

Accelero Identifies Opportunities to Provide Greater Value in Hip Fracture Care



Every year more than a quarter of a million people over the age of 65 are admitted to a hospital with a hip fracture. Mortality and readmission rates are higher for this patient population, increasing the risk of unfavorable outcomes and increased costs. This white paper details the care and contribution margin improvement opportunities for a hospital that performs approximately 300 hip fracture repair/partial hip replacement cases annually. Data analysis, onsite observation and interviews were conducted to uncover opportunities to improve care and expand market share for these procedures. Emphasis was on the admission, perioperative and acute stay care processes and metrics. While the perioperative metrics were good overall, opportunities were identified to improve on-time starts and scheduling. In addition, the percentage of patients that had surgery within one day of admission or less was below the 50th percentile when compared to the Accelero OrthoVal[®] database.

Introduction

According to the Centers for Disease Control and Prevention, almost 260,000 people over the age of 65 are admitted to the hospital with a hip fracture.¹ By 2030 the number will be closer to 300,000, a projected increase of 12%.² While the numbers are small in comparison to hip and knee replacements, Medicare is expected to spend almost \$3 billion annually to care for this patient population.³

As reimbursement remains virtually unchanged or declining for hip fractures, hospitals must understand the primary cost drivers for hip fracture care in order to maintain or improve their contribution margin. The Accelero *OrthoVal* database breaks down costs associated with hip fractures care into ten categories: Room, OR, Implant, Diagnostics, Supplies, Pharmacy, Lab, Rehabilitation, ED and Respiratory. The average percentages of the total cost, per category, can be seen in **FIGURE 1**.

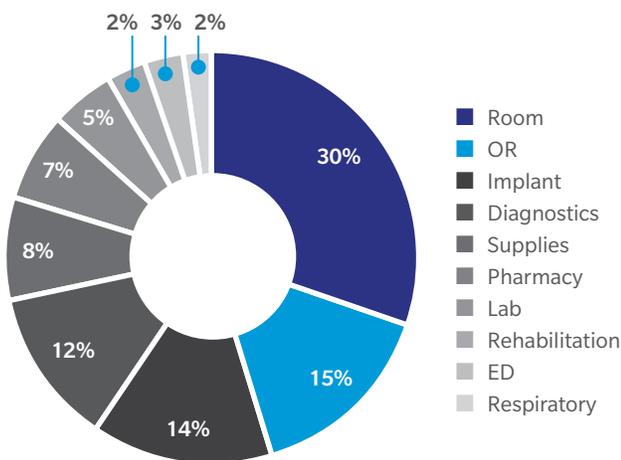


FIGURE 1 | Hospital cost distribution for hip fracture care. Source: Accelero *OrthoVal* database.

The main cost drivers of hip fracture care in the hospital are the room costs (i.e. length of stay), operating room time and various diagnostics/ services that are part of the patient admitting, preparation and postoperative care processes.

The average length of stay (LOS) for the three MSDRGs (480-482) included in the hip fracture grouping is five days. The percentage of hip fracture patients discharged on or before the fifth day is a good indicator of program effectiveness.

FIGURE 2 shows the distribution of hospitals in the *OrthoVal* database with a LOS of five days or less for hip fracture patients.

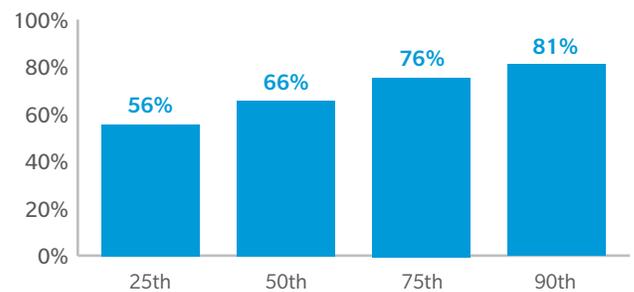


FIGURE 2 | Hip fracture LOS, five days or less. Source: Accelero *OrthoVal* database.

The risk for developing complications after surgery is high for the hip fracture population. Some hospitals are experiencing coded complication rates of up to 25%. Unfortunately, one in five patients will die within the first year following surgery.⁴ Because of this, it is imperative that hospitals create awareness to ensure that postoperative complications are minimized. Top performers in the *OrthoVal* database are able to avoid higher complication rates, with the 90th percentile achieving an 11% coded complication rate (**FIGURE 3**).

