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Outpatient air leak management after lobectomy: a CMS cost analysis

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Abstract

Background—Air leaks after lobectomy are associated with increased length of stay (LOS) and protracted resource utilization. Portable drainage systems (PDS) allow for outpatient management of air leaks in patients otherwise meeting discharge criteria. We evaluated the safety and cost efficiency of a protocol for outpatient management of air leaks with a PDS.

Methods—We retrospectively assessed patients who underwent lobectomy for non–small-cell lung cancer at our institution between 2004 and 2014. All patients discharged with a PDS for air leak were included in the analysis. The study group was compared to an internally matched cohort of patients undergoing lobectomy for non–small-cell lung cancer managed without the need for outpatient PDS. Study end points included resource utilization, postoperative complications, and readmission.

Results—A total of 739 lobectomies were performed during the study period, 73 (10%) patients with air leaks were discharged with a PDS after fulfilling postoperative milestones. Shorter LOS was observed in the study group (3.88 ± 2.4 versus 5.68 ± 5.7 d, $P = 0.014$) without significant differences in 30-d readmission (11.7% versus 9.0%, $P = 0.615$). PDS-related complications occurred in 6.8% of study patients (5/73), and 2.7% (2/73) required overnight readmission. PDSs were used for 8.30 ± 4.5 outpatient days. A CMS-based cost analysis predicted an overall savings of \$686.72/patient (4.9% of Medicare reimbursement for a major thoracic procedure), associated with significantly fewer hospital days and resources used.

Conclusions—In patients otherwise meeting discharge criteria, outpatient management of air leaks is safe and effective. This strategy is associated with improved efficiency of postoperative care and a modest reduction in hospital costs. This model may be applicable to other thoracic procedures associated with protracted LOS.

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Keywords

Outcomes; Quality care management; Postoperative care; Lung cancer surgery; Database

Introduction

Given the increased emphasis placed on cost containment and efficient delivery of patient care, recent investigational studies have focused on treatment strategies aimed at reducing health care–associated costs and length of stay (LOS) after major thoracic procedures.¹ Fast-track protocols for early discharge have successfully reduced LOS without increasing risk for readmission, demonstrating safety and cost-efficiency. After major pulmonary resection, the presence of an air leak is a common finding. In addition, extended LOS from a prolonged air leak, defined by the Society of Thoracic Surgeons as an air leak lasting greater than 5 d after surgery, occurs in 5%–26% of cases.² Previous studies have identified air leaks as a primary driver for increased LOS and hospital costs for both open and video-assisted thoroscopic surgery lobectomy.^{3–5}

Published data supporting portable drainage systems (PDSs) have demonstrated efficacy for outpatient management of air leaks.^{6–8} However, most studies are comprised of heterogeneous patient populations, combining data from multiple operative procedures and for a variety of indications.⁹ In addition, few have examined the associated cost savings for early discharge with a chest tube (CT) and PDS, with estimates based loosely on billing and institution-specific charges rather than actual cost to the hospital.⁹

In the present study, we sought to evaluate the safety, feasibility, and economic impact of an outpatient management strategy consisting of early discharge with a PDS for air leak after lobectomy for non–small-cell lung cancer (NSCLC). Our hypothesis is that outpatient management of an air leak with a PDS is a safe protocol for patients who meet traditional discharge milestones, and that earlier transition of care to the outpatient setting is significantly more efficient and cost-effective, particularly for an integrated health care network. To date, no air leak study has sought to determine the actual hospital cost, particularly via a generalizable metric such as Centers for Medicare and Medicaid Services (CMS) reimbursement, to evaluate the efficiency associated with early transition of patient care to the outpatient setting.

Material and methods

Patient population

We performed a retrospective evaluation of patients at the University of Wisconsin Hospital and Clinics who underwent lobectomy or bilobectomy for NSCLC between 2004 and 2014. Data were collected in a prospective manner. Patients aged greater than 50 with a diagnosis of NSCLC, retrievable preoperative computed tomography and positron-emission tomography scans, pulmonary function tests, and follow-up within our health system with accessible pathologic reports, operative dictation, clinic notes, 30-d follow-up, and record of death were evaluated. Patients treated with neoadjuvant therapy and those who underwent

sublobar resection, pneumonectomy, or additional pleural-based procedures (decortication, washout of empyema, pleurodesis) were excluded. To identify the association between air leak, early discharge, and resource utilization with minimal confounding, patients discharged with a CT and PDS for ongoing CT drainage were also excluded. The remaining patients discharged with a PDS for air leak were identified as the primary study group ($n = 73$). All patients undergoing lobectomy during the study period without PDS at discharge were considered for inclusion in the control group ($n = 666$). The Institutional Review Board at the University of Wisconsin approved this study including a waiver for patient consent due to the retrospective and de-identified nature of the data.

