Hong Kong Reference Framework for Preventive Care for Older Adults in Primary Care Settings

Module on Falls in Elderly

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Module on Falls in Elderly

1. Importance of Falls

Fall is defined as a subject’s unintentional coming to rest on the ground or at a lower level with or without loss of consciousness.\(^1\) Falls are a major cause of morbidity and mortality in older population. They are also associated with fear of falling, functional decline and early admission to residential care home. According to the Core Document of this Reference Framework, primary care providers are recommended to assess the risk of falls in older adults opportunistically.\(^2\)

1.1. Epidemiology

Between 30% and 40% of community dwelling older adults aged over 65 fall at least once every year, the rates are higher after 75 and among old age home residents.\(^2,3\) The annual fall rates in local elderly population ranged from some twenty to thirty percent, with almost half of falls occurred indoors and a higher incidence was found in winter.\(^4\) Majority of fallers reported injuries while fractures occurred in around 9.9%.\(^5\)

1.2. Common conditions leading to falls in older adults in Hong Kong

Falls in older adults are usually the interplay between intrinsic factors (e.g. muscle weakness), extrinsic factors (e.g. obstacles in the path) and/or risky behavior. Local and Chinese population studies have found the following independent risk factors for falls in older people:\(^5-7\)

- Women
- Increasing age
- Fall history
- Decline in basic or instrumental activity of daily living (ADL)
- Living alone
- Multiple medications use
- Gait abnormalities or instability
- Co-morbidities, like diabetes mellitus and eye problems
- Fear of falling
- Use of walking aids
- Self perceived poor health
2. Screening

2.1. History

Under-reporting of fall is common. Hence, direct questioning is often required for case finding.\(^8\) Opportunistic screening for older people (age > 65) at medical encounters at least once every 12 months is recommended. Any positive answer to the following screening questions signifies that the person screened is at a high risk of fall that warrants further evaluation.

- Whether there is history of two or more falls within the last twelve months?
- Whether the patient is presented with acute fall?
- Whether there is presence of clinical conditions (e.g. stroke, Parkinson’s disease, osteoarthritis) that leads to either weakness of the lower limb, balance and/or gait impairment?

2.2. Tests

Balance and gait should be evaluated in persons with history of fall or fall risk. The Timed Up and Go Test (TUG) is a frequently used test of gait or balance.\(^9\)

The Timed Up and Go Test is to measure the time to rise from the chair, walk at regular pace for 3 metres, turn around and walk back to the chair and finally sit down. Cut off values for fall risk are variable in literatures, which may reflect different subjects characteristics and methodologies.\(^10\) The cut off value of 14 seconds is conventionally adopted to discriminate fallers and non-fallers in healthy, highly functional older people.\(^11\) On the other hand, in frail elderly, a time score of less than 20 seconds identifies elderly people who are independently mobile while more than 30 seconds indicates a need of assistance for mobility task.\(^9\) The TUG should be considered together with other relevant factors (e.g. medical and drug history, physical assessment, circumstances of the fall) to identify individuals at high risk of falls.\(^12\)

Please refer to the Annex for further details of the Timed Up and Go Test.

There are other tests which could be used to test gait or balance. Among them includes the One Leg Balance Test which is a simple clinical static balance test that can provide information on the risk of injurious falls in community-dwelling older adults.\(^13,14\)
3. Post-screening assessment

3.1. History
A fall-focused history should include frequency of falling, time, place, activity and symptoms at the time of fall (for example dizziness or syncope), precipitating causes and consequences, like injury. Witness(es) should be sought to look for unrecognized syncope due to amnesia and also for fallers with cognitive impairment. Other relevant history includes past medical illnesses and medications, for example psychotropic, sedative and hypnotic drugs.

3.2. Physical examination
Physical examination should include testing of gait, balance and lower limb joint function. Postural blood pressure and vision should also be checked. Other neurological or cardiovascular examination, like mental status, extra-pyramidal functions, muscle power and heart rate etc should be checked whenever necessary. Feet should be examined for corns, bunion and deformity and footwear should also be examined.

3.3. Investigations and referrals
Investigations and referrals to geriatricians or allied health professionals should be guided by history and physical findings. For referral criteria, please refer to Section 4.6 of this Module for further information.

4. Management
Primary care providers have important role in fall prevention, identification and management among older adults. For older adults with history of falls, the causes of the falls should be carefully assessed. Any acute or reversible deficits should be properly treated to reduce the cumulative burden of the deficits, such as improvement of vision and footwear or drug review. In particular, patients with falls and syncope or presyncope (which are common causes of falls) should be worked up and managed accordingly. Possible causes include postural hypotension, cardiac arrhythmia or neurological diseases etc.
Older persons with a single fall without reported or demonstrable balance and gait abnormalities may not require further extensive fall risk assessment. Nevertheless, for this group of older adults and those who do not have recent falls, primary care providers should also identify whether there are risk factors and give appropriate advice and interventions, and refer the patients to specialists if necessary.

Primary care doctors are encouraged to promote practice of healthy lifestyle as it is conducive to healthy ageing as well as fall prevention. Consultation and advice may also focus on reducing the risk factors of falls.

4.1. Physical activity
Exercise, as a single or part of multifactorial intervention, is recommended in reducing falls in community dwelling older people. Challenging balance exercise, like Tai Chi or Otago Exercise Program, in home or group setting, when performed for two hours or more per week is effective to prevent fall. Besides, muscle strengthening and endurance exercise are also helpful. Brisk walking alone is not recommended for fall prevention. It should be noted that adaptation is required for people with limited exercise tolerance or cognitive impairment.

