

Hip Fracture Evidence Based Clinical Practice Guidelines

Orthopaedic Section APTA
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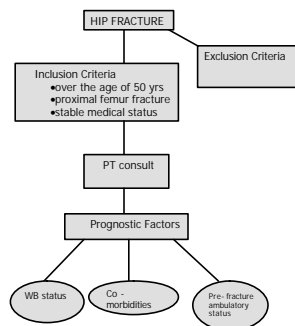
Hip Panel

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DRAFT

Overview of Format for ICF Hip Fracture Guidelines

- **Introduction**
- Organization
- Target Audience
- Pathophysiology
- Epidemiology
- Co-morbidities
- **Guidelines**
- Population Covered
- Prognostic Groups
- Recommended tests
- Recommended PT Interventions
- **Summary of Recommendations**
- **Appendix**
 - Evidence Grading Scale
 - Algorithm
 - ICF coding of hip fracture



INTRODUCTION

- Proximal femur fractures (hip fracture) are a major health problem in the elderly. A significant percentage of individuals who sustain a hip fracture have increased mortality for up to one year.
- Often the individuals who survive hip fracture do not return to their pre-fracture functional status or living arrangements. Physical therapists have a major role in the post-operative care of this population.

INTRODUCTION

- There is limited scientific literature on the best methods for post-operative management of elderly individuals who have sustained a hip fracture. These guidelines are based on the evidence available and where published evidence is not available, or is equivocal, expert consensus opinion is used. The guidelines use a rating scale to evaluate the recommendations.

ORGANIZATION OF THE GUIDELINES

- Section 1
 - Target audience, pathophysiology/pathology, epidemiology, common co-morbidities
- Section 2
 - Describes PT management and consensus recommendations based on the available evidence.
- Section 3
 - Classification of the target population using the WHO ICF system.
- Section 4
 - Data dictionary that describes the examination tests, definition, measurement or test method, nature of the test, units of measurement used and its measurement

SECTION ONE

TARGET AUDIENCE

- These guidelines are intended primarily for PTs. Physicians, nurses, social workers, and other health care personnel who care for elderly patients with hip fractures may find them helpful as well.
- Consumers who may wish to review these guidelines are encouraged to do so in consultation with a physical therapist.

PATHOPHYSIOLOGY/ PATHOLOGY

- Brief description of typical presentation

EPIDEMIOLOGY

- US >250,000 hip fractures occur per annum
- Women > Men
- Incidence doubles each decade after 50
- Usually associated with low energy trauma such as a fall from standing
- The vast majority with a non-pathologic hip fracture will require prompt ORIF or arthroplasty.
- Postop - most require weeks to months of in-patient rehabilitation.

EPIDEMIOLOGY

- Sentinel event.
- Co-morbidities are usually present at the time of fracture or develop soon thereafter
- Many co-morbidities associated with a lack of mobility during the peri-operative period.
- Many co-morbidities preventable or reversible with prompt post-op exercise and ambulation.

EPIDEMIOLOGY

- Many do not regain pre-fracture health & function
- Many never return to their pre-fracture living arrangements.
- Increase in mortality up to 1 year following hip fracture.
- Prognosis can be good for full recovery. For most individuals the sequela from hip fracture and the common co-morbidities are largely reversible. However, to return to pre-fracture health and function requires a consistent, coordinated, concerted effort of rehabilitation by the health care team, the individual, and their social support structure.