In both groups, we performed an extensive chart review from patient electronic medical records to determine clinical and pathologic characteristics for matching. Propensity score matching (1:1) using patient characteristics (age, gender, race, smoking history and status, comorbidities, pulmonary function tests), surgical characteristics associated with air leak (stage, histology, surgical approach, extent of resection), and postoperative complications before discharge (acute respiratory failure, cardiac arrhythmia, surgical site infection, transfusions, myocardial infarction, atelectasis/pneumonia, deep vein thrombosis/pulmonary embolism, stroke) was performed. Details regarding inpatient LOS, imaging and laboratory evaluations, discharge details, emergency room (ER) visits, readmissions, and outpatient clinic evaluations were captured for both groups to evaluate the cost savings associated with early discharge.

Operative technique/postoperative care

Patients in study and control groups underwent lobectomy or bilobectomy and mediastinal lymph node dissection in all cases. Patients were uniformly managed with a single 28-French CT after resection. Tubes were placed to suction postoperatively using an Oasis Dry Suction Water Seal Drain (Atrium Medical Corporation, Hudson, NH) and evaluated the evening of POD #0 for the presence of an air leak and each morning thereafter. Chest roentgenograms (CXR) were performed each morning and repeated when transitioning to water seal, for clinical changes mandating imaging evaluation, or after transition to a PDS. Pleurevac systems were placed to water seal with cessation of an air leak or when deemed appropriate by the operating surgeon. No patients required resumption of pleurevac suction due to CXR changes or clinical symptoms after transition to water seal.

At the time of discharge, study patients were required to fulfill predetermined discharge milestones including: (1) tolerance of regular diet, (2) pain control on oral medication, (3) stable CXR on water seal, (4) CT drainage less than 250 cc/ 24 h, (5) performance of adequate pulmonary toilet and regular use of an incentive spirometer, (6) completion of nursing education including demonstration of competency to manage the PDS, and (7) family support at the discharge residence to help manage the PDS and observe the patient. Study patients were discharged home with an Atrium Express Mini 500 Mobile Dry Seal Drain (Atrium Medical Corporation, Hudson, NH). We performed a 6-h-interval CXR after PDS placement to demonstrate lung expansion in all patients.

Outpatient management

Study patients returned to clinic 4–5 d after discharge, with variation based on distance of travel to our institution and clinical judgment regarding anticipated duration for PDS. A CXR was performed at each clinic visit and compared to discharge imaging to ensure appropriate lung expansion. The PDS was evaluated for air leak, and if resolved, the CT was removed. Persistent air leak with a stable CXR, and in the absence of symptoms, was managed with short interval follow-up, typically between 2 and 3 d after the initial clinic visit. Patients were instructed to call the office or visit the ER for complications related to outpatient PDS management.

Outpatient emergency evaluation and readmission

Study and control patients were assessed for ER visits and readmission for all causes during the 30-d postoperative period. PDS-specific complications, defined as any problem that required evaluation of the PDS or CT during the 30-d postoperative period, were included.

Estimation of costs

We adopted a US health care system perspective, which assigns value to all resources used in the direct provision of medical care. We used Medicare average reimbursement as a proxy for the economic opportunity cost of professional, technical, and facility resources that differed between study and control groups. These resources included those expended (or saved) as a result of reduced LOS, inpatient and outpatient laboratory testing and CXRs, outpatient clinic visits, emergency department visits, and readmission within the postoperative 30 d. Laboratory tests were defined as the number of postoperative complete blood counts (CBC) and basic metabolic panels (BMP) in the 30-d postoperative period. We used institutional cost for the Atrium Express Mini 500 Mobile Dry Seal Drain (Atrium Medical Corporation, Hudson, NH) of approximately \$63.83 per unit.

