 visual observations	Level 3 As for Level 1 and 2 + Consider nursing 1:1 with identified management plan Segregate from other patients if appropriate

Table 4: Management strategies for postural hypotension.

Postural Hypotension			
Assessment	☐☐ Low Alert Low blood pressure or recent change in medication	☐ Moderate Alert Drop in systolic pressure 10-20mmHg within 3 minutes of standing Dizziness on rising, light headedness, feeling faint	☐☐ High Alert Drop in systolic pressure >20mmHg within 3 minutes of standing Buckling of legs, cognitive slowing, headache
Interventions	Monitor BP daily (lying and standing) Monitor for signs of postural hypotension Education - encourage to mobilise in steps - sit on side of bed, then stand	As for Low Alert + Assess for symptoms of postural BP before mobilizing - dizziness, feeling faint Plan activity before meals, largest meals at night, limit carbohydrates Maintain hydration - drinking water may improve symptoms Avoid prolonged activity or recumbence Moderate temperature of bath/shower, care during hot weather	As for Moderate Alert + Monitor sitting and standing BP BD or Q4hrly (for one week after change in medication) Raise head of bed 5 - 20 degrees

highlighted the fluctuating cognition and behaviour changes that could be experienced in this patient group over a three week period and the medication alert system identified not only the number of medications that could increase the falls risk but also the risk alert level of each medication. Reduced falls lead to fewer complications occurring in patients during hospitalisation further improving access to services, cost efficiencies and improved patient flow through all inpatient older adult mental health services. A reduction in falls also means that more of these patients will successfully be returned to their community and will not need alternative accommodation and specialist follow up care as a result of falling.

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REFERENCES

- MacCulloch PA, Gardner T, Bonner A. Comprehensive fall prevention programs across settings: a review of the literature. *Geriatr Nurs.* 2007; 28: 306-311.
- Heslop K, Wynaden D, Bramanis K, Connolly C, Gee T, Griffiths R, et al. Assessing falls risk in older adult mental health patients: a Western Australian review. *Int J Ment Health Nurs.* 2012; 21: 567-575.
- Wynaden D, Tohotoa J, Heslop K, Al Omari O. Recognising falls risk in older adult mental health patients and acknowledging the difference from the general older adult population. *Collegian.* 2015.
- Ballard C, Creese B, Corbett A, Aarsland D. Atypical antipsychotics for the treatment of behavioral and psychological symptoms in dementia, with a particular focus on longer term outcomes and mortality. *Expert Opin Drug Saf.* 2011; 10: 35-43.
- Healey F, Monro A, Cockram A, Adams V, Heseltine D. Using targeted risk factor reduction to prevent falls in older in-patients: a randomised controlled trial. *Age Ageing.* 2004; 33: 390-395.
- Waldron N, Hill AM, Barker A. Falls prevention in older adults - assessment and management. *Aust Fam Physician.* 2012; 41: 930-935.
- Passant U, Warkentin S, Gustafson L. Orthostatic hypotension and low blood pressure in organic dementia: a study of prevalence and related clinical characteristics. *International Journal of Geriatric Psychiatry.* 1997;12: 395-403.
- Lee A, Mills PD, Watts BV. Using root cause analysis to reduce falls with