COMORBIDITIES

- Three overlapping categories:
 - Pre-fracture changes in health status such as dehydration, untoward effects of poly-pharmacy, and decreased nutritional status
 - Peri-operative complications such as acute confusional state (delirium), narcotic sedation and hemodynamic fluctuations
 - Co-morbidities associated with immobilization such as; UTI, atelectasis, pneumonia, and thromboembolic events

COMORBIDITIES

- Prevention requires seamless coordination of care and prompt intervention
- Some occur prior to seeking medical attention or are otherwise not preventable. Most are treatable and reversible
- Delays in dx and prompt intervention can result in a cascade of additional comorbidities and further deterioration of health status which can negatively impact prognosis
- It is critical for the individual with a hip fracture to receive “the right care at the right time” throughout the continuum of care

SECTION TWO

ICF Hip Fracture Guidelines

- Apply to the vast majority of elderly with a hip fracture. Following admission to a hospital they are medically stabilized and should promptly undergo surgery for the fracture. Once stable after surgery the individual enters the rehabilitation phase of care. It is at this point where the PT is typically first consulted.

INCLUSIONARY AND EXCLUSIONARY FACTORS

Patient Description	
Inclusions – Individual must meet all criteria	<ul style="list-style-type: none"> •Over the age of 50 years •Proximal femur fracture •Stable medical status
Exclusions – Meeting one criterion will exclude from the guidelines	<ul style="list-style-type: none"> •Under 50 years of age •Pathological fracture •Other fracture(s) in addition to proximal femoral fracture •Unstable medical status •Other major trauma

RECOMMENDATION

- For individuals who have sustained a hip fracture a physical therapist should be consulted as soon as medically stable after surgery (POD1).) Quality of Evidence: XXX; benefit: XXX; Grade of recommendation: X.

PT CONSULTATION

- A physical therapist should see the patient on POD1. At that time the physical therapist will conduct a history and examination of the individual, evaluate the findings, render a diagnosis and prognosis, and develop a plan of care.

PROGNOSTIC FACTORS IN DECISION MAKING

Group One: FULL RECOVERY PROGNOSIS – Individuals must meet all criteria	Group Two: LIMITED &/OR DELAYED RECOVERY PROGNOSIS – Individuals may have 1 or more of the following	Group Three: BASELINE RECOVERY PROGNOSIS
<ul style="list-style-type: none"> •Adequate fixation of fracture allowing for partial to FWB and activity as tolerated •There are NO co morbidities which limit participation (peri-operative changes in mental status should not exclude from this group) •Ambulatory before femur fracture 	<ul style="list-style-type: none"> •There is Not adequate fixation of fracture allowing for partial to FWB and activity as tolerated •Co morbidities exists which limit participation •Ambulatory before femur fracture 	<ul style="list-style-type: none"> •Not ambulatory before the femur fracture •Severe cognitive impairment prior to hip fracture (unable to safely follow commands)

IMPAIRMENTS, DISABILITIES AND PARTICIPATION PROBLEMS GROUPS 1 & 2

- Pain in the lower limb
- Decreased mobility of the hip joint
- Decreased power of muscles in the hip and lower extremity
- Decreased endurance of hip and lower extremity muscles
- Altered gait pattern functions
- Sensation of muscle stiffness
- Repair function of skin

RECOMMENDATION

- Individuals who have sustained a hip fracture and who were ambulatory prior to the hip fracture should have the following evaluated by a PT:
 - Pain in the lower limb
 - Mobility of the hip joint
 - Power of muscles in the hip and lower extremity
 - Endurance of hip and lower extremity muscles
 - Gait pattern functions
 - Sensation of muscle stiffness
 - Repair function of skin
- Quality of Evidence: XXX; benefit: XXX; Grade of recommendation: X

RECOMMENDED TESTS FOR PROGNOSTIC GROUPS 1 & 2

Pain	Hip ROM in Degrees	Muscle Power	Gait	Function
<ul style="list-style-type: none"> •VAS •WOMAC •Harris Hip Score •FIM 	<ul style="list-style-type: none"> •Internal rotation •External rotation •Flexion •Abduction 	<ul style="list-style-type: none"> •MMT 	<ul style="list-style-type: none"> •Level of assistance needed •Use of assistive devices •Distance •Time •Cadence •Speed •Indoor •Outdoor •Uneven terrain •Activities 	<ul style="list-style-type: none"> •Sitting •Standing •Balance •Transfers •Walking •Putting on socks •Walking up stairs •Walking down stairs •Squatting •Functional reach test

