Medicare's Bundled Payments for Care Improvement Initiative: Expanding Enrollment Suggests Potential for Large Impact

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ABSTRACT

Objectives: Aiming to encourage care coordination and cost efficiency, the Center for Medicare & Medicaid Innovation (CMMI) launched the Bundled Payments for Care Improvement (BPCI) initiative in 2013. To help gauge the program's potential impact and generalizability, we describe early and current participants.

Study Design: We examined the cross-sectional association between BPCI participation and providers' structural and cost characteristics.

Methods: Using data from October 2013 and June 2014, we quantified changes in BPCI participation. We described structural differences between participating and nonparticipating hospitals using *t* tests and χ^2 tests, and we used the Cochrane-Armitage test to assess whether participants were more likely be in higher 90-day episode cost quintiles than their peers at baseline (2009-2010).

Results: Overall (risk-bearing and non–risk-bearing) participation in BPCI increased from about 400 in October 2013 to more than 2000 in June 2014—attributable, in part, to Model 2, the most comprehensive of the 4 models offered by CMMI for provider participation. Model 2 hospitals increasingly resemble eligible but nonparticipating hospitals. For the most commonly chosen condition of hip replacement, Model 2 hospitals were not costlier than their peers. Hospitals used to make up 97% of Model 2 participants, but physician practices now comprise a substantial number of Model 2 participants. However, most BPCI participants have not yet begun to bear financial risk. Risk-bearing Model 2 hospitals are a smaller and less representative group, with higher baseline costs for hip replacement than their peers.

Conclusions: Growing participation in BPCI suggests strong interest in bundled payments. The long-term impact of BPCI will depend on CMMI's ability to persuade interested but non–risk-bearing participants to bear risk.

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Episode-based bundled payments are one of several proposed healthcare payment reforms aimed at encouraging care coordination, quality improvement, and cost efficiency.[1-6] Historically, hospitals, physicians, and post acute care providers have been paid separately for services occurring during and after hospital admissions. With bundled payments, a fixed lump sum payment is shared among all caregivers, who also share savings when actual expenditures fall below the bundled payment amount. Based on data highlighting wide variation in episode payments across hospitals with many common conditions,[7,8] some estimate that implementation of bundled payments around hospitalizations could save more than $30 billion annually in the Medicare program alone.[4]

A new program by the Center for Medicare & Medicaid Innovation (CMMI) provides early insights about the future prospects of bundled payments. The Bundled Payments for Care Improvement initiative (BPCI) was launched in 2013, with CMMI offering providers 4 models for participation.[3,5] Model 1 includes Part A services for the index hospitalization alone, and thus most closely resembles current fee-for-service payment. Model 2 is the most comprehensive of the 4, encompassing Part A and Part B services for the index hospitalization, readmissions, and all other post acute care. Model 3 includes only post acute care, and Model 4 includes both the index hospitalization and any readmissions.

Although the end results of the BPCI program will not be available for some time, we provide an overview of the program's general parameters and describe the characteristics of its participants in order to help gauge the program's potential impact and generalizability. More specifically, we describe national patterns of participation in the BPCI program, as well as the association between participation and providers' structural and cost characteristics.

METHODS

CMMI began accepting applications from hospitals and other providers for the BPCI initiative in 2011. The first participants began bearing financial risk in April 2013 (Model 1) and October 2013 (Models 2-4). CMMI briefly accepted new applications in late 2013 (Model 1) and early 2014 (Models 2-4), with many of these participants not yet having begun risk-bearing (ie, subject to financial gains and losses in the program). Program participants first enter a non–risk-bearing period preparing for implementation (Phase 1), followed by the start of a 3-year risk-bearing period (Phase 2), which is staggered among participants. Even for individual participants, risk-bearing may be rolled out over time; a BPCI participant may begin bearing risk for some of their selected conditions (ie, partial risk-bearing) before doing so for all of their selected conditions (ie, complete risk-bearing).

To describe program participation, we used BPCI participant lists from October 2013 (defined as early participants) and June 2014 (defined as current participants). Data on BPCI participants were first made publicly available in October of 2013.[9] Because Model 3 focuses exclusively on post acute care, we examine Models 1, 2, and 4—the 3 models that included the index hospitalization and were open to acute care hospitals.