- injury in the psychiatric unit. *Gen Hosp Psychiatry.* 2012; 34: 304-311.
- Michael YL, Lin JS, Whitlock EP, Gold R, Fu R, O'Connor EA, Zuber SP, et al. Interventions to Prevent Falls in Older Adults: An Updated Systematic Review. Rockville (MD): Agency for Healthcare Research and Quality, Syntheses USPSTFE; 2010 Dec. Report No.: 11-05150-EF-1.
- Cameron ID, Murray GR, Gillespie LD, Robertson MC, Hill KD, Cumming RG, et al. Interventions for preventing falls in older people in nursing care facilities and hospitals. *Cochrane Database Syst Rev.* 2010. CD005465.
- Hendrie D, Hall SE, Arena G, Legge M. Health system costs of falls of older adults in Western Australia. *Aust Health Rev.* 2004; 28: 363-373.
- Morello RT, Barker AL, Haines T, Zavarsek S, Watts JJ, Hill K, et al. In-hospital falls and fall-related injuries: a protocol for a cost of fall study. *Inj Prev.* 2013;19: 363.
- Härlein J, Halfens RJ, Dassen T, Lahmann NA. Falls in older hospital inpatients and the effect of cognitive impairment: a secondary analysis of prevalence studies. *J Clin Nurs.* 2011; 20: 175-183.
- Haumschild MJ, Karfonta TL, Haumschild MS, Phillips SE. Clinical and economic outcomes of a fall-focused pharmaceutical intervention program. *Am J Health Syst Pharm.* 2003; 60: 1029-1032.
- Rumore MM, Vaidean G. Development of a Risk Assessment Tool for Falls Prevention in Hospital Inpatients Based on the Medication Appropriateness Index (MAI) and Modified Beer's Criteria. *College of Pharmacy.* 2012; 3.
- Close JC, Lord SR. Fall assessment in older people. *BMJ.* 2011; 343: d5153.
- Oliver D, Healy F. Falls risk prediction tools for hospital inpatients: do they work? *Nurs Times.* 2009; 105: 18-21.
- Morse JM, Black C, Oberle K, Donahue P. A prospective study to identify the fall-prone patient. *Soc Sci Med.* 1989; 28: 81-86.
- Hendrich AL, Bender PS, Nyhuis A. Validation of the Hendrich II Fall Risk Model: a large concurrent case/control study of hospitalized patients. *Appl Nurs Res.* 2003; 16: 9-21.
- Swartzell KL, Fulton JS, Friesth BM. Relationship between occurrence of falls and fall-risk scores in an acute care setting using the Hendrich II fall risk model. *Medurg nursing: official journal of the Academy of Medical-Surgical Nurses.* 2013; 22: 180-187.
- Nandy S, Parsons S, Cryer C, Underwood M, Rashbrook E, Carter Y, et al. Development and preliminary examination of the predictive