RECOMMENDATION

- Individuals with hip fracture should have physical therapy interventions directed at restoring motion and strength sufficient to allow for their pre-fracture level of function at a minimum. Quality of Evidence XXX; benefit: XXX Grade of recommendation: X

RECOMMENDATION

- Individuals with a hip fracture should have interventions directed at restoring the ability to transfer and ambulate to allow for their pre-fracture level of function at a minimum. Quality of Evidence: XXX; benefit: XXX Grade of recommendation: X

RECOMMENDATION

- Patients with a hip fracture should have uninterrupted physical therapy until they have achieved their pre-fracture level of function or have demonstrated no further improvement. Quality of Evidence: XXX; benefit: XXX Grade of recommendation; X

INTERVENTION

- Individuals in Prognostic Groups 1 & 2 be placed in a prompt and intensive rehabilitation program to restore function and participation as fully and as soon as possible. Such a program can prevent the development of co-morbidities and may reduce the risk of mortality. Additionally, timely gains in function can allow for shorter in-patient care and for (earlier) return to pre-fracture living arrangements. This should also reduce health care costs.

Group 1: Commonly Provided Interventions	Group 2: Commonly Provided Interventions	Group 3: Commonly Provided Interventions
<ul style="list-style-type: none"> •Resistive strengthening •Aerobic •Balance/fall prevention •ROM/flexibility •Screening and intervention – education for osteoporosis •Environmental modifications •ADL/driving/work/sport/recreation Timing - Immediate post-op until discharge or pre-fracture status achieved •Medically stable patient should initiate intensive physical therapy on POD 1 consisting of: <ul style="list-style-type: none"> ○Transfers ○Positioning ○ROM ○Gait ○Fall prevention ○Balance training ○Low intensity strengthening and flexibility 	<ul style="list-style-type: none"> •Limited resistive strengthening •Limited Aerobic •Balance/fall prevention •ROM/flexibility •Screening and intervention – education for osteoporosis •Environmental modifications •ADL/driving/work/sport/recreation Timing - Immediate post-op until discharge or pre-fracture status achieved •Medically stable patient should initiate physical therapy on POD 1 to the extent cleared medically consisting of: <ul style="list-style-type: none"> ○Transfers ○Positioning ○ROM ○Gait ○Low intensity strengthening and flexibility ○ADL's 	<ul style="list-style-type: none"> •ROM/flexibility •Positioning Timing - Immediate post-op until discharge from Acute Setting •Medically stable patient should initiate physical therapy on POD 1 to the extent cleared medically consisting of: <ul style="list-style-type: none"> ○Positioning ○ROM Timing – Discharge from Acute setting until pre-fracture status achieved •Physical therapy should continue daily until adequate ROM is achieved to allow for transfers and positioning by nursing

CONSULTATION, COLLABORATION AND COORDINATION

- PTs consult, collaborate and coordinate with other disciplines. Depending where in the continuum of care an individual is a number of disciplines will be involved.
- Generally, individuals move from high utilization of medical services when they enter the hospital to a period of intermediate utilization when they transition to a rehab facility or home care to low utilization when they may require PT in the home or in an outpatient setting provided the recovery trajectory is favorable.

CONSULTATION, COLLABORATION AND COORDINATION

- Other disciplines who are typically involved in the care of the individual following a hip fracture include but are not limited to: dietician, psychologist, social worker, OT, geriatrician/PCP, ortho, endocrinologist, and nursing.
- The PT consults, collaborates and coordinates using a team approach to help the individual regain their pre-fracture function and independence, and to minimize the risk of future traumatic events through interventions to prevent falls, and improve bone health.

