



CMS program participation and policy evaluation without administrative data: a case study on Bundled Payments for Care Improvement (BPCI) initiative

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Background: The US spends significantly more per capita on healthcare than other developed countries. The Centers for Medicare and Medicaid Services (CMS) Innovation Center (CMMI) has created various alternative payment models (APMs) that use financial incentives to reward providers for delivering higher value care, including bundled payments. In 2013 and 2018, CMS scaled up its bundled payment APM nationwide through its Bundled Payments for Care Improvement (BPCI) Initiative and BPCI Advanced Initiative, respectively. Studies of the effects of physician group practice (PGPs) participation have been delayed in part due to a lack lists of participating physicians available via CMS.

Methods: To assess whether health policy researchers could adequately evaluate the impact of BPCI without CMS administrative data, we investigated the accuracy of using non-CMS sources to identify BPCI physicians. Our researcher-created database (“Other Data Source List” or “ODSL”) of individual physicians participating in BPCI through a PGP was compared to a novel data set—a list of physicians in PGPs participating in BPCI directly from CMS (“CMS List”). We performed chi-squared tests to determine whether ODSL-identified physicians differed meaningfully from CMS List-identified physicians.

Results: Sixty-two percent of ODSL physicians were found in the CMS List of participating BPCI physicians, and ODSL contained 46% of BPCI physicians identified in the CMS List. ODSL was statistically different from the CMS List and had significant limitations in identifying participating BPCI physicians.

Conclusions: Policy evaluations that rely on identifying physicians using non-CMS sources may have a large degree of inaccuracy. If these challenges extend to other APMs, policy evaluations of such programs using non-CMS sources may also be inaccurate.

Keywords: Bundled payments; Bundled Payments for Care Improvement (BPCI); policy evaluation; physician group practices

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Introduction

The US spends significantly more per capita on healthcare than other developed countries. Some reasons for this include lack of health insurance coverage, increased hospital fees

due to recent hospital consolidation, high drug prices, and wasteful spending. The Centers for Medicare and Medicaid Services (CMS) has attempted to solve this problem by increasing the value of US healthcare through improvements

in health outcomes and/or decreases in health-related costs. Specifically, CMS has created various alternative payment models (APMs) that use financial incentives to reward providers for delivering higher value care, including population-based shared savings programs, patient centered medical home models, and bundled payments.

Recently, CMS announced a greater emphasis on physician leadership in APMs (1). In 2013, CMS expanded its bundled payment APM through the Bundled Payments for Care Improvement (BPCI) Initiative for participating acute care hospitals and physician group practices (PGPs). BPCI builds on Medicare's prospective payment system by paying a lump sum to providers for not only the acute care hospital stay, but also physician payments and all other spending up to 90 days after a hospitalization to encourage providers to coordinate their services and be more cost-conscious. Bundled payments in theory increase value by decreasing unnecessary healthcare costs, improving quality of care, and improving patient outcomes.

In 2018, CMS continued expanding its bundled payment APM through the BPCI Advanced Initiative (2). Although the impact of BPCI on participating hospitals has been evaluated, an understanding of the impact on PGPs has lagged, in large part due to an initial lack of available CMS administrative lists of participating physicians (3). To assess whether health policy researchers could adequately evaluate the impact of BPCI on PGP physicians without CMS administrative data, we investigated the accuracy of using data from available non-CMS sources to identify BPCI physicians.

Methods

National Provider Identifiers (NPIs) for individual physicians participating in phase 2 of BPCI model 2 through a PGP were first identified. To collect physician NPIs, we used non-CMS sources, specifically manual website searches of each PGP, the SK&A office-based physician dataset, and the NPI registry. We then assigned NPIs to PGPs based on organization name and address to create the "Other Data Source List" ("ODSL"). CMS subsequently made lists available that included physicians participating in BPCI for 2015 and 2016 ("CMS List"); comparing allowed evaluation of the accuracy of ODSL. We restricted both CMS List and ODSL to PGPs participating in the largest single episode (major joint replacement of the lower extremity) and then compared physician characteristics by linking information from the SK&A database. We performed chi-squared tests to determine whether ODSL-identified physicians were

Table 1 PGP physician NPI LEJR-SKA match accuracy

	CMS List	Not in CMS List	Positive predictive value
ODSL	5,456	3,301	62%
Not in ODSL	6,302	–	–
True positive	46%	–	–

PGP, physician group practice; NPI, National Provider Identifiers; CMS, Centers for Medicare and Medicaid Services; ODSL, Other Data Source List.

meaningfully different from CMS List-identified physicians.

