

Distribution of Post-Acute Care under CJR Model of Lower Extremity Joint Replacements for MS-DRG 470

Introduction

The goal of the Medicare Comprehensive Care for Joint Replacement (CJR) payment model is to provide beneficiaries undergoing lower extremity joint replacement (LEJR) with coordinated, quality, cost-efficient care. The CJR payment model, which became effective in April 2016, requires that Medicare make a single payment for all services provided during a 90-day episode of care. By definition, an episode begins with a Medicare fee-for-service beneficiary admission to a participating hospital for a LEJR, from which the beneficiary is discharged under MS-DRG 469 or 470.¹ The episode ends 90 days after the beneficiary is discharged from the acute care hospital. The episode contains the acute care hospital stay plus an additional 90 days post-discharge, and includes all items and services paid under Medicare Part A and Part B. CJR is a retrospective, two-sided risk model with hospitals bearing financial responsibility for the episode of care. The mandatory CJR model has been implemented in 67 metropolitan statistical areas (MSAs).

Understanding LEJR patient referral patterns from the acute care hospital to various types of post-acute care (PAC) settings is key to achieving the overall goal of reducing health care costs and increasing care quality. PAC comprises a wide range of health care services that assist patients with transitioning from the hospital to the community. In the context of PAC, providers share a common goal of restoring patients to their prior level of functioning. Patients discharged under MS-DRG 470 more frequently make use of home health agencies (HHAs) compared to patients discharged under MS-DRG 469, which are more likely to be treated in formal PAC settings such as SNFs or IRFs. Previous research conducted by Dobson | DaVanzo indicated that MS-DRG 470 is the most frequently reported MS-DRG within HHAs, SNFs, and IRFs. The number of MS-DRG 470 cases far outnumbers the number of MS-DRG 469 cases. Because of the high prevalence of MS-DRG 470 cases as compared with MS-DRG 469, for the MSA-level data analysis, we focus on MS-DRG 470 patient discharges only.² However, at the region-level, the data analysis reflects both MS-DRGs 470 and 469.

Hip and knee replacements are the most common procedures for Medicare patients; typically Medicare spends between \$16,500 and \$33,000 per procedure. Medicare payments for hip and knee replacements vary, as do rates of complications, such as infections and implant failures. Under a bundled payment program, there are two key drivers of episode spending for LEJR cases: 1) PAC placement following the acute care hospital stay; and 2) rate of acute care hospital readmission during the episode.

Purpose

Dobson DaVanzo & Associates, LLC was commissioned by the Alliance for Home Health Quality and Innovation (AHHQI) to examine: 1) the distribution of patient discharges for MS-DRG 470 (both with and

¹ MS-DRG 469 – Major joint replacement or reattachment of lower extremity with major complications or comorbidities.

MS-DRG 470 – Major joint replacement or reattachment of lower extremity without major complications or comorbidities. Only MS-DRG 470 was included in the analysis.

² Dobson A, DaVanzo J, El-Gamil A, et al. (2012). Clinically Appropriate and Cost Effective Placement (CACEP): Improving Health Care Quality and Efficiency: Final Report. Submitted to the Alliance for Home Health Quality and Innovation. Dobson DaVanzo & Associates, LLC.

without fracture) from the acute care hospital to various PAC settings for hospitals participating in CJR; 2) the average Medicare episode payment for each post-acute discharge destination; and 3) the average readmission rate for related conditions. The analysis mirrors the structure of the CJR program and can be used to understand variation in post-acute care across regions. Ultimately, this analysis quantifies the value of home health care in promoting cost-effective, quality care.

Methods

This analysis is completed using claims for the five percent and 100 percent sample of Medicare beneficiaries contained within the 2011-2014 Standard Analytic Files (SAF) Limited Data Set (LDS). All sites of service are included in the analysis of the five percent sample. All sites of service, excluding Part B Carrier (physician) and durable medical equipment (DME) claims, are included in the analysis of the 100 percent sample, as CMS does not make the universe of claims available for physician or DME settings due to the size of the files.

