

Online Data Supplement

Results of a Medicare Bundled Payments for Care Improvement Initiative for COPD Readmissions

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Methods

Study Design

We performed a pre-post intervention study comparing readmissions following an index hospitalization for acute exacerbation of COPD to a single tertiary care hospital (University of Alabama at Birmingham, UAB). We included Medicare only patients prospectively enrolled in the Medicare Bundled Payments For Care Improvement (BPCI) initiative during its first year (2014) and compared outcomes with patients meeting BPCI criteria during 2012. UAB is participating in Model 2 of the BPCI involving patients discharged with one of the diagnoses for COPD exacerbation, which include: Diagnosis-related group (DRG) numbers 190, 191, and 192. “BPCI Model 2: Retrospective Acute & Post Acute Care Episode” is a retrospective bundled payment arrangement where actual expenditures are reconciled against a target price for an episode of care which includes the inpatient stay in the acute care hospital as well as all subsequent inpatient and outpatient costs up to 90 days. The bundle excludes patients with end stage renal disease or on hospice care. The bundle also excludes patients hospitalized for acute exacerbation of COPD but with acute respiratory failure (DRG 518). Data for readmissions were prospectively recorded for the intervention group and extracted from the electronic medical record for controls. Patients were followed for 1 year post discharge from index hospitalization to calculate time to readmission. The study was approved by the UAB Institutional Review Board.

We employed a multipronged strategy to identify patients likely to receive a bundle DRG using daily census reports, the initiation of the COPD Powerplan in the electronic medical record, as well as care manager and nursing notifications. Every day, a hospital wide census was sent to the COPD team that lists all new admissions with their admitting diagnosis. All patients with COPD as primary or secondary diagnosis as recorded by the primary team were reviewed by the COPD team and evaluated for inclusion in the bundle. The final analysis includes only those patients who received a final Diagnosis-related group (DRG) code of 190, 191 or 192. It is important to note that bundle payment eligibility is based entirely on hospital coding (specifically receiving DRG190-192) and this is often not known until after a patient is discharged.

Interventions

Patients enrolled in the BPCI initiative received standardized care delivery during their admission and the post-acute care period. On hospitalization, all patients were evaluated by a nurse or nurse practitioner in addition to the treating physician, and treