

Length of Stay is Critical for Total Hip and Knee Replacement Cost of Care >



The reimbursement methodology for total hip and knee replacements is partially based on the length of stay (LOS) for these patients. As technology and efficiency increases, the average LOS continues to decline. Medicare front loads the reimbursement to cover the higher cost of the first day of hospitalization with the remainder of the payment dispersed throughout the hospital stay. Hospitals that have a lower LOS without readmission will be better positioned to maximize their reimbursement while controlling their costs of additional bed days. This white paper describes the relationship between Medicare reimbursement and length of stay, and reveals key processes used by leading hospitals to minimize their average LOS of stay for total hip and knee replacement patients.

Introduction >

The average hospital cost distribution for inpatient total hip and knee replacements as derived from the Accelero Health Partners hospital database can be seen in FIGURE 1.

The second largest cost component is that of the 'service line', which entails all of the costs associated with the inpatient stay, except the perioperative components. At an average bed rate of \$600 per day, length of stay (LOS) represents the largest single cost element of the service line, and is impacted by pre-operative, perioperative and post-operative processes.

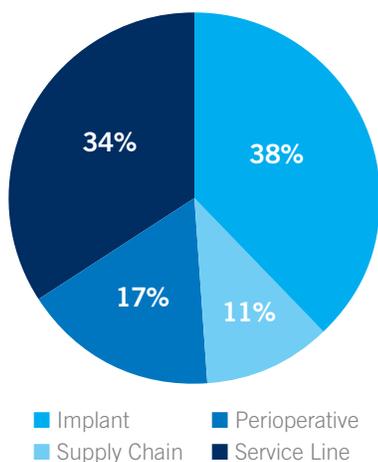


FIGURE 1 | Cost breakdown for total hip and knee replacements.

The average length of stay (ALOS) for total hip and total knee replacements has continued to decrease over the years as anesthesia procedures, surgical techniques, pain management protocols, implant advancements and hospital processes have improved. For example, in 1990 the ALOS was 10 days, dropping to five days in 2000, and typically three days or less today.

This is particularly relevant since Medicare uses the historical LOS information from their billing data two years prior to the current year to determine the geometric mean LOS (GMLOS). Geometric mean is a statistical method to determine a central tendency or typical value. The GMLOS is calculated by multiplying all of the lengths of stay and then taking the nth root of that number (where n=number of patients). The benefit of this method is that it minimizes the effect of outliers.

Because the GMLOS is determined using actual ALOS data, it has followed the ALOS trend downward. As GMLOS decreases, hospitals must continue to improve their processes and continuum of care to adapt to a consistently decreasing length of stay for total hip and knee replacement patients.

FIGURE 2 shows the declining GMLOS for the main DRG for major joint replacements (DRG 470).

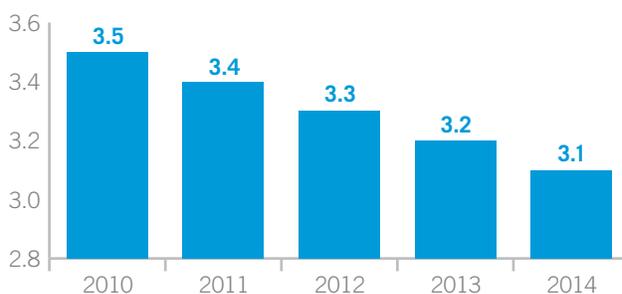


FIGURE 2 | Medicare GMLOS for MS-DRG 470.

Similarly, the ALOS for total hip and knee replacements for the hospitals in the Accelero database has declined over the past five years ahead of the GMLOS, as seen in [FIGURE 3](#).

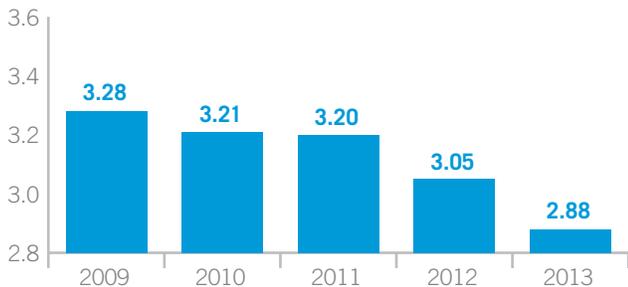


FIGURE 3 | ALOS for total hip and knee replacements from hospitals in Accelero database.

A vast majority of the hospitals in the Accelero database have successfully implemented a three day pathway for total hip and knee replacement patients. [FIGURE 4](#) shows that the highest performing hospitals in the Accelero database (90th percentile) discharge total hip and knee replacement patients in three days or less 90% of the time. Even lower performing hospitals (25th percentile) discharged these patients in three days or less 77% of time.

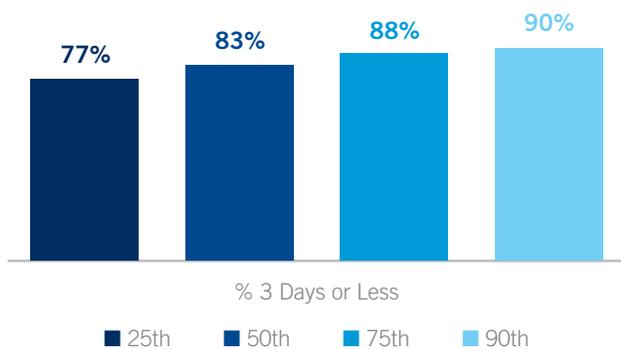


FIGURE 4 | Hospital rankings by percentile with ALOS of three days or less for total hip and knee replacement patients.