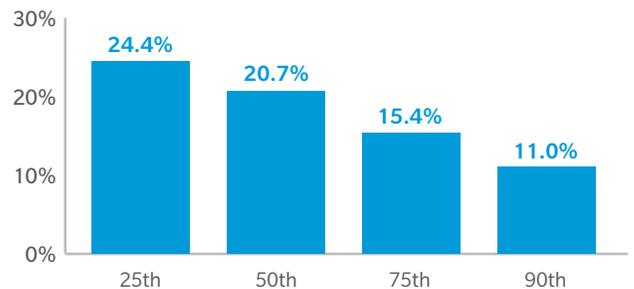


FIGURE 3 | Hip fracture coded complication benchmarks. Source: Accelero *OrthoVal* database.

Readmission rates following hip fracture surgery are 10.9%;⁵ more than double the rate of joint replacement patients (5.2%).⁶ Additionally, the average cost for a readmission following hip fracture surgery is over \$13,000/readmission.⁷ While hip fracture patients have inherent risks, the benefit to the hospital can materialize in the form of a healthy contribution margin (reimbursement less variable cost). At \$5,2048, the average contribution margin per hip fracture case is approaching that of joint replacements (\$6,948).⁹ With the appropriate medical management this patient population can greatly impact the overall contribution margin generated by the orthopedic service line.

METHODS

The subject hospital is a full service, acute care hospital with over 350 beds and 27 operating rooms. The orthopedic group performed over 1,200 total joint cases and over 260 hip fracture cases in 2014. As part of this analysis, an in-depth review of the hip fracture program was performed. The evaluation consisted of data analysis, onsite observation and interviews. The Interview process was 28 one-on-one and group meetings with senior administration, orthopedic surgeons, hospitalists, emergency department physicians and other key medical staff. The purpose was to gain a complete understanding of the current processes while documenting the insights, concerns and observations of the interviewees. This information was used to create a report detailing current data trends, a comparison to the *OrthoVal* database, a gap analysis of current processes to best practices, and the quantification of opportunities with recommendations and guidelines for implementation.

RESULTS

Two of the biggest challenges hospitals face with hip fractures is getting patients cleared for surgery and medically preparing them for discharge based on an established plan of care. With this in mind, the results will be summarized using the following categories and episodes of care: admission to surgery, length of stay, coded complication rate, readmission rate and market share.

Admission to Surgery

One of the biggest factors in a patient's long-term recovery after hip fracture surgery is the elapsed time between admission and surgery. **FIGURE 4** shows that 75% of hip fracture patients are in the hospital one day or less prior to the day of surgery. This places the hospital between the 25th and 50th percentile of hospitals in the *OrthoVal* database.

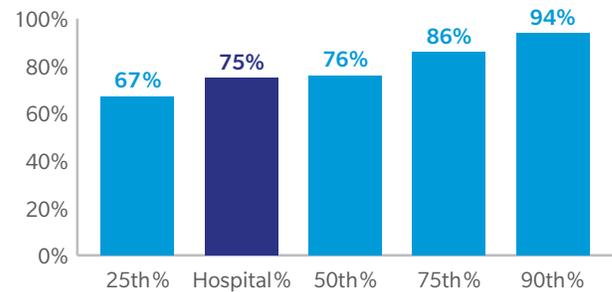


FIGURE 4 | Hip fracture admit to day of surgery, one day or less. Source: Accelerer *OrthoVal* database.



Length of Stay (LOS)

Accelerero collected LOS data for both hip fracture repair and partial hip replacement patients. As shown in [FIGURE 5](#), 79% of the hospital’s hip fracture patients had a length of stay of five days or less. This placed the hospital between the 75th and 90th percentile of all hospitals in the *OrthoVal* database.

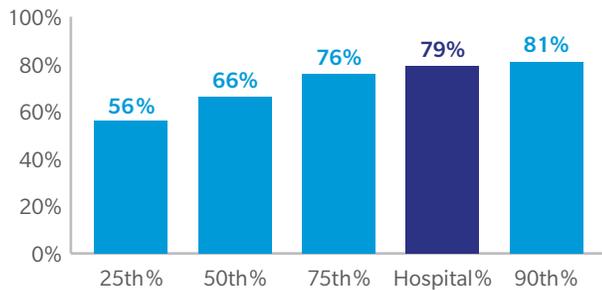


FIGURE 5 | Hip fracture LOS, five days or less.
Source: Accelerero *OrthoVal* database.

Coded Complication Rate

The coded complication rate for the hospital was 20.0%, which was between the 50th and 75th percentile of all of the hospitals in the *OrthoVal* database ([FIGURE 6](#)).

