

Quick Reference Guide

Improving Time to Surgery - Emergency Room, Preoperative and Immediate Postoperative Clinical Practice Guidelines for Hip Fracture Patient Management

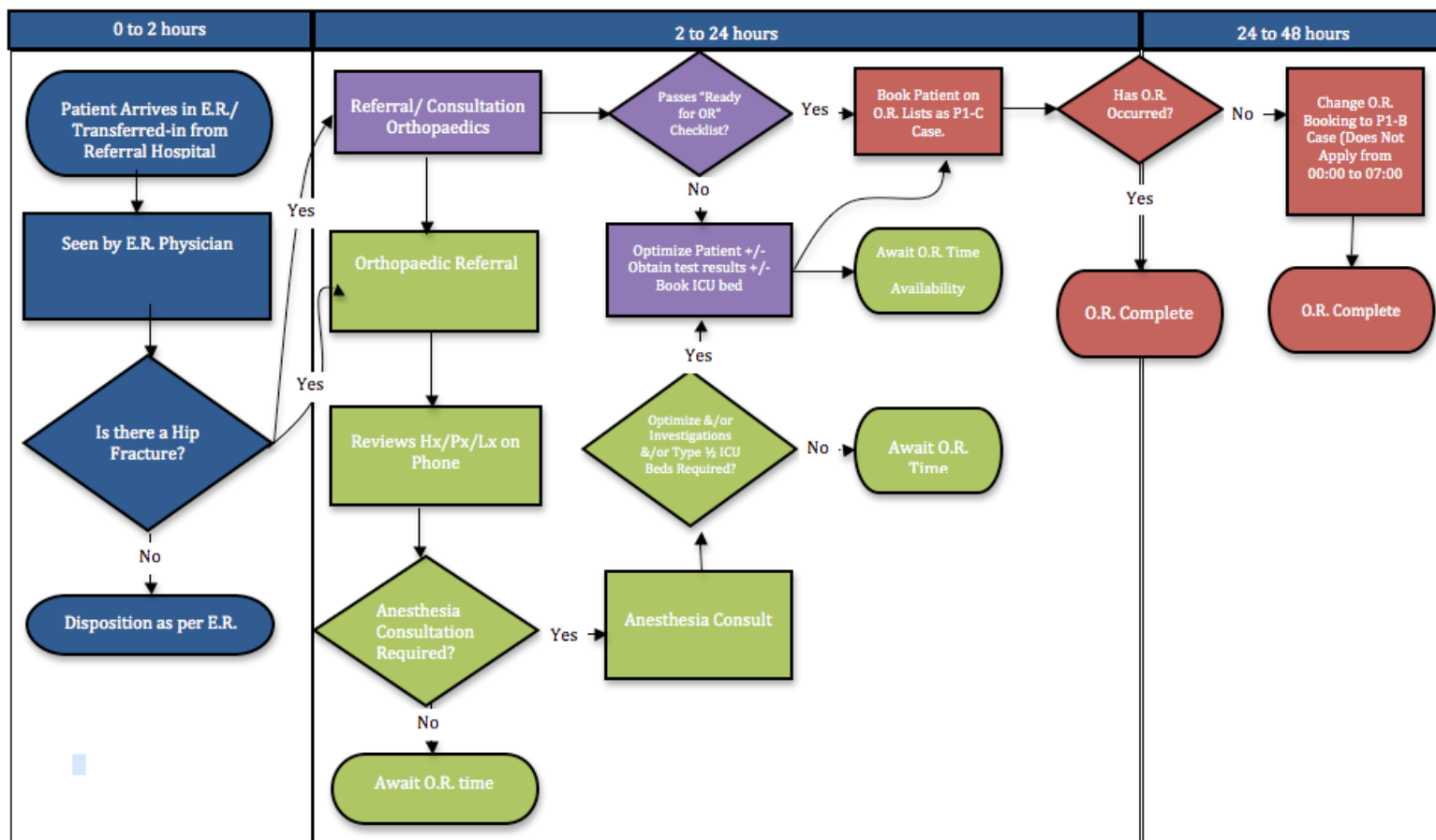
The Ontario Orthopaedic Expert Panel through the Bone and Joint Health Network has developed a Provincial Hip Fracture Model of Care. This model flows patients across the health care continuum and provides best practice standardized guidelines for care. Integrated into this model is the target for 90% of hip fracture patients to receive surgery within 48 hrs of ER admission.

Recommendations to improve time to surgery for patients following a hip fracture have been developed and are outlined below. This Quick Reference Guide will provide healthcare professionals with a summary of the most important recommendations. For detailed information, consult the full guidelines document at www.boneandjointhealthnetwork.ca.

Recommendation

Timely Surgery - Early surgery within 48 hours of presentation to hospital should occur for most patients. Short delays may be justified to gain improvement in clinical condition. However, it is important not to pursue unrealistic medical goals with resulting delays.

Figure 1. Preoperative pathway algorithm for hip fracture patients to achieve timely surgery within 48 hours.



