Published in final edited form as:

JAMA. 2016 September 27; 316(12): 1262–1264. doi:10.1001/jama.2016.12525.

Medicare's Bundled Payment Program for Joint Replacement Promise and Peril?

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The United States is in the midst of a bold experiment. Medicare is moving rapidly away from traditional fee-for-service payment. Various alternative payment models (APMs) intended to improve quality and reduce costs are being implemented or tested. The stakes are high. If an evaluation finds that a new model meets the statutory requirements for expansion, the US Secretary of Health and Human Services is authorized to expand the models across the country. Whether these new programs work and how effectively they are evaluated should matter to physicians, patients, and taxpayers.

While accountable care organizations (ACOs) represent the largest current APM (about \$85 billion per year¹), bundled payment initiatives, under which physicians or health care organizations are paid for all related services within an episode of care, are expanding rapidly.² The largest of these is the Bundled Payments for Care Improvement (BPCI) initiative (about \$10 billion per year¹), a voluntary program that was phased in between 2013 and 2015 in which about 1400 organizations are participating.

The article by Dummit et al³ in this issue of JAMA is the first glimpse of how BPCI is performing. This report is important for several reasons: it is by far the largest study of bundled payments to date; it focuses on bundled payments for lower extremity joint replacement (approximately 400000 procedures per year); and the payment model evaluated is similar to the recently launched Comprehensive Care for Joint Replacement initiative—under which all hospitals within 67 metropolitan statistical areas are required to participate.

Under this model, the episode of care begins with an inpatient stay in an acute care hospital and includes all related services for up to 90 days after discharge. Medicare sets a target price but continues to make fee-for-service payments to all eligible physicians, hospitals, and other health care organizations. Medicare then compares total episode payments with the target price. If the participating organization maintains or improves quality, it is eligible to receive savings below a small discount (generally 3%) that is intended to ensure that the Centers for Medicare & Medicaid Services (CMS) receives at least some savings. The model entails risk bearing; if total costs for the episode exceed the target price, participating organizations must pay some portion of that excess to CMS.

The article by Dummit and colleagues reports findings from the first 21 months of the BPCI program, a time when organizations were transitioning to risk bearing and the average

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organization bore financial risk for only 10 months. The study compares changes in spending, utilization, and quality for Medicare beneficiaries who underwent lower extremity joint replacement during a baseline period before the BPCI initiative was launched (October 2011 through September 2012) and the early intervention period (October 2013 through June 2015). Episodes delivered at the 176 BPCI-participating hospitals were compared with a sample of episodes drawn from a matched sample of 841 nonparticipating hospitals. All patients at the BPCI hospitals were included ($n = 29441$ in the baseline period; $n = 31700$ in the intervention period); a matched comparison population was randomly selected from the hospitals not participating in the BPCI initiative ($n = 29440$ and $n = 31696$, respectively). By taking this difference-in-differences approach, the study design is intended to take account of other changes in payment or policy that may have occurred during this period and thereby isolate the effect of the new payment incentive on the participating hospitals and physicians.

The major finding of the study is that while spending decreased in both the intervention and control populations, the decrease was significantly greater for health care organizations in the BPCI. For hospitals participating in the BPCI initiative, mean Medicare payments for the hospitalization and 90-day postdischarge period were \$30551 during the baseline period and decreased to \$27265 during the intervention period. In the comparison hospitals, mean episode payments were \$30057 at baseline and decreased to \$27938 during the intervention period. Payments declined \$1166 more (95% CI, $-\$1634$ to $-\$699$) in the BPCI hospitals than in the comparison group. Almost all of the reduction in spending was from reduced use of institutional postacute care.

The study found no evidence that quality of care was worse in those hospitals participating in the BPCI initiative. Claims-based measures of quality—unplanned readmissions and emergency department visits—were nearly identical at baseline in BPCI and control hospitals and changed in similar ways during the intervention period. Although the study was underpowered to detect differences in mortality rates, 30-day and 90-day postdischarge mortality rates were identical in BPCI and control hospitals at both baseline and follow-up. The evaluation also included a survey of patients approximately 6 months after surgery during the intervention period in the BPCI and control hospitals. The findings should be interpreted with caution, largely because patients were asked to recall their functional ability before surgery (an approach of uncertain validity). Nevertheless, a higher proportion of patients in the BPCI group reported improvements in mobility and pain, with no evidence to suggest worsening on any measure.