Results

ODSL included 8,757 physicians, while the CMS List included 11,758 physicians. Sixty-two percent of ODSL physicians were found in the CMS List of participating BPCI physicians, and ODSL contained 46% of BPCI physicians identified in the CMS List (*Table 1*). Chi-squared tests performed by specialty, geography, and PGP size rejected equivalence of ODSL and CMS list ($P < 0.001$) (*Table 2*). ODSL was statistically different from the CMS List and had significant limitations in identifying participating BPCI physicians.

Specialty

On average, 71% of ODSL-identified physicians were missing from the CMS List, while 47% of CMS List-identified physicians were missing from ODSL. Of note, 43% of ODSL-identified internists, 20% of orthopedic surgeons, and 25% of physical medicine/rehab specialists were missing from the CMS List.

Geography

On average in each state and region (Northeast, Midwest, South, West), 43% (3–100%) and 44% (32–53%), respectively, of ODSL-identified physicians were missing from the CMS List, while 61% (20–100%) and 54% (49–60%), respectively, of CMS List-identified physicians were missing from ODSL.

PGP size

On average in large (50+ physicians), medium (10–49

Table 2 ODSL vs. CMS List by physician characteristics

Physician characteristics	% of ODSL missing from CMS List	% of CMS list missing from ODSL
Specialty (P<0.001) (top 3 of 83 specialties shown)		
1. Internist	43	62
2. Orthopedic surgeon	20	22
3. Family practitioner	48	68
<i>Avg. of all specialties</i>	71 [0–100]	47 [0–100]
Geography (P<0.001)		
Northeast (n=8)	53	50
Midwest (n=12)	42	60
South (n=17)	32	49
West (n=13)	50	57
<i>Avg. by region</i>	44 [32–53]	54 [49–60]
<i>Avg. by state</i>	43 [3–100]	61 [21–100]
PGP size (P<0.001)		
Large (n=62) (50+ physicians)	22 [0–100]	49 [10–88]
Medium (n=149) (10–49 physicians)	53 [0–100]	27 [0–92]
Small (n=77) (<10 physicians)	74 [0–100]	14 [0–93]

CMS, Centers for Medicare and Medicaid Services; ODSL, Other Data Source List; PGP, physician group practice.

physicians), and small PGPs (<10 physicians), 22%, 53%, and 74% (each 0–100%), respectively, of ODSL-identified physicians were missing from the CMS List, while 49% (10–88%), 27% (0–92%), and 14% (0–93%), respectively, of CMS List-identified physicians were missing from ODSL.

Discussion

In this study, we examined physician group participation in Medicare's BPCI program and found that publicly available data could not be used to accurately identify a large proportion of participants. This suggests that the health policy research community is heavily reliant on the release of such data by regulatory agencies such as CMS to provide policy relevant analysis of program impact. Researchers frequently use primary data collection such as web scraping and other manual means to collect this information, as we did in this study, to fill in gaps in availability of data. While this is generally well-intentioned and noted as a limitation of research, this is the first study to our knowledge to compare a detailed effort to collate participation lists using

publicly available data to participation lists made available by CMS. Unfortunately, our analysis did not corroborate that manual efforts are accurate.

This limitation of manual collection may not be limited to the BPCI program. There are several programs, unlike BPCI, for which the participation lists have not been made available to the research community. For example, to date, the Next Generation ACO program and several primary care initiatives do not provide lists with identifiers that can be used reliably by researchers (4–6).

Conclusions

Policy evaluations that rely on identifying physicians using non-CMS sources may have a large degree of inaccuracy. If these challenges extend to other CMS APMs (e.g., Next Generation Accountable Care Organizations), policy evaluations of such programs using non-CMS sources may also have large degrees of inaccuracy. Before CMS continues expanding its bundled payment APM in PGPs, robust research should be conducted to evaluate the effects

of BPCI. However, if CMS does not publicly release and update lists of physicians participating in PGPs in a timely fashion, health policy researchers cannot accurately study the impact of BPCI on PGP physicians. Without such research, CMS will be unable to make an evidence-based decision to continue expanding its bundled payment programs. We expect that the effects of BPCI will be different on PGPs than on hospitals, similar to what has been observed in other APMs (7-9).

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Footnote

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