To estimate resource costs associated with differential LOS between groups, we applied a proportionate reduction to average 2016 Medicare reimbursement for Diagnosis-related group (DRG) 164 (major thoracic procedure without significant complication), which was approximately \$14,118.26 per admission. Because resource utilization is typically low at the end of an inpatient stay, we assumed that a 1-d reduction in LOS would reduce facility resources used by 3%, or \$437.67. Although DRG reimbursement routinely includes outpatient visits for the 90-d global period, gross resource costing using the DRG alone fails to capture the increase in outpatient visits, imaging, and laboratory testing that result from an early discharge intervention. To compensate for this shift in resources, we deducted the value of professional services for outpatient clinic visits (\$20.05) based on the CMS Physician Fee Schedule (2016) for CPT 99211 (office or other outpatient visit for the evaluation and management of an established patient), and the value of facility resources (\$54.31) based on Ambulatory Payment Classification code 5011 (level 1 examination and related services). We used average CMS reimbursement for two-view CXRs (71020), CBC (85025), and BMP (80047) to value additional resources used in the outpatient setting. A comprehensive Ambulatory Payment Classification code (8011) was used to assess the cost associated with readmission/ observation due to a PDS-related event (this coding represents a comprehensive cost for low-acuity patients admitted to observation for less than 48 h).

Statistics

Statistical analysis was conducted using SPSS (IBM Corp, released 2012, IBM SPSS Statistics for Windows, version 21.0, Armonk, NY: IBM Corp). To ensure appropriate matching of controls, we used *t*-tests for continuous variables and chi-square tests for categorical variables to confirm that a statistical difference did not exist between the groups. These same tests were applied to identify differences in resource utilization between study and control patients.

Results

We identified 739 patients who underwent lobectomy during the study period. Seventy-three patients (10%) discharged with a PDS for air leak were eligible for inclusion in the study group. Comparison of study and control patients confirmed no statistical differences in preoperative comorbidities or demographics, pathologic features, or postoperative complications between groups except for the presence of an air leak (Table 1). All patients eligible for discharge with a PDS for air leak agreed to outpatient management. Of the 73 control patients, 7 (9.59%) had a postoperative air leak but were unable to fulfill all milestones to be considered a candidate for discharge with a PDS. Controls with prolonged air leak demonstrated significantly longer LOS compared to those without air leak (8.1 ± 4.6 d—PDS *versus* 4.3 ± 3.7 d—controls; $P < 0.001$).

PDS-specific complications occurred in 6.8% of patients (5/73), and 2.7% (2/73) of study patients required readmission and overnight observation due to device malfunction. Rates of non-PDS-related readmission were equivalent between groups (Table 2). Discharge with a PDS was associated with significantly shorter LOS compared with controls (3.9 ± 2.4 d—PDS *versus* 5.8 ± 5.7 d—controls; $P = 0.014$), without associated major morbidity or mortality noted (Table 3). PDSs were maintained for 8.3 ± 4.5 d after hospital discharge. Unplanned readmission (11.7%—PDS *versus* 9.0%—controls, $P = 0.615$) and emergency department visits without readmission (8.2%—PDS *versus* 13.7%—controls, $P = 0.289$) were similar between groups. Control patients demonstrated higher utilization of inpatient laboratory tests (452 total laboratory tests—PDS *versus* 1006—controls, $P < 0.001$) but no statistical difference in the number of inpatient CXRs performed (427—PDS *versus* 655—controls, $P = 0.230$; Table 3). A total of 679 hospital days were saved by discharging study patients with a PDS for air leak (total number of outpatient days with a CT and PDS). As a result, study patients used more outpatient resources, including 30 additional clinic visits, 71 CXRs, and 16 laboratory tests compared with the control group (Table 4).

We estimated the savings associated with reduced LOS of 1.8 d (145 d total) at \$869.34 per patient (\$63,462.15 total) for early discharge with a PDS (Table 5). The additional cost of 74 PDS devices reduced this savings by \$64.70 per patient (\$4723.42 total). Accounting for the value of facility resources and professional services required by 30 additional outpatient visits further reduced this savings by \$30.56 per patient (\$2230.80 total). Costs associated with inpatient CXRs and laboratory testing were not included as they are encompassed within the DRG reimbursement. However, we estimate that additional outpatient imaging (71 CXRs) and laboratory testing (16 CBCs and BMPs) reduced this savings by \$29.52 per patient (\$2155.26 total). There were two PDS-related readmissions that required overnight

observation but no surgical intervention, which were valued at \$57.84 per patient (\$4222.00 total). Rates of non-PDS-related readmissions were equivalent between groups, with higher LOS and absolute resource utilization noted in the control group. To avoid skewing the analysis in favor of the study group, these costs were omitted from our calculation. Based on these values, overall savings in the early discharge group was estimated at \$686.72 per patient (\$50,130.67 total), approximately 4.9% of the total CMS reimbursement (Table 5).

