

TITLE: Integration of Services for Treatment of Elderly Patients with Hip Fracture.

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BACKGROUND

Hip fractures in the elderly population have serious implications for both mortality and morbidity, as well as significant ramifications for health service utilization. Females are twice as likely as males to fracture their hip. (2) In Alberta, the incidence rate of hip fractures in females aged 65 years and older during 1996-1997 was 7.7 /1000. (2) With an ageing population and longer life expectancy, the incidence of hip fractures is forecasted to increase exponentially in Canada. (1) Current costs associated with hip fractures in Canada are estimated at 650 million dollar annually and are projected to rise to 2.4 billion dollars in 2041 with hip fractures representing one of the leading causes of hospitalisation in the elderly. (1)

POLICY CONTEXT

There are currently 24,000 hip fractures annually in Canada and this number is projected to double by 2040. (1) In Alberta, 1,914 people were hospitalized for treatment of a fractured hip in 1996-97. (2) Of these patients, 1,657 (86.6%) were 65 years or older with women representing 2/3 of this patient population. With increasing life expectancy and an ageing population, the demand on finite health care resources will increase. Thus, before this patient population reaches its maximum level, it is important to determine the most cost-effective manner to attain the best possible outcomes.

Six regional health authorities (RHA) in Alberta that have the capacity to treat elderly patients with hip fractures, based upon the availability of orthopaedic surgeons and appropriate support services, were involved in the policy review. These regions vary in surgical staff from two orthopaedic surgeons to more than 25. Numbers of patients per annum vary from fewer than 100 to more than 750 patients. Examination of incidence and utilization patterns across Alberta showed regional variations in 1) lengths of hospital stay in acute care and 2) discharge destinations, suggesting differences in patterns of care among the health regions.(2) Little documented information is available, however, on actual treatment practices within regions and between sites. Thus, the degree of variation in clinical practice and the reasons for these variations remain unclear.

This report attempts to 1) describe where treatment practice variations occur, 2) determine the extent of evidence-based care, 3) determine the barriers,

including gaps in current knowledge, that exist to best practice, and 4) examines directions for policy change and future research among regions in the province of Alberta.

OBJECTIVES

The objective of this project was to determine how services are integrated to provide care for elderly patients who sustain hip fractures. Additionally, the continuum of care for the patient as they pass through different phases was examined to determine if the pathway of recovery was seamless for the patients, their families and caregivers or if gaps in the continuity and availability of services could be identified. These objectives were met through 1) identifying evidence-based practices through a systematic review of the literature and 2) determining the extent to which these practices were used and 3) examining barriers to adoption of best practice through discussion with teams of health care providers and decision makers within each of six health regions that treat this patient population.

METHODS

Evidence-based treatments were identified regarding recommended best care and determinants of outcome following a hip fracture through a systematic review of the literature. Greater than 1000 abstracts were extracted from eight databases, various websites and reference lists. Based upon standardized selection criteria, two independent reviewers identified 35 articles that merited inclusion in the evidence summary document.

For the clinical review, teams of health professionals and policy makers were developed at the participating sites. The policy review engaged discussion with cities in six regional health authorities who surgically treat patients with hip fracture – Grande Prairie, Edmonton, Red Deer, Calgary, Lethbridge and Medicine Hat. Discussions held with each individual city reviewed the systematic review summary document and current clinical practices to determine the extent to which evidence-based care was delivered. Barriers to deliver such care and gaps in knowledge were also discussed.

RESULTS

For the most part, all sites were delivering evidence-based care to this patient population in the acute perioperative period with only minor regional variations. We believe based upon these findings that, provincial treatment guidelines could be established for this large patient population with minimal resource allocation. To reduce variation and improve standard of care across the province, the following changes would need to occur in some centres: 1) alteration of prophylaxis procedures (giving less antibiotics and standardizing DVT prophylaxis), and 2) discontinuing the use of preoperative traction. The

current widely accepted use of such standardized care in one city would suggest that the other regions would also be able to adopt the use of these guidelines.

The policy review also indicated common issues around barriers to evidence-based practices existed. Resources, in particular health care professionals and bed access, were the most common barriers reported regardless of centre although each centre had site-specific issues. Based upon the implications to the patients' health, surgical delays due to resource issues such as personnel and infrastructure shortages are inappropriate. Urgent reallocation of resources to ensure these patients receive timely surgical intervention to allow them to commence the route to recovery is required.

In Alberta a seamless continuum of care does not exist for treatment of hip fractures. Certain patient groups are particularly vulnerable because of the lack of coordinated treatment among the different care settings (acute care, sub-acute/rehabilitation, long-term care and the community) and health regions. Patients who need to be transferred to another health region for surgical treatment and those patients who are transferred to long-term care facilities do not receive adequate rehabilitation services to maximize their functional recovery. Little published evidence exists on how care should be integrated across different treatment settings to provide a seamless continuum of recovery following the acute postoperative phase. There are several areas where patient care appears to be compromised due to lack of discharge and rehabilitation options. Each of the sites deals with sub-acute rehabilitation differently, but commonly reported inadequate rehabilitation coverage or access. Inadequate resources also affected discharge planning with patients frequently waiting in the acute hospitals for alternative levels of care. This includes both patients waiting for 1) long-term care beds or 2) access to sub-acute rehabilitation services. Rehabilitation options in acute and sub-acute period as well as discharge planning are done using consensus evidence and available resources. Further, little is known about the care that occurs once the patient is discharged, particularly when they are discharged to long-term care or to their local hospital.

CONCLUSIONS

Research regarding what care is needed in continuing care facilities and in regional hospitals and how to deliver such care is required. Rehabilitation settings need to be further studied to determine the most effective and cost-effective models. Long-term care access must also be improved. In our future research to determine how to best deliver care following the acute perioperative period, attention needs to be paid to the role of communication both within and across disciplines and settings.

This project is the first in Alberta, and to our knowledge in Canada, to report providers' and allied health professionals' impressions of how care is delivered to elderly patients with hip fractures. We identified that within Alberta, peri-operative care for elderly patients with hip fractures is within evidence-based

guidelines with few exceptions other than timely operating room access. Beyond acute care, further investigation is required to determine how the continuum of care and integration of services can be improved in an effective and cost-effective manner across the province.

KEY ISSUES

In the province of Alberta, many components of treatment for patients with a hip fracture across the continuum of care are delivered in accordance with current best evidence. Healthcare delivery is multi-disciplinary to a varying degree at all sites that treat hip fractures. However, the following areas require further attention:

- Surgical delays for fixation of the hip fracture, of greater than 24 hours, were common across all sites. Reasons for the delays varied by site, but all were fundamentally associated with lack of resources – either personnel or infrastructure.
- Urgent reallocation of resources is needed to address this issue.
- An achievable benchmark (e.g. 90% rate of patients operated within 24 hours) needs to be established as a quality indicator for this patient population to ensure timely surgical intervention occurs, and to measure the end-result of any resource re-allocation.
- Designated treatment coordination need to be established at each site that treats hip fracture patients, to ensure that 1) discharge occurs in a timely fashion, 2) patients are discharged to the most appropriate destination and 3) ongoing patient needs are met.
- Increased access to rehabilitation, transition, and long-term care beds is required to meet the needs of this growing patient population.
- Research is required to determine which combination of healthcare services and health professionals are required to provide optimal evidence-based care to these patients.
- Provincial standardized treatment guidelines, for acute medical/rehabilitation care should be implemented.
- Treatment for this patient population could be standardized and streamlined, decreasing unnecessary and potentially wasteful practice variations; therefore resource implications of standardized treatment would be expected to be minimal.
- The approach used in our project could also be used for other large musculoskeletal populations such as total joint arthroplasties, and possibly for other surgical or medical conditions.
- Our approach may also facilitate programmatic evaluation, continuing professional education, and acceleration of the adoption of new evidence, as per the mandate of the nascent Alberta Bone and Joint Network.

Practice Supported by Current Evidence	
Policy Review Findings	Implications
<p><u>Surgical Delay</u></p> <p>Delays of greater than 24 hours in getting patient to surgery occur to a varying degree across all regions.</p>	<ul style="list-style-type: none"> • Delays in getting the patient to the OR have ramifications for postoperative morbidity and mortality. • Regions need to continue to examine methods of improving OR access. • Where possible, specific trauma rooms should be designated.
<p><u>Regional Anaesthetic</u></p> <p>Regional anaesthetic is not a standard procedure in most regions.</p> <p>The choice of anaesthetic is typically not determined by the orthopaedic surgeons.</p>	<ul style="list-style-type: none"> • Morbidity and mortality is significantly reduced when regional anaesthetic is used. • Sites that have anaesthetists trained in the use of regional anaesthetic should encourage its use.
<p><u>Nutritional Assessment & Treatment</u></p> <p>Nutritional assessment and treatment is not a standard practice.</p> <p>Most sites indicated inadequate resources to provide such assessment and treatment.</p>	<ul style="list-style-type: none"> • Malnutrition leads to increased mortality. • Nutritional levels should be assessed on all patients. • The effectiveness of treatment for malnutrition beyond the acute care setting should be assessed.
<p><u>Preoperative Traction</u></p> <p>Preoperative traction provides no benefit to the patient.</p>	<ul style="list-style-type: none"> • Preoperative traction should not be used as standard practice in this patient population. • Most sites use traction only infrequently.

<p><u>Surgical Management</u></p> <p>Best available evidence is used to determine surgical management of these patients in most cases across all regions.</p>	<ul style="list-style-type: none"> • Surgeons should continue to use current indications for determining appropriate surgical fixation. • The use of the more expensive bipolar implant should be discouraged based upon lack of evidence to support its use. • Cement should be used for hemi-arthroplasties as much as possible.
<p><u>Antibiotic Prophylaxis</u></p> <p><u>DVT Prophylaxis</u></p> <p><u>Pressure Sore Prevention</u></p> <p><u>Oxygen Therapy</u></p> <p><u>Postoperative Wound Drainage</u></p> <p>Similar treatment practices were seen across the province for each of these domains.</p>	<ul style="list-style-type: none"> • Each of these strategies has clear evidence regarding its utilization. • Regions report only minor variations within these areas. • A regional caremap has been in place in Capital Health Regional Health Authority for four years and has been widely accepted by all stakeholders. • Provincial treatment guidelines could be established for each of these areas to provide standardized acute medical care in the immediate postoperative period, as regional treatment patterns are already similar.
<p>Practice Not Supported by Current Evidence</p>	
<p>Policy Review Findings</p>	<p>Implications</p>
<p><u>Urinary Catheterization</u></p> <p>Indwelling catheterization is the usual standard of care at most sites.</p> <p>Length of catheterization varies from 1-4 days postoperatively.</p> <p>Sub-acute settings noted that urinary retention and urinary tract infections were common.</p> <p>Intermittent catheterization is used infrequently.</p>	<ul style="list-style-type: none"> • One randomized clinical trial has indicated that intermittent catheterization is better than indwelling catheterization in patients with urinary retention. • There is currently inconclusive evidence regarding how catheterization should be used in the immediate postoperative period for all patients. • Issues regarding patient mobility, patient compliance and skin care must be considered.

<p><u>Geriatrician Involvement</u></p> <p>All regions indicated that increased services by a geriatrician would be beneficial for this patient population.</p>	<ul style="list-style-type: none"> • The regular use of a geriatrician in either the preoperative or postoperative period has not been shown to have any significant clinical benefit as compared to standard care. • Despite the regions' indications that they would like increased geriatrician services, there are no evidentiary grounds to support this request.
<p><u>Multidisciplinary Care</u></p> <p>All sites had multidisciplinary care with at least involvement of nursing, surgery, medicine and rehabilitation.</p> <p>Other paramedical professions were used on an “as available” or “as needed” basis.</p>	<ul style="list-style-type: none"> • There is no clear evidence that more structured multidisciplinary care leads to better outcomes than usual care, perhaps because most usual care is already multidisciplinary. • Specific disciplines or interventions should be examined as individual components of care to determine their effectiveness rather than further examinations of multidisciplinary care.

Current Gaps in Knowledge	
Policy Review Findings	Implications
<p><u>In-hospital Rehabilitation</u></p> <p><i>Acute Care:</i></p> <p>Early mobilization was standard to all regions. Restricted weight bearing was felt to have significant ramifications on the patient’s ability to mobilize. This restriction was often noted to be surgeon-specific rather than solely based on fracture characteristics.</p> <p>Some regions felt that they had inadequate rehabilitation resources, particularly on the weekend.</p> <p><i>Sub-Acute Care</i></p> <p>Few hospitals had on-site sub-acute rehabilitation units.</p> <p>All sites indicated an interest in having access to such a unit.</p>	<p><i>Acute Care</i></p> <ul style="list-style-type: none"> • Although there were no primary studies in this patient population comparing early mobilization versus not, this is an accepted treatment practice. • There is currently no evidence upon which to base a decision regarding the patient’s weight bearing status. Restricted weight bearing should not be usual standard of care. • Aside from weekend coverage, all sites reported similar treatment strategies suggesting that provincial guidelines for rehabilitation of this patient population could be developed. Necessity of weekend coverage by rehabilitation has not yet been assessed in this patient population. <p><i>Sub-Acute Care</i></p> <ul style="list-style-type: none"> • No evidence is available to determine whether onsite sub-acute rehabilitation is effective and/or cost-effective. • Several sites, particularly the two largest urban sites, noted that there was “bottlenecking” at the point of discharge because there were inadequate numbers of rehabilitation options for this patient populations.

<p><u>Perioperative Pain Control</u></p> <p>Significant variation was reported across regions in postoperative pain control regimens.</p> <p>Most sites indicated that codeine, oxycodone and acetaminophen were used.</p> <p>Only one region had a “delirium protocol” in place. This site had concerns regarding whether there was adequate pain control with this regime.</p>	<ul style="list-style-type: none"> • Recommendations for changes in pain management cannot be made based upon available evidence. • There is currently only a consensus statement from the World Health Organization (WHO) upon which to base treatment guidelines for this patient population.
<p><u>Service Integration across Different Treatment Settings</u></p> <p>In most regions, a lack of communication exists across treatment settings, which prevents a seamless continuum of care. This may mean that best care is not being delivered with the available resources.</p> <p>Patients who are admitted from out of region or from long-term care often are discharged to facilities where rehabilitation is very limited or not available. This occurs most commonly in the two largest regions where acute care bed access is a major issue.</p>	<ul style="list-style-type: none"> • Little evidence exists to indicate how services should be coordinated over different treatment settings. • Smaller centres appeared to be more successful in communicating across disciplines and settings than the larger centres. • Little is known about the services offered to patients in local hospitals or in continuing care. Examining care over multiple settings is required to be able to make evidence-based decisions.

Waiting for Alternative Levels of Care

Patients who are admitted from the community who are unable to return to that setting following their fracture frequently wait for placement in the surgical hospital, often on the surgical wards, for prolonged time periods.

All regions expressed concerns with the inadequate number of long-term beds or options for these patients and their families.

- Acute care beds are the most expensive beds for these patients to use while waiting for alternative care and are not well suited to meet these patients' ongoing needs.
- Little evidence exists as to the best management of patients who are awaiting long-term care placement.

Future Research and Policy Directions

Acute Medical Care:

- Surgical Delay:* Urgent re-allocation of resources is needed to improve patient care in this area given the adverse implications of prolonged delays.
- Urinary Catheterization:* Catheterization protocols should be examined through randomized trials to determine type and duration of catheterization to be used postoperatively.
- Perioperative Pain Control:* Pharmaceutical management of pain in this patient population should be studied through randomized clinical trials to determine safe and effective regimens.

Rehabilitation:

- Settings* The effect of different rehabilitation settings on the patients' subsequent recovery and health care utilization is unknown. Prior to introducing new sub-acute units, the effectiveness and cost of current rehabilitation settings needs to be quantified.
- Weight Bearing Status:* Restricted weightbearing status should be assessed to determine the effects of such practice on fracture healing and patient function.

Continuum of Care:

<i>Continuing Care:</i>	Services in continuing care need to be examined and studies should be undertaken to determine what resources are available or are necessary to provide effective care to patients in long-term care following a hip fracture.
<i>Out of Region Care:</i>	Communication between surgical and local hospitals should be improved so that patient receives similar care regardless of site. Education programs (such as the one established in Red Deer) should be examined to determine if they are effective.
<i>Waiting for Alternative Levels of Care</i>	Alternative methods of caring for patients in transition need to be examined. More transitional units with less expensive nursing personnel and increased long-term beds should be considered.
<i>Post Discharge Care</i>	Transfer of ongoing care to family physician and other out of hospital paramedical personnel needs to indicate where further intervention is required. As an example, malnutrition is an ongoing condition that requires post-hospital intervention and/or monitoring. Better communication is required across settings and discipline to achieve this goal, and in some cases current resources may be inadequate to manage the problem.
<i>Secondary Prevention</i>	Prevention of further fractures should also be mandated. This should include treatment of underlying conditions such as osteoporosis and fall prevention.