

# **CMS Comprehensive Care for Joint Replacement Model: Performance Year 6 Evaluation**

## *Executive Summary*

**HEALTH CARE AND HUMAN SERVICES POLICY, RESEARCH, AND ANALYTICS — WITH REAL-WORLD PERSPECTIVE.**



*Prepared for:* **Centers for Medicare & Medicaid Services**

*Submitted by:* **The Lewin Group, Inc. with our partners: Abt Associates, GDIT, and Telligen**

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# **CMS Comprehensive Care for Joint Replacement Model: Performance Year 6 Evaluation**

## ***Executive Summary***

### ***Prepared for:***

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## Introduction

### Model Goals and Evaluation Approach

Implemented on April 1, 2016, by the Centers for Medicare & Medicaid Services (CMS) Center for Medicare and Medicaid Innovation, the mandatory Comprehensive Care for Joint Replacement (CJR) Model seeks to slow Medicare spending growth by rewarding value rather than volume.

The CJR Model tests whether episode-based payment and quality measurement for lower extremity joint replacements (LEJRs) can lower payments and improve quality. The goal of the CJR Model is for patients to have a safe, effective, and positive recovery experience that is free from complications, while maintaining their freedom of choice in providers and services.

Participating hospitals take on responsibilities for patients receiving an LEJR. These include ensuring that patients receive high-quality, coordinated care by all health care providers from the time of the procedure through recovery, including physical therapy and any other at-home rehabilitation care. Providers work with their patients to develop a plan for recovery, including whether they prefer to recover at home instead of a rehabilitation facility.

The evaluation assessed the impact of the CJR Model (compared with the control group) in Performance Year (PY) 6 on outcomes relevant to model objectives. We used Medicare claims and enrollment data, patient surveys, and case study interviews to evaluate the model's impact on cost, quality, and utilization. The 3-year period (2012 through 2014) before the start of the CJR Model serves as the baseline period for the model. We present the highlights of the evaluation, including a discussion of contextual factors that may have influenced model performance.

### Sixth Annual Evaluation Covers the First Year of the Model Extension

In the 2021 Final Rule, CMS implemented multiple changes to the CJR Model:

- Made significant payment design changes, including:
  - Including outpatient episodes
  - Updates to the target price calculation
  - Streamlined reconciliation process
  - Additional flexibilities for gainsharing and downstream distribution payments.
- Returned to full mandatory participation - excluding Section 401 rural status, low volume, and voluntary participant hospitals.
- Extended the performance period by 3 years, from October 2021 to December 2024, to evaluate design updates.

**All model design changes took effect in performance year 6.** For more details on model changes, refer to the Background section below and the Performance Year 6 Evaluation in-depth Report.

## Highlights: Model Impact Findings

**Most knee and hip replacements now occur in the outpatient setting.** Medicare began covering knee and hip replacements performed in outpatient (OP) setting starting from 2018 (for knee) and 2020 (for hip). CMS included LEJRs performed in OP settings in the model starting in PY 6. Consistent with CMS' goal for site neutrality, inpatient and OP CJR episodes do not have separate prices. The aim was to incorporate OP LEJR procedures in a way that would not incentivize participants to choose a setting based on financial considerations over a patient's level of need. CJR hospitals have shifted toward performing LEJRs in OP settings, although at a slower pace than control hospitals. However, this difference in pace has decreased over time, narrowing the gap between CJR and control hospitals. By the last quarter of PY 6, CJR hospitals performed more than 70% of elective LEJRs in an OP setting. The evaluation included OP episodes starting from PY 6 to ensure the findings are robust and generalizable.

**The CJR Model significantly reduced episode payments by shifting patients to less intensive post-acute care settings.** During PY 6, compared with the baseline, CJR-participating hospitals had significantly lower average episode payments relative to control hospitals (by \$1,012, or 3.5% of baseline). Factors contributing to the lower average episode payments include a reduction in inpatient rehabilitation facility (IRF) payments (of \$571), likely due to a large decrease in the proportion of patients first discharged to an IRF (3.9 percentage points [pp]), as well as a large relative increase in the percentage of patients discharged home with home health (3.2 pp). Changes in care patterns for elective LEJRs, representing 88% of episodes, drove the overall findings.

**The CJR Model generated net savings of \$54.2 million for Medicare in PY 6, marking a return to the pattern of saving from the first four performance years.** For the first time in any PY, repayments from hospitals contributed to the savings. This change was likely due to the changes in model target pricing made in PY 6. About half of the hospitals received reconciliation payments, totaling \$29.4 million. The other half paid back \$33.6 million to Medicare. Relative to hospitals that received reconciliation payments, CJR hospitals that made repayments were more likely to be safety-net hospitals (SNHs) and serve a higher proportion of patients from underserved populations.

**Hospitals maintained quality of care under the CJR Model.** Patients attributed to the CJR and control hospitals experienced similar changes in unplanned readmissions, emergency department visits, mortality, and LEJR complications between baseline and PY 6. Additionally, patients attributed to CJR and control group hospitals who responded to a survey on the quality of their care reported similar improvements in function and mobility, similar levels of satisfaction with their overall recovery, and similar levels of help from their caregivers after returning home. These findings suggest that the CJR Model maintained quality of care while reducing the cost of joint replacement episodes.

