



Reengineering valve patients' postdischarge management for adapting to bundled payment models

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ABSTRACT

Background: Bundled Payments for Care Improvement (BPCI) initiatives were developed by Medicare in an effort to reduce expenditures while preserving quality of care. Payment model 2 reimburses based on a target price for 90-day episode of care postprocedure. The challenge for valve patients is the historically high (>35%) 90-day readmission rate. We analyzed our institutional cardiac surgical service line adaptation to this initiative.

Methods: On May 1, 2015, we instituted a readmission reduction initiative (RRI) that included presurgical risk stratification, comprehensive pre-discharge planning, and standardized postdischarge management led by cardiac nurse practitioners (CNPs) who attempt to guide any postdischarge encounters (PDEs). A prospective database also was developed, accruing data on all cardiac surgery patients discharged after RRI initiation. We analyzed detailed PDEs for all valve patients with complete 30-day follow-up through November 2015.

Results: Patients included 219 surgical patients and 126 transcatheter patients. Sixty-four patients had 79 PDEs. Of these 79 PDEs, 46 (58.2%) were guided by CNPs. PDEs were due to fluid overload/effusion (21, 27%), arrhythmia (17, 22%), bleeding/thromboembolic events (13, 16%), and falls/somatic complaints (12, 15%). Thirty-day readmission rate was 10.1% (35/345). Patients with transcatheter aortic valve replacement had a higher rate of readmission than surgical patients (15.0% vs 6.9%), but were older with more comorbidities. The median readmission length of stay was 2.0 days (interquartile range 1.0–5.0 days). Compared with 2014, the 30-day readmission rate for BPCI decreased from 18% (44/248) to 11% (20/175), $P = .05$.

Conclusions: Our reengineering of pre/postdischarge management of BPCI valve patients under tight CNP control has significantly reduced costly 30-day readmissions in this high-risk population. (*J Thorac Cardiovasc Surg* 2017;154:190-8)



Logo for the CMS Innovation Center created by the Affordable Care Act.

Central Message

Surgeons must take ownership of patient management in the postdischarge period to survive in the era of financial risk bearing.

Perspective

The Affordable Care Act created an innovation center to explore solutions for health care cost reduction. What has been perceived as a post-procedural failure (high readmission rates after valves) has become a target of this reform. This has placed pressure on the cardiac surgeon to optimize postdischarge management with an institutional approach to avoid unnecessary and costly hospital readmissions.

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The Centers for Medicare and Medicaid Services (CMS) has historically based reimbursement on a fee-for-service mechanism. However, this approach has been criticized as a major driver of health care costs as it contains

unintended incentives for increasing the volume of care while not necessarily improving quality.¹ In an effort to respond to these concerns, the Center for Medicare and Medicaid Innovation (CMMI) was created in 2010 by the Affordable Care Act (ACA) and instituted the Bundled Payments for Care Improvement (BPCI) initiative.

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Abbreviations and Acronyms

ACA	= Affordable Care Act
BPCI	= Bundled Payments for Care Improvement
CMMI	= Center for Medicare and Medicaid Innovation
CMS	= Centers for Medicare and Medicaid Services
CNP	= cardiac nurse practitioner
CSSL	= Cardiac Surgical Service Line
EOC	= episode of care
HRRP	= Hospital Readmissions Reduction Program
PDE	= postdischarge encounter
RRI	= readmission reduction initiative
SAVR	= surgical aortic valve replacement
SNF	= skilled nursing facilities
STS	= Society of Thoracic Surgery
TAVR	= transcatheter aortic valve replacement
TCV	= transcatheter valve
TVT	= transcatheter valve therapy

