days after hospital admission had a 17% higher chance of dying within 30 days than similar patients whose surgery was not delayed.

Our institution had a hip fracture service line in place; however, it was not well developed. It was decided, in an effort to increase the quality of care provided to this population of patients, that the journey to The Joint Commission (TJC) disease-specific certification should begin.

Our journey toward certification began with hiring an orthopaedic clinical nurse specialist (CNS) in May 2009, submitting the application for certification review in November 2009, and our site visit was scheduled in February 2010. This is a summary of our commitment to becoming a hospital of excellence in the treatment of hip fractures and of the process that was implemented to achieve our goal of disease-specific certification.

Our hospital is a 731-bed community hospital. It is a Magnet hospital with a Level II trauma program; we are certified by TJC for stroke care, Commission on Cancer Accredited, Chest Pain Accredited, and College of American Pathologist Accredited and have a Commission of Accreditation of Rehab Facilities program.

Establishing a Program

It is fundamental that a program coordinator be selected as someone with extensive clinical experience and excellent interpersonal skills. Our institution employed an advanced practice nurse, specifically a CNS, to utilize expertise in research, education, collaboration, clinical practice, and consultation. The program coordinator role included collaborating with all departments involved with the hip fracture population and assembling an interdisciplinary steering committee, practice council, and a performance improvement council. Other responsibilities of the program coordinator include communicating with all physicians who manage/comanage this population.

Hip fracture is a common injury that results in substantial morbidity, mortality, and expense. According to Kesmezacar, Ayhan, Uulu, Seker, and Karaca (2010), mortality can also be extensive as approximately 23.8% of patients die within the first year following a hip fracture. A total of 310,000 individuals were hospitalized with hip fractures in the United States in 2003, according the U.S. Agency for Healthcare Research and Quality (2009), accounting for 30% of all hospitalized patients.

Approximately one fourth of individuals who were living independently before the fracture require long-term nursing home care. Only half achieve their prefracture mobility. The resulting cost of hip fracture is dramatic, and the total annual cost of hip fractures will increase to approximately $16 billion in the year 2040 with hip fracture exceeding 500,000 annually (Friedman, Mendelson, Bingham, & Kates, 2009).

Delay of surgical hip fracture repair increases the risk of mortality within the first month, according McGuire, Bernstein, Polsky, and Silber (2004). They conducted a study that found that patients with a closed hip fracture who had a delay in surgery of 2 or more days after hospital admission had a 17% higher chance of dying within 30 days than similar patients whose surgery was not delayed.

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McGuire, Bernstein, Polsky, and Silber (2004) found that delaying surgical repair of hip fractures increases the risk of mortality within the first month. This emphasizes the importance of timely intervention to improve patient outcomes. Our institution’s journey to disease-specific certification began with hiring a CNS in 2009, and the process continues as we strive to enhance the quality of care for hip fracture patients.
maintaining the performance measures database and providing education opportunities for the nursing staff and individualized education to each of the hip fracture patients. The program coordinator personally met with the top-volume hip fracture surgeons to establish a relationship, review the order sets, discuss the performance indicators, and try to achieve “buy in” for the hip fracture service line.

A comprehensive program involving the participation of physicians should have a physician champion. The physician champion is expected to represent his colleagues in their practice group regarding the care of patients with hip fracture and to serve as ambassador for the program, encouraging his peers to use the guidelines (Cooper et al., 2000). An orthopaedic surgeon approached our administration team several years ago with an idea to implement a geriatric fracture service line. His passion is improving care of the hip fracture patient and he accepted the position of Chair of the Hip Fracture Service Line.

The scope of this service line is to work within the geriatric population to serve those with a diagnosis of hip fracture. The program utilizes the guidelines for the care of this population from the National Guideline Clearinghouse. The population defined is reviewed and followed with data abstracted on four performance measures chosen by the Geriatric Hip Fracture Steering Committee. Variances are reviewed at the performance improvement meetings. Based on analysis of the results of the performance indicators, processes and systems are adjusted as needed for continuous improvement.

Our target population is adults, aged 60 years or older, with a hip fracture resulting from a ground-level fall, excluding motor vehicle accidents, nonsurgical patients and patients with active or recent cancer in which the hip fracture may be pathologic.