## Background

The CJR Model is a retrospective bundled payment model that requires hospitals in a set of randomly selected metropolitan statistical areas (MSAs) to participate. The model holds participant hospitals financially accountable for the cost and quality of health care services during and after an LEJR. The payment incentives encourage participant hospitals to coordinate care with the physicians, post-acute care (PAC) providers, and other providers and clinicians involved in the 90-day episodes of care defined by the model rules. The model tests whether episode-based payment and quality measurement can reduce costs, improve quality of care, and advance care coordination.

### Acronyms

|              |   |
|--------------|---|
| ACO          | Accountable Care Organizations  |
| BPCI, BPCI-A | Bundled Payments for Care Improvement (BPCI) initiative and BPCI Advanced |
| FFS          | Fee-for-Service   |
| IRF          | Inpatient Rehabilitation Facility   |
| IPPS         | Inpatient Prospective Payment System                                      |
| LEJR         | Lower Extremity Joint Replacements  |
| MSA          | Metropolitan Statistical Area   |
| MS-DRG       | Medicare Severity-Diagnosis Related Groups                                |
| OP           | Outpatient  |
| PAC          | Post-acute care   |
| PY           | Performance Year  |
| THA          | Total hip arthroplasty  |
| TKA          | Total knee arthroplasty   |

## Model Design

The CJR Model began on April 1, 2016. In 2021, CMS implemented key design changes and extended the model to run through December 31, 2024, representing 8 PYs.<sup>1</sup> The model requires all hospitals in a CJR MSA to participate. The model extension applies to CJR participants in mandatory markets, excluding Section 401 rural status, low volume, and voluntary participant hospitals. The CJR Model’s mandatory and randomized design includes a spectrum of hospitals with varying levels of infrastructure, care redesign experience, episode costs, utilization, and market positions, which allows for a broad test of the CJR Model.

LEJR surgeries are primarily for hip replacements (total hip arthroplasty) and knee replacements (total knee arthroplasty) and can be elective or due to fractures.<sup>2</sup> For PYs 1–5, an LEJR episode of care began with the hospitalization of an eligible Medicare fee-for-service (FFS) patient at a hospital paid under the Inpatient Prospective Payment System.<sup>3</sup> Starting in PY 6, the definition of an episode of care includes LEJRs performed in the OP setting. Hospitals are accountable for the cost and quality of the surgery and other health care services during the 90 days after hospital discharge.

CMS provides each participant hospital with preliminary target prices prior to each PY. If episode payments fall below the target price, the hospital can earn a reconciliation payment. If episode payments exceed the target price, the hospital repays Medicare. The target prices represent the

<sup>1</sup> Medicare Program: Comprehensive Care for Joint Replacement Model Three-Year Extension and Changes to Episode Definition and Pricing; Medicare and Medicaid Programs; Policies and Regulatory Revisions in Response to the COVID-19 Public Health Emergency, 86 FR 23496 (May 3, 2021) (codified at 42 CFR 510).

<sup>2</sup> Identified using International Classification of Diseases codes listed in <https://innovation.cms.gov/Files/worksheets/cjr-icd10hipfracturecodes.xlsx>.

<sup>3</sup> Beneficiary was enrolled in Medicare Parts A and B, Medicare was the primary payer (not enrolled in any managed care plan), and beneficiary was not eligible for Medicare based on end-stage renal disease.



average spending within that hospital’s region for each of the four Medicare Severity-Diagnosis Related Groups (MS-DRGs) related to hip and knee replacement in the CJR Model.<sup>4</sup>

For the model extension that began in PY 6, CMS made multiple changes to the model design, and how the target prices were calculated. CMS anticipated that the changes would reduce Medicare program expenditures and result in savings over the additional 3 model years while preserving or enhancing the quality of care.<sup>1</sup> CMS aimed to make the target prices more accurate and adaptable by aligning with practice patterns and payment methodology, including OP episodes, and recognizing quality care.

### ***Evaluating the CJR Model in the Context of the Current Health Care Landscape***

The PY 6 evaluation’s approach to measuring the impact of the model and interpreting the findings accounts for the potential influence of other programs and policies, including their influence on CJR hospitals’ approach to care transformation. CMS has enacted policies and launched models that may affect CJR and control hospitals and their markets differently. These include the Bundled Payments for Care Improvement (BPCI) initiative and BPCI Advanced; Accountable Care Organizations (ACOs), such as the Medicare Shared Savings Program; Medicare Advantage (MA) programs; and initiatives to address health equity. In particular, the PY 6 evaluation explores the interaction between participation in ACOs and the CJR Model, including the impact of ACOs on CJR hospitals’ approach to care transformation. The evaluation also analyses health equity implications of the model, considering the changing landscape and focus on health equity since the model began.