To describe the structural characteristics of BPCI hospitals versus non-BPCI hospitals, our sample included acute care hospitals eligible for program participation. We utilized the American Hospital Association Annual Survey 2012.[10] We defined rural hospitals as those in areas with a population less than 10,000 and we defined teaching hospitals as major or minor (ie, members of the Council of Teaching Hospitals, hospitals with a medical school affiliation, or hospitals with residency or internship training approved by the Accreditation Council for Graduate Medical Education or the American Osteopathic Association). When examining Model 2 hospitals (BPCI participants vs nonparticipants), we defined nonparticipants as all acute care hospitals not participating in Model 2 of BPCI as of June 2014, identified in the 2010 version of the 100% Medicare Provider Analysis and Review File, excluding the Model 2 BPCI hospitals, Maryland hospitals, and federal hospitals.

Given concerns that providers might "cherry-pick" high-cost conditions for performance measurement (because it may be easier to lower costs for conditions with baseline costs above benchmark), we performed a sensitivity analysis of baseline costs of care for hip replacement—the most popular condition chosen. We describe the distribution of Model 2 BPCI hospital participants who selected hip replacement, across national cost quintiles. These cost quintiles were created by ranking all hospitals (all BPCI eligible nonfederal acute care hospitals that had at least 10 hip replacement cases per year and were not located in Maryland—which is exempt from the Inpatient Prospective Payment System and Outpatient Prospective Payment System—with payment rates set by the state) by their average 90-day risk-adjusted, price-standardized, reliability-adjusted total payments, and then dividing this into quintiles. Because almost no physician practices are risk-bearing yet, we did not conduct a similar analysis for hospitalized patients attributed to BPCI physician practices (vs non-BPCI physician practices).

For this work, we utilized Part A and B Medicare claims data from 2008 to 2011. We restricted our sample to acute care hospitals that cared for fee-for-service Medicare beneficiaries 65 years or older who underwent hip replacement (*International Classification of Diseases, 9th revision, Clinical Modification* codes 81.51 or 81.52, and diagnosis-related group codes 469 or 470) between 2009 and 2010. We included no more than 1 index admission per year per beneficiary. We price-standardized total episode payments from the procedure date through 90 days post-discharge, using a previously described methodology.[11] We risk-adjusted payments using age, sex, race, admission acuity, and the 29 Elixhauser comorbidities.[12]

This study was declared not regulated by the University of Michigan Institutional Review Board. We conducted all analyses with SAS version 9.3 (SAS Institute, Cary, North Carolina).