RECOMMENDATIONS

A. Emergency Room Care

1. Triage, Early Recognition, Assessment and Diagnosis - Early recognition of patients with a potential hip fracture requires higher prioritizing within the triage category. Established protocols or medical directives are useful to expedite diagnosis and treatment. Patient assessment should include mechanism of the fracture and associated injuries as well as a thorough review of co-existing health issues. Assessment should be timely:

- Emergency physician/health team assessment within *one hour* of presentation.
- Orthopaedic surgeon, anaesthesiology and/or internal medicine within *two hours*

Patient review by the anaesthesiologist should determine the depth of investigations needed for safe perioperative care, and any necessary preoperative interventions (i.e. anticoagulation reversal).

2. Immediate Management Issues

a. Pain management - Pain control is important and a multimodal approach should be considered using a more than one drug approach to provide better analgesia with fewer side effects. Most commonly, titration of intravenous opioids, such as morphine or hydromorphone are used for analgesia. Analgesics such as acetaminophen can be co-administered to enhance patient analgesia. A regional nerve block may be considered as an analgesia adjunct, especially for those who poorly tolerate systemic analgesics. Continuation of long-acting opioids for patients who have pre-existing chronic pain conditions should generally occur to ensure adequate analgesia and prevent withdrawal symptoms. Standardized pain assessment tools should be used to assess a patient's level of discomfort.

b. Hydration - Patients are frequently poorly hydrated on entry to the ER or may become dehydrated while waiting for surgery. Hydration, whether intravenous or oral should be assessed carefully and continuously monitored.

c. Prevention of pressure sores – Prevention of pressure sores should include transfer to an appropriate hospital bed with a pressure-relieving mattress. Those at high risk should receive care using a large-cell, alternating-pressure air mattress or similar device. Consideration needs to be given to using soft surfaces to protect heels and the sacrum. Clinical judgment and identified assessment tools should be used to determine patients at risk.

d. Nutritional status - All patients should have a nutritional assessment, so that protein and energy supplements can be provided as needed. Protein and energy feeds may reduce medical complications and mortality.

Fasting guidelines are used to decrease the risk of aspiration in patients undergoing anesthesia. The Canadian Anesthesiologists' Society guidelines for fasting are:

- ≥ 2 hours – Clear fluids
- ≥ 6 hours – Light meals (ie. toast, non-human milk)
- ≥ 8 hours – Heavy meals (ie. meat, fried or fatty foods)

e. Reducing the potential for delirium - These patients are at high risk for delirium both pre and post-operatively. The prevention of delirium is the most effective strategy for reducing its frequency and complications. It is important that interventions start in the ER.

f. Osteoporosis management - Osteoporosis contributes significantly to the occurrence of a hip fracture. It is crucial that comprehensive interventions to prevent future fracture are initiated and become a routine part of hip fracture care without delay. This process should be initiated in the ER through bloodwork initiation.

g. Oxygen therapy - Persistent hypoxia may be present in hip fracture patients from the time of emergency admission to 48 h after surgery. Patients should have oximetry assessment, and oxygen administered as necessary.

h. Urinary catheterization - Avoid indwelling catheters as possible. These patients are frail older people that demonstrate a high incidence of urinary tract infections. Intermittent catheterization is preferable and has been shown not to increase the incidence of urinary tract infections.

i. Prophylactic antibiotics - Hip fracture patients are at risk of infections of the chest, urinary tract and wound. The administration of prophylactic intravenous antibiotics should be given as a single dose at the induction of anaesthesia.

B. Preoperative Management

- 1. Management of Anticoagulation** – Patients on anticoagulation require careful review by the anaesthesiologist, as neuraxial anesthesia may be contraindicated with certain types of anticoagulation. Appropriate discontinuation of anticoagulation prior to surgery offers opportunities for optimal care by allowing the choice between general anaesthesia and neuraxial anesthesia (i.e. spinal or epidural).
 - a. Management of patients on clopidogrel (plavix)** - The goal for patients on clopidogrel should be early operative intervention to decrease morbidity and mortality associated with surgical delay for hip fracture patients. Current literature indicates are no serious surgical complications or increased transfusion requirements for these patients.
 - b. Management of patients on warfarin (coumadin)** - First-line therapy for the reversal of warfarin anticoagulation is Vitamin K. For surgery greater than six hours away, administration of intravenous Vitamin K (5-10mg) should be sufficient for reversal. If more urgent reversal is required (less than six hours), compounds such as prothrombin complex concentrate (PCC) (ie. Octaplex®) or frozen plasma (FP) may be considered along with the use of intravenous Vitamin K. PCC is probably the preferred choice over FP for those at risk for volume overload.
- 2. Assessment of LV function and Significant Valvulopathies** – The importance of obtaining time consuming investigations i.e. echocardiography should be weighed against the complications associated with surgical delays >48 hours. Careful physical examination can sometimes rule out significant valvulopathies, such as severe aortic stenosis. Anaesthesiologists may consider heightened intraoperative monitoring (i.e. arterial waveform monitoring) when pre-operative cardiac investigations are not available in a timely fashion.

