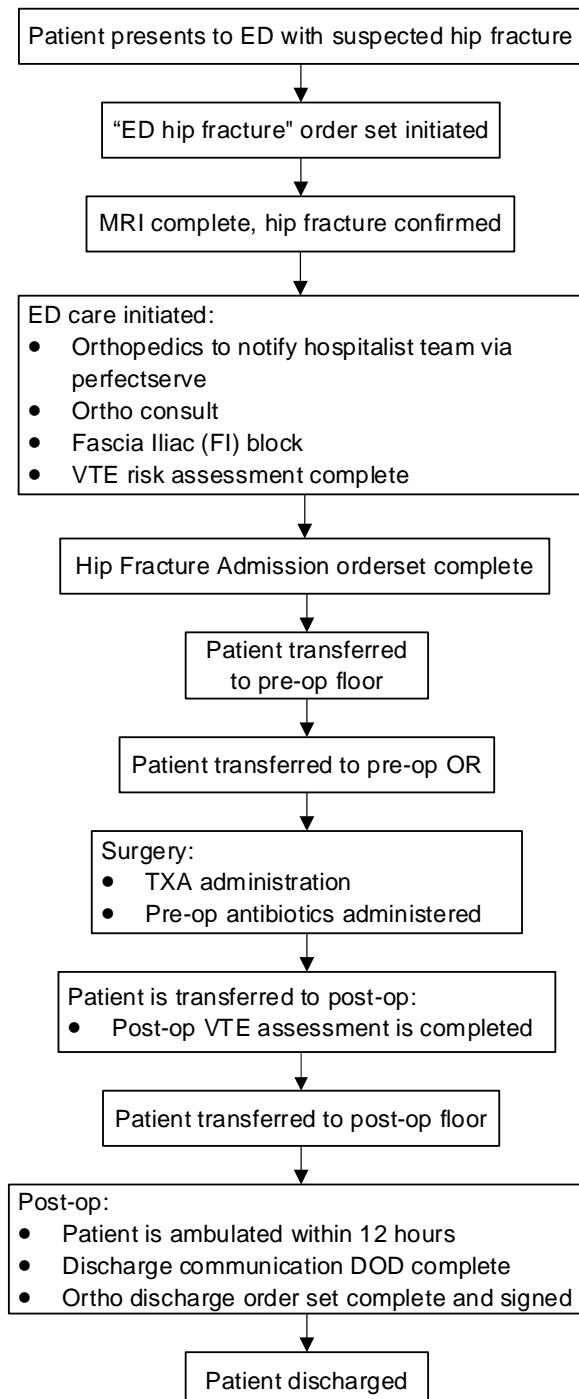


## Clinical Pathway: Hip Fracture, Geriatric - Inpatient

Updated: January 14, 2021

### Clinical algorithm:



## Clinical pathway summary

**CLINICAL PATHWAY NAME:** Geriatric Hip Fracture, Inpatient

**PATIENT POPULATION AND DIAGNOSIS:** Patients 65 years or older with ground level fall, resulting in suspected hip fracture

**APPLICABLE TO:** All Spectrum Health Sites

**BRIEF DESCRIPTION:** This clinical pathway outlines the patient continuum of care for qualifying patients from ED presentation through surgery and discharge from acute care.

**OPTIMIZED CLINICAL DECISION SUPPORT:**

Epic Ordersets:

- 16010001006 ED Hip Fracture
- 30410001150 Hip Fracture (Admission Order Set)
- 30410001151 Postoperative Hip Fracture
- 30410001322 Orthopedic Discharge

Geriatric Hip Fracture Epic Care Path

**OVERSIGHT TEAM LEADER(S):** John Mahajan, Karl Roberts, and Lisa McCann-Spry

**OWNING EXPERT IMPROVEMENT TEAM (EIT):** Hip Fracture

**MANAGING CLINICAL PRACTICE COUNCIL (CPC):** Orthopedic Health

**OTHER TEAM(S) IMPACTED (FOR EXAMPLE: CPCs, ANESTHESIA, NURSING, RADIOLOGY):** Anesthesia, Acute Health Clinical Practice Council, and Surgical Services Clinical Practice Council

**IMPLEMENTATION DATE:** 2/24/2020

**LAST REVISED:** 6/1/2020

**FOR MORE INFORMATION, CONTACT:** John Majahan, MD

**LINK TO METRIC DASHBOARD:** <https://tableaugw.spectrum-health.org/#/site/Prototype/workbooks/22135/views>

## Clinical pathways clinical approach

### TREATMENT AND MANAGEMENT:

**Use of MRI for Diagnostic Imaging** - Moderate evidence supports MRI as the advanced imaging of choice for diagnosis of presumed hip fracture not apparent on initial radiographs. Five low strength studies evaluated the use of MRI to assess for hip fractures in patients with a clinical history consistent with fracture but negative plain films. The included studies demonstrated the ability of MRI to identify fractures, especially in older patients. The studies also noted that MRI was able to demonstrate causes of hip pain other than fracture. Only one low strength study was available that evaluated the sensitivity of bone scan in detecting occult hip fractures. Noted equivalent accuracy when comparing MRI to bone scan in this setting; however, MRI was found to provide a diagnosis earlier than bone scan, with better spatial resolution. In this study, MRI was obtained within 24 hours of admission and bone scan within 72 hours. For situations in which MRI is not immediately available, bone scan can be considered. In addressing issues of cost and patient discomfort, three studies showed that a "limited" MRI of the hip could identify occult hip fractures; these limited scans were obtained with lower cost and shorter duration than standard MRIs.