Hospitals’ ability to transform the delivery of care under the model varies based on factors such as hospital characteristics, market and population features, alignment with other value-based care (VBC) initiatives, and relationships with health systems, orthopedic surgeons, and associated providers. The alignment of CJR with other market pressures and VBC initiatives influenced how hospitals responded to the CJR Model. Some hospitals leveraged existing partnerships and standardized care protocols to react quickly to the CJR Model, and others enhanced or streamlined VBC initiatives across the hospital or system.

#### **Changes to Target Price Calculation Starting from PY 6**

- **Prices are risk-adjusted** based on age, dual-eligibility status, and count of Hierarchical Condition Categories. These adjustments are **in addition** to the existing 3% discount and adjustments for composite quality score.
- **CMS calculates target prices using the most recent year**, instead of 3 years, of claims data.
- CMS replaced a national adjustment factor with a **retrospective market trend factor** that is applied at the reconciliation stage.
- **CMS updated the quality discount factors** for hospitals with a quality rating of “excellent” or “good,” altered the method to calculate spending caps, and removed the use of anchor factor and regional- and hospital-specific anchor weights.

<sup>4</sup> For PY 6, the MS-DRG groups are MS-DRG 469: Major Hip and Knee Joint Replacement or Reattachment of Lower Extremity with Major Complications or Comorbidities (MCC); MS-DRG 470: Major Hip and Knee Joint Replacement or Reattachment of Lower Extremity without MCC; MS-DRG 521: Hip Replacement with Principal Diagnosis of Hip Fracture with MCC; MS-DRG 522: Hip Replacement with Principal Diagnosis of Hip Fracture without MCC.

Past evaluation reports describe how CJR hospitals used a range of enhanced or new initiatives to transform care across the presurgical, hospitalization, and post-discharge care pathways for LEJR patients. Hospitals increased their focus on patient education and patient optimization, where providers identify high-risk patients and mitigate medical and social risk factors for improved outcomes and recovery. Hospitals also provided physical therapy earlier and more often, used data to inform clinical decision-making, and worked with surgeons and PAC provider partners to adopt more efficient practices. These efforts can help shift care away from more expensive settings, such as PAC facilities like skilled nursing facilities (SNFs) and IRFs, and toward less expensive options, such as home health care. Coordination with PAC partners can also reduce patients' length of stay in PAC facilities and limit unnecessary readmissions.

Under the current evaluation, we interviewed hospitals that participated in both a Medicare ACO and the CJR Model. We learned that hospitals used common strategies to respond to the programs, including using data to inform care pathways, strengthening care coordination, and monitoring patient outcomes. Interviewees discussed how participation in an ACO and CJR resulted in more awareness and greater alignment toward VBC among hospital staff. Many hospital- and system-level efforts aimed to align management of VBC initiatives across programs. For example, some hospitals and hospital systems created one VBC management team to help coordinate care across programs, used the same PAC preferred provider network for both programs, and developed a new electronic management system to see patient notes and vital signs and track readmission risk across multiple programs. The CJR hospitals that already participated in an ACO used their ACO experience, data, and resources to guide changes to the LEJR pathway in response to the CJR Model. Other interviewees said that the CJR Model motivated the decision to join a Medicare ACO. These participants noted that their hospital system could leverage the technologies and funding from CJR to implement the ACO.

This evaluation also monitors impacts of the model on health equity, and experiences of hospitals transforming care for underserved populations. CMS' Strategic Plan<sup>5</sup> identifies one of its six strategic pillars as advancing health equity by addressing disparities. As part of that strategy, CMS priorities include explicitly measuring the impact of policies on health equity to inform the development of sustainable solutions that close gaps in health and in health care access, quality, and outcomes. Although the original CJR Model design did not provide resources for, incentivize, or require participants to address health equity, changes in hospital practices implemented in response to the model could potentially have differing effects on underserved populations of patients. In addition, initiatives implemented to address CMS' strategic plan can affect care strategies and hospital performances.

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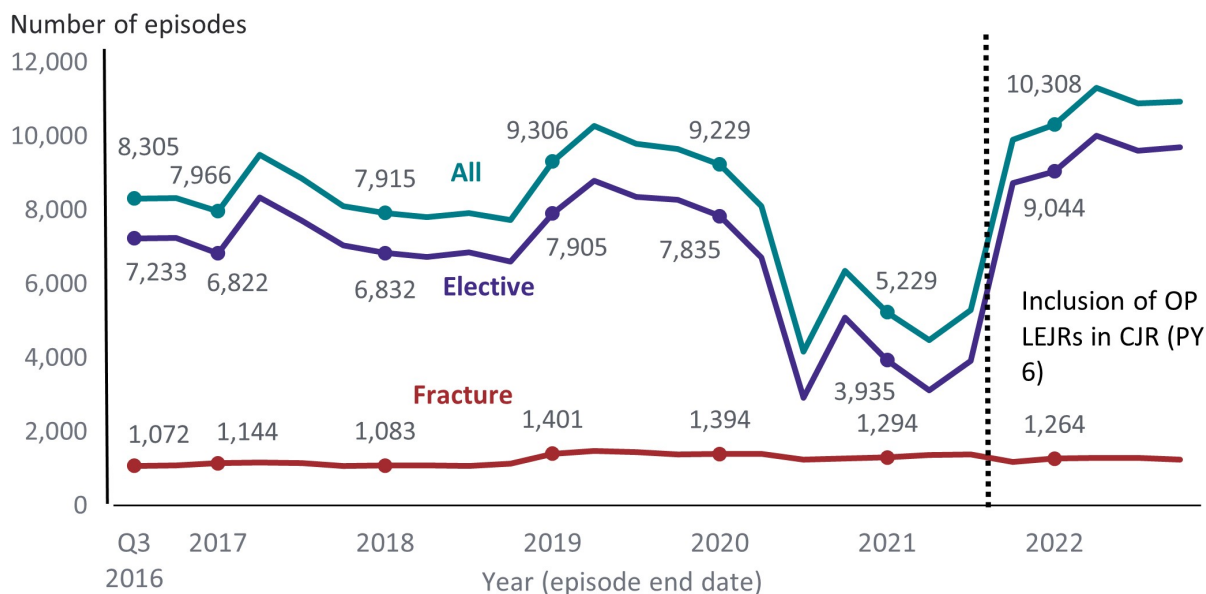
<sup>5</sup> Centers for Medicare & Medicaid Services. (2024). *CMS Strategic Plan*. <https://www.cms.gov/about-cms/what-we-do/cms-strategic-plan>