C. Anaesthesia Management

- 1. Types of Intra-operative Anaesthesia – Neuraxial vs. General Anaesthesia** – Both general and neuraxial anaesthesia are commonplace for hip fracture surgery. Neuraxial anaesthesia may decrease post-operative confusion, thromboembolism development, intraoperative blood loss and short-term mortality. There are many reasons which preclude the use of neuraxial anaesthesia including anticoagulation, patient refusal, challenging anatomy and others, therefore in these situations general anaesthesia may be required. Ultimately, the choice of anaesthesia administered rests in the hands of the attending anaesthesiologist.
- 2. Postoperative Pain Management** - Systemic opioids (ie. morphine) are the most common form of post-operative analgesia for hip fracture. Common side effects can be more pronounced in the elderly population. Patient Controlled Analgesia (PCA) devices allow patients to self-administer intravenous opioids according to timed dose parameters set by a physician. This allows the patient to self-titrate the medication to an optimal dose, maximizing analgesia while minimizing side-effects. However, the patient must be able to cognitively understand and use the PCA device. Also, multimodal approaches should be considered including regular orders for analgesia can while minimizing side effects. Standardized pain assessment tools should be used to assess a patient's level of discomfort.

D. Surgical Management

- 1. Considerations in Types of Surgery** - Careful preoperative planning must consider the level of patient demand and co-morbidity as well as the specifics of the fracture pattern and associated injuries or pre-existing musculoskeletal problems. Surgical tactics should be chosen that achieve maximal functional results while balancing the risk of implant failure, malunion, and surgical morbidity for the particular patient.
- 2. Immediate Weight Bearing** - Immediate weight bearing for previously ambulatory hip fracture patients is of paramount importance in improving patient mortality and morbidity, reducing medical complications, minimizing hospital length of stay and most importantly improving functional outcome and the likelihood of future independent living. Recent advances in modern technology and implants allow for stable fixation, or replacement arthroplasty, in all cases of hip fracture. Also, patients limit their weight bearing dependant on the stability of the construct and failure rates have not increased.

E. Immediate Postoperative Management

1. **Clinical Pathway** - Clinical pathways help to support the standardization of care across the healthcare continuum, assisting patients through to their recovery, by providing a sequence and timing of interventions to meet patients' discharge goals in an efficient timeframe. Clinical pathways have been effectively used preoperatively, as well as postoperatively during both the acute and rehabilitation phases of recovery.
2. **Delirium, Dementia and Depression (3D's) Screening and Management** – Hip fracture patients are older people whereby their complex and multi-faceted nature contribute to the development of 3D conditions that are unrecognized, occur frequently, and often are poorly managed. Management of these challenging issues requires a multidisciplinary approach that includes targeted nursing and rehabilitation assessment and interventions to assess and treat cognitive issues on a daily basis, and in severe cases, pharmacological management through either the surgeon or another physician.
3. **Thromboprophylaxis/ Anticoagulation** - Following surgery, hip fracture patients should receive routine anticoagulation as per CHEST guidelines.
4. **Rehabilitation and Early Mobilization** - Rehabilitation and early mobilization through a coordinated multidisciplinary program is key to regaining sufficient function for patients to return to their pre-fracture living situation in the community. Rehabilitation should focus on addressing physical and function needs of the patient, and include transfer techniques, balance, and gait training.

F. Process Management

1. **Operating Room Booking Priority Policy** - Hip fracture patients access to the operating room usually begins at a priority type C, and as such they should receive surgery within 48 hours. In organizations where there are a high volumes of other patients already designated as priority type B, hip fracture patients regularly do not receive surgery within this 48 hour timeframe. In these cases, changing the Operating Room Booking Policy to upgrade hip fracture patients from priority type C to priority type B after 24 hours on the operating room wait list has been effective in increasing access to surgery within 48 hours.
2. **Trauma Time** - Sufficient operating room time is required to successfully manage trauma patients including those with a hip fracture. Designated orthopaedic trauma operating room time is a method to increase access to timely surgery. This designated time needs to be available at regular intervals each week, either daily or 3 times weekly, to manage hip fracture patients within the 48 hour timeframe.
3. **Regional Trauma Planning** - The development of a regional trauma plan is recommended and may include a written agreement between health care organizations that includes clear expectations for timely acceptance for transfer of the patient for surgery, shared preoperative approaches, and timely repatriation of the patient back to the referral hospital for continued care.
4. **Fast Tracking to Inpatient Unit within 4 Hours** – Evidence suggests that fast tracking from the ER to the Inpatient unit is a good standard of clinical care for older people with a hip fracture, and contributes to improved pressure sore care.
5. **Early Referral and Transfer to Home or Rehabilitation on Day 5 Postoperatively** - Patients that experience a hip fracture and who were living successfully in the community should have the opportunity to return home again through early transition either home or to inpatient rehabilitation by Day 5 postoperatively.
6. **Standardized Discharge Planning** - Discharge planning requires effective, efficient and consistent processes. Potential discharge issues should be identified early in the process and this will enable maximum time to make preparations for a home supported discharge. The family physician or community care provider should be informed about the pending discharge and a follow-up appointment made within 2 weeks of discharge.