Preparing for the silver boom: A falls prevention tool for older adults in the emergency department

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ABSTRACT

Geriatric falls presenting to the emergency department (ED) are rising due to our rapidly ageing population. As part of a group of geriatric-focused emergency medicine practitioners, we describe a multidisciplinary falls prevention tool using the acronym, “MA-PhD⁴, GET CLEARS!” to address modifiable intrinsic and extrinsic risk factors in the ED to prevent future falls and their adverse consequences in this at-risk group.

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Each year, 28–35% of community dwelling adults over 65 years fall.¹ This figure increases to about 50% for those above 80 years old.² Falls also account for 85% of all geriatric trauma presenting to the emergency department (ED) in Singapore,³ with the crude incidence rate of unintentional falls at 277.7 per 100,000 for adults aged 60 years and older.⁴ Falls in older adults result in significant morbidity and mortality from hip fractures, traumatic brain and other injuries, and have significant impact on disability, quality of life and socio-economic burden.^{5,6} With the exponential increase in the number of older persons in Singapore, where 1 in 5 individuals are above 65 years old by 2021,⁷ there is an urgent need for effective falls prevention strategies in the ED. This area of research is developing in EDs around the world,^{8–10} but is more limited in Singapore.¹¹ As such, this paper aims to provide a falls prevention assessment tool using the acronym, “MA-PhD⁴, GET CLEARS!” that is comprehensive and evidence-based, yet brief and easy to remember. It is also tailored to the Singapore context, as an effort to prevent falls for those who are planned for discharge from the ED in Singapore.

Based on the 2015 Singapore Health Promotion Board-Ministry of Health clinical guidelines, all individuals who are 65 years and older should be asked for history of falls, and screened for gait and balance

problems during a clinical encounter, and those who have fallen more than once in 6 months or with gait and balance deficits should be offered a comprehensive falls assessment.¹² This is in keeping with international falls guidelines.^{13–16} Most Singapore EDs have geriatric-trained nurses and/or case managers who can undertake such an assessment during weekday office hours (8am–5pm). A successful ED falls prevention strategy, in addition to effective detection of fall risk (such as the systematic screening tool presented here), will require protocolised care linkages from the ED to other health services for the issues detected. In this paper, each section is linked to care that is appropriate for the Singapore context—a clinical pharmacist for medicine reconciliation, an ophthalmology review for impaired visual acuity, a geriatrician or psycho-geriatric service for cognitive assessment, physiotherapy or occupational therapy for gait training and home visits to address modifiable environmental risk factors, as well as follow-up and continuity of care by the patient’s family physician.

Addressing modifiable risks factors for geriatric falls: MA-PHD⁴, GET CLEARS! Risk factors for falls in older persons are often classified into intrinsic and extrinsic factors. They can be further grouped into modifiable or non-modifiable factors. Falls prevention interventions target the modifiable factors.

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Modifiable intrinsic risks factors are captured in the acronym, “MA-PhD⁴” that stands for Medication review, Acuity (visual), Postural hypotension, Delirium/Dementia and Depression/vitamin D.

Medication review. Growing evidence suggests that medication review by a clinical pharmacist can lead to reduction in falls and hospital admissions among older adults.¹⁷ While the aim is to achieve a pharmacist review in ED itself, a more feasible short to mid-term goal can be to establish referral workflows to early outpatient pharmacist reviews within the week for suitable patients. Our referral criteria include having two or more of the following: clinical concerns of medication non-compliance; unclear indications; polypharmacy (≥ 5 medications); medication adverse reactions (e.g. falls, postural hypotension, urinary retention, constipation and bleeding risks); use of high-risk drugs (e.g. anticoagulants, corticosteroids and non-steroidal anti-inflammatory drugs); or the presence of high-risk conditions (i.e. diabetes, renal or heart failure). This should prompt a referral to a medication reconciliation clinic in the hospital or the polyclinic (depending on where the patient’s regular appointments are), together with a review by a medical practitioner if indicated.

Acuity (visual). Harwood et al. demonstrated that cataract surgery for older women with cataracts decreased falls and fall risk, and lowered anxiety, depression, visual disability and handicap compared with controls.¹⁸ As such, older adult patients should be asked about problems with vision as well as screened for decrease in visual acuity. If found to have deficits, then appropriate referrals to ophthalmology may be initiated from the ED as per protocols.