Typically, over 60% of the total hip and knee replacement patients have Medicare as their primary payer. Therefore, understanding the Medicare payment methodology is central to determining the target length of stay for total hip and knee replacement patients.

Over 95% of patients that have a total hip or knee replacement are coded as DRG 470. [TABLE 1](#) demonstrates the payment by day (using the national base rate average) for DRG 470 over the past four years. It assumes that a patient is a “transfer” patient, meaning that there is an additional care level provided post-discharge (skilled nursing facility, comprehensive rehabilitation center or home healthcare within 48 hours of discharge). The majority of Medicare patients undergo some level of post-discharge care.

| Year | GLMOS | Day 1 | Day 2 | Day 3 | 3 Day Total |
|--------|-------|---------|---------|---------|-------------|
| FY2011 | 3.4 | \$6,391 | \$3,195 | \$1,278 | \$10,864 |
| FY2012 | 3.3 | \$6,531 | \$3,265 | \$980 | \$10,776 |
| FY2013 | 3.2 | \$6,975 | \$3,488 | \$698 | \$11,161 |
| FY2014 | 3.1 | \$7,406 | \$3,703 | \$370 | \$11,479 |

TABLE 1 | Medicare reimbursement for total joint replacements (MS-DRG 470), by day.

Using FY 2013 as an example, Medicare allocated \$6,975 reimbursement for day one since this is where a majority of the costs lie (day of surgery and implant cost). The payment allocation (assuming the patient transfers to some level of post-discharge care) is \$3,488 for day two and \$698 for day three. As the GMLOS has decreased, the hospital payment for day three has also decreased. Total reimbursement for DRG 470 also varies based on any base rate fluctuations in the DRG for any given year.

The average bed day costs allocated by a hospital are generally \$500-\$700 per day. In FY 2013 with a GMLOS of 3.2 days, the Medicare reimbursement for day three would roughly equal the bed day cost. However, with the decrease in the GMLOS in FY 2014 to 3.1 days, the payment for day three has decreased to \$370. Based on the bed day costs, most hospitals would incur a financial loss on the third day.

It is important to consider that this payment model is only for Medicare patients and that the hospital would receive full DRG reimbursement (\$11,479) for patients who are not deemed transfer patients (i.e., not discharged to a skilled nursing facility, inpatient rehabilitation, or home healthcare within 48 hours of discharge).

Because of this change and progressive post-surgery treatment regimens, many hospitals are now beginning to migrate to a two day target length of stay for total hip and knee replacement patients. FIGURE 5 shows the Accelerero database for a length of stay of two days or less following a total hip or knee replacement. Leading hospitals (90th percentile) in the Accelerero database are able to discharge total joint replacement patients in two days or less 47% of the time. Hospitals in the 25th percentile are only able to discharge these patients in two days or less 4% of the time.

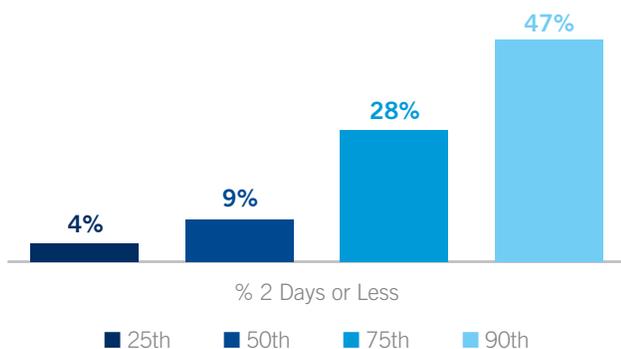


FIGURE 5 | Hospital rankings by percentile with ALOS of two days or less for total hip and knee replacement patients.

Achieving a two day length of stay with the majority of your total hip and knee replacements requires a new level of diligence in pre-operative, perioperative, and post-operative care, including:

- **Pre-operative patient education to support admission and discharge expectations.** Education should start at the point of surgical decision-making and include a “coach” to assist the patient during recovery. It is important to establish and communicate the targeted discharge date and manage the process toward it.

- **Patient optimization processes to ensure patients are prepared for surgery and co-morbidities are managed pre-operatively, reducing the risk of complications.**

There also needs to be processes in place for post-operative risk reduction to initiate timely action when complications do occur.

- **Effective multimodal pain management approach.**

Multimodal protocols combine various drug-types and techniques to more effectively treat the various receptor systems while reducing opioid-related adverse effects and surgical stress response. As a result, clinical outcomes are typically better with fewer complications and a higher level of functionality.

- **Accelerated rehabilitation to include day of surgery physical therapy.** The sooner the patient can begin the rehabilitation process, the sooner the recovery begins and the patient can be discharged.

- **Transition of care strategies for timely discharge and to ensure the next level of care can anticipate the patient needs.** This involves creating a patient/nurse pathway that all nurses and therapists are trained to follow. Creating and communicating such a pathway establishes and tracks goals for patients and caregivers while minimizing treatment delays.

SUMMARY

Medicare reimbursement is based on GMLOS, which continues to decline. No different than four years ago when hospitals migrated from a four day to a three day pathway for total hip and knee replacement patients, they now need to move toward a two day stay. This is most effectively achieved through formalized patient education, patient optimization processes, an effective multimodal pain management plan, accelerated rehabilitation and a patient/nurse pathway that ensures continuous and consistent care.