Although the findings reported by Dummit and colleagues are promising, the study has important limitations. First, the study reported on the first few months of what will be at least a 3-year program in which participation was voluntary. Early positive results could be an anomaly, or the volunteering organizations could differ from the comparison group in unmeasured ways. For instance, the greater changes in hospital characteristics for the BPCI participants between the baseline and intervention periods suggest that these hospitals were evolving differently than the comparison hospitals. Second, the quality measures were limited. Although the incentives to improve quality are strong (given the high cost of complications), subsequent studies will need to confirm that beneficiaries are not harmed.

A third concern is whether the design of the evaluation was sufficiently sensitive to behavioral changes that could make any apparent savings misleading. One of the questions surrounding bundled payments is whether the effort to align financial incentives between physicians and hospitals could contribute to increases in volume or shifts in case mix toward healthier (more profitable) patients.^{4,5} The authors' choice of the primary end point, per-episode payments, is one issue. They provide data showing that the volume of procedures in the BPCI hospitals increased from a mean of 61.5 lower extremity joint replacement discharges per quarter per hospital in the baseline period to 64.6 during the intervention period, while volume decreased in the comparison group, from 59.6 to 59.2 lower extremity joint replacement discharges per quarter per hospital.

Using a different end point that takes volume into account, ie, mean total joint replacement payments per hospital (estimated by multiplying the volume of episodes by total per-episode costs), reveals that total spending actually declined less in the BPCI hospitals than in the comparison hospitals. In the BPCI hospitals, during the preintervention period, the mean number of total joint replacement episodes initiated per quarter per hospital was 61.5 and the mean total payment per episode was \$30551, for mean total payments per quarter per hospital of \$1878887, whereas the comparable numbers in the intervention period were a mean of 64.6 episodes and mean payment per episode of \$27265, for mean total payments per quarter per hospital of \$1761319, a mean difference of \$117568 per hospital, a 6.3% decrease.

In the comparison hospitals, during the preintervention period, the mean number of total joint replacement episodes initiated per quarter per hospital was 59.6 and the mean total payment per episode was \$30057, for mean total payments per quarter per hospital of \$1791397, whereas the comparable numbers in the intervention period were a mean of 59.2 episodes and mean payment per episode of \$27938, for mean total payments per quarter per hospital of \$1653930, a mean difference of \$137468 per hospital, a 7.7% decrease.

In addition, the data reported by Dummit and colleagues seem consistent with a greater shift toward healthier patients in the BPCI hospitals than in the comparison group (at least as measured by their use of inpatient, home health, or skilled nursing facility care in the 6 months prior to surgery), similar to findings in a recent evaluation of a bundled payment initiative in New Jersey.⁶

It is thus too soon to tell whether the portion of the BPCI initiative focused on lower extremity joint replacement is actually improving care and achieving savings for the Medicare program. The launch of the Comprehensive Care for Joint Replacement initiative should therefore be seen as an important step forward. By requiring participation of all hospitals within the selected metropolitan statistical areas and being able to compare joint replacement performance in quality, outcomes, and costs in these regions with that in other similar regions, a much more rigorous evaluation will be possible. Better quality measures—eventually to include patient-reported functional outcomes—are planned and will be useful, especially if also collected from patients in the comparison regions. Volume effects can be carefully monitored at the appropriate level (the region) and with a solid denominator (the resident fee-for-service population).

Enthusiasm for bundled payments is now high. Leading health policy experts recently called on CMS to expand its mandatory bundled payment initiatives,⁷ and several initiatives were recently announced. There are good reasons to test this approach to payment reform: bundled payments make it easier to engage specialists and smaller physician practices; encourage care coordination across clinicians and sites of care; and, when focused on hospitalization, may help reduce avoidable postacute institutional-based care. However, the evidence base for bundled payments is limited. Prior initiatives, such as the CMS Participating Heart Bypass Center Demonstration and Acute Care Episode Demonstration, included fewer than 10 hospitals and largely focused on the inpatient stay.^{8,9} The study by Dummit and colleagues appears to be the largest evaluation of bundled payments to date.