Each hospital participating in CJR was identified and analyzed to determine: 1) the distribution of LEJR discharges (specifically for MS-DRG 470) to each PAC setting; 2) the average Medicare episode payment for each PAC setting (including the initial hospital stay), and 3) the average readmission rate for related conditions by PAC setting (defined by CJR) over the 90-day period. This analysis is limited to patients with an MS-DRG 470 discharge and excludes those discharged under MS-DRG 469. While MS-DRG 469 is included in CJR, this category represents a higher level of patient severity, which is generally not treated within the HHA setting. PAC settings analyzed as the first setting following discharge from the acute care hospital include: home health agencies (HHAs), skilled nursing facilities (SNFs), and inpatient rehabilitation facilities (IRFs). Discharges to long-term acute care hospitals (LTCHs) and other inpatient settings were excluded from the analysis. "Community" care reflects episodes without formal PAC care, including physician and other outpatient services, including outpatient therapy. The readmission rate may not be related to the first PAC setting; rather it is a readmission anytime during the 90-day episode.

Additional information is provided on the rate of fractures and Medicare payment for each care setting within the episode, by PAC setting. As discussed in more detail below, fracture status is an important indicator of patient severity and a driver of episode payment. The results of this analysis are presented by MSA in order to better identify referral patterns of LEJR patients and PAC utilization across the U.S.

The analysis described above was also done by region in order to enable a greater understanding of the CJR model. At the region level, the above-mentioned analysis was performed both for patients with an MS-DRG 470 discharge and an MS-DRG 469 discharge. The data associated with each MS-DRG is presented separately.

CJR Episode Structure

Under the CJR initiative, an episode is defined as all Medicare Part A and B services beginning with an acute care hospital admission for a patient with an MS-DRG of 469 or 470 and ending 90 days later. Only acute care hospital readmissions, hospital outpatient services, Part B carrier and DME claims that are clinically related to the initial acute care hospital stay are included in the episode. Despite the inclusion of MS-DRG 469 in CJR, our MSA and hospital-level analyses are limited to only patients discharged under MS-DRG 470; however, the region-level analysis presents both MS-DRG 470 and 469 data.

Episodes of care are analyzed for dates of acute care hospital discharge between October 1, 2011 and September 30, 2014 for CJR hospitals. Medicare payments for services that span a period of care that extends beyond the episode are prorated to include only the portion of the claim that occurred during the episode period. Episode payment reflects removal of special payment provisions under the inpatient prospective payment system (IPPS), as well as for IRFs, SNFs, and HHAs. Medicare beneficiaries who: 1) are not enrolled in both Medicare Part A and B; 2) enrolled in a Medicare Advantage plan; 3) have ESRD; 4) have Medicare as a secondary payer; or 5) died during the episode are excluded from CJR and the analysis.

CMS recognizes that the presence of a hip fracture results in significantly higher Medicare spending and more intense post-acute care needs. Therefore, CMS has implemented a separate payment adjustment to account for patients with hip fractures who underwent a LEJR. While fracture status serves as a proxy indicator for severity, use of administrative claims data limits our ability to truly understand the clinical severity of these patients.

Medicare payments have been normalized for hospital-specific wage adjustment variation in order to be comparable across regions, and have been trended forward to FY 2014. Trends up to FY 2014 payment were based on the change in the national average episode spending between FYs 2012 and 2013 and between FYs 2013 and 2014, which is performed for MS-DRG 470 patients, and separated by fracture status.

Service Imputation

CMS only makes the carrier (file in which physician and outpatient therapy services are often found) and DME claims available to researchers for a five percent sample of Medicare beneficiaries. Therefore, utilization of these services within the bundle was calculated within the five percent sample, and imputed to the beneficiary population in the 100 percent sample. We developed a regression model to predict outpatient therapy, physician, and DME spending in the five percent sample, and applied this model to the 100 percent sample to estimate spending.

Results

The distribution of PAC services for MS-DRG 470 episodes varied significantly by MSA and geographic region. Furthermore, readmission rates and average Medicare episode spending significantly varied by PAC setting within and across regions. Generally, discharges to HHAs and SNFs as the first PAC setting are most prevalent. On average, HHA first setting episodes had significantly lower Medicare payments and readmission rates than discharges to SNFs and IRFs. However, HHA first setting episodes had slightly higher Medicare payments and readmission rates compared to Community care, which includes physician and outpatient therapy services. Higher Medicare payments for HHA episodes are likely attributed to the higher clinical severity (as illustrated by the home health homebound requirement) compared to patients who are discharged home with no formal post-acute care. As expected, lower readmission rates are associated with lower total episode payments.

