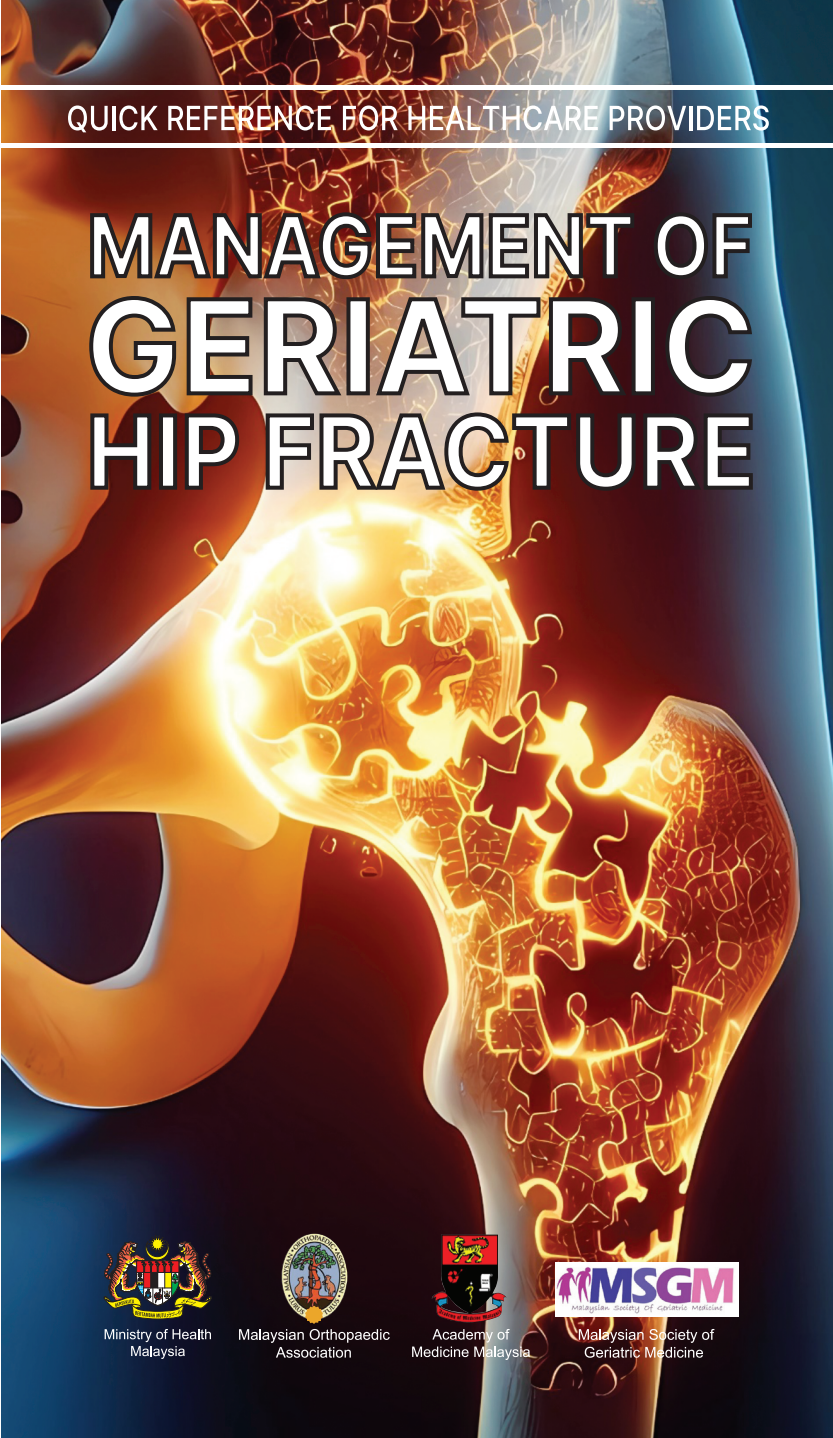
QUICK REFERENCE FOR HEALTHCARE PROVIDERS

MANAGEMENT OF GERIATRIC HIP FRACTURE



Ministry of Health Malaysia
Malaysian Orthopaedic Association
Academy of Medicine Malaysia
Malaysian Society of Geriatric Medicine