## Summary of Performance Year 6 Report Findings

### The CJR Model Population

**Exhibit 1: The Number of Episodes Included in the Model at Mandatory CJR Hospitals Has Grown Over Time and Increased Sharply in PY 6 With the Addition of OP LEJRs**



**Source:** CJR evaluation team analysis of Medicare claims and enrollment data for LEJR episodes ending between July 2016 (PY 1) and December 2022 (PY 6).

**Notes:** CJR = Comprehensive Care for Joint Replacement; LEJR = lower extremity joint replacement; OP = outpatient; PY = performance year.

Over the five quarters of PY 6 (October 2021–December 2022), 320 CJR hospitals performed about 53,000 LEJR surgeries that triggered an LEJR episode of care under the CJR Model.<sup>6</sup>

The CJR Model had more LEJR episodes in PY 6 than in prior years (**Exhibit 1**). About 88% of episodes were for elective procedures. CMS included OP LEJRs as part of the CJR Model for the first time in PY 6, and by the last quarter, more than 70% of the elective episodes for both CJR Model and control hospitals occurred in the OP setting. This increase in LEJRs in an OP setting occurred for both total knee arthroplasty and total hip arthroplasty procedures.

CJR and control hospitals had similar patient populations in both PY 6 and in the baseline period, but between baseline and PY 6, some of the characteristics of patients receiving LEJRs changed in both groups. In PY 6, most patients receiving LEJRs in both the CJR and control group were female (63%) and Non-Hispanic White (85%), and about three-quarters were diagnosed with hypertension and a quarter with diabetes. Between the baseline period and PY 6, the share of LEJR patients dually eligible for Medicare and Medicaid declined by almost one half, the prevalence of obesity doubled, and fewer patients receiving an LEJR had an acute care stay in the 6 months prior or received care in a PAC setting.

<sup>6</sup> The number of hospitals only includes hospitals with CJR evaluation-related LEJR episodes.

## Impact of the CJR Model

### Payment and Utilization

The CJR Model continues to reduce episode payments, mainly through less use of institutional post-acute care.

**CJR hospitals reduced average episode payments.** CJR hospitals reduced episode payments by \$1,012, or 3.5% of the CJR Model baseline, relative to the control hospitals in PY 6. The reductions were mostly driven by declines in IRF payments of \$571, or 25.9% of the CJR Model baseline. We found a similar impact for elective LEJRs, which represent most LEJRs.

For elective episodes, the CJR Model led to a relative reduction of \$1,171, or 4.5% of the CJR Model baseline, in average episode payments between the baseline and PY 6, driven by a \$410, or 25.1% of baseline, reduction in IRF payments. The model did not have any significant impact on average episode payments for fracture patients. However, CJR Model hospitals had large relative increases in SNF payments and large relative decreases in IRF payments.<sup>7</sup> These two effects appear to offset each other resulting in no relative change in average episode payments.

**CJR hospitals sent fewer patients to more intensive PAC settings.** CJR hospitals had a relative decline in the proportion of patients first discharged to IRFs for the all-LEJR population (3.9 pp reduction, or 28.3% of the CJR Model baseline) and the elective LEJR population (3.0 pp reduction, or 26.2% of the CJR Model baseline). Among the fracture population, CJR hospitals had a relative increase in the proportion of patients first discharged home with home health under the CJR Model between the baseline and PY 6 (3.2 pp, or a 60.9% increase).

### Quality of Care

Our evaluation of claims-based measures and patient-reported outcomes suggests that CJR hospitals maintained quality of care between baseline and PY 6.

**CJR and control hospitals experienced similar changes between baseline and PY 6 in claims-based quality of care measures.** The rates for all claims-based measures studied (unplanned readmissions, emergency department visits, mortality, and LEJR complications) decreased from baseline to PY 6 – however that decrease was similar for CJR and control hospitals.

#### Interpreting Impact: Claims-Based Outcomes

- We calculated the **impact of the CJR Model** on payments and quality using a difference-in-differences (DiD) methodology, which subtracts the difference from baseline to intervention for the CJR Model population from the difference for the control population.
- The **percent change from the CJR baseline** is calculated by dividing the DiD estimate by the CJR Model baseline average. This value represents the percent change from the CJR Model baseline that is due to the CJR Model.
- **Average Per-Episode Payments** is the average sum of Medicare fee-for-service payments for all services and items included in the episode. We define payments as standardized allowed amounts, which include beneficiary cost sharing and do not include wage adjustments and other Medicare payment adjustments.

<sup>7</sup> Refer to Annual Report 6 In-Depth Report, Chapter III for limitations on this finding and additional details.

**Survey respondents who had elective LEJRs at CJR and control hospitals reported similar experiences in recovery.** Patients with LEJRs at CJR and control hospitals reported similar improvement in functional status, indicated similar levels of satisfaction with their overall recovery, and required similar levels of help from their caregivers after returning home. With the inclusion of LEJRs in the OP setting, we also examined differences in outcomes between patients who had an elective LEJR in the inpatient setting relative to those in the OP setting. We found no systemic differences in patient-reported outcomes.

### Methods to Examine the Effect of the CJR Model on Function and Care Experience

- We collected responses from a sample of LEJR patients on their status after surgery and recalled status before surgery.  
(The median time patients returned surveys was 37 days after the end of their 90-day post-discharge period.)
- We estimated the effect of CJR as the average difference in responses between CJR and control respondents, adjusting for various characteristics.

Due to the urgent and unexpected nature of hip fractures, we expect these patients to identify having worse functional status after their episode relative to before the episode. Among patients with hip fracture episodes, respondents who had an LEJR at a CJR hospital reported significantly lower levels of decline in using stairs and dependence on a mobility aid from before surgery to after surgery than patients with LEJR at control hospitals. CJR Model respondents with hip fracture also reported higher satisfaction with recovery and care management than did control respondents and were more likely to agree that they were discharged from the hospital at the right time.

### Medicare Program Savings and Net Reconciliation Payments

The CJR Model returned to its prior pattern of generating Medicare program savings in PY 6. The savings were large enough to offset losses due to the large payouts to hospitals during the public health emergency. For the first time in any PY, repayments from hospitals contributed to the savings. This change was likely due to the changes in model target pricing implemented in PY 6.

**In PY 6, the CJR Model generated statistically significant estimated savings of \$54.2 million.** The savings may have ranged from \$2.0 million to \$106.4 million based on 90% confidence intervals. On a per-episode basis, the model saved an estimated \$1,017 (with a range from \$38 to \$1,996). This finding appears to align with CMS' anticipated reduction in expenditures and savings to the Medicare trust fund over the 3-year extension.<sup>8</sup>

### Interpreting Medicare Program Savings

**Net payment reconciliation amounts (NPRA)** are the incentive payments made to CJR hospitals by Medicare, or the net of repayments that CJR participant hospitals make to Medicare for exceeding episode target prices.

**Medicare Program Savings (MPS)** was calculated as the difference between the estimated change in Medicare spending and net reconciliation payments that CMS made to CJR participants in PY 6:

$$\text{MPS} = \text{Change in episode spending} - \text{NPRA}$$

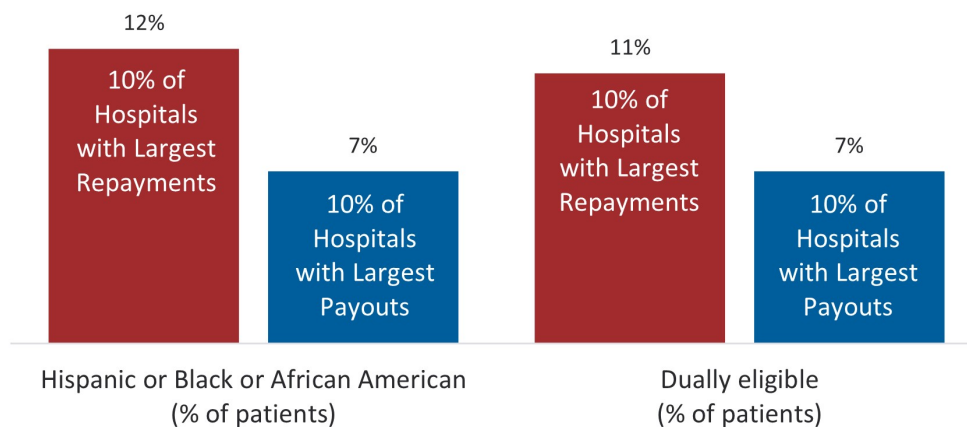
<sup>8</sup> Medicare Program: Comprehensive Care for Joint Replacement Model Three-Year Extension and Changes to Episode Definition and Pricing; Medicare and Medicaid Programs; Policies and Regulatory Revisions in Response to the COVID-19 Public Health Emergency, 86 FR 23496 (May 3, 2021) (codified at 42 CFR 510).

**PY 6 was the first PY with an average net repayment to CMS per episode.** The average net reconciliation payment per episode was  $-\$78$ , indicating more net repayments from hospitals to CMS. As a result, the net repayments help contribute to overall Medicare program savings.

**In PY 6, about 46% (146) of the hospitals received reconciliation payments from CMS, while 50% of hospitals (161) made repayments to CMS.** Thirteen hospitals had no repayment obligation and received no reconciliation payments. The updates to target pricing in PY 6 may have affected changes in the distribution of payments to hospitals compared with previous PYs. Compared with prior years, the hospitals that received the highest relative reconciliation payments received lower reconciliation payments in absolute terms. In contrast, hospitals that made the most relative reconciliation payments were responsible for substantially larger repayments in absolute terms. The 10% of hospitals with the largest repayments collectively repaid \$19.3 million. The 10% of hospitals with the largest reconciliation payments collectively received \$18.6 million.

**The payouts and repayments were not equally distributed across hospitals.** Relative to hospitals that received reconciliation, those that made repayments had a higher proportion of underserved patients and a larger proportion were identified as SNH (**Exhibit 2**). Of the 32 (10%) hospitals with the largest repayments, three were identified as SNHs, 11.5% of their patients were either Hispanic or Black or African American, and 10.9% of their patients were dually eligible for Medicaid and Medicare. None of the hospitals receiving reconciliation payments were identified as a SNH.

**Exhibit 2: Hospitals That Made Repayments Had a Higher Proportion of Underserved Patients Than Hospitals That Received Payouts**



**Source:** CJR evaluation team analysis of Medicare claims and enrollment data for LEJR episodes ending between July 2016 (PY 1) and December 2022 (PY 6).

We also conducted exploratory analyses to examine if the changes in target pricing affected whether a hospital earned a reconciliation payment or repaid CMS and if hospitals moved in NPRA distribution<sup>9</sup> relative to prior years. Findings indicate relative shifts in NPRA in PY 6:

- **Previously unsuccessful hospitals had limited mobility.** For the 30% of hospitals with the lowest net reconciliation (had either some repayment or small NPRA) in PY 1–5, 44% remained in the bottom 30% of the PY 6 NPRA distribution. A small proportion (11%) of hospitals shifted to the top 30% (received some of the largest reconciliations) in PY 6.
- **Moderately successful and unsuccessful hospitals had more “upward mobility.”** For the 40% of hospitals in the middle of the PY 1–5 distribution, many moved to higher-NPRA deciles in the PY 6.
- **A third of previously successful hospitals had notable downward mobility.** One-third of hospitals in the top 30% of the PY 1–5 NPRA distribution (that is, the 30% of hospitals that received the most reconciliation dollars) shifted to the bottom 30% of the PY 6 NPRA distribution (hospitals with the largest repayments).

### Health Equity Analyses

CMS’ Strategic Plan<sup>10</sup> identifies one of its six strategic pillars as advancing health equity by addressing disparities. As part of that strategy, CMS’ 2022–2032 Framework for Health Equity lays out detailed priorities and goals.<sup>11</sup> One of the priorities includes explicitly measuring the impact of policies on health equity to inform the development of sustainable solutions that close gaps in health and in health care access, quality, and outcomes. As part of the approach to advance health equity, CMS also aims to evaluate policies to support safety-net providers, including acute care hospitals.<sup>12</sup>

#### Health Equity Analyses for PY 6

- **Examined impact of the model for underserved population on:**
  - LEJR volume
  - Cost, utilization, and quality.
- **We conducted impact analyses for four underserved populations:**
  - Black or African American patients,
  - Patients who were dually eligible for Medicare and Medicaid,
  - Patients who are both Black or African American and dually eligible, and
  - Hispanic patients.
- **Conducted interviews with 6 safety-net CJR participating hospitals.**

<sup>9</sup> NPRA distribution refers to deciles based on total NPRA hospitals received (or paid out) ranging from top 10% of hospitals that received the largest reconciliation to bottom 10% of hospitals that had the largest pay out. Shifts in NPRA distribution indicates relative change in hospital NPRA relative to other hospitals and may indicate differential affect of target prices between the hospitals.

<sup>10</sup> Centers for Medicare & Medicaid Services. (2024). *CMS Strategic Plan*. <https://www.cms.gov/about-cms/what-we-do/cms-strategic-plan>

<sup>11</sup> Centers for Medicare & Medicaid Services. (2023). *CMS Strategic Plan: health equity*. <https://www.cms.gov/files/document/health-equity-fact-sheet.pdf>

<sup>12</sup> Centers for Medicare & Medicaid Services. (n.d.). *Health equity*. <https://www.cms.gov/priorities/innovation/key-concepts/health-equity>



Although the CJR Model did not incentivize or require participants to address health equity, changes in hospital practices implemented in response to the model or changes in model design such as including patient characteristics and hospital quality rating in episode target price calculations could have differing effects on underserved populations. For the PY 6 evaluation, we investigated the impact of the model on underserved populations and gathered preliminary perspectives on the experience of safety-net providers participating in the model. Hip fractures, constituting approximately 12% of all LEJRs, present hospitals with limited opportunities for presurgery patient optimization or discretion in scheduling of the surgery. Additionally, fracture patients have different outcomes and model impacts. To avoid conflating the effects on fracture and elective populations, for the health equity analyses, we considered only elective LEJRs.

### *Model Effects for Underserved Populations*

The evaluation examined impact on Hispanic population for first time for PY 6. Findings indicate LEJR volume increased for Hispanic population between baseline and PY 6 in CJR MSAs relative to control. Volume of LEJRs also increased for dually eligible patients. CJR Model reduced costs for underserved populations more than the corresponding contrasting population.

**The CJR Model increased LEJR volume for Hispanic and dually eligible patients.** In both CJR and control MSAs, underserved populations had substantially lower LEJR volume than their counterparts during both the baseline period and PY 6. The model increased LEJR volume for patients who are Hispanic (11.1% relative to the baseline,  $p < 0.01$ ) and for patients who were dually eligible (7.6% relative to the baseline,  $p = 0.11$ ). There was no difference in LEJR volume for patients who are Black or African American or patients who are both Black or African American and dually eligible between baseline and PY 6 relative to control MSAs.

**The CJR Model reduced costs more for underserved populations but had mixed effects on quality.** The CJR Model reduced average payments for all patients, but the reduction was substantially larger for patients from underserved populations. Changes in PAC discharge destination were the primary drivers behind these reductions in payments, with a relatively lower proportion of patients discharged to IRFs and SNFs and a higher proportion discharged to home health. Some evidence suggests that the CJR Model led to higher rates of discharge to home without home health for underserved populations.

The CJR Model also led to statistically significant increases in emergency department use for patients from underserved populations, as well as a statistically significant decrease in all-cause mortality for patients who are Black or African American.

### **Interpreting Impact of Model for Underserved Populations**

We estimated the impact of the model on underserved and reference populations using a difference-in-difference-in-differences approach. With this approach, we estimated two effects:

- The impact on the model for each subpopulation as relative change from baseline to PY 6 between CJR and control.
- The difference between the impact for underserved and reference populations, which we refer to as the 'differential impact' of the model.



Underserved populations reported worse functional status and care<sup>13</sup> following LEJRs at both CJR and control hospitals. In both the CJR and control populations, underserved populations had worse experiences relative to non-underserved populations across all measures. Dually eligible patients who had an LEJR at CJR hospitals had worse functional status outcomes and higher likelihood of needing caregiver help (relative to reference patient population) than those who had an LEJR at control hospitals. Black or African American patients who had an LEJR at a CJR hospital had higher levels of satisfaction with care management (relative to reference patients) than Black or African American patients who had an LEJR at control hospitals for all five satisfaction questions.

### *Safety-Net Hospitals—A Preliminary Perspective on CJR Model Experience*

SNHs provide care regardless of patients' insurance status and, thus, typically serve a higher proportion of underserved populations. Empirical studies most often identify SNHs using metrics like disproportionate share percentage, measures of Medicaid caseload, or the amount of uncompensated care that qualifies a hospital for additional Medicare payments.<sup>14,15</sup>

We interviewed representatives of six SNHs to understand how these hospitals responded to the CJR Model and how the care pathways may differ for their patients with unmet nonmedical needs. All six hospitals had a low volume of CJR episodes (21–57 episodes ending in or between Quarter 4 [Q4] 2021 and Q3 2022) and made repayments to CMS under CJR ranging from –\$228K to –\$921K. Hospitals reported that they serve complex patient populations with high unmet medical and nonmedical needs and that their care transformation efforts focused on addressing social determinants of health (SDOH) at discharge.

Interviewees reported that care transformation strategies that can improve financial success are often not feasible for SNHs. While many CJR hospitals can shift procedures to the OP setting to deliver care at a lower price, as well as reduce institutional PAC use, SNHs said they could not make these changes because their patients' needs often require inpatient procedures and more intensive post-discharge care.

Rather than targeting PAC discharge setting, these hospitals focused on identifying and addressing SDOH. In caring for LEJR patients with unmet nonmedical needs, all six hospitals screened for the social needs for all patients. Half of the hospitals continued these screenings in their discharge planning. Lack of in-home family support, transportation, access to quality PAC services, access to regular primary care, and food security were common unmet nonmedical needs of LEJR patients at SNHs.

SNHs were not optimistic about their financial prospects in the model due to low CJR episode volume and target prices that were "too low" or did not reflect the cost of care for their complex patient population. To better provide care for LEJR patients with unmet nonmedical needs, these SNHs suggested more funding for community services to address social barriers such as housing,

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<sup>13</sup> Measured effects of CJR are not statistically significant, and the small respondent sample limits our ability to draw conclusive inferences. Refer to In-Depth report for limitations and additional details on findings.

<sup>14</sup> Centers for Medicare & Medicaid Services. (2022). Person-centered innovation – An update on the implementation of the CMS Innovation Center's strategy – supplemental document.

<https://www.cms.gov/priorities/innovation/data-and-reports/2022/cmimi-strategy-refresh-imp-tech-report>

<sup>15</sup> Hefner, J. L., Hogan, T. H., Opoku-Agyeman, W., & Menachemi, N. (2021). Defining safety net hospitals in the health services research literature: a systematic review and critical appraisal. *BMC Health Services Research*, 21(1), 278.

transportation, mental and behavioral health services, and increased coverage for additional in-home care. They also requested changes such as target pricing that reflects the needs of their complex patient populations and higher reimbursement for LEJR procedures to improve their financial performance under the CJR Model.

### ***Potential Unintended Consequences of the CJR Model***

The evaluation examined whether the CJR Model had any unintended consequences.

**No evidence of changes in the composition of elective LEJR patient population between PY 5 and PY 6.** Patient complexity for both CJR and control hospitals increased modestly between the baseline period and PY 6. However, CJR hospitals had a significantly smaller increase, suggesting that on the margin the model may favor some lower-risk patients. In addition, we found no notable differences in changes in the CJR hip fracture patient population relative to the changes in the control population.

**Inconclusive evidence of potentially delayed care.** Medicare spending 30 days after the episode increased by \$351 per episode for hip fracture patients who received care at CJR hospitals relative to control hospitals. Based on the recent patient survey, hip fracture patients at CJR hospitals experienced a similar quality of care to hip fracture patients at control hospitals during the episode, and they improved in certain measures of functional status shortly after the episode period relative to control hip fracture patients. Based on these quality findings, we cannot conclude that delayed care or longer recoveries caused the relative increase in post-episode payments for hip fracture patients. We will continue to monitor these results.

**Small increase in LEJR volume.** For the first time over the course of the CJR Model, we observed a small increase in elective LEJR volume. Patients living in mandatory CJR MSAs in 2022 experienced a relative increase in the number of elective LEJRs of 47 LEJRs per 100,000 Medicare FFS patients. We will continue to monitor changes in LEJR volume.

### **Conclusion**

Since 2016, the CJR Model has successfully reduced Medicare payments for joint replacement procedures while maintaining the quality of care for patients. In PY 6, hospitals participating in the CJR Model achieved significant savings to Medicare through reducing institutional PAC use while improving patient satisfaction and widening access to LEJRs, particularly for patients who are Hispanic and dually eligible.

CJR hospitals continued to focus on reducing institutional PAC use after hospital discharge. To achieve better patient outcomes and reduce costs, health care providers under the CJR Model often optimize care protocols and pathways. These efforts include strategies to reduce patient risk before surgery, standardize surgical techniques, and use evidence-based rehabilitation protocols. Standardized treatment plans can help streamline processes, improve efficiency, and minimize variations in care.

While reducing PAC use, CJR hospitals also continued to maintain the quality of care for LEJR patients. In the most recent survey, patients reported similar levels of functional recovery and satisfaction with their overall recovery, as well as a need for similar levels of help from their

caregivers after returning home. Additionally, patients reported no differences in outcomes among those who had an LEJR in an OP setting compared with those who had an LEJR in an inpatient setting.

### ***New and Emerging Findings***

Medicare began covering outpatient knee replacements in 2018. Since that time, inpatient joint replacements have steadily declined, but outpatient procedures have grown faster, resulting in more procedures overall. The COVID-19 pandemic rapidly accelerated this shift as patients avoided hospitalizations and stays in skilled nursing facilities. However, CJR hospitals performed a smaller share of LEJRs in an OP setting than did control hospitals. With less burden and cost for the patient—and the provider—we might expect continued growth in procedures in OP settings. We will continue to monitor this trend in future years.

Hospitals that participated in both a Medicare ACO and the CJR Model indicated that the two programs are viewed as aligned, involve common care redesign strategies, and increase awareness of VBC among hospital employees. Most interviewees viewed the goals of the two programs as similar, stating that both programs share the same dual aims to improve quality of care for patients while reducing expenditures. Hospitals that participated in both VBC initiatives employed common strategies, including using patient and population level data to inform care pathways, strengthen care coordination, and monitor patient outcomes. Additionally, to ensure alignment with program goals and adopt VBC initiatives, hospitals implemented educational efforts both for hospital staff and other partners such as PAC providers and executive leadership. Participating in VBC programs resulted in a mindset change at hospitals by increasing physicians' awareness of quality throughout the episode, improving understanding of SDOH, and increasing focus on potential economic impacts.

For the first time over the course of the model's implementation, CMS recouped more from hospitals than it paid out. We also observed considerable movement in the amount of NPRA earned by individual hospitals. This change may be due to the new risk adjustment methodology, inclusion of outpatient procedures in the model, or the moving baseline used to set benchmark prices. In PY 6, a high proportion of safety-net CJR hospitals had repayments. A small number of interviews with CJR participants identified as an SNH indicated that they lacked financial success due to low CJR episode volume and low target prices, possibly because the target prices did not reflect the cost of care for their complex patient population.

The CJR Model provides evidence that a mandatory, episode-based payment model that holds providers financially accountable for a well-defined and clinically meaningful episode can achieve significant savings by motivating transformative changes to patient care. We will continue to evaluate potential synergies between ACOs and CJR and further investigate experiences of hospitals who serve diverse patient populations.