Fractures are a critical component of the total Medicare episode payment, readmission rates, and first setting distribution. In the context of this analysis, fractures were defined as hip fractures as identified using the list of ICD-9-CM diagnosis codes contained in Appendix A. These codes identify whether a hip fracture preceded the index hospitalization. Lower Medicare payments and readmission rates among HHA

episodes may be partially attributed to the lower rate of fractures compared to the facility-based PAC settings (SNFs and IRFs). For patients nationwide in MS-DRG 470 CJR episodes, the average fracture rate for those who went to IRF as the first PAC setting was 30.9% and the average fracture rate for those who went to SNF was 20.5%. For those who received home health services as the first PAC setting, the average fracture rate was 2.5%. Thus, Medicare payments and readmission rates may be related to patient severity and required level of intensive care, which is not controlled for in this analysis. Fracture rates are critical not only in understanding differences in Medicare payment and readmissions across different settings, but in understanding significant variation across MSAs and regions, due to the potential impact fractures have on payment and readmission rates.

PAC DISTRIBUTION ACROSS MSAs: HHA is the most prevalent first PAC setting in 54 percent of MSAs (36 out of 67 total). Discharges to SNFs are most prevalent in 37 percent of MSAs (n=25), and Community care is most prevalent in the remaining 9 percent (n=6) of MSAs. No MSA has IRF as the most prevalent first PAC setting. On average across all MSAs, HHAs are used as the first PAC setting for 41 percent of discharges, but within MSAs, HHA utilization ranges from 5 percent (Topeka, KS) to 75 percent (Gainesville, GA). SNFs are the first setting for 36 percent of discharges, and IRFs are the first setting for 9 percent of discharges. Similar to the HHAs, the use of SNFs and IRFs varies significantly by MSA.

EPISODE PAYMENTS ACROSS SETTINGS AND MSAs: Across all first PAC settings and MSAs, the average total Medicare episode payment is about \$24,900. HHA first setting episodes generally have a lower total episode payment than SNFs and IRFs, and a slightly higher episode payment than Community care. In HHA first setting episodes, the average episode payment is about \$19,900, ranging from about \$17,400 (San Francisco-Oakland-Hayward, CA) to \$21,400 (Topeka, KS). In contrast, SNF first setting episodes have a higher average episode payment of about \$31,500, ranging from about \$26,500 (Buffalo-Cheektowaga-Niagara Falls, NY) to \$40,100 (Beaumont-Port Arthur, TX). IRF first setting episodes generally have higher total episode payments, with an average payment of about \$38,000, ranging from about \$32,200 (Bismarck, ND) to \$45,600 (Tuscaloosa, AL). Generally, within an MSA, the average fracture rate is correlated to the total average episode payment, in that higher fracture rates are associated with higher average episode payments. Furthermore, within MSAs, differences in total episode payments by first PAC setting is correlated with different fracture rates in each first PAC setting.

Based on average total episode payments, HHAs episodes appear to be more cost-effective in their provision of post-acute care; however, we recognize that the severity of patients treated in facility-based care settings may differ from those who receive home health therapy, especially given the higher rates of fractures among SNF and IRF episodes compared to HHA and Community care episodes. However, past research conducted by Dobson | DaVanzo indicated that MS-DRG 470 is the most prevalent condition within HHAs, SNF, and IRFs. That finding suggests that regardless of differences in fracture rates, there may be considerable overlap in the clinical characteristics of patients who are admitted to HHAs, SNFs, and IRFs.³

READMISSION RATES ACROSS SETTINGS AND MSAs: Readmission rates also reflect the value of home health as a first PAC discharge setting. Across all settings and MSAs for MS-DRG 470 patients, 8 percent of

³ Dobson A, DaVanzo J, El-Gamil A, et al. (2012). Clinically Appropriate and Cost Effective Placement (CACEP): Improving Health Care Quality and Efficiency: Final Report. Submitted to the Alliance for Home Health Quality and Innovation. Dobson DaVanzo & Associates, LLC.

episodes contain a readmission related to the LEJR. This readmission rate is lower among HHA episodes, with an average of 5 percent, ranging from 3 percent (Corpus Christi, TX) to 9 percent (Flint, MI). In contrast, SNF episodes have an average readmission rate of 12 percent, ranging from 7 percent (Reading, PA) to 18 percent (Oklahoma City, OK). IRF episodes are again significantly higher than HHAs, with an average readmission rates of 15 percent, ranging from 8 percent (Milwaukee-Waukesha-West Allis, WI) to 25 percent (Norwich-New London, CT). However, we recognize that the severity of patients treated in facility-based care settings may differ from those who receive home health therapy, especially given the higher rates of fractures among SNF and IRF episodes compared to HHA and Community care episodes.