- validity of the Falls Risk Assessment Tool (FRAT) for use in primary care. *Journal of public health (Oxford, England)*. 2004; 26:138-143.
22. American Psychiatric Association. *Diagnostic Criteria DSM-V desk reference*. Virginia: American Psychiatric Association; 2013.
 23. World Health Organization. *International Classification of Diseases-10*. Geneva: WHO; 2010.
 24. Tzeng HM. Inpatient falls in adult acute care settings: influence of patients' mental status. *J Adv Nurs*. 2010; 66: 1741-1746.
 25. Edelman CL, Mandle CL. *Health promotion throughout the lifespan 7th ed*. St. Louis, MO: Mosby Elsevier; 2010.
 26. Schoenfelder DP, Crowell CM. From risk for trauma to unintentional injury risk: falls--a concept analysis. *Nursing Diagnosis Extension and Classification Research Team. Nurs Diagn*. 1999; 10: 149-157.
 27. Titler MG, Shever LL, Kanak MF, Picone DM, Qin R. Factors associated with falls during hospitalization in an older adult population. *Res Theory Nurs Pract*. 2011; 25: 127-148.
 28. Fonad E, Wahlin TB, Winblad B, Emami A, Sandmark H. Falls and fall risk among nursing home residents. *J Clin Nurs*. 2008; 17: 126-134.
 29. Mulley G. Falls in Older People. *J R Soc Med*. 2001; 94: 202.
 30. Trujillo AJ, Hyder AA, Steinhardt LC. Cognitive functioning and the probability of falls among seniors in Havana, Cuba. *Int J Aging Hum Dev*. 2011; 73: 175-194.
 31. Finkelstein E, Prabhu M, Chen H. Increased prevalence of falls among elderly individuals with mental health and substance abuse conditions. *Am J Geriatr Psychiatry*. 2007;15: 611-619.
 32. Tsai YF, Witte N, Radunzel M, Keller ML. Falls in a psychiatric unit. *Appl Nurs Res*. 1998; 11: 115-121.
 33. Blair E, Gruman C. Falls in an Inpatient Geriatric Psychiatric Population. *Journal of the American Psychiatric Nurses Association*. 2005; 11: 351-354.
 34. Eriksson S, Strandberg S, Gustafson Y, Lundin-Olsson L. Circumstances surrounding falls in patients with dementia in a psychogeriatric ward. *Arch Gerontol Geriatr*. 2009; 49: 80-87.
 35. Gardette V, Lapeyre-Mestre M, Coley N, Cantet C, Montastruc JL, Vellas B, et al. Antipsychotic use and mortality risk in community-dwelling Alzheimer's disease patients: evidence for a role of dementia severity. *Curr Alzheimer Res*. 2012; 9: 1106-1116.
 36. American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012; 60: 616-631.
 37. Boyle N, Naganathan V, Cumming RG. Medication and falls: risk and optimization. *Clin Geriatr Med*. 2010; 26: 583-605.
 38. Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Suttorp MJ, et al. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. *BMJ*. 2004; 328: 680.
 39. Gillespie L, Robertson M, Gillespie W, Sherrington C, Gates S, Clemson L, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2009.
 40. Lord SR, Menz HB, Tiedemann A. A physiological profile approach to falls risk assessment and prevention. *Phys Ther*. 2003; 83: 237-252.
 41. Fairhall N, Sherrington C, Lord SR, Kurrle SE, Langron C, Lockwood K, et al. Effect of a multifactorial, interdisciplinary intervention on risk factors for falls and fall rate in frail older people: a randomised controlled trial. *Age Ageing*. 2014; 43: 616-622.
 42. Rubenstein LZ. Falls in older people: epidemiology, risk factors and strategies for prevention. *Age Ageing*. 2006; 35: ii37-37ii41.
 43. Moncada LV. Management of falls in older persons: a prescription for prevention. *Am Fam Physician*. 2011; 84: 1267-1276.
 44. Tavakol M, Dennick R. Making sense of Cronbach's alpha. *International Journal of Medical Education*. 2011; 2: 53-55.
 45. Plaksin J. Falls in Older Adults—Risk Factors and Strategies for Prevention. *The NYU Langone Online Journal of Medicine*. 2014.
 46. Kallin K, Gustafson Y, Sandman PO, Karlsson S. Factors associated with falls among older, cognitively impaired people in geriatric care settings: a population-based study. *Am J Geriatr Psychiatry*. 2005; 13: 501-509.
 47. Tzeng HM. Understanding the prevalence of inpatient falls associated with toileting in adult acute care settings. *J Nurs Care Qual*. 2010; 25: 22-30.
 48. Hendrich A. How to try this: predicting patient falls. Using the Hendrich II Fall Risk Model in clinical practice. *Am J Nurs*. 2007; 107: 50-58.
 49. Kerse N, Flicker L, Pfaff JJ, Draper B, Lautenschlager NT, Sim M, et al. Falls, depression and antidepressants in later life: a large primary care appraisal. *PLoS One*. 2008; 3: 2423.
 50. Rigler SK, Shireman TI, Cook-Wiens GJ, Ellerbeck EF, Whittle JC, Mehr DR, et al. Fracture risk in nursing home residents initiating antipsychotic medications. *J Am Geriatr Soc*. 2013; 61: 715-722.
 51. Lavsa SM, Fabian TJ, Saul MI, Corman SL, Coley KC. Influence of medications and diagnoses on fall risk in psychiatric inpatients. *Am J Health Syst Pharm*. 2010; 67: 1274-1280.
 52. Tinetti ME. Clinical practice. Preventing falls in elderly persons. *N Engl J Med*. 2003; 348: 42-49.
 53. Weber J, Kelley J. *Health assessment in nursing*. 4th ed ed. Philadelphia: Lippincott Williams & Wilkins; 2010.
 54. Knight M, Coakley C. Fall risk in patients with acute psychosis. *J Nurs Care Qual*. 2010; 25: 208-215.

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