The BPCI program was developed to test payment and service delivery models with the potential to reduce expenditures during clinical episodes while preserving or enhancing the quality of care.^{2,3} Four different models are currently being tested that link payments for the multiple services rendered during a clinical care episode. An episode of care (EOC) is designated based on disease process or procedure as defined by disease-related group codes. BPCI model 2 EOCs include acute care and physician fees for the index procedure as well as related post-acute care, including readmissions and all related services through 90 days postdischarge. Model 2 includes a retrospective bundled payment arrangement in which actual expenditures are reconciled against a baseline target price for the EOC. The target price is set by CMS, individualized for an institution based on 3-year historic claims data, EOC category, episode length, and a 2% discount. For a “bundle” patient, the actual 90-day expenditures from the CMS master claims file are tabulated and reconciled. If total expenditures are below the target amount, the difference is paid to the institution; if above, recoupment is accordingly collected by CMS. Readmissions are therefore a costly penalty to the institution. Proponents of this model believe it will incentivize the more judicious use of health care resources and lead to less fragmentation of care.^{1,4,5}

One of the challenges in caring for Medicare valve patients is the historically high (>40%) 90-day readmission rates present in this elderly, high-risk population.⁶ It has been shown that between 50% and 80% of cardiac surgery readmissions occur in the first 30 days postdischarge.⁷ From a fiscal perspective, Medicare payments for unplanned

rehospitalizations in 2004 accounted for approximately \$17 billion of the \$100 billion that Medicare awarded that year.⁸ Previously, extended postdischarge management and concomitant fiscal burden of late complications was typically beyond the surgeon’s purview. Now that this expenditure has become a target for CMS penalty, this perspective has changed. We analyzed our institution’s cardiac surgical service line (CSSL) adaptation to this BPCI model.

METHODS**BPCI Details**

Our institution decided to participate for valve surgery in BPCI model 2 with a 90-day EOC. The phase 1 preparation period started in January 2013, with the financial risk-bearing phase starting in October 2013. Historically, before and during the preparation period, our discharge strategy had high reliance (approximately 70%) on inpatient rehabilitation and skilled nursing facilities (SNFs), which was driven by length-of-stay concerns. Our initial approach to reduce postdischarge inpatient expenditures was to move away from facility-based post-acute care.

By the end of 2013, use of inpatient rehabilitation and SNFs was down to 21%, resulting in beneficiary savings of more than \$7000 per patient.⁹ However, 30-day readmission remained at approximately 20%.

Implementation of Readmission Reduction Initiative

In 2015, our cardiac service line team completed development of a comprehensive discharge planning and management approach. It begins with presurgical risk stratification based on a variety of heart failure, frailty, and cognitive measures (eg, Society of Thoracic Surgery [STS] risk score, Kansas City Cardiomyopathy Questionnaire, walk tests). PredischARGE planning is then begun early in the postoperative course with patient and family education (emphasizing the importance of medication compliance), as well as coordination with home-care services or acute and subacute facilities. Standardized postdischarge management led by cardiac nurse practitioners (CNPs) begins with a phone call within 48 hours of discharge. CNPs then maintain weekly contact by phone and use telemedicine (Cardiocom, Chanhassen, Minn) to monitor the patient’s clinical status and attempt to guide any postdischarge encounters (PDEs) throughout the first 30 days after discharge. Postdischarge office visits also have been regimented, with patients being seen on postdischarge days 7 and 21 and scheduled to see their cardiologist on day 14. We also implemented a number of postdischarge triage and management protocols for patients presenting to our emergency department, which facilitates immediate evaluation by our team and standardizes the approach to common presentations, such as postoperative pain, atrial fibrillation, and volume overload. Whenever possible, less than 48-hour hospital observation was used instead of readmission. Additionally, a prospective database was created in May 2015 to track all adult cardiac surgery patients for 30 days postdischarge.

Outcomes

A retrospective analysis of our prospectively collected adult cardiac surgery discharge database was conducted. Additional data were collected from CMS claims as well as STS and transcatheter valve therapy (TVT) data. Local institutional review board approval for retrospective de-identified data analysis was obtained, and the requirement for written informed consent was waived.

PDE included any unplanned hospital encounter other than office visit, regardless of hospital setting; planned staged procedures were excluded. A patient was considered an inpatient readmission if the patient stayed more than 48 hours in-house, as per CMS definition. For less than 48 hours, the patient was classified as observational or outpatient status.

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