As the United States moves forward with bundled payments, 4 important challenges will need to be considered and addressed. First, bundles are difficult to design and administer. Determining what services should be included, who should be the recipient of payments (or billed for losses), and how those gains or losses should be distributed represent technical and social challenges. To be successful, bundled payments should follow similar rules for commercial and private payers—but the latter will have to negotiate each bundle with each physician group, hospital, or other health care organization, a timely process that led a bundled payment initiative in California to collapse.¹⁰ Second, the assumption that bundles will save CMS money because of the mandatory discount will only be true if there are not behavioral responses that lead to increased volume or the substitution of healthier patients for sicker patients (who may have the most to gain). Third, for elective procedures, the potential for overuse is real. Population-based rates of total joint replacement vary across US hospital referral regions by more than 3-fold,¹¹ and evidence from Ontario, Canada, suggests that many patients with severe arthritis will choose nonoperative management.¹² The CMS leaders and others recognize the importance of shared decision making in bundled payments²; moving forward quickly to implement programs that include both the use of validated decision aids and measurement of whether shared decision making took place will be critical. Fourth, the complex interplay among bundled payment initiatives (what if patients are in multiple bundles at once?) and between bundled payments and ACOs needs attention. Bundled payments could undermine ACOs directly if all of the savings within bundles go to those responsible for the bundle.¹ It is also important to recognize that bundled payments leave the overarching incentive to increase volume solidly in place.

These concerns underscore the importance of rigorous, independent evaluations that take a broad perspective, including not only those within a particular payment model but also the populations of the communities in which they reside. Accountable care organizations may¹³ or may not¹⁴ be contributing much to lowering costs and improving care for their own patients; they could also be contributing to more rapid consolidation and increasing prices for commercial payers. Bundled payments may reduce costs within episodes but increase costs overall if volumes increase for Medicare patients or for the commercially insured patients in those markets.

Given the burden that health care costs impose on society and the magnitude of waste in the current system, the federal government should continue to press forward with payment and

delivery reforms. The measure of their success must be whether health care improves and health care cost growth slows for the US population overall.

References

1. Mechanic RE. When new Medicare payment systems collide. *N Engl J Med*. 2016; 374(18):1706–1709. [PubMed: 27144847]
2. Press MJ, Rajkumar R, Conway PH. Medicare's new bundled payments: design, strategy, and evolution. *JAMA*. 2016; 315(2):131–132. [PubMed: 26720889]
3. Dummit LA, Kahvecioglu D, Marrufo G, et al. Association between hospital participation in a Medicare bundled payment initiative and payments and quality outcomes for lower extremity joint replacement episodes. *JAMA*.
4. Mechanic RE. Opportunities and challenges for episode-based payment. *N Engl J Med*. 2011; 365(9):777–779. [PubMed: 21864162]
5. Weeks WB, Rauh SS, Wadsworth EB, Weinstein JN. The unintended consequences of bundled payments. *Ann Intern Med*. 2013; 158(1):62–64. [PubMed: 23277901]
6. Alexander, D. How do doctors respond to incentives? unintended consequences of paying doctors to reduce costs. http://scholar.princeton.edu/sites/default/files/daalexand/files/alexander_jmp.pdf. Accessed September 2, 2016
7. Emanuel, E., Berwick, D., Chandra, A., et al. Center for American Progress. Letter to Secretary Burwell, June 23, 2016. <https://cdn.americanprogress.org/wp-content/uploads/2016/06/22130534/Mandatory-bundled-payment-letter.pdf>. Accessed August, 29, 2016
8. Calsyn M, Emanuel EJ. Controlling costs by expanding the Medicare acute care episode demonstration. *JAMA Intern Med*. 2014; 174(9):1438–1439. [PubMed: 25004083]
9. Nelson, L. Lessons From Medicare's Demonstration Projects on Disease Management, Care Coordination, and Value-Based Payment. Washington, DC: Congressional Budget Office; 2012.
10. Ridgely MS, de Vries D, Bozic KJ, Hussey PS. Bundled payment fails to gain a foothold in California: the experience of the IHA bundled payment demonstration. *Health Aff (Millwood)*. 2014; 33(8):1345–1352. [PubMed: 25092835]
11. Fisher, ES., Bell, J-E., Tomek, IM., Esty, AR., Goodman, DC. Trends and Regional Variation in Hip, Knee, and Shoulder Replacement. Hanover, NH: Dartmouth Institute for Health Policy & Clinical Practice; 2010.
12. Hawker GA, Wright JG, Coyte PC, et al. Determining the need for hip and knee arthroplasty: the role of clinical severity and patients' preferences. *Med Care*. 2001; 39(3):206–216. [PubMed: 11242316]
13. Song Z, Fisher ES. The ACO experiment in infancy—looking back and looking forward. *JAMA*. 2016; 316(7):705–706. [PubMed: 27533150]
14. Schulman KA, Richman BD. Reassessing ACOs and health care reform. *JAMA*. 2016; 316(7):707–708. [PubMed: 27533151]