Comment

We have demonstrated that early discharge after lobectomy with a CT and PDS is safe and appropriate for select patients with postoperative air leaks. This treatment pathway is associated with equivalent risk for outpatient complications and readmission after lobectomy compared with matched patients discharged without a PDS. The use of a PDS and early hospital discharge is also associated with decreased LOS and has a significant impact on hospital resource utilization, including reduced inpatient imaging and laboratory testing. We have confirmed a modest cost savings (4.9% of total CMS reimbursement per patient) after this intentional early discharge pathway.

This investigation is the first to use CMS reimbursement to estimate the net value of resources saved (and expended) by early PDS discharge for air leak. Although payer mix varies according to hospital and regional characteristics, CMS reimbursement data are often used as a proxy for the social value of resources in health services research. Previous PDS studies have used hospital billing and single-institution costs, assessing average per diem charges that do not account for patterns of resource utilization, which decrease significantly after the first postoperative day. Varela *et al.* demonstrated significant costs associated with postoperative air leaks after lobectomy; however, estimates were based on per hospital day gross charges. Rieger also evaluated the cost savings associated with outpatient management of air leak in 36 patients, estimating a savings of \$262,000 after discharge with CT and PDS. This calculation was extrapolated from the number of hospital days saved and institution-specific charges, potentially resulting in substantial overestimates of savings.

To determine generalizable estimates of the value of resources saved (or expended) by the health care system, CMS-based cost estimates are likely to be more appropriate than institutional charge data. CMS reimbursement is determined from nationally representative accounting of hospital costs attributed to specific types of inpatient stays, the relative value of professional time, and resources spent in delivering outpatient services. In this study, we believe a value of 3% per day of total CMS reimbursement (savings of \$686.72/per patient by reducing LOS by 1.8 d) more accurately approximates the hospital savings realized by reducing low-acuity LOS with a PDS. This methodology has been validated in other surgical cost-based resource evaluations.

However, the overall advantage of an intentional early discharge protocol with PDS for air leak is not necessarily just the modest cost savings but also the shift in resource utilization from the inpatient to outpatient setting. Given that the resources of an integrated health care system are finite, this protocol allows low-acuity patients to be managed in a less resource-intensive environment such as the outpatient clinic setting, increasing the availability of

inpatient resources. This shift may improve the capacity of an institution to manage high-acuity patients or to increase surgical volume. These advantages complement previous studies that have demonstrated the feasibility and safety of early discharge with PDS for air leak.”

Over the past decade, we have made additional adjustments to our clinical practice based on results from this assessment, increasing our comfort level with early discharge on postoperative day 2 or 3 in select patients with PDS for air leak. Practice patterns have also adjusted to accommodate more efficient utilization of postoperative imaging and laboratory evaluations. In our current practice, an uncomplicated video-assisted thoracoscopic surgery lobectomy patient with an air leak will undergo an average of 3 postoperative CXRs and even fewer laboratory evaluations before discharge with a PDS. This discharge practice has not resulted in increased risk for readmission or complications in the perioperative period. However, we have not concurrently observed any reduction in the average LOS for patients without an air leak and believe that an average LOS of 3 to 4 d is a reasonable expectation for most patients after lobectomy.

To enhance practice efficiency, we have also implemented a digital pleurevac system that further supports our preference for fast-track outpatient air leak management. Digital PDS’s expand on the eligibility criteria for discharge with an air leak, particularly for those patients that require active suction for lung expansion. In addition, quantitative assessment of airflow and displayed graphical trends (information a patient can convey by phone) more accurately identifies air leak cessation and, we suspect, will lead to a reduction in the number of outpatient clinic visits as well as CT duration. Although digital PDS’s require a significant capital investment, their use will likely play a key role in future cost models associated with outpatient management of air leaks.