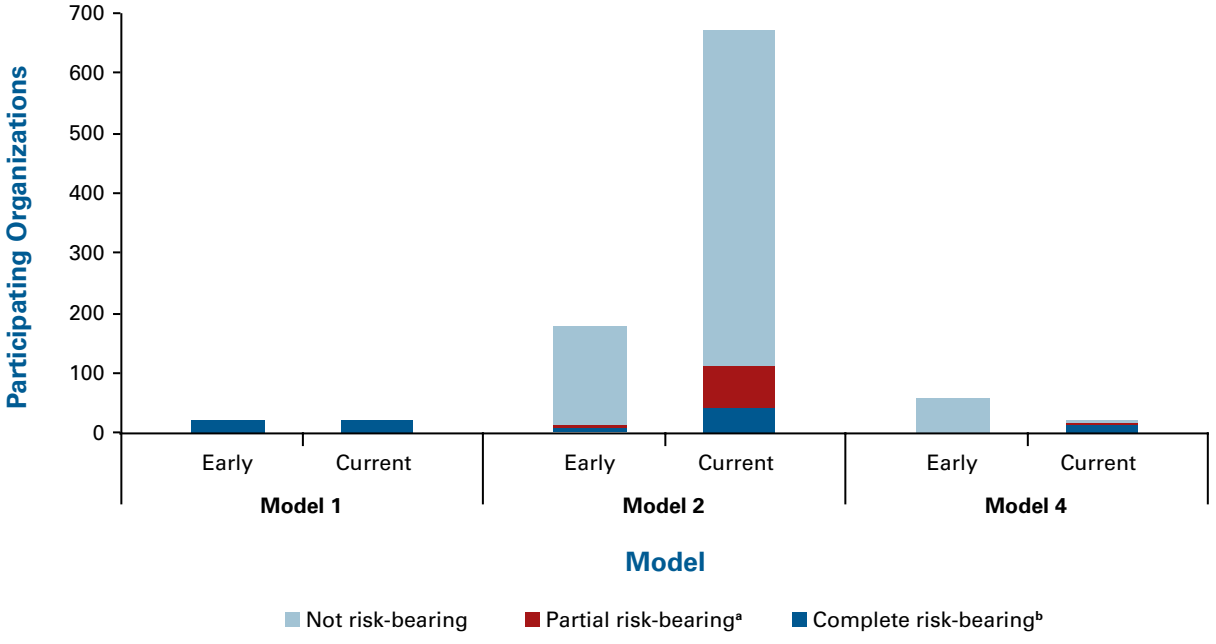
Take-Away Points

Growing and more representative enrollment in Medicare's Bundled Payments for Care Improvement (BPCI) initiative suggests strong interest in bundled payments. The long-term impact of BPCI will depend on the results of risk-bearing participants.

RESULTS

The BPCI program has grown rapidly since its inception. Only 171 acute care hospitals were participating in Model 2 when the earliest participants began risk-bearing in October 2013 (**Figure 1**). Even fewer hospitals were participating in Models 1 and 4. Participation rose sharply after CMMI accepted new applications in early 2014. The number of Model 2 participants increased more than 3-fold. Even risk-bearing participation grew substantially during this same time period. In contrast, the number of

Figure 1. Change in BPCI Enrollment for Models 1, 2, and 4, Stratified by Risk-Bearing Status



BPCI indicates Bundled Payments for Care Improvement initiative.
[a]Partial risk-bearing indicates participants who have begun bearing risk for some, but not all, of their selected conditions.
[b]Complete risk-bearing indicates participants who have begun bearing risk for all of their selected conditions.
Early is October 2013 and current is June 2014.

Model 1 and 4 participants remained low—and in the case of Model 4, dropped.

Physician groups make up a growing and sizable proportion of BPCI participants (Table). While physician practices comprised just 3% of all Model 2 participants in October of 2013, they now make up many of the Model 2 participants. Most practices specialize in orthopedic surgery, hospital medicine, cardiology, or emergency medicine; the growth in physician groups has outpaced that of hospitals. Nevertheless, almost no physician practices have begun risk-bearing. About 10% of all eligible acute care hospitals are currently part of Model 2.

Model 2 hospitals (risk-bearing + non–risk-bearing) differ from nonparticipating hospitals (Table). For example, these hospitals are more likely to be large (500 beds or more) and to be teaching hospitals. Hospitals in the northeast are substantially overrepresented, while those in the south are underrepresented. Participating hospitals are also more likely to be nonprofit than their eligible nonparticipating peers. Risk-bearing Model 2 hospitals are an even less representative group than non–risk-bearing hospitals.

BPCI hospitals and physician groups in Model 2 chose from a menu of 48 eligible clinical conditions for performance measurement. These 48 episodes make up approximately three-fourths of all admissions at acute care hospitals for older fee-for-service Medicare beneficiaries. However, most early entrants limited their participation to a narrow subset of these conditions (Table). For example, nearly half of early Model 2 participants selected only 1 or 2 conditions: the most popular choices were major lower extremity joint replacement (selected by 86% of Model 2 participants), congestive heart failure (60%), coronary artery bypass grafting (CABG) (44%), and chronic obstructive pulmonary disease/asthma (43%). Later entrants were more likely to choose all 48 conditions. For example, about half of the Model 2 orthopedic practices chose all of the nonorthopedic conditions offered, in addition to all of the orthopedic conditions. When participants did limit themselves to a smaller number of conditions, orthopedic and cardiac conditions were favored.