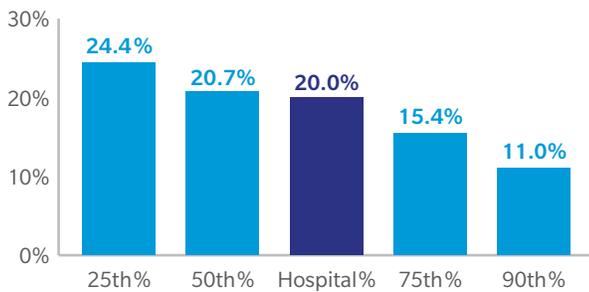


FIGURE 6 | Hospital coded complication rate compared to Accelerero *OrthoVal* database.

Readmission Rate

The 30-day all-cause readmission rates for hip fracture patients were collected and compared against national benchmarks. The Hospital’s current readmission rate was 7.7% and places it below the national average of 10.9%.¹⁰

Market Share

A market analysis was conducted during the assessment to determine the hospital’s market share in its service area. The service area was defined using a radius of 90 miles from the hospital. There were 790 hip fracture cases performed in the service area with the subject hospital performing 267, for a 34% share of the market. There were 523 hip fracture cases (market opportunity) performed by other hospitals on patients from the defined service area. [FIGURE 7](#) summarizes the market share by sub-region within the defined service area.

Market	Market Share
Hospital Local Market	57%
North Market	25%
East Market	19%
West Market	13%
South Market	6%

FIGURE 7 | Hospital market share summary.

DISCUSSION

The following is a discussion of the results and opportunity by category.

Admission to Surgery

The majority of published studies indicate a quick admission to surgery time favors improved outcomes for pain, complications and length of stay.¹¹ Additionally, patients having surgery within 12 hours of admission have a significantly lower 30-day mortality rate than those with a longer delay.¹² With this in mind, the assessment identified limitations in the care process that may prolong the time required to clear hip fracture patients for surgery.

The hospital was between the 25th and 50th percentiles of the *OrthoVal* database for the percentage of patients that have surgery within one day of admission, illustrating the need to improve processes related to the admission to surgery phase. It was recommended that a geriatric-specific fracture order set and plan of care be

developed as the elderly have special needs and should have a unique care algorithm. Another recommendation was to establish baseline medical, cognitive, functional, psycho-social and nutritional status during the admission process for use in the development of an acute care and discharge plan. Many times this is missed and can increase the patient's risk for future falls.

Many hip fracture patients are admitted to the nursing unit first, allowing medicine to stabilize and prepare the patient for surgery. It was noted that patients were often added to the OR schedule, but it was not communicated to the nurses in a timely fashion. Accelero recommended that nurses on the unit have access to and a vehicle with which to drive a review of the surgery schedule. It will enable the nurses to know how and when to prepare the patient for their surgery day. As the nurses review the surgery schedule, it is equally important they have well-defined patient preparation guidelines (i.e., timing of the provision of the pre-surgery antibiotic) that are used consistently. This ensures that every patient arrives in pre-surgical holding completely prepared.

Because falls happen suddenly, there is very limited time to educate patients and their family members on the surgery and postoperative care. It was recommended that the hospital develop an education guide to help family members understand the process, what to expect during surgery and better prepare everyone for life after discharge from the hospital. The most effective education process begins in the emergency department once the diagnosis and surgery are confirmed.



Length of Stay (LOS)

Once the patient is released from the post anesthesia care unit, a number of coordinated steps should occur to ensure the patient is medically prepared for discharge. Without this coordination, many patients have an extended length of stay and are at higher risk for developing complications. The hospital had favorable results with 79% of patients being discharged within five days or less. The *OrthoVal* database 90th percentile was 81%. This trend will need to continue as the goal of five days moves towards four days in the coming years.

While the overall LOS indicators were positive, there were a number of process and care related activities that could negatively impact the results over time. The first was the lack of a consistent acute care order set and plan of care. The process documents were in place but were deviated from on a consistent basis. There were also different physician practice patterns, causing confusion from the nursing staff. It was recommended that a comprehensive physician variability study occur to determine those practice patterns that were similar and those that were physician-specific. Once the results were determined, it was also recommended that the variances be reviewed by a physician champion. The results of that process could then be used in forming a comprehensive fracture order set and plan of care for all physicians to use.

Poor pain control not only impacts the patient's comfort level, it also can decrease their ability to participate in rehabilitation – a factor that can negatively impact a positive functional outcome and increase the risk for future falls. A recent AAOS study determined there is strong evidence to support the use of a multimodal pain management protocol after surgery.¹³ Based on inconsistencies in pain management between surgeons at the hospital, and the increased risk of postoperative delirium, it was recommended that a geriatric-specific fracture pain management protocol be developed to aid in both, patient comfort and readiness for discharge.

