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# The Impact of Comprehensive Care for Joint Replacement Bundled Payment Program on Care Delivery

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## Abstract

**Background:** Comprehensive Care for Joint Replacement (CJR) is a Medicare initiative to test the impact of holding a hospital accountable for services provided during an episode of care for a lower extremity joint replacements on costs and quality. This study examines whether hospital participation in CJR is associated with having programs focused on improving post-hospitalization care or reducing costs using a survey of orthopedic surgeons.

**Methods:** 73 (of 104) orthopedic surgeon members of The Hip Society, a national professional organization of hip surgeons, completed the survey.

**Results:** Surgeons practicing in CJR hospitals were more likely to report that their hospital had implemented programs focused on improving post-hospitalization care or reducing costs. Surgeons in CJR hospitals were significantly more likely to report that the hospital had a narrow network of skilled nursing facilities to enhance care and limit length of stay in SNFs (83% vs. 47%, P<0.01). Surgeons in CJR hospitals were also more likely to report the hospital provides incentives or some type of gain sharing. There were no statistically significant differences in implementation of having programs to reduce costs or improve care during hospitalization.

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**Conclusion and Discussion:** Participation in CJR is associated with higher utilization of hospital practices aimed at improving post-discharge care and higher utilization of linking surgeon compensation to cost and quality.

### Keywords

bundled payment; Comprehensive Care for Joint Replacement; lower extremity joint replacement

## Introduction

To address concerns about rising health care costs and inefficient spending the Affordable Care Act [1] implemented several initiatives to test new Medicare payment models. However, participation in these new payment models is voluntary making it difficult to evaluate the effects of these models on care delivery, costs and outcomes. Under one voluntary program, the Bundled Payment for Care Improvement initiative (BPCI) model 2, hospitals receive a bonus if Medicare payments for an episode of care (hospitalization and up to 90 days post-discharge) are less than a target. Initial results for hip and knee replacement episodes (but not other episodes) showed lower Medicare spending for BPCI participants compared to non-BPCI participants [1, 2].

Encouraged by these preliminary results, Medicare implemented a 5-year mandatory episode-based bundled payment model for hip and knee replacement in 800 hospitals across 67 metropolitan statistical areas (MSAs) known as the Comprehensive Care for Joint Replacement (CJR) starting in April 2016. Given that hip and knee replacements are the most common inpatient surgery for Medicare beneficiaries and there exist large variations in Medicare payments across hospitals suggests that there may be opportunity for savings from CJR [3]. Early results on CJR suggest a lower percentage of discharges to institutional post-acute care, but no difference in total Medicare spending per episode [4]. However, we do not yet know how CJR influences care delivery. In this study, we surveyed a sample of orthopedic surgeons across the U.S. to understand the impact of CJR on care delivery.

## Materials and Methods

In fall of 2017, we conducted an online survey of members of The Hip Society, a national professional organization of hip surgeons. The survey asked surgeons about care delivery and compensation practices of hospitals where the surgeon performed the majority of his/her total joint replacements (Appendix Table 1). The survey asked about practices for improving care during hospitalization and post-hospital discharge. Participation in CJR was identified based on the MSA of the hospital. We conducted cognitive testing of the survey with a convenience sample of 4 respondents to ensure clarity and validity of the questions. Significant differences among CJR and non-CJR hospitals were identified with a 2-sided test of proportions ($p<0.05$) using Stata version 15.1 (StataCorp). This study was approved by the [removed for review] institutional review board.

[1]Abbreviations: ACA: Affordable Care Act; BPCI: Bundled Payment for Care Improvement; MSA: metropolitan statistical area; CJR: Comprehensive Care for Joint Replacement; PAC: post-acute care

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## Results

Among the 104 surgeons contacted, 73 (70%) completed the survey. Almost all respondents were 41 years old or older (100% in non-CJR hospitals and 97% in CJR hospitals), all were male, most have been in practice more than 20 years (78% in non-CJR hospitals and 50% in CJR hospitals), and 51% of surgeons in non-CJR hospitals and 37% of surgeons in CJR hospitals have been at their current hospital for more than 20 years (Table 1). In addition, 44% of respondents performed total joint replacements at a hospital participating in CJR and were located in 11 MSAs. The hospitals participating in CJR in our sample are larger, less likely to be for-profit and more likely to be teaching hospitals compared to all hospitals participating in CJR [4].

Almost all surgeons (97%) reported that their hospital has at least one program focused on improving post-hospitalization care or reducing costs. However, surgeons practicing in CJR hospitals were more likely to report that their hospitals had implemented these programs (Table 2, Panel 1). Surgeons practicing in CJR hospitals were significantly more likely to report the hospital developed a narrow network of skilled nursing facilities (SNFs) to enhance care and limit length of stay in SNFs than surgeons in non-CJR hospitals (83% vs. 47%, $P<0.01$). More surgeons in CJR hospitals also reported the hospital developed a narrow network for home health, engaged in telehealth services for physical therapy, and had decreased use of SNFs. However, differences in these practices were not statistically significant. The differences between CJR and non-CJR hospitals were more pronounced when hospitals participating in BPCI were removed from the non-CJR hospitals group (Table 2, Panel 2).

Surgeons in CJR hospitals were also more likely to report the hospital provides incentives or gain sharing if the patient's care costs are below a certain target (83% vs. 47%; $p<0.01$). More surgeons in CJR hospitals reported the hospital provides reports on post-discharge outcomes, however the difference was not statistically significant. Regardless of participation in CJR, few (6-7%) reported hospitals were imposing financial penalties for physicians.

Among surgeons who reported the hospital provides incentives for curtailing episode costs, 30% felt that the compensation and incentives limit their ability to provide care to high-risk patients, such as those with obesity, uncontrolled diabetes, smoking, or other critical health issues (results not shown).

Most surgeons reported their hospital had programs to reduce costs or improve care during hospitalization. There were no statistically significant differences in the implementation of these programs between CJR and non-CJR hospitals (Table 2, Panel 1).

## Discussion

This study examines bundled payment from a provider perspective. It is the first study to use data from a national survey of providers to link change in care delivery and compensation practices to implementation of bundled payment. Prior studies that have examined bundled

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payment and hospital practices using provider surveys/interviews have used data from a handful of hospitals [5, 6].

We posit that the higher rate of use of practices aimed at improving post-hospital discharge care in CJR hospitals is likely due to participation in CJR rather than pre-existing differences in use of these practices. There are two potential reasons why pre-existing differences in these practices is unlikely. First, unlike other bundled payment programs where participation was voluntary, participation in CJR was mandatory. Second, CJR and non-CJR hospitals were equally likely to have practices focused on reducing hospital costs such as programs for reducing implant costs or hospital length of stay. Under current Medicare prospective payment, hospitals already have incentives to implement these programs regardless of participation in bundled payments. Bundled payments create unique incentives to invest in post-discharge care to more effectively manage PAC costs and we find significant differences between CJR and non-CJR hospitals only for programs focused on post-discharge outcomes or costs.

The greater use of practices aimed at improving post-discharge care such as developing narrow networks of post-acute care (PAC) providers, using telehealth services, and reducing utilization of SNFs complement the findings of a recent qualitative study of hospitals [7] and suggests that bundled payments might reduce costs and improve outcomes. Previous research has also found that narrow networks of SNFs are associated with lower readmission rates, potentially due in part to increased focus on the transition to SNFs and having a dedicated hospital team visit SNFs to treat patients in place [8]. Initial results of BPCI also suggest that a bundled payment model for lower extremity joint replacements reduces episode payments, while maintaining quality measures [1, 9]. The results from this study suggest that bundled payments might limit access to care for more complex and high-risk patients. About a third of surgeons participating in gain sharing arrangements reported that their compensation structure limited their ability to provide care to high-risk patients.

This study has limitations. First, the data is self-reported by surgeons and thus reflects surgeons' perception of hospital practices. Second, all the surgeons that participated in the survey specialize in total joint replacement and practice in academic health centers, large medical centers or orthopedic subspecialty hospitals. These findings may not be generalizable across all facility types.

Finkelstein et al. recently reported on an interim analysis of the CMS CJR bundled payment program. MSAs covered by CJR, compared with MSAs not involved in the program had lower percentage of discharges to institutional PAC providers [4]. However, no significant differences were noted in total CMS expenditures per total joint arthroplasty procedure. CMS recently rolled back CJR reducing the number of participating MSAs from 67 to 34. It also cancelled two other mandatory bundled payment models. Juxtaposing these policy changes with the results from this study, suggests that these policy changes will may increase Medicare costs by stalling the diffusion of hospital practices aimed at improving post-hospital care.

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## Conclusion

We found that CJR hospitals compared to non-CJR hospitals were more likely to utilize a variety of practices aimed at improving post-hospitalization outcomes or reducing post-hospitalization costs.CJR hospitals were not more likely to utilize programs to reduce costs or improve care during hospitalization.

## Acknowledgements

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## Appendix Table 1: Survey Questions

| |
|---|
| What is your age? |
| What is your gender? |
| How many years have you been in practice? |
| Hospital or surgery center where you perform the majority of your total joint replacements |
| Years practicing in this hospital or surgery center |
| Does this hospital or surgery center participate in CJR? |
| Has your hospital or surgery center participated in, or is presently participating in, a bundled payment care initiative (BPCI) for total joint replacement besides CJR? |
| Instructions: Please consider the following questions for the hospital or surgery center where you perform the majority of your total joint replacements |
| Has your hospital or surgery center in the last 2 years instituted some type of pre-optimization program for patients with problematic medical issues, including: obesity, uncontrolled diabetes, smoking or other health issues? |
| Has your hospital or service in the last 2 years instituted a pre-operative teaching class for total joint arthroplasty patients? |
| Has your hospital or service in the last 2 years instituted a program to reduce impact costs? |
| Has your hospital or surgery center in the last 2 years developed a system to reduce hospital length of stay? |
| Has your hospital or surgery center hired more nurse navigators or other mid-level providers to facilitate pre- and post-operative care of total joint arthroplasty patients related to length of stay and discharge disposition? |
| Has your hospital or surgery center developed a narrow network (contracts with specific providers/services) to enhance care and reduce costs related to use of home health after hospital discharge? |
| Has your hospital engaged telehealth services or an outside company to limit use of home physical therapy? |
| Has your utilization of skilled nursing facilities after total joint arthroplasty decreased over the past 2 years? |
| Do you receive fee for service in your practice? |
| Do you receive any report from your hospital on post-operative outcomes and costs of your patients? |
| Does your hospital provide incentives or some type of gain sharing if your patient’s care costs are below a certain target? |
| Does your hospital impose financial penalties on surgeons if your patient’s post-operative costs are above a certain target? |
| Does your hospital impose financial penalties for excess readmissions? |
| Do you feel that the compensation and incentives provided by your hospital limit your ability to provide care to high-risk patients, such as those with obesity, uncontrolled diabetes, smoking, or other critical health issues? |

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**Table 1:**

Characteristics of sample of orthopedic surgeons who perform total joint replacements, 2017

| | Surgeons at Non-CJR Hospitals (n=41) | Surgeons at CJR Hospitals (n=32) |
|---|---|---|
| **Age** | | |
| **30-40** | 0% | 3% |
| **41-50** | 17% | 34% |
| **51-60** | 39% | 38% |
| **61-70** | 29% | 19% |
| **>70** | 15% | 6% |
| **Male** | 100% | 100% |
| **Years in practice** | | |
| **0-10** | 0% | 6% |
| **11-20** | 22% | 44% |
| **21-30** | 39% | 31% |
| **31-40** | 24% | 19% |
| **>40** | 15% | 0% |
| **Years in hospital or surgery center where perform majority of total joint replacements** | | |
| **0-10** | 10% | 41% |
| **11-20** | 39% | 22% |
| **21-30** | 29% | 28% |
| **31-40** | 15% | 9% |
| **>40** | 7% | 0% |

CJR: Comprehensive Care for Joint Replacements

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**Table 2:**

Percent of surgeons reporting that hospitals developed post-hospitalization programs, surgeon compensation practices, or programs to reduce costs or improve care during hospitalization

| | Panel 1: Full Sample | | | Panel 2: hospitals participating in BPCI removed from non-CJR hospital group | | |
|---|---|---|---|---|---|---|
| | Surgeons practicing in Non-CJR Hospitals (n=41) % | Surgeons practicing in CJR Hospitals (n=32) % | P value | Surgeons practicing in Non-CJR Hospitals (n=23) % | Surgeons practicing in CJR Hospitals (n=32) % | P value |
| **Post-hospitalization programs** | | | | | | |
| Hospital or surgery center has developed a narrow network (contracts with specific providers/services) to enhance care and reduce costs related to use of home health after hospital discharge (Panel 1 N=62; Panel 2 N=47 ) | 35 | 54 | 0.15 | 26 | 54 | 0.06 |
| Hospital has engaged telehealth services or an outside company to limit use of home physical therapy (Panel 1 N=61; Panel 2 N=46) | 16 | 31 | 0.15 | 0 | 31 | 0.01 |
| Hospital has developed a narrow network of SNFs to enhance care and limit LOS in SNFs (Panel 1 N=63; Panel 2 N=47) | 47 | 83 | <0.01 | 22 | 83 | <0.01 |
| Utilization of SNFs after total joint arthroplasty decreased over past 2 years (Panel 1 N=61; Panel 2 N=47) | 84 | 93 | 0.29 | 94 | 93 | 0.85 |
| **Surgeon Compensation** | | | | | | |
| Surgeon receives report from hospital on post-operative outcomes and costs of his/her patients (Panel 1 N=65; Panel 2 N=49) | 67 | 76 | 0.42 | 60 | 76 | 0.24 |
| Hospital provides incentives or some type of gain sharing if patient's care costs are below a certain target (Panel 1 N=64; Panel 2 N=48) | 14 | 64 | <0.01 | 5 | 64 | <0.01 |
| Hospital imposes financial penalties on surgeons if post-operative costs are above a certain target (Panel 1 N=64; Panel 2 N=48) | 6 | 7 | 0.79 | 5 | 7 | 0.76 |
| Hospital imposes financial penalties for excess readmissions (Panel 1 N=64; Panel 2 N=48) | 6 | 7 | 0.79 | 5 | 7 | 0.76 |
| **Programs to reduce costs or improve care during hospitalization** | | | | | | |
| Hospital or surgery center instituted some type of pre-optimization program for patients with problematic medical issues including: obesity uncontrolled diabetes, | 81 | 94 | 0.12 | 80 | 94 | 0.13 |
| smoking, or other health issues (Panel 1 N=69; Panel 2 N=52) | | | | | | |
| Hospital or service instituted a pre-operative teaching class for total joint arthroplasty patients (Panel 1 N=73; Panel 2 N=55) | 95 | 97 | 0.71 | 100 | 97 | 0.39 |
| Hospital or service instituted a program to reduce implant costs (Panel 1 N=71; Panel 2 N=53) | 95 | 94 | 0.84 | 94 | 95 | 0.82 |
| Hospital or surgery center developed a system to reduce hospital length of stay (Panel 1 N=72; Panel 2 N=54) | 98 | 97 | 0.84 | 96 | 97 | 0.83 |

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| | Panel 1: Full Sample | | | Panel 2: hospitals participating in BPCI removed from non-CJR hospital group | | |
|---|---|---|---|---|---|---|
| | **Surgeons practicing in Non-CJR Hospitals (n=41) %** | **Surgeons practicing in CJR Hospitals (n=32) %** | **P value** | **Surgeons practicing in Non-CJR Hospitals (n=23) %** | **Surgeons practicing in CJR Hospitals (n=32) %** | **P value** |
| Hospital or surgery center hired more nurse navigators or other mid-level providers to facilitate pre- and post-operative care of total joint arthroplasty patients related to length of stay and discharge disposition (Panel 1 N=70; Panel 2 N=52) | 90 | 93 | 0.62 | 91 | 93 | 0.75 |

CJR: Comprehensive Care for Joint Replacements;

LOS: Length of stay