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ORIGINAL ARTICLE

Bundled payments for care improvement initiative – insights from the test pilots of payment reform

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Abstract

Background: The Medicare Bundled Payments for Care Improvement (BPCI) pilot program aims to reward high-value providers by setting a global payment target for particular episodes of care. The representativeness of BPCI participants will influence the ability of this pilot to inform policy decisions.
Methods: We linked the Medicare lists of participants in the risk-bearing portion of BPCI Model 2, encompassing acute and post-acute care, to the American Hospital Association resource file and the 2013 Hospital Value-Based Purchasing quality performance data. We classified episode-initiating hospitals by the number of bundles in which they were participating into "narrow", "medium" and "comprehensive". The analysis described the characteristics of hospitals in each of these categories.
Results: The 105 hospitals with linkable data were predominantly large, urban, non-profit, teaching hospitals. These hospitals were quite similar to the general population in terms of disproportionate share, Medicare, and Medicaid percentages. Most participants selected a narrow number of bundles, with the majority selecting a single bundle around joint replacement. There were only minor differences in quality between Model 2 participants and non-participants.
Conclusions: Informing the decision about whether to scale the BPCI program nationally will require evaluation of the pilot's performance by participants' characteristics to understand in what conditions and for which providers the program is most effective.

Key Words: Bundled payments, Episodes of care, Hospitals, Medicare, Payment reform

1 Introduction

The Affordable Care Act (ACA) provided the legislative framework enabling Medicare to initiate bundled payments under the Bundled payments for Care Improvement (BPCI) initiative. Bundled payments provide a single payment for an episode of care that may span multiple providers and settings, in contrast with ordinary fee-for-service, which pays each provider separately for each service that is provided. The BPCI initiative is designed to show whether bundled payments will improve quality and reduce costs.

Bundled payments have been proposed by policy makers for over a decade as one approach to reforming the healthcare payment system[1–3] to address escalating costs and suboptimal quality. As the largest insurer of health care in the US, Medicare has taken a keen interest in the potential of bundles to give providers new incentives that align with Medicare's objective of ensuring access to high quality and cost-efficient care.

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This paper provides the first window into the possible effects of the BPCI initiative by providing information about the characteristics of hospitals participating in one of the bundle programs and the number of bundles covered by their applications.

1.1 How bundled payments for care improvement works

Medicare's BPCI initiative was launched by the Center for Medicare and Medicaid Innovation (CMMI) in 2011 with the first bundles "going live" in April 2013. The innovative reform of BPCI is that the participant, or Awardee, will be responsible for overall Medicare costs, based on the patient's DRG, for an episode of care such as an inpatient hospital stay and/or for certain post-acute care. This total episode of care cost responsibility provides an incentive for multiple providers caring for a patient to work together to provide high quality care that lowers cost and minimizes the need for subsequent care.

Providers were invited to apply to the voluntary initiative in the summer of 2011. They were offered a range of options for participating in the program, with the main variations pertaining to: (1) the setting and duration of the bundled payment, and (2) the number and type of conditions, defined by the DRG, included in the bundled payment. All bundles begin with the index event of an acute-care hospitalization. Four models are currently active, and we study what is labeled Model 2.

Model 2 covers services during periods of 30, 60, or 90 days encompassing hospital and post-acute care. The bundled payment includes all Medicare Part A and Part B services, including readmissions, within the Model-specific time period and related to the bundle condition. Participants could choose the types and numbers of conditions for which they would receive bundled payments.

An episode of care includes the spectrum of Medicare-insured services provided to patients starting with an initial inpatient admission. The DRG assigned during this hospitalization is known as the "Anchor DRG". Clusters of related severity DRGs are aggregated into episodes of care. For instance, the Congestive Heart Failure bundle includes all patients hospitalized in DRGs 291, 292, or 293. These are: heart failure and shock with MCC (major complications or comorbidities), heart failure and shock with CC (complications or comorbidities), and heart failure and shock without CC/MCC. There are two bundles which represent a single DRG; for example, the bundle for Transient Ischemia represents patients hospitalized and assigned to DRG 69. Providers could apply to participate in as few as one and as many as 48 bundles, representing 179 unique DRGs.

Patients of participating providers can continue to seek care from any provider. Patients will receive information about the bundles program and its financial incentives either upon hospitalization or admission to post-acute care, depending on the BPCI Model. Providers will continue to collect (and report to Medicare) the usual clinical, administrative and demographic data for patients covered by a bundle and will provide additional data specific to the BPCI program.