Recognized limitations of this study include its retrospective design and our small sample size, which was incompletely powered to demonstrate statistical significance for all end points evaluated. Outpatient follow-up was scheduled based on patient proximity to our institution and clinical judgment regarding anticipated duration of air leak. This has obvious implications that restricted our ability to determine the exact timing of air leak cessation and CT removal. For that reason, we do not believe a cost savings analysis that includes number of total hospital days saved, in our case 679 days with the use of a PDS, is as relevant as the decreased LOS realized by early discharge. Implementation of a digital pleurevac system will likely significantly reduce this variability and our need for multiple clinic visits, and provide quantitative data to reduce the duration of outpatient PDS days. We anticipate this system will make a cost savings analysis even more compelling. To determine whether differences in LOS or resource utilization varied based on the year in which a patient was treated, we performed a post-hoc analysis of study and control patients, categorizing them into three study periods (2004–2006, 2007–2009, and 2010–2010). In this evaluation, there was an equal distribution of study and control patients in each category, without significant differences in LOS, number of CXRs and laboratory evaluations performed, or risk for readmission.

This analysis did not include evaluation of patient satisfaction after discharge with a PDS due to its retrospective design and lack of available data. However, during preoperative consultation, all patients were informed of the possibility for early discharge with a PDS for air leak (we often quote a 10%–15% risk), and anecdotally, most patients prefer this practice to a protracted inpatient stay. In this analysis, no patient eligible for discharge with PDS refused. We purposefully did not evaluate a comparison group exclusively of patients with air leak that remained in the hospital until discharge. These patients likely represent a fundamentally different cohort, often with significant air leaks and intolerance of water seal, and in our analysis, a significantly higher rate of postoperative complications. We consider this group to be outliers based on protracted LOS and resource utilization, especially if the air leak prevented transition of care to an outpatient setting. In the future, some of these patients may be eligible for early discharge on suction with use of a digital PDS.

These conclusions and cost methods can be extrapolated to other major thoracic procedures to evaluate improvements of efficiencies for patient care. PDS usage for air leak should be considered for implementation in appropriately selected patients to reduce cost and expand the availability of inpatient hospital resources. Future studies in clinical practice investigations of cost and efficiency will likely incorporate newer technologies such as digital pleurevacs in an effort to improve patient care and cost-effectiveness, improving health care delivery.

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Table 1

Patient demographics.

Variable	Patients discharged with PDS (n = 73)	Control patients (n = 73)	P value
Age (y ± SD)	67.2 ± 10.5	65.1 ± 12.1	0.26
Gender (% male)	47.90%	52.10%	0.619
Race (% Caucasian)	100.00%	94.60%	0.172
Smoking status (% current/past smokers)	93.20%	87.70%	0.173
Pack year smoking history	44.5	42.2	0.311
Comorbidities			
Coronary artery disease	6.85%	6.85%	1
Hypertension	49.32%	57.53%	0.319
COPD	52.05%	50.68%	0.868
Congestive heart failure	4.11%	6.85%	0.467
Diabetes	13.69%	17.81%	0.495
Myocardial infarction	6.85%	9.59%	0.547
Peripheral vascular disease	13.69%	9.59%	0.599
Dementia	2.74%	2.74%	1
Obesity	10.96%	16.44%	0.336
Surgical approach (% VATS)	71.20%	61.60%	0.22
Pulmonary function test			
% Predicted FVC	89.90%	88.00%	0.31
% Predicted FEV1	77.10%	79.70%	0.18
% Predicted DLCOc/VA	77.00%	79.10%	0.386
Extent of resection			1
Lobectomy	93.20%	93.20%	
Bilobectomy	6.80%	6.85%	
Stage			0.897
IA	52.05%	60.27%	
IB	12.33%	10.96%	
IIA	10.96%	9.59%	
IIB	8.22%	5.48%	
IIIA	10.96%	10.96%	
Other diagnosis	5.48%	2.74%	
Diagnosis (%)			0.618
Squamous cell	31.50%	32.80%	
Adenocarcinoma	46.60%	49.30%	
Adenosquamous	5.48%	0.00%	
Adenocarcinoma in situ	2.70%	4.11%	
Typical carcinoid	5.40%	8.20%	