**Fascia Iliaca Block** - Strong evidence supports regional analgesia to improve preoperative pain control in patients with hip fracture. Six high strength studies and one moderate strength study showed beneficial outcomes. Six studies inclusive of 593 patients used a prospective randomized clinical trial design to assess the effect of regional analgesia in reducing preoperative pain after hip fracture upon presentation to the emergency department. These studies all used a technique of administration of a local anesthetic that results in temporary loss of nerve function in the fascia iliaca or femoral compartment of the injured hip. In each study the patients who received this agent reported significant reduction in reported preoperative pain on a visual analog scale. One of these studies reported improved reported pain at time of administering spinal anesthesia. No complications were reported in these studies using a technique of administration of a numbing agent that results in temporary loss of nerve function in the femoral compartment of the injured hip

**Timing to OR** - Moderate evidence supports that hip fracture surgery within 48 hours of admission is associated with better outcomes. Nine moderate strength studies evaluated patient outcomes in relation to timing of hip fracture surgery. In many of these studies the presence of increased comorbidities represented a confounding effect, and therefore delays for medical reasons were often excluded. Most studies favored improved outcomes in regard to mortality, pain, complications, or length of stay.

**VTE Prophylaxis** - Moderate evidence supports use of venous thromboembolism prophylaxis (VTE) in hip fracture patients. One high strength study, three moderate strength studies, and eight low strength studies were identified comparing various pharmacological prophylaxis interventions to placebo. One moderate strength study compared mechanical prophylaxis to a group that received no mechanical prophylaxis. These studies show the risk of DVT/VTE/PE complications is significantly less with VTE prophylaxis than control. Most general complications were not significantly different between treatment groups, with the exception of Lahnborg et al<sup>13</sup> which found hematoma complications were higher in pharmacological prophylaxis groups. There was no difference in hospital stay and there is some evidence that mortality is less with prophylaxis. Given the significant established risk factors for VTE present in this patient population including age, presence of hip fracture, major surgery, delays to surgery, and the

potential serious consequences of failure to provide prophylaxis in the hip fracture population, it is the recommendation of the workgroup that VTE prophylaxis be used.\

**Nutritional Supplements** - Moderate evidence supports that postoperative nutritional supplementation reduces mortality and improves nutritional status in hip fracture patients. One high strength 130 and 2 low strength 131 and Espauella et al 132 studies were used to evaluate the relationship between nutritional supplementation and outcomes in elderly patients with hip fractures. These studies report that protein energy malnutrition is an important determinant of outcome in older patients with hip fracture. Use of a dietary assistant decreased death acutely 2.5 times and at 4 months by half. Duncan et al is the largest randomized control study of nutritional support following hip fracture and the first that includes patients with cognitive impairment (57%). Energy intake in the intervention group (IV x 3d and PO x 7d) provided by supplements was optimal in 100% of patients in the intervention group vs. 54% in the control group. Fracture related complication rate was 15% (intervention group) vs. 70% (control group). Greater than 58% of the patients in each group were malnourished on admission. A 20g protein supplement daily with 800mg of calcium did not decrease mortality or increase functional status but significantly decreased complications within the hospital (odds ratio 1.88 in-hospital and overall 1.94 after discharge).

Four moderate strength studies show benefits of either supplemental calcium, vitamin D or both to reduce fall risk and prevent fractures in the elderly. There is a high prevalence of vitamin D deficiency among hip fracture patients and hip fracture patients have a 5-10x increased risk of a second hip fracture and other fragility fractures. In a moderate strength double-blinded study in elderly women with hip fractures, 98% of patients were found to be vitamin D deficient.

**Osteoporosis Evaluation** - Moderate evidence supports that patients be evaluated and treated for osteoporosis after sustaining a hip fracture. There were two moderate strength studies and one low strength studies that support this recommendation. Lyles et al<sup>161</sup> studied the effectiveness of zoledronic acid versus placebo combined with pre-treatment vitamin D repletion and found that the treatment group exhibited statistically significant reductions in mortality rates, rates of any new fractures, rates of new non-vertebral fractures, or the rates of new vertebral fractures. All participants who had very low 25hydroxyvitamin D levels or no blood level available received 50,000 to 125,000 units of vitamin D<sub>2</sub> or D<sub>3</sub> (orally or intramuscularly) 14 days before the treatment intervention. All participants then received supplemental calcium and vitamin D daily. Majumdar et al<sup>162</sup> was upgraded from a low strength study to a moderate strength study due to a large effect size. Majumdar, et al studied the effectiveness of an osteoporosis case manager for post-discharge hip fracture care. In this study, those patients who received the intervention had increased chance of osteoporosis evaluation by bone mineral density testing and osteoporosis-specific treatment with bisphosphonates. The Gardner et al<sup>163</sup> study found no significant differences in mortality or osteoporosis addressed with bone density scan and/or bisphosphonate therapy between the group who received a discussion regarding osteoporosis risks post-surgery and the group who received a fall prevention pamphlet. Hip fractures are a sign (symptom) of osteoporosis, but most patients with hip fractures are not currently evaluated and treated for their underlying osteoporosis.

## References:

Management of Hip Fractures in the Elderly – American Academy of Orthopedic Surgeons - 2014 <https://www.aaos.org/quality/quality-programs/lower-extremity-programs/hip-fractures-inthe-elderly/>