Among current risk-bearing Model 2 hospitals that selected the most commonly chosen condition of hip replacement, more than 5 times as many Model 2 hospitals were in the highest compared with the lowest cost quintile (Figure 2). In contrast, the baseline costs of all cur-

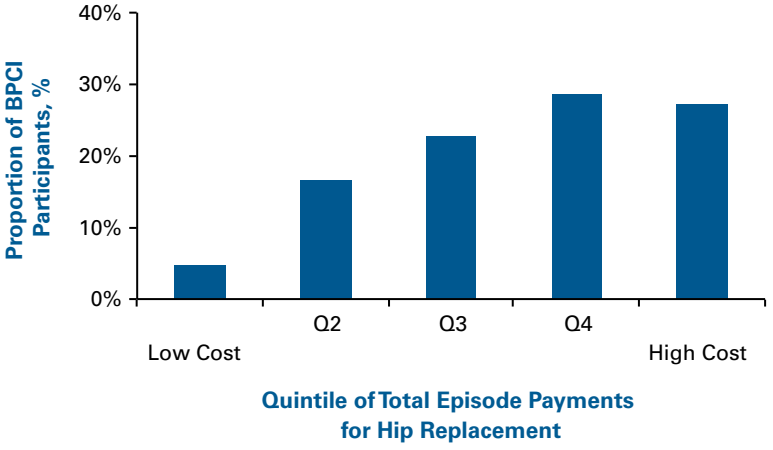
Table. Characteristics of Model 2 BPCI Participants and Nonparticipants[a,b,c]

	Participants				Nonparticipants	
	Risk-bearing[a] + Non–risk-bearing					
	Early[b] (N = 177)		Current[c] (N = 673)		Risk-bearing[a] Current[c] (N = 111)		Current[c] (N = 3013)	
Characteristics	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Provider type								
Acute care hospital[d]	97	(171)	50	(339)	99	(110)	100	(3013)
Beds								
<200	29	(50)	36	(120)	21	(23)	63	(1913)
200-349	32	(54)	29	(97)	33	(36)	20	(616)
350-499	17	(28)	16	(52)	18	(19)	9	(274)
≥500	22	(37)	18	(61)	28	(30)	7	(209)
Teaching hospital	67	(118)	58	(193)	70	(76)	34	(1011)
Profit status								
For profit	17	(28)	14	(47)	18	(19)	25	(755)
Nonprofit	80	(136)	83	(275)	81	(88)	57	(1721)
Other	3	(5)	2	(8)	1	(1)	18	(536)
Urban	100	(169)	99	(327)	100	(108)	89	(2693)
Region								
Midwest	22	(37)	28	(91)	23	(25)	22	(675)
Northeast	48	(81)	31	(101)	41	(44)	14	(411)
South	17	(29)	20	(67)	19	(21)	45	(1363)
West	13	(22)	22	(71)	17	(18)	19	(563)
Physician practice[e]	3	(6)	50	(334)	1	(1)		
Orthopedics	83	(5)	39	(130)				
Hospital medicine			26	(88)				
Cardiology			12	(40)				
Emergency medicine			8	(27)				
Other[f]	17	(1)	15	(49)	100	(1)		
Selected conditions								
≤5	66	(117)	10	(66)	48	(53)		
6-44	8	(14)	14	(96)	17	(19)		
≥45	26	(46)	76	(511)	35	(39)		