**Assembling the Teams**

Key individuals who impact this population should be assembled to serve on the committees. Our three teams consisted of the Steering Committee, Practice Council, and the Performance Improvement Council.

The Steering Committee is a multidisciplinary team, which includes the Committee Chair (an orthopaedic surgeon); Vice President Chief Quality Officer; Chief of the Orthopaedic Division; physicians representing trauma, anesthesia, internal medicine, geriatrics, and emergency medicine; Doctor of Pharmacy; and Orthopaedic CNS. Other department representation included the directors; managers; and representation from restorative services, emergency department (ED), laboratory, operating room (OR), rehabilitation, the orthopaedic floor, chief certified registered nurse anesthetist, case management, social work, chaplin, trauma injury prevention coordinator, and clinical nutrition.

The Steering Committee oversees the hip fracture program and is responsible for written protocols involving the care and treatment of patients with hip fracture. Standardized pre- and postoperative order sets, based on best practice, were developed by this committee with the expectation of usage of these order sets on all hip fracture patients in the program. In addition, the committee monitors and reviews the Hip Fracture Dashboard, which includes all performance measures. All new research and development reported in the literature is reviewed in this committee and applied to the program if applicable.

The Practice Council comprises the orthopaedic CNS, Director of Restorative Services, an ED nurse, a postanesthesia care unit (PACU) nurse, an OR nurse, representative from case management, a physical therapist, trauma intensive care unit nurse, and several orthopaedic floor nurses. The Practice Council develops and delivers education for patients and staff and participates in the orientation of new orthopaedic nurses. This committee implements protocols developed by the steering committee, monitors monthly outcomes, and reviews clinical practice guidelines and order sets to ensure evidenced-based care is given. Monitoring of effectiveness of the program is completed and reported to the medical director and the hip fracture Steering Committee.

The Performance Improvement Committee is attended by physicians from orthopaedic surgery, geriatrics, anesthesiology, emergency room, internal medicine, trauma services, pharmacy, rehabilitation, the orthopaedic CNS, and the Vice President Chief Quality Officer. A database of patients with hip fracture is maintained through the quality management department, where all performance measures, various elements of care related to treatment, time to provision of care, and patient outcomes are entered to evaluate the quality of care. Aggregate data at the individual patient/physician level are monitored and analyzed by the Performance Improvement Committee to identify trends. The analysis of the measurement data is used to determine compliance with program, identify performance improvement opportunities, and develop/implement action plans as required to improve patient care and outcomes.

**Reviewing the Standards**

The Joint Commission standards for certification in hip fracture care are listed as follows:

*Program management* consists of designing, implementing and evaluating an organized program. Appropriate access to care is provided for all eligible patients, and resources are available for all practitioners involved with the program.

*Delivering or facilitating clinical care* includes using qualified and competent practitioners who have been properly oriented and educated. Care is to be delivered using evidence-based practice guidelines, which are individualized for the needs of the patient and through a program that is focused on improving practice.

*Supporting self-management* focuses on active involvement of the patient in managing his or her disease, developing a plan of care, assessing self-management capabilities, providing support when necessary, and providing education.

*Clinical information management* consists of gathering and sharing information to coordinate care across the setting, providing easy access to patient information for practitioners, integrating data from various sources while also preserving confidentiality, and maintaining data quality and integrity.
Performance measurement and improvement involves an organized, comprehensive approach to performance improvement, trending and comparing data to evaluate process and outcomes, using gathered and analyzed data to improve clinical practice, and evaluating perception of care by patient.

Clinical Practice Guidelines and Order Sets
Clinical practice guidelines must be chosen and reviewed early in the program development as these will be used to guide your program and must be submitted to TJC at the time of application. Our institution based our hip fracture program on the evidence-based guidelines from the National Guidelines Clearinghouse. Specifically,

- Hip and pelvis (acute & chronic)
- Acute pain management in older adults
- Venous thromboembolism (VTE) prophylaxis
- Delirium: prevention, early recognition, and treatment

A literature search was done to determine what are the most common problems of the hip fracture patient and what is the optimal plan of care for the hip fracture population to achieve the best outcome. The order sets and the care of the patient are based on these evidence-based recommendations.