4.2. Healthy eating habit and balanced diet
A healthy balanced diet rich in calcium and Vitamin D is recommended. Vitamin D supplementation reduces falls in patients with low Vitamin D level and should also be considered for older adults who are susceptible to deficiency, such as residents of old age home. Vitamin D supplementation of at least 800IU could be considered for older adults who would be susceptible to Vitamin D deficiency.

4.3. Awareness to adverse drug reactions
Primary care providers should always review older people’s current medication to avoid drug induced sedating effect or hypotension. For instance, psychoactive medications increase fall risk in older people and should be avoided, reduced or withdrawn as far as possible. These include long or short acting benzodiazepam, selective serotonin reuptake inhibitors or other antidepressants, typical and atypical antipsychotics as well hypnotics like Zolpidem and Zopiclone. Primary care doctors should be cautious about the use of such medications and consider to limit their use at lowest dosage to patients who do not respond to non-pharmacological intervention or alternative treatment. Periodic review of indications and side effects of medications should be undertaken. Various tapering schedules of benzodiazepam have been described and one example is stepped withdrawal of 25% of equivalent diazepam dose per week.
4.4. Overcoming visual impairment
Visual impairment is an independent risk factor for falls. Cataract surgery on the first eye should be expedited in older person in whom surgery is indicated.\textsuperscript{18} Multifocal lens increase fall risk by reducing contrast sensitivity and depth perception in the lower visual field during outdoor activities and stairs walking. For older adults having regular outdoor activities, single lens glasses should be worn instead.\textsuperscript{19,20}

4.5. Home safety
Home safety assessment and modification with transfer training and education are effective in reducing falls in high risk population, such as patients with severe visual impairment. Appropriate footwear should be suggested to all older adult. The benefits are greatest when delivered by an occupational therapist or as part of a multifactorial strategy.\textsuperscript{16,20}

Older adults should be counseled on their individual fall risk and potential implications, as underestimation of fall risk is frequent. Strategies to maintain independent living in general should be emphasized and the positive aspects of fall prevention such as social and health benefits should be highlighted.\textsuperscript{15}

4.6. Referral
Patients with high fall risk might benefit from referrals to geriatricians or Fall Clinic for multi-factorial assessment and intervention.\textsuperscript{8} These include patients with:

a. **Recurrent falls:** two or more falls in past one year
b. **Acute falls:** falls requiring medical attention or presenting to emergency department
c. Demonstrating or reporting **gait and or balance problem**
4.7. Community Resources

The following are community resources on falls for elderly people:

Falls Prevention

- 足不可失─長者防跌小貼士

Elderly Safety

- 認識長者安全

Foot Care

- 足部護理

Elderly self-care tips

- 長者個人護理貼士

Leaflets for fall prevention (in Chinese version only): 長者防跌錦囊

4.8. Algorithm for falls screening, subsequent assessment and management for older people
(Modified from Hong Kong Geriatrics Society Curriculum in Geriatrics Medicine ²¹)

Opportunistic Screening for older people (age > 65) at medical encounters at least once every 12 months

Any one or more of the following?
1. Had > 2 falls in past 12 months?
2. Presented with acute fall?
3. Difficulty with walking or balance?

Yes

Loss of consciousness?

Yes

Required detailed cardiovascular and neurological assessment

No

Had one fall in past 12 months?

Yes

Timed Up and Go Test

>14 seconds OR Abnormal / unsteady gait?

Yes

Consider multidisciplinary / multifactorial interventions
1. Adjust medications
2. Exercise program
3. Treat visual impairment and medical conditions
4. Vitamin D supplement
5. Modify home environment, advice on footwear and use of walking aids if needed

No

Assessment:
1. Circumstances of fall
2. Environment
3. Medical / drug history
4. Physical assessment e.g. vital signs, gait and balance, visual acuity, cardiovascular, neurological, lower limb power, feet and footwear

Health advice on fall prevention and reassess periodically

Consider referral to specialist for further management
Annex: Timed Up and Go Test

Instructions:
1. Begin the test with the patient sitting correctly in a standard arm chair (approximate seat height of 46 cm), the patient’s back should rest on the back of the chair. The chair should be stable and positioned such that it will not move when patient moves from sitting to standing.
2. Mark on the floor 3 metres away from the chair so that it is easily seen by the patient.
3. Ask the patient to perform the following series of manoeuvres:
   - Rise from the chair
   - Walk at regular pace for 3 metres to the mark on the floor, customary walking aid is allowed
   - Turn around and walk back to the chair
   - Sit down in the chair
4. Start timing when patient rise from the chair and stop timing when the patient is seated again correctly in the chair.
5. The patient may use any walking aid that is usually used during ambulation, but may not be assisted by another person.
6. The patient can be given a practice trial that is not timed before testing.

Interpretation:
Balance and gait should be evaluated in persons with history of fall or fall risk. The Timed Up and Go Test (TUG) is a frequently used test of gait or balance. The Timed Up and Go Test is to measure the time to rise from the chair, walk at regular pace for 3 metres, turn around and walk back to the chair and finally sit down. Cut off values for fall risk are variable in literatures, which may reflect different subjects characteristics and methodologies. The cut off value of 14 seconds is conventionally adopted to discriminate fallers and non-fallers in healthy, highly functional older people. On the other hand, in frail elderly, a time score of less than 20 seconds identifies elderly people who are independently mobile while more than 30 seconds indicates a need of assistance for mobility task. TUG should be considered together with other relevant factors (e.g. medical and drug history, physical assessment, circumstances of the fall) to identify individuals at high risk of falls.
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References