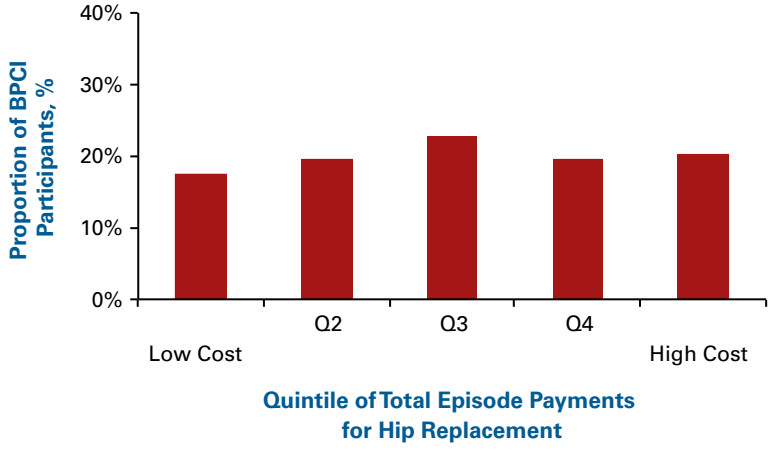
BPCI indicates Bundled Payments for Care Improvement initiative.
[a] Risk-bearing includes providers that have begun risk-bearing for some or all of their selected conditions.
[b]Early BPCI hospitals refers to BPCI Model 2 participants as of October 2013 with a Medicare hospital ID in 2010 (ie, out of 177 total Model 2 participants, the sample of 169 Model 2 hospitals excludes 6 physician groups without a Medicare hospital ID, and 2 hospitals that were established in 2011 or 2012).
[c]Current BPCI hospitals refers to BPCI Model 2 participants as of June 2014 with a Medicare hospital ID in 2010 (ie, out of 673 total Model 2 participants, the sample of 330 Model 2 hospitals excludes 9 hospitals without a Medicare hospital ID in 2010).
[d]We identified unique hospitals by CMS Certification Number.
[e]We identified unique physician practices as those BPCI participants without a CCN, but with a unique BPID (unique physician practice-organizing entity combination). Because some physician practices work with more than 1 organizing entity, this method may overestimate the number of unique physician practices.
[f]Other (only acute care hospitals) refers to all acute care hospitals not participating in Model 2 of BPCI as of June 2014, identified in the 2010 version of the 100% Medicare Provider Analysis and Review File, excluding the Model 2 BPCI hospitals, Maryland hospitals, and federal hospitals.
P <.001 for difference between hospital characteristics of BPCI acute care hospitals (Model 2, Risk-bearing, Current) and other (non-Model 2 BPCI) hospitals, both in June.
Source: The October 2013 and June 2014 data from Center for Medicare & Medicaid Innovation's public files on BPCI participants[9] and the 2012 AHA Annual Survey.[10]

Figure 2. Proportion of Model 2 BPCI Hospitals that Selected Major Lower Extremity Joint Replacement in Each Quintile of 90-Day Medicare Episode Payments for Hip Replacement, Across All US Hospitals, 2009-2010

Panel A. Risk-Bearing, Current Participants



Panel B. Non–Risk-Bearing, Current Participants



BPCI indicates Bundled Payments for Care Improvement initiative.
For Panel A, $P < .001$. For Panel B, $P = .58$. For both panels, we restricted our analyses to acute care hospitals.

rent Model 2 hospitals (risk-bearing + non–risk-bearing) resemble that of nonparticipating hospitals.

DISCUSSION

We found that provider participation in the national bundled payment initiative for Medicare beneficiaries has grown substantially in the past year, with participation tripling for the most comprehensive model (Model 2). Although this growth is comprised primarily of non–risk-bearing participants, the number of risk-bearing providers has also increased. Physician practices—especially orthopedic practices—have increasing interest in the program, as evidenced by the rising number of physician practices in the BPCI's non–risk-bearing phase. The clinical scope has broadened as well. Whereas many early participants selected 1 or 2 conditions, many current entrants have selected all 48 conditions offered.

Bundled payments are 1 of several "alternative payment models" that were highlighted by HHS Secretary Sylvia Burwell, when she described the federal government's efforts to move toward paying for value.[13] The size of the BPCI program dwarfs prior bundled payment initiatives, and is comparable in size to other CMMI payment reforms such as the Medicare Shared Savings Program (with 343 accountable care organizations [ACOs] as of January 2014). CMMI permits providers to enroll in multiple payment reform initiatives simultaneously (eg, BPCI, Next Generation ACOs). Of note, we found that BPCI hospitals share a number of characteristics with Medicare ACOs.[14]

BPCI builds upon earlier and ongoing efforts around bundled payments. As early as 1991, the Medicare Participating Heart Bypass Center Demonstration tested bundled payments with CABG at 7 hospitals.[15] This was followed by efforts to implement bundled payments in other settings or for other populations; for example, Medicare's Acute Care Episode Demonstration, which ran from 2009 to 2012, targeted orthopedic and cardiac conditions in 5 hospitals or health systems.[6] The Geisinger ProvenCare program started with CABG in 2006 and now includes several other conditions and procedures,[16] and the ongoing PROMETHEUS payment model offers many different bundles of care.

These earlier efforts have highlighted the difficulty of implementing bundled payments,[17,18] and thus, the rapid growth of BPCI participation is somewhat surprising. Administrative and logistical challenges to bundled payments include establishing provider networks that share and distribute risk, constructing the legal and regulatory framework to support these arrangements, and modernizing information and billing systems to accommodate episodes of care. Recent data suggest that these

are continuing challenges. For example, a recent effort to establish bundled payments for orthopedic procedures in California broke down during the implementation phase, with disagreements such as how a bundle should be defined.[17] In contrast, CMMI delineated what services would be included in a bundle, had an established risk-adjustment methodology, and designated benchmarks for episode costs; it is too early to tell though whether or not these aspects of the program will be enough to minimize implementation challenges. Finally, it is possible that many of BPCI's current participants will drop out of the program prior to beginning to bear risk.

The rising interest of physician groups is another notable finding from our descriptive work, and one that makes sense given the central role that physicians play in an episode of care. For example, post acute care makes up a substantial proportion of total episode costs for major joint replacement.[19] While orthopedic surgeons may not dictate length of stay in a skilled nursing facility (SNF), they are able to influence which patients are discharged with the less-costly option of home health (vs an SNF). Similarly, hospitalists help decide which patients require sub-acute care on discharge, and may help triage patients presenting for readmission. Furthermore, some hospitalist groups have assumed the care of patients in skilled nursing facilities in addition to acute care hospitals. Guidelines for BPCI encourage participation from physician groups, as only those inpatients cared for by a participating physician are attributed to participating physician groups. How BPCI participants will distribute risk among the various providers that share in a patient's care (eg, attending physician, consulting physician, acute care hospital, post acute care provider) remains to be determined, however.

Although participating providers increasingly chose a wide range of conditions, the most popular conditions remain orthopedic and cardiac. This may reflect the confidence gained from prior bundled payment initiatives around these same conditions (eg, the ACE Demonstration, Geisinger's ProvenCare). In addition, unlike many chronic medical conditions, procedures have discrete start and end points, lending themselves to episodes of care that are measured in days rather than years. Finally, surgical inpatients such as those undergoing a hip replacement, are on average more clinically homogeneous then medical inpatients. CMMI offered risk corridors to mitigate the unexpected effects of outliers, but providers may remain concerned about the inability to reliably predict the clinical course for patients with multiple comorbidities.

Any interpretation of our results should account for the fact that BPCI is an ongoing program. For example, as of June, most Model 2 participants were still in the non–risk-bearing preparatory period (Phase 1), with the 3-year risk-bearing period (Phase 2) slated to begin by January 2015. It is possible that a substantial number of participants will drop out of the program before they begin to bear financial risk. Between October and June, one-fifth of Model 2 enrollees dropped out. It is also possible that fewer conditions will be selected for the risk-bearing phase of the program. Nevertheless, we believe that the magnitude of the trends— toward greater participation and more physician group involvement for a wider range of conditions—make these results important to note. Moreover, while we focused on those models that were open to acute care hospitals, the same general patterns were found among Model 3 (post acute care bundling) participants.

CONCLUSIONS

Interest in the national Medicare bundled payment program is growing, as evidenced by rising and increasingly diverse provider participation for a broad array of clinical conditions. With increased participation, the potential for generalizability of the program's eventual outcomes has increased as well. However, the magnitude of BPCI's long-term impact will depend on the still uncertain results of risk-bearing participants; success by a large risk-bearing group would make it easier for CMMI to convince other providers to join the program.

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Authorship Information: Concept and design (LC, EM, JDB); acquisition of data (JDB); analysis and interpretation of data (LC, EM, JDB); drafting of the manuscript (LC); critical revision of the manuscript for important intellectual content (LC, EM, JDB); statistical analysis (LC); obtaining funding (EM, JDB); administrative, technical, or logistic support (JDB); and supervision (EM, JDB).

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