Coded Complication Rate

Outcomes increasingly are more transparent to consumers, whether it is Medicare publishing quality indicators of complication rates and readmission rates or third party consumer rating and feedback sites such as Healthgrades. Outcomes are also known to impact the cost of care following hip fracture surgery. In this case study, 20% of the hip fracture patients had a coded complication. The other most common occurrences from the Accelerero OrthoVal database are listed in **FIGURE 8**.

Complications Grouping	Occurrence
Respiratory	24%
Renal Failure	19%
Urinary	26%
Cardiac	5%
Iatrogenic Hypotension	7%
Delirium	5%
DVT/PE	4%
Sepsis	3%
Hemorrhage/Hematoma	3%
Digestive System	3%
	100%

FIGURE 8 | Hospital market share summary.

While not all coded complications will cause an increase in the length of stay, hip fracture patients with complications had, on average, a 1.16 day longer stay than those without complications. For example, a patient could develop a respiratory complication due to inactivity. If there was a defined rehabilitation protocol ensuring the patient was mobilized on the first postoperative day, there is a greater possibility that the complication can be avoided. Recommendations made to the hospital to reduce coded complications included conducting retrospective chart reviews to determine coding opportunities, and implementing risk reduction protocols to mitigate the incidence of postoperative complications for those affected.

Readmission Rate

Preventing readmissions (specifically within 30 days) is critical to improve long-term outcomes for hip fracture patients. There are significant care and financial implications for hospitals that have a high readmission rate. The hospital had a readmission rate of 7.7%, adding an additional \$145,310 to the cost of care. Accelerero recommends that hospitals focus on four key areas including time from discharge to readmission, discharge facility location, reason for readmission and post-discharge medical management processes. Implementing a readmission report card to track key metrics is critical. The first step is to determine the timing of the readmission. The ability to track when the readmission occurred (day of discharge to 15 days, 16 to 30 days) will aid in developing avoidance strategies.

The next step is to focus on discharge disposition. When tracking readmissions it is important to know not only the timing of the readmission but the facility from which the patient is being readmitted. Because most patients will not go directly home, it is important to understand the care philosophies for hip fracture patients at both skilled nursing and rehabilitation facilities. Accelerero recommended the hospital strengthen its relationships with both local and regional post-acute care facilities to ensure care is consistent, regardless of the location. Consistent paperwork and person-to-person communication with patients can help to minimize readmissions. Performing a root cause of the readmission in collaboration with the admission facility can also help identify strategies to reduce the likelihood of readmission.

While tracking the location of the readmitting facility, it is equally important to understand the readmission diagnosis. Understanding trends such as falls, infection, pneumonia, etc. will help determine clinical process issues that can be improved. Finally, evaluating the transition of care from the discharge facility to the orthopedic surgeon and primary care physician is important. Understanding the timing of follow up appointments and its impact on readmission will help with the identification of optimal patient touch points.



Care Team Infrastructure

Accelerero observed that the hospital currently manages the orthopedic service line at a macro level, meaning they tend to focus on total patient metrics vs. specific patient populations. Because different patient populations have different needs and areas of focus, it was recommended that the hospital establish a hip fracture team. This team should meet regularly to review case data, complication rates and discuss patient flow using the recommendations above as a starting point for implementation. Having this team structure and regular hip fracture-specific metrics is essential in accomplishing any improvements in hip fracture care.

Market share

Due to the emergent nature of hip fracture cases, successful programs tend to focus on outreach and prevention activities vs. the more traditional marketing activities associated with many elective orthopedic cases. This does not mean that growth should not be part of an overall strategy to increase market share. Hospitals should develop specific messaging to target audiences, namely seniors, to attract more cases.

Overall, the hospital led the local market with a 57% share. However, the market share percentages were significantly smaller outside of the local market. There were over 500 cases or \$1.3 million of contribution margin that the hospital was not capturing. In order to grow, it was recommended that the hospital focus outreach efforts in all four of the peripheral markets. As part of this effort, the hospital should establish and promote brand messaging to increase the recognition of their program. The hospital currently has a web site specific to hip fractures, which is a step in the right direction. To increase the effectiveness of the website, Accelerero recommended adding patient testimonials, provide a virtual tour of the facility, promote their outcomes (functional and customer service) and link to downloadable patient/family education materials.

SUMMARY

The hip fracture patient population will continue to be a part of the future landscape of hospital provided care. This hospital has a growing orthopaedic program and will see growth and expansion of the current hip fracture service. Implementing the recommendations made by Accelerero – specifically focusing on the improvement of admit to surgery processes and postoperative care – will help the hospital to continue to decrease length of stay and drive down coded complication rates and readmissions. These enhancements will further strengthen the hospital's position within the market and improve their hip fracture market share.

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