Variable	Patients discharged with PDS (n = 73)	Control patients (n = 73)	P value
Large cell	8.10%	5.40%	
Postoperative complications			
Air leak	100%	9.59%	<0.0001
Acute respiratory failure	0%	2.74%	0.154
Cardiac arrhythmia	8.22%	9.59%	0.771
Surgical site infection	2.74%	4.11%	0.649
Transfusion requirement	2.74%	5.48%	0.404
Myocardial infarction	0%	1.37%	0.315
Atelectasis/pneumonia	8.22%	13.69%	0.289
DVT/pulmonary embolism	2.74%	4.11%	0.649
Stroke	0%	0%	1

COPD = chronic obstructive pulmonary disease; SD = standard deviation; VATS = video-assisted thoracoscopic surgery; FVC = forced vital capacity; FEV1 = forced expiratory volume 1 second; DLCOc/VA = diffusion capacity divided by alveolar volume; DVT = deep vein thrombosis. Study and control groups were successfully matched in all categories for comparison.

Table 2

Discharge with PDS was associated with significantly fewer hospital days and laboratory testing, but a significantly increased number of outpatient clinic visits.

Variable	Patients discharged with PDS (n = 73)	Control patients (n = 73)	P value
Length of stay (d ± SD)	3.88 ± 2.4	5.68 ± 5.7	0.014
CXR (mean ± SD)	7.97 ± 2.3	10.12 ± 7.2	0.23
Laboratory tests (mean ± SD)	6.78 ± 4.2	14.15 ± 15.2	<0.001
Outpatient clinic visit (mean ± SD)	1.58 ± 0.9	1.16 ± 0.4	<0.001
Readmission rate (%)	11.70%	9.00%	0.615
ER evaluation (%)	8.20%	13.70%	0.289
Outpatient pleural drainage (d ± SD)	8.30 ± 6.5	N/A	—

SD = standard deviation.

There were no differences in readmission, with average duration of outpatient PDS of 8.3 days.

Table 3

Study and control group ER evaluation and readmissions.

Variable	Patients discharged with a PDS (<i>n</i> = 73)		Control patients (<i>n</i> = 73)	
	n	Reason	n	Reason
ER visit without readmission	5	Broken chamber (1)	10	Shortness of breath (5)
		Shortness of breath (2)		Incisional pain (3)
		Incisional pain (3)		Incision drainage (2)
Non-PDS readmission	8	Pleural effusion (3)	8	Dehydration (2)
		Pneumonia (2)		Air leak/pneumothorax (2)
		NSTEMI (1)		Syncope (1)
		Air leak (1)		<i>Clostridium difficile</i> (1)
		Lower gastrointestinal bleed (1)		Hypoglycemia (1)
				Incisional pain (1)
PDS-related readmission	2	Broken chamber (1)	—	—
		Monitoring of air leak (1)		

There were 2 PDS-related complications leading to readmission.

Table 4

Absolute resource savings for patients discharged with a PDS.

Variable	Patients discharged with a PDS (n = 73)	Control patients (n = 73)	Resources
Total hospital days	283	428	−145
Outpatient PDS days	679	—	+679
Total inpatient laboratory tests	452	1006	−554
Total inpatient CXRs	427	655	−228
Total outpatient clinic visits	115	85	+30
Total outpatient laboratory tests	43	27	+16
Total outpatient CXRs	155	84	+71

Table 5

Savings associated with early discharge with a PDS derived from the 2016 Medicare MEDPAR file.

Variable	Resources used by patients discharged with a PDS (<i>n</i> = 73)	Cost per unit (2016 MEDPAR)	Total cost (<i>n</i> = 73)	Cost per patient discharge (total cost/73)
Length of stay (d)	−145	\$437.67	−\$63,462.15	−\$869.34
Mini 500 Equipment	+74	\$63.83	\$4723.42	\$64.70
Additional outpatient clinic visits (CPT 99211 + APC 5011)	+30	\$74.36	\$2230.80	\$30.56
Additional outpatient CXRs (CPT 71020)	+71	\$27.93	\$1983.03	\$27.16
Additional outpatient CBCs (CPT 85025)	+13	\$10.59	\$137.67	\$1.89
Additional outpatient BMPs (CPT 80047)	+3	\$11.52	\$34.56	\$0.47
PDS-related readmission (APC 8011)	+2	\$2111.00	\$4222.00	\$57.84
Total cost			−\$50,130.67	
Cost per patient discharge (total/73)			−\$686.72	

APC = Ambulatory Payment Classification; MEDPAR = Medicare Provider Analysis and Review.