KEY MESSAGES

1. Geriatric hip fracture (GHF) is a break in the proximal part of the femur bone and/or around the hip joint following low energy trauma.
2. Geriatric patients with hip pain following a fall need to be assessed to rule out hip fracture.
3. Plain radiographs of anterior-posterior pelvis (with 15° lower limb internal rotation in neutral abduction-adduction) & lateral hip views are the main imaging modalities. However, a normal finding in plain radiograph does not exclude a fractured hip.
4. The definitive treatment for GHF is surgical intervention with the aims to control pain, allow early mobilisation & preserve good functional outcomes.
5. Analgesia should be prescribed adequately in GHF peri-operatively.
6. Frail older patients with hip fracture should receive comprehensive geriatric assessment (CGA).
7. Cemented stem should be offered for arthroplasty in displaced neck of femur fracture in geriatric patients.
8. In GHF, cephalomedullary nail (CMN) or extramedullary device may be offered for stable intertrochanteric fracture. CMN is the preferred choice for unstable intertrochanteric fracture.
9. Surgery should be performed within 48 hours of admission in medically stable GHF patients.
10. Early mobilisation should be advocated as early as post-operative day 1 in GHF.

This Quick Reference provides key messages & a summary of the main recommendations in the Clinical Practice Guidelines (CPG) Management of Geriatric Hip Fracture.

Details of the evidence supporting these recommendations can be found in the above CPG, available on the following websites:
Ministry of Health Malaysia: www.moh.gov.my
Academy of Medicine Malaysia: www.acadmed.org.my
Malaysian Orthopaedics Association: www.moa-home.com
Malaysian Society of Geriatric Medicine: www.msgm.com.my

CLINICAL PRACTICE GUIDELINES SECRETARIAT
Malaysian Health Technology Assessment Section (MaHTAS)
Medical Development Division, Ministry of Health Malaysia
Level 4, Block E1, Precinct 1,
Federal Government Administrative Centre
62590 Putrajaya, Malaysia
Tel: 603-88831229
E-mail: htamalaysia@moh.gov.my

RISK FACTORS

- Established risk factors for GHF are:
  - increasing age
  - low bone density
  - poor vision
  - impaired gait & balance
  - hazardous living environments (e.g. cluttered spaces, loose rugs & mats or handrails & grab bars where appropriate)

DIAGNOSIS

- Patients with GHF often present with a history of fall & may complain of:
  - hip pain and/or
  - inability to weight bear or walk
- Examinations may reveal the following:
  - affected lower limb externally rotated & shortened
  - bruising, deformity, swelling & ecchymosis at site of fracture
  - localised tenderness on palpation
  - inability to perform straight leg raising
  - movement causes pain
- Those with occult GHF (presence of symptoms & signs of hip fractures despite normal plain radiographs) should have computed tomography scan or magnetic resonance imaging done to rule out the fracture.

PRE-OPERATIVE OPTIMISATION

- Treatment of pain in GHF is a multimodal approach. Peripheral nerve block may be considered if pain persists & resources are available.
- CGA is a multidisciplinary diagnostic & treatment process that addresses the medical, psychosocial & functional limitations.
- Delirium should be assessed & managed as it is a common complication among older patients with hip fractures.
- Oral nutritional support should be considered for all patients with GHF.
- A haemoglobin (Hb) level of ≥10 g/dL is aimed for surgery on GHF. Patients with Hb 8 - 10 g/dL may undergo the surgery if they are asymptomatic with no underlying ischemic heart disease.
- Patients with GHF should be given venous thromboembolism prophylaxis (chemoprophylaxis and/or mechanical prophylaxis).
- Pre-operative evaluation of GHF patients is important in identifying high-risk patients who require close monitoring post-operatively.

SURGERY

- In patients with stable (impacted/non-displaced) femoral neck fractures, arthroplasty, internal fixation or non-operative management may be considered.
- Total hip replacement is recommended for patients with either displaced or non-displaced neck of femur fracture who meet all of the following criteria:
  - able to walk independently outdoors with or without the use of a stick
  - no co-morbidity that makes the procedure unsuitable for them
  - expected to be able to carry out ADL independently beyond two years

- Intertrochanteric fractures can be categorised into stable and unstable fractures.