SUMMARY OF RECOMMENDATIONS

1. Restore pre-fracture level of function as soon as possible
2. Restore hip joint range of motion to allow for pre-fracture function
3. Restore hip joint muscle power to allow for pre-fracture function.
4. Continue physical therapy until pre-fracture function or no further gains in function are achieved.

EVIDENCE GRADING SCALE

- *Strong evidence:* A preponderance of level 1 and/or level 2 studies support this conclusion (at least 1 Level 1 study).
- *Moderate evidence:* A single high quality RCT or a preponderance of level 2 evidence supports this conclusion.
- *Weak evidence:* A Single Level 2 Study or a preponderance of Level 3, 4 studies support this conclusion; Practice surveys or clinician focus groups support this conclusion
- *Conflicting evidence:* Higher quality studies conducted on this topic disagree with respect to their conclusions.
- *Theoretical (Foundational) evidence:* A preponderance of evidence from animal studies, from conceptual models/principles, from basic sciences/bench research supports this conclusion.

SECTION THREE

ICF - Application to Hip Fracture

Body Functions Classification

b110- b139	Global Mental functions	assessing orientation pt. interview e.g. MME,
b28015	Pain in lower limb	NPRS/WOMAC pain scale/faces pain scale/ pain drawing intensity & location
b28016	Pain in joints	NPRS, VAS, Pain Faces Scale, WOMAC - Pain Scale drawing intensity & location
b4100 b415 b420 b4301 b4400 b4402 b455	Heart rate DVT BP O2 RR Depth of respiration Ex tolerance	Pulse CPR - sxs BP Pulse ox, hct RR Incentive spirometer RPE, heart rate response, 6" walk
b530	Weight maintenance & function	

Body Functions Classification

b545 b610- b639	Electrolyte & water balance Urinary function	Lab values, I & O Maintaining continence
b7100	Mobility of a single joint	All ROM (timeline of recovery will prioritize motion)
b7101	Mobility of several joints	Knee & ankle
b7300	Power of isolated muscles and muscle groups	MMT – limited by acuity, dynamometer, trendelenberg
b7400	Endurance of isolated muscles	Hip, quads HS Repetitions of active motion, ability to maintain sustained contraction
b770	Gait pattern functions	Velocity, step & stride length, assistive device, quality, weight bearing, negotiate uneven, safety, manual assistance, TUG, trendelenberg
b7800	Sensation of muscle stiffness	WOMAC, present or not
b810	Protective functions of skin	Color, odor, size depth, integrity, turgor
B820	Repair functions of skin	open, closed, draining, infection, scar

Body Structures Classification

s75000	Bone of the thigh	Imaging
s75001	Hip joint	Imaging, joint end feel
s75002	Muscles of thigh	Imaging, muscle length & density
s75003	Ligament and fascia of thigh	Imaging
s8104	Skin of lower extremity	visual inspection

Activities and Participation

- (this drives classification interventions)
- Measures for category
 - FIM, PPT, WOMAC, LEFS, HOS, MACTAR, Pt. Specific Index, Harris Hip Score

Activities and Participation

d410	Changing basic body position	
d415	Maintaining a body position	
d4153	Maintaining sitting position	Perturbations, use of external support
d4154	Maintaining standing position	Rhomberg, Tinetti, one leg stance, perturbations, stand and reach, use of external device
d420	Transferring oneself	
d4300 – d4309	Lifting and carrying objects	
d435	Moving objects with lower extremities	
d450-d469	Walking and moving	TUG, distance, 6" walk, assistance/device,
d4551	Climbing	Assistance/device
d470-d489	Moving around using transportation	

Self Care

d510	Washing oneself	
d5200	Caring for skin	
d5204	Caring for toenails	
d530	Toileting	
d5400- d5403	Dressing	
d570	Looking after one's health	

Additional Classifications

- Domestic Life
- Particular Interpersonal Relationships
- Major Life Areas
- Community, social and civic life
- Products and technology
- Support and relationships
- Attitudes
- Services, systems and policies

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Thank You!