OVERALL RESULTS BY REGION: The distribution of patient episodes by PAC setting, the average episode payments, and readmission rates differ significantly by geographic region. East South Central, South Atlantic, and Mid Atlantic regions had the highest overall readmission rates (across PAC settings), and higher than average readmission rates within HHA first PAC episodes. The West North Central, Mountain, and Pacific regions have the relatively lowest readmission rates, which may be attributed to the higher than average rate of fractures across all episodes and other contributors of patient severity. We note, however, that there is considerable variation within each region, making region-specific conclusions difficult.

Conclusion

Within the CJR payment model, HHAs are frequently the most common first setting following acute care hospital discharge for patients with hip or knee replacements under MS-DRG 470. Patients who enter HHAs immediately after acute care hospital discharge generally have lower Medicare episode payments and lower readmission rates than other formal discharge destinations such as SNFs and IRFs. This may be due to patient severity and associated needs for more intensive care, which is not controlled for in this analysis.

There is significant variation in the use of HHA as a first-PAC setting across MSAs and regions, which may be partially related to the percent of patients with a hip fracture or other clinical complication requiring more intensive facility-based care. However, the rate of fractures alone does not account for all geographic variation in episode payments; rather the mix of care across settings during the 90-day episode (including readmissions) leads to significant differences in average episode payments.

The results of this analysis suggest that within the CJR program focusing on LEJRs, the use of home health care as a post-acute care setting can lead to reduced Medicare episode spending and lower rates of readmission. Recognition of home health's value, both to the Medicare program and to the patient, is critical as CJR and other payment models are being developed and implemented by CMS. The cost-effectiveness and positive patient outcomes of home health care will be a major source of CJR's success.

Appendix A

Description: ICD-9-CM code list for hip fractures

The presence of one of the listed ICD-9-CM diagnosis codes in the principal position on the inpatient anchor hospitalization claim indicates hip fracture.

ICD-9

| code | Description |
|-------|---|
| 73310 | Pathological fracture unspecified site |
| 73314 | Pathological fracture of neck of femur |
| 73315 | Pathological fracture of other specified part of femur |
| 73319 | Pathological fracture of other specified site |
| | Fracture of unspecified intracapsular section of neck of femur |
| 82000 | closed |
| 82001 | Fracture of epiphysis (separation) (upper) of neck of femur closed |
| 82002 | Fracture of midcervical section of femur closed |
| 82003 | Fracture of base of neck of femur closed |
| 82009 | Other transcervical fracture of femur closed |
| 82010 | Fracture of unspecified intracapsular section of neck of femur open |
| 82011 | Fracture of epiphysis (separation) (upper) of neck of femur open |
| 82012 | Fracture of midcervical section of femur open |
| 82013 | Fracture of base of neck of femur open |
| 82019 | Other transcervical fracture of femur open |
| 82020 | Fracture of unspecified trochanteric section of femur closed |
| 82021 | Fracture of intertrochanteric section of femur closed |
| 82022 | Fracture of subtrochanteric section of femur closed |
| 82030 | Fracture of unspecified trochanteric section of femur open |
| 82031 | Fracture of intertrochanteric section of femur open |
| 82032 | Fracture of subtrochanteric section of femur open |
| 8208 | Fracture of unspecified part of neck of femur closed |
| 8209 | Fracture of unspecified part of neck of femur open |
| 82100 | Fracture of unspecified part of femur closed |
| 82101 | Fracture of shaft of femur closed |
| 82110 | Fracture of unspecified part of femur open |
| 82111 | Fracture of shaft of femur open |
| 82120 | Fracture of lower end of femur unspecified part closed |
| 82121 | Fracture of femoral condyle closed |
| 82122 | Fracture of lower epiphysis of femur closed |
| 82123 | Supracondylar fracture of femur closed |
| 82129 | Other fracture of lower end of femur closed |
| 82130 | Fracture of lower end of femur unspecified part open |
| 82131 | Fracture of femoral condyle open |
| 82132 | Fracture of lower epiphysis of femur open |
| 82133 | Supracondylar fracture of femur open |
| 82139 | Other fracture of lower end of femur open |