Similar to DRG, Medicare will contract for a bundle price for an episode of care, using a baseline price calculated from three years of historical data. After the baseline price is calculated, CMS requires a discount rate between 2% and 3.25%, depending on the type and length of episode of care, and the particular Model. The target price for the bundle is calculated by trending forward the baseline price to the performance year and subtracting the discount rate. By building a discount into the price or payment for an episode of care, CMS is guaranteeing savings and expecting participating providers to reduce Medicare spending by at least two percent.

In Model 2, providers participating in the BPCI initiative will continue to submit claims to Medicare and be paid via their traditional payment model — fee-for-service, per diem, or prospective payment — depending on the type of provider. Medicare will reconcile the sum of the fee-for-service claims paid to providers during bundled episodes with the target price of the bundle. Differences will then be settled, with savings beyond the target price distributed to participants, and deficits repaid to Medicare.

The BPCI initiative is a phased program for Model 2. Phase 1 consists of a non-binding, no risk period denoted the "preparation period". Phase 2 includes financial risk for the successful BPCI Awardees and began on October 2013 or January 2014. This analysis examines the hospitals associated with BPCI Model 2 Awardees that entered into the risk-bearing agreements with CMS starting Phase 2 in October 2013 or January 2014. All BPCI episodes must begin Phase 2 by January 2015.

1.2 National implications of the BPCI evaluation

The BPCI program may be expanded nationally by Medicare if its evaluation finds that bundled payments are effective in reducing spending without compromising quality, or in improving quality without increasing spending.

The representativeness of the participants will be critical to determining the potential scalability of the BPCI program in Medicare, including how, where and for whom the program should be scaled. Should the program be expanded for multiple conditions, or just a limited set? Can bundled payments be applied in markets across the country? Should the program be applied to both high and low quality providers, those serving as safety net providers, rural and urban providers? These key questions must be answered by the BPCI evaluation.

Our analysis of the Model 2 BPCI Phase 2 participants de-

scribes the characteristics of healthcare organizations that are assuming financial risk in Model 2 of the BPCI initiative and will help identify opportunities for strengthening the evaluation plan and increasing the potential generalizability of the initiative's findings.

2 Study data and methods

Our analysis focuses on BPCI Phase 2 episode-initiating hospitals in Model 2. A similar analysis could be applied to participants of other Models.

Medicare recently published a list of 107 hospitals participating in Phase 2 of the BPCI Model 2. For each participating hospital, Medicare released the hospital's name, address, state, and the number of bundles that the hospital was selecting to include in this initial phase, ranging from one to a maximum of 48. Using this information, we obtained each participating hospital's national provider identifier (NPI) to facilitate matching with other data sources. (NPIs could not be located for two hospitals which were dropped from the analysis.) Our analysis focuses on the 105 hospitals with an NPI, four of which we could not ascertain the ownership status.

Episode-initiating hospitals were stratified according to the number of bundles they were participating in during Phase 2. Hospitals that applied for five or fewer bundles were classified as "narrow", representing a limited amount of innovation and financial risk. Hospitals applying to participate in the maximum number of bundles, 48, were classified them as "comprehensive" as they were proposing to adopt bundled payments for patients in 179 unique DRG. Remaining hospitals applied for between 6 and 40 bundles, and were classified as "medium" representing some breadth of clinical conditions and financial risk.

Using these hospitals NPI's, we made a linkage to the American Hospital Association (AHA) resource file (2011), which includes descriptive information on over 6,500 hospitals. Information in the AHA file about non-participating hospitals provided a point of comparison.

The hospital's NPIs were also linked to a cross section of their hospital's publicly reported performance data from the 2013 Hospital Value-Based Purchasing (HVBP) program[4] in order to compare hospital's publicly reported performance measures to non-participating hospitals. The HVBP program consists of a clinical process of care domain that assesses hospital's performance on quality measures in acute myocardial infarction, healthcare-associated infections (HAIs), heart failure, pneumonia, and surgical care improvement; and a patient experience of care domain with measures from the Hospital Consumer Assessment of Healthcare Providers and Systems Survey (HCAHPS).

With these data, we compared hospital's performance on each measure to national benchmarks to generate an achievement score that ranged between 0 and 10, where higher scores are better. Prior performance was used to generate an improvement score between 0 and 10. The hospital's score for each individual measure is the greater of the achievement or improvement scores, and each domain score is the sum of those individual scores divided by the total score of the measures for which the hospital was eligible. The patient experience of care domain also includes a "consistency score" that assesses whether the hospital performs well on all HCAHPS measures, or only a subset.

The total performance score is composed of 70% clinical process of care domain and 30% patient experience of care domain. Data were not available on some measures for some hospitals, and these hospitals were omitted from the comparison. Higher scores are associated with higher performance in the domain, and quality scores are weighted by the number of domains for which data is reported. Quality scores of BPCI participants were then compared with scores of non-participant hospitals.