Subgroups:
Isolated single trochanter fracture
31A1.1*

Two-part fracture
31A1.2

Latered wall intact (>20.5 mm) fracture
31A1.3

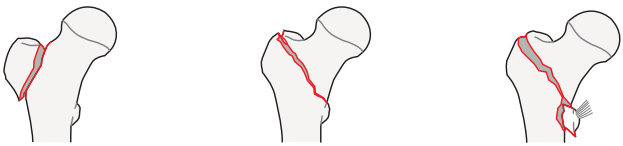


Figure 1. Stable intertrochanteric femur fracture pattern (31A1 and its subtypes)

With 1 intermediate fragment
31A2.2

With 2 or more intermediate fragments
31A2.3

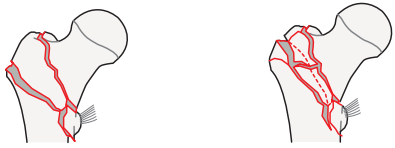


Figure 2. Unstable intertrochanteric femur fracture pattern with compromised lateral wall and posteromedial buttress fracture (31A2 and its subtypes)

Simple oblique fracture
31A3.1

Simple transverse fracture
31A3.2

Wedge or multifragmentary fracture
31A3.3

Figure 3. Unstable intertrochanteric femur fracture with reverse oblique pattern (31A3 and its subtypes)

- CMN is the preferred surgical fixation technique in subtrochanteric fracture in older adults.

REHABILITATION

- Rehabilitation addresses the impact of a health condition on a person's everyday life by optimising their function and reducing their experience of disability. A multidisciplinary approach is the preferred choice.

PREVENTION

- Geriatric population should be screened & assessed for falls risk. Education about falls prevention should be offered accordingly.
- Fracture Liaison Service has become an important component of management in secondary fracture prevention.

PRE-OPERATIVE ANALGESIA

Drug	Recommended dose	Comments
Paracetamol	325 - 500 mg 4-hourly or 500 - 1,000 mg 6-hourly per oral (PO)	• Maximum dose usually 4 g daily • Reduce maximum dose 50% to 75% in patients with hepatic insufficiency or history of alcohol abuse
Celecoxib Etoricoxib	200 mg twice daily (BD) for 2 - 5 days, then 200 mg once daily (OD) PO 90 mg OD PO	• Higher doses are associated with higher incidence of gastrointestinal (GI) & cardiovascular side effects • Consider prescribing proton-pump inhibitor to reduce GI side effects & when patients on aspirin
Morphine	2 - 3 mg 4- to 6-hourly (subcutaneous (SC) or PO)	• Most commonly used for episodic or breakthrough pain • Intravenous (IV) morphine may be considered in severe pain (refer to Guidelines of Pain as 5th Vital Sign)
Oxycodone	2.5 - 5 mg 4- to 6-hourly PO	• Useful for acute recurrent, episodic or breakthrough pain
Dihydrocodeine tartrate (DF118)	30 - 60 mg 6- to 8-hourly PO	• Useful for acute recurrent, episodic or breakthrough pain
Tramadol	50 mg 6- to 12-hourly PO	• Monitor side effects e.g. confusion, drowsiness, constipation & nausea • Risk of seizures in high doses • May precipitate serotonin syndrome if used with selective serotonin reuptake inhibitors • Use with caution in renal impairment; if creatinine clearance (CrCl) <30 mL/min, requires dose reduction

COMPREHENSIVE GERIATRIC ASSESSMENT

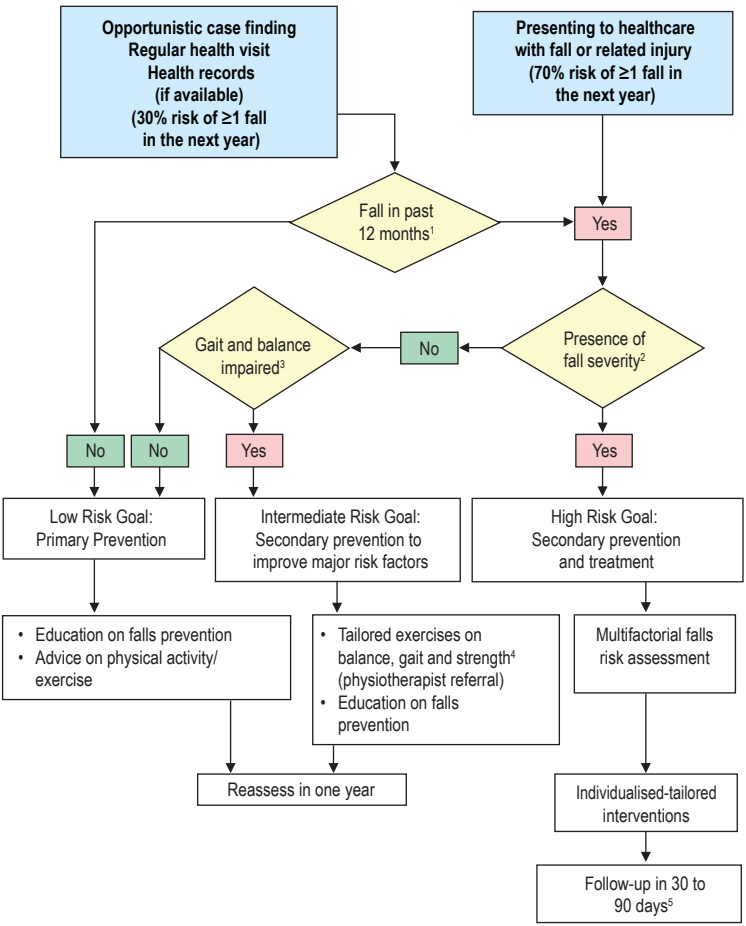
- The main dimensions covered in a CGA should include the following assessments:

Physical	Functional	Psychological	Social
• Presenting complaint • Acute medical issues which include cardiac assessment • Past medical history • Medication review • Nutritional status (e.g. MNA-SF) • Frailty assessment (e.g. Clinical Frailty Scale) Note: Advanced directives should also be explored	• Activities of daily living (e.g. Barthel Index) • Functional ability • Balance & gait stability • Mobility	• Delirium assessment (e.g. 4AT Delirium Detection Tool) • Baseline cognition [e.g. Mini Mental State Examination (MMSE), Abbreviated Mental Test Score (AMTS)] • Mood [e.g. Geriatric Depression Scale (GDS)]	• Social support • Caregiver stress • Living arrangements (domestic support) • Living environment • Financial circumstances

ASSESSMENT OF FALLS RISK FACTORS & INTERVENTIONS TO REDUCE IDENTIFIED RISK FACTORS

Assessment	Interventions
Evaluate lower limb muscle strength, gait, & balance *Timed Up & Go* *(high risk >13.5 sec)*	Poor gait, strength & balance • Refer for physical therapy • Engagement in exercise programmes that involve balance, functional exercise & resistance training
Identify medications that increase fall risk	Medication(s) likely to increase fall risk • Optimise medications by stopping, switching or reducing dosage (especially for psychoactive medications)
Ask about potential home hazards *(e.g. slippery bathroom floor, loose rugs)*	Home hazards likely to increase fall risk • Refer to occupational therapist to evaluate home safety assessment ± modification
Measure positional blood pressure *(supine & standing blood pressure measurement)*	Orthostatic hypotension observed • Review medications • Encourage adequate hydration • Consider use of compression stockings, abdominal binders or physical manoeuvres
Check visual acuity	Visual impairment observed • Refer ophthalmologist/optometrist • Avoid wearing multifocal glasses when walking, particularly on stairs
Assess feet & footwear	Feet or footwear issues identified • Appropriate treatment for foot problem identified • Advise wearing well-fitted shoes indoors & outdoors
Assess vitamin D intake	Vitamin D deficiency observed or likely • Recommend daily vitamin D (800 - 1000 IU) supplement for individuals with proven vitamin D deficiency
Previous history of falls OR fear of falling	• Provide falls education & information to all patients • Regular follow-up to ensure adherence to interventions

ALGORITHM ON RISK STRATIFICATION, ASSESSMENT & INTERVENTIONS FOR COMMUNITY-DWELLING OLDER ADULTS



[1]To increase sensitivity, **use three Key Questions (3KQ)** which any positive answer to a) Has fallen in the past year? b) Feels unsteady when standing or walking? or c) Worries about falling? prompts to "fall severity" step.
Fall severity: fall with injuries (severe enough to consult with a physician), laying on the ground with no capacity to get up, a visit to emergency room or loss of consciousness/suspected syncope.

[2]**Assess fall severity (one is enough)**: • injury • ≥2 falls last year • frailty • lying on the floor/unable to get up • loss of consciousness/suspected syncope (syncope suspicion should trigger evaluation/management)

[3]**Gait speed** ≤0.8 m/s or alternatively **Timed up and go** >15 seconds

[4]**Exercise on balance/leg strength** is recommended for the intermediate group which may also be **referred to a physiotherapist.**

[5]**High risk individuals** with falls can deteriorate rapidly and close follow-up is recommended which is guided on frequency of consequent health service utilisation.

ALGORITHM ON MANAGEMENT OF GERIATRIC HIP FRACTURE