Postural hypotension. Postural hypotension, a drop of blood pressure of more than 20mmHg (systolic) and 10mmHg (diastolic) upon standing for 1 minute from a lying position, is associated with giddiness, syncope and falls.¹⁹ Its usefulness in ED includes its role in the clinical evaluation of syncope, as well as falls prevention.²⁰ Common causes include dehydration, medications such as anti-hypertensives and alpha blockers, and autonomic neuropathy. Postural hypotension can often be improved through rehydration, medication simplification, and simple non-pharmacological measures such as patient education to stand up slowly, learn simple exercises, and/or use compression stockings, although this is not well tolerated in Singapore. Refractory cases may need to be referred to a geriatrician or the relevant specialty (e.g. neurology or cardiology) for assessment and pharmacological

treatment. Most other cases, however, can be followed up by the patient’s general practitioner, and at a medication reconciliation clinic (see previous medication review section), if the postural hypotension is thought to be associated with medication-related issues. If it occurs in a patient who had a fall with multifactorial fall risk, but who is thought to be suitable for discharge, the patient can be referred to the hospital’s transitional care programme for a more thorough assessment and home visit follow-up, and/or to a geriatric falls clinic for early review.

Delirium/dementia. Both delirium and dementia are significant risk factors for falls in older adults.^{21,22} The 4 A’s test or 4AT, is a simple yet sensitive clinical screening tool for delirium, comprising 4 items: an assessment for level of alertness, the Abbreviated Mental Test 4 (AMT-4), attention testing using months backwards, and screening for whether there is an acute change in mental status. A total score of ≥ 4 suggests possible delirium.²³ A patient with suspected delirium would need to be admitted and worked up for a variety of causes including infections, electrolyte abnormalities, intracranial events, cardiopulmonary disease, and bladder and bowel issues. The key to delirium, though, is that it is reversible and preventative measures should be taught to ED staff,²⁴ with workflows put in place for early review by geriatric teams in ED or in specialised frailty units once suspected.²⁵

The 4AT also includes the Abbreviated Mental Test 4 (AMT-4), which is a good ED screening tool for dementia.²² Using correct identification of age, date of birth, name of place and year to screen for impaired cognition (indicated by ≥ 1 wrong answer), a positive screen should prompt consent taking from the patient and/or family for an early outpatient referral to a geriatric or psycho-geriatric service for further cognitive evaluation.

Depression/vitamin D. Depression in older adults is associated with falls through a multifactorial relationship.²⁶ A simple but effective screening tool that may be feasible in the ED is the Patient Health Questionnaire-2 (PHQ-2) with only 2 simple questions.²⁷ A score of ≥ 3 is a positive screen for depression, and should prompt a referral to the psychiatric clinic for further evaluation. Vitamin D therapy has also been shown to reduce falls and prevent fractures in older adults.^{28,29} Older adults should be referred to their general practitioner or polyclinic to check their vitamin D levels and eligibility to start supplementation with a letter template stating the above.

Modifiable extrinsic risks factors: GET CLEARS!

A falls screen in the ED should also include a brief gait assessment by getting the patient up to walk, and simple function assessment through observation and questions on basic activities of daily living and home care support.

If there are concerns about fall risk from the patient's gait due to poor coordination and balance, significant motor deficit (e.g. hemiplegia, severe Parkinson's disease and amputation), or a need for assistance during mobilisation, a physiotherapy referral should be initiated for a Gait and Exercise Training (GET) evaluation in the ED during weekday office hours, or arrange to have the patient admitted to the ED short stay unit for evaluation the next day, before ED discharge. Physiotherapists' interventions include assessment of patients' gait, prescription of exercises to improve their strength and balance, and/or recommendations for suitable walking or adaptive devices to help patients mobilise safely, to prevent frailty and falls.^{30,31} They would then recommend that the patient is fit for discharge and may give an outpatient appointment to follow up, or be admitted to the ED short stay unit for a repeat session, or be admitted to a step-down unit for longer rehabilitation of a few weeks.

If there is a suspected decline in function, which could affect activities of daily living and pose a falls risk, a referral to the occupational therapist in the ED can be made during weekday office hours. The patient will be asked about their home environment with a CLEARS assessment (Clutter, Lighting and vision, Emergency, Assistive aids, Relocate items and Shoes). Assessment and education will be conducted by the therapist, and a resource pack will be given to the patient and/or their caregiver, if appropriate. The pack includes a checklist on home safety, information on grab bar installation, anti-slip flooring application and falls prevention, as well as an equipment list. The therapist will also assess if the patient requires an outpatient follow-up or a home visit to assess home safety, and suggest modifications to the home so as to reduce falls.³² Interventions and suggestions would usually include (1) removing fall hazards like clutter, wires, and loose rugs by replacing them with anti-slip mats; (2) ensuring good lighting (including appropriate night lights), placing contrast tapes over curbs or steps as visual prompts; (3) ensuring accessible emergency response during falls, like the use of fall pendants and telecommunication devices to allow for immediate activation of emergency contacts post-fall; (4) modifying the home with installation of

grab bars to improve home safety, or recommending changes in behaviour and lifestyle, such as in using the pill alarm box to improve medication compliance; (5) relocating items to prevent over- or under-reach; and (6) replacing ill-fitting shoes with well-fitted shoes or sandals with anti-slip soles.

Conclusion. This article introduces a structured screening tool and system for falls prevention in older patients in the ED. The authors are collecting outcome and efficacy data of using this system in reducing falls in the Singapore context for subsequent publication.

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