Because of the increasing comorbidities of this population, medical consultants are almost universally involved in the care of these patients and in one study, Friedman et al. (2009) demonstrated that comanaged care reduced time to surgery, reduced length of stay, and reduced complications. Based on previous research, it was determined by the Hip Fracture Steering Committee that this population of patients would be best comanaged with an orthopaedic surgeon and an internist in collaboration. It was then recommended that all patients in this program be medically optimized by the internist and then taken to the OR within 24 hr of medical clearance.

Performance Measures
Hip fracture is a Joint Commission disease-specific care program that does not have standard measures. Facilities are required to collect and analyze data on four or more performance measures. Two of the measures have to be clinically related as identified from the clinical practice guidelines. The four our program selected for submission were the following:

- Prealbumin within 48 hr of admission
- Deep Venous Thrombosis prophylaxis for all applicable patients
- Time to OR from admission within 24 hr
- Usage of postoperative order sets for hip fracture

At the time of the initial certification review, a facility must have four months of data collected. It is important that these performance measures be reflected in the order sets, clinical pathways, and protocols. It is imperative that the physicians have input and are aware of the performance measure, as they have the greatest impact on achieving them. Our physician champion and CNS were very involved in attending other service line division meetings to educate other physicians about our program, give them feedback as to how they are impacting the program, and to build partnerships. Report cards including volume, length of stay, and performance indicators are mailed to the orthopaedic surgeons once a quarter with blind data, so that each surgeon can see how their measures are compared with others.

Multidisciplinary Approach
A multidisciplinary team of individuals including nursing, physical therapy, dietary, pharmacy, OR nurse, PACU nurse, ethics, medical management, Chaplin, orthopaedic unit manager, orthopaedic CNS, and physicians meet on the orthopaedic floor once a week to discuss the patients with hip fracture and assure that the program is being followed for these patients. It is also a learning opportunity for everyone as the rounds are lead by different physicians such as orthopaedics, rehabilitation, internal medicine, and geriatrics.

This same multidisciplinary team, created a pathway utilizing current best practice to appropriately care for these patients. All nurses were initially given the pathway, and now all new nurses are given this pathway in the orthopedic orientation. The pathway serves as a guide to meet all indicators and to assure we are standardizing our approach to caring for all hip fracture patients in the program (see Table ).

Submitting the Application
The guidelines on eligibility for Disease-Specific Care Certification indicate that a program should be in full operation when the application is submitted. An extensive educational plan needs to be formed and implemented; however, there is not a specific number of hours mandated for hip fracture education from TJC. The Practice Council decided that 4 hours of hip fracture related education would be required for all orthopaedic floor nurses. Examples of educational opportunities include the following:

- Weekly multidisciplinary hip fracture rounds with the medical director
- Care of the geriatric patient with hip fracture
- Recognizing delirium in hip fracture patients
- Managing acute pain in the elderly
- Fall prevention for professionals
- Prevention of VTE in hip fracture patients
- Physical therapy treatment for different approaches of hip fracture repair
- Osteoporosis screening and treatment
- Serum Prealbumin
- Types of hip fracture repair
- Vitamin D therapy
- Quantitative ultrasound of the calcaneus

The program coordinator attended staff meetings in the ED, orthopaedic floor, the trauma unit where hip fracture patients are admitted when the orthopaedic unit is full, PACU, radiology, trauma intensive care unit, nursing supervisors, and physical therapy to share the guidelines and
<table>
<thead>
<tr>
<th>Postoperative Day 4</th>
<th>Postoperative Day 3</th>
<th>Postoperative Day 2</th>
<th>Postoperative Day 1</th>
<th>Day of Surgery</th>
<th>Admission to OR Within 24 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walker Bedside commode</td>
<td>Mental health CNS for confusion or delirium Orthopaedic CNS for complex patients</td>
<td>Hip fracture pre-/postoperative order set utilized</td>
<td>walkers</td>
<td>____</td>
<td>____</td>
</tr>
<tr>
<td>Discontinue Foley catheter</td>
<td>____</td>
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</table>

**Preoperative/postoperative**
- ED hip fracture order set utilized
- ED to unit < 5 hr
- Pain medication
- Fall risk kit (gait belt, grip socks)
- Initiate care plan