3 Results

The 105 hospitals that could be linked to our other data sources are predominantly large, urban hospitals; over two-thirds are teaching hospitals (see Table 1). Comparison hospitals not currently participating in the risk bearing phase of Model 2 tended to have fewer beds, fewer staff, less revenue, and more Medicare revenue as a share of total revenue. The hospitals participating in the BPCI Model 2 are predominantly not-for-profit (n = 88), or 87% of hospitals whose ownership could be established. Bundle-participating hospitals are quite similar to the general hospital population in disproportionate share, Medicare, Medicaid percentages. Most participants selected a narrow breadth of bundles (n = 82), with a smaller number selecting a medium breadth of bundles (n = 22), and only one Awardee selecting the comprehensive package of bundles.

3.1 Hospital quality

There were only minor differences in quality scores between hospitals participating in the BPCI Model 2, and those not participating (see Table 2). For pneumonia, HAIs and heart failure, the quality scores were nearly identical. Hospitals in the BPCI Model 2 performed slightly better on the surgical care domain; however, performed more poorly than non-participants on acute myocardial infarction, patient experience and total performance scores.

3.2 Focus on the narrow

Fifty four of the 105 Model 2 participants selected a single bundle (see Figure 1). Thirty seven of these participated with the Clinical Episode of Major Joint Replacement of the Lower Extremity, and seven selected congestive heart failure. There were only one or two participants for the other bundles selected as the only condition.

Table 1: Characteristics of hospitals participating in BPCI Model 2

Hospital Characteristic	Category of Number of Bundles for Participants, Mean Values Shown			All Bundle Participants	Non-Bundle Participants
	Narrow (⩽ 5)	Medium (6-40)	Comprehensive (48)		
Number of Hospitals (%)	82 (78%)	22 (21%)	1 (1%)	105	3197
Total Beds	378	289	342	359	129
FTE on Payroll	2749	1521	1396	2483	755
Hospital Admissions (000s)	182	234	202	193	90
Total Revenues (000,000)	518	312	306	474	135
Urban Hospital (%)	93%	100%	100%	94%	63%
Teaching Hospital	70%	81%	0%	72%	19%
Inpatient Days Medicare (%)	38%	34%	23%	37%	48%
Inpatient Days Medicaid (%)	13%	14%	21%	13%	11%
Disproportionate Share (%)	29%	35%	51%	30%	28%

Table 2: Comparison of quality scores between hospitals participating in BPCI Model 2 and non-participants

Quality Measures	Hospital Value-Base Purchasing Program Quality Score	
	Bundle Participants (N)	Non-Bundle Participants (N)
Pneumonia	0.58 (102)	0.57 (2,734)
Hospital Acquired Infection	0.59 (103)	0.59 (2,825)
Acute Myocardial Infarction	0.57 (77)	0.60 (1,308)
Heart Failure	0.57 (103)	0.56 (2,721)
Surgical Care	0.69 (103)	0.67 (2,879)
Patient Experience of Care Score	0.26 (103)	0.33 (2,881)
Total Performance Score	0.52 (103)	0.54 (2,885)

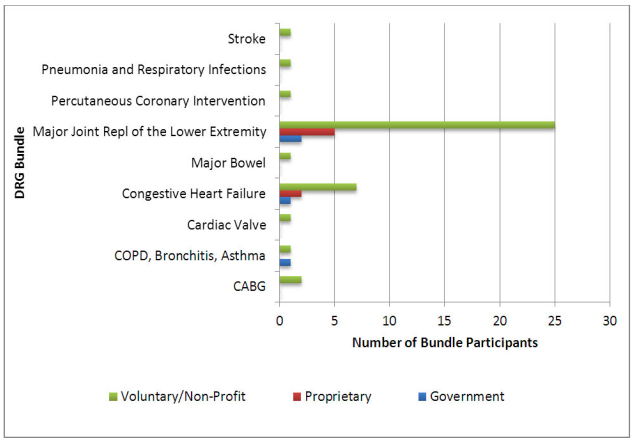

Figure 1: Distribution of hospitals applying for a single bundle among DRG

4 Discussion

One hundred and seven hospitals have thus far signed risk-bearing agreements with CMS in Model 2 of the BPCI initiative. When one considers that Awardees are agreeing to at least a 2% reduction in episode of care payment in addition to assuming financial risk for the totality of care, this number of participating hospitals plus their post-acute partners is a moderately encouraging demonstration of support for payment reform. Not surprisingly, BPCI participating hospitals are larger, urban and more academic, similar to the prior CMS pilot of the Premier Hospital Demonstration Project[5] which became the basis for the Hospital Value-Based Purchasing Program. These types of institutions with more resources and regional influence are likely more able to establish the programs and partnerships necessary for success. The participants are broadly representative of hospitals nationally in terms of disproportionate share, Medicare, Medicaid percentages. Importantly, no significant quality performance differences exist between BPCI Model 2 participants and non-participants, suggesting that participants do not appear to be self-selecting from the strata of high performing hospitals. This feature makes it more likely that findings from the BPCI can be generalized in terms of hospitals' quality measures performance.

The wide latitude afforded to participants in allowing them to select the number and types of conditions in which they bundle payments may ultimately provide important insights into the strategic planning of individual hospitals. With the

majority of Awardees selecting a limited number of bundle conditions, it may be that hospitals are only willing to risk a limited financial exposure. Alternatively, and possibly simultaneously, those hospitals may be specialty hospitals providing care for a limited number of conditions, and with the specific expertise and standardization to excel in that narrow band of services. The 20% of Awardees selecting greater numbers of conditions for bundled payment warrants further investigation since their broader participation indicates that they are confident in their ability to limit financial risk and decrease Medicare's spending by more than 2% across a wider range of their admitted patients.

4.1 Informing the decision to scale

The primary goal of the BPCI program, and all CMMI pilots, is to provide Medicare with the information necessary to decide whether or not to scale a program nationally. Beyond the essential scaling questions of quality and cost established in the ACA, CMS will need to ask two key questions about the pilots: 1) are the characteristics of the participants so different that their experiences provide little basis for generalizing? and 2) does the pilot have the statistical power to reliably answer the scaling questions? While the BPCI program is just out of the starting gate, the characteristics of participants and their selection of bundles provides valuable insights to guide CMS in gathering the necessary information to answer these questions.

Many of the key features are quite similar between BPCI participants and non-participants, such as disproportionate share, Medicare, Medicaid percentages and, importantly, quality measure performance. The quality analysis determining that the participating hospitals are not the "cream" provides comfort regarding the generalizability. The most striking difference is that bundle participants are larger than most hospitals across the country, with 88% of BPCI hospitals having greater than 150 beds, while 28% of the complement of AHA hospitals have greater than 150 beds.

This finding does not necessarily mean that the results will not be applicable and may simply reflect the greater flexibility of larger hospitals to participate in pilot programs. However, it does suggest that CMS will need to closely examine the performance of those smaller, rural and non-academic hospitals to determine whether those subgroups achieve similar outcomes to the typical bundle participants. Additionally, the evaluation will need to consider the context in which the program did or did not work so that CMS can understand in what conditions and for what kinds of providers the program can be scaled.

The BPCI evaluation will also need to carefully consider whether they have sufficient numbers of participants in particular conditions to provide the statistical power necessary for reliable conclusions on spending or quality indicators. For DRG where the number of participating hospitals is smaller, such as stroke, the results may cause a number of confounded and inconclusive findings: the difference in spending or quality is large but the confidence in the findings is low, or there is no effect. Small numbers of bundle applicants may also undermine efforts to develop a risk adjustment mechanism for future bundled payment initiatives.

For a number of other DRG clusters in which the number of hospitals is larger, the effects are likely to be more definitive. As an example, the larger number of Awardees with the lower extremity joint replacement bundle may allow the statistical power to detect smaller effect sizes. It will be important to be cognizant of the need for statistical power during the evaluation, given the large number of DRG options available in the BPCI program and the potential combinations of those DRGs.

4.2 Limitations

This analysis focused on hospitals and the findings underrepresent the interest and motivation of post-acute care providers participating in bundled payments. Since specific information about the contracts established between providers participating in the program are not publicly available, we are unable to comment on the nature of the partnerships between hospitals, physicians, post-acute, ambulatory, or other care providers. In assessing the representativeness of hospitals to hospitals across the country, the similarity on quality measure performance is reassuring but may miss other non-measured sources of volunteer bias. This analysis of Phase 2 participants is the first snapshot of Awardees, and providers currently in Phase 1 may advance to Phase 2 in the future which could change the characteristic composition of Awardees.

5 Conclusions

Innovations to the way Medicare pays for services and how providers organize delivery are urgently needed. It is encouraging to see CMS tackle fragmentation and ineffective use with pragmatic payment reforms. Bundled payments provide one possible vehicle to align incentives in order to support simultaneously achieving quality and cost control goals. As with any pilot, the evaluation is the key element. In the case of the BPCI, the health care for millions of Americans and the ability to pay for that care rests on the decision about whether or not the program should be scaled. The BPCI is now underway and, as the evaluation unfolds over the next year, this preliminary analysis of who is participating in the pilot provides important guidance to developing an analysis that is both nationally applicable and scientifically valid in making the all-important scaling decision.

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