**Consults**
- Internal medicine for medical optimization
- Social services

**Diagnostic tests**
- X-rays
- Prealbumin
- Calcium
- Vitamin D level
- CMP
- CBC with differential

**Assessment & treatments**
- Vital signs Q4h
- times 48 hr
- Neurovascular checks Q4
- Admission weight
- Skin assessment every shift with skin care protocol
- CAM assessment every day
- Intake & output
- Oxygen: if sat < 92%
- Comfort measures
- Incentive spirometry
- Cough and deep breath exercises
- Assess risk of heart failure
- Mechanical VTE prophylaxis while in bed throughout stay
- Predictive model for delirium

**Note:** The table continues on the next page.
<table>
<thead>
<tr>
<th>Table. Texas Health Harris Methodist Hospital Fort Worth Geriatric Hip Fracture Service Line Pathway (Continued)</th>
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</table>

<table>
<thead>
<tr>
<th>Admission to OR Within 24 hr</th>
<th>Day of Surgery Date: ___</th>
<th>Postoperative Day 1 Date: ___</th>
<th>Postoperative Day 2 Date: ___</th>
<th>Postoperative Day 3 Date: ___</th>
<th>Postoperative Day 4 Discharge Day Date: ___</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV Fluids IV Morphine (avoid Demerol in elderly) Avoid PCA in elderly Stress Ulcer Prophylaxis Antibiotic perioperatively for 24 hr</td>
<td>Continue IV fluids Transition IV pain meds to PO Stool softener/prophylaxis begin 12–24 hr after end of surgery Begin Vitamin D if level low</td>
<td>As tolerated post op Nutrition consult if prealbumin &lt; 10 or other nutrition concerns</td>
<td>Out of bed to chair twice with physical therapy Out of bed with meals after PT evaluation Weight-bearing per orders</td>
<td>Out of bed and ambulating in the hall with physical therapy 2 times a day Ambulate to bathroom if possible</td>
<td>As tolerated Reinf. teaching fall prevention teaching Follow up with primary physician if Vitamin D level low</td>
</tr>
<tr>
<td>Nutrition</td>
<td>As tolerated</td>
<td>Advance to solid food Nutrition consult if unable to advance diet/nausea/vomiting</td>
<td>As tolerated</td>
<td>As tolerated</td>
<td>As tolerated</td>
</tr>
<tr>
<td>Activity: physical therapy &amp; nursing</td>
<td>OHFT Bucks traction Preteaching assessment Physical therapy consult and treatment</td>
<td>Physical therapy consult and treatment</td>
<td>Out of bed with meals after PT evaluation Weight-bearing per orders</td>
<td>Encourage ankle pumps every hr while awake</td>
<td>Hip fracture education manual if not already given and reinforce teaching Osteoporosis teaching if indicated</td>
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<td>Patient/family education</td>
<td>Pain control Stress importance of breathing exercises, early mobility Vaccination assessment Heart failure education if indicated Fall prevention teaching Confusion/delirium education</td>
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<td>Medications time routine medications around activity schedule</td>
<td>Monitor H&amp;H for possible transfusion Qualitative ultrasound of calcaneus before discharge</td>
<td>Continue IV fluids Transition IV pain meds to PO Stool softener/laxative PRN Chemical VTE prophylaxis begin 12–24 hr after end of surgery Begin Vitamin D if level low</td>
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Final Preparation

Our institution had 5 weeks’ notice of the date of our survey. Mock surveys were conducted on the orthopaedic floor twice a week using the TJC tracer methodology. Several mock surveys were also conducted on PACU, trauma intensive care unit, and the emergency department. Weekly Q&A fliers with survey-type questions were sent out to all areas that were involved with the hip fracture program. The Practice Council members made hand-held, pocket-sized laminated cards with information specific to the hip fracture program and participated in reviewing with the orthopaedic nurses all elements of the program.

Documents requested by the surveyor included (a) a current list of patients being treated in the program; (b) a list of patients from the previous 4 months; (c) a current list of program management leadership with title and responsibilities; (d) the organization chart for the hospital and service line; (e) performance measurement data collected from the last 4 months; and (f) performance improvement action plans that demonstrate how data have been used to improve program care and services. There were a total of eight notebooks assembled with policies and procedures, credentials, patient and staff education, infection-related data, clinical practice guidelines, mission and vision, goals of program, environment of care information, list of committees and members, and many other supporting documents to show that all Joint Commission the standards were met accordingly.

The Survey

The opening session included the surveyor and representatives from each department/physician division involved in the care of the patient with hip fracture. After a brief overview of the facility as a whole, the surveyor was introduced to how each of the departments cares for these patients by the respective representative.

The “tracers” took up the majority of the day as the surveyor traced four patients, interviewed one patient, and then researched four previous patients through the electronic health record. The patient tracers included visiting the orthopaedic floor, emergency room, PACU, and preoperative area. At the end of the day, we were notified that it was recommended that we receive certification with no requirements for improvement.

Continuation of Care

In the year following the survey, we shifted our focus to expand and develop a delirium and vitamin D protocol.
According to Lundstrom et al., 2005, delirium is a common and a serious problem and is associated with substantial morbidity and mortality rates. Occurring in 28% to 61% of hospitalized older patients treated for hip fractures. Hospitalized patients who develop delirium are at higher risk for fall, developing pressure ulcers, have longer length of stay and higher associated costs (Sendelbach, Guthrie, Schoenfelder, 2009). On admission, a predictive model for risk of delirium is completed on hip fracture patients. Every day there after a confusion assessment method (CAM) is completed. If the patient is a risk for developing delirium the protocol is initiated and the physician is notified.

Approximately 33% of women 60 to 70 years of age and 66% of those 80 years of age or older have osteoporosis. It is estimated that 47% of women and 22% of men 50 years of age or older will sustain an osteoporotic fracture in their remaining lifetime (Hollieck 2007). Our protocol includes a Vitamin D, 25–Hydroxy lab drawn on admission; treatment is given according to the level being greater or less than 30 ng per milliliter. Before the patient is discharged a Quantitative ultrasound (QUS) of the calcaneus is performed. It has been demonstrated that QUS is an effective screening tool for osteoporosis risk in hospitalized orthopaedic trauma patients (Collinge, et. al., 2010). A letter is sent to the patient’s primary care doctor and to the receiving facility, if appropriate, up to discharge outlining the Vitamin D level, treatment started. QUS results and recommendation for another Vitamin D, 25–Hydroxy lab in four weeks along with a DEXA scan.

**Discussion**

The outcomes achieved during this 1-year process in creating the geriatric hip fracture program were the following: Postoperative order set usage went from 33.5% to 100%, prealbumin being ordered within 48 hr of admission went from 0% to 90%, VTE prophylaxis remained at 100% and reduction in time to OR from medical clearance from 26 hr to 10.6 hr, and our length of stay has been reduced 2.71 days.

We determined during the process that our performance measure of getting the patient to the OR within 24 hr was unreasonable as many of our patients were admitted with multiple comorbidities and were unable to be cleared for several days. At the time of the survey, we changed our performance measure to getting the patient to the OR within 24 hr of medical clearance, which is a more reasonable objective.

The process of developing a geriatric hip fracture program has moved our institution forward in reaching our goals of, creating high-quality clinical programs to provide quality, evidence-based care through the acute hospital phase of the patient’s illness, and fostering teamwork among physicians, hospital employees, management, and the patient to achieve an optimal outcome.

**Summary**

Hip fractures occurring in older adults are a common and serious condition, frequently leading to functional decline, morbidity, and mortality. As one consequence of the aging of America, the incidence of hip fractures is steadily increasing. The risk of a fracture doubles every decade after the age of 50 years. Management of the hip fracture can be complicated as most live with comorbidities (Friedman et al., 2009).

The optimal surgical decision must be individualized and prompt. The team of orthopaedic surgeons, hospitalist, Doctor of Pharmacy, and anesthesia must all work together to get the patient to the OR as quickly as the patient is medically optimized. Strategies to improve outcomes in these patients after surgery include collaboration with clinical nutrition, physical therapy, and nursing to ensure early ambulation, nutrition assessment, delirium prevention, and appropriate VTE prophylaxis.

The process of applying for this certification has provided us with a solid structure on which to continue to build and maintain our disease management program. This has resulted in standardization of care, greater efficiency, and ultimately improved outcomes for the hip fracture population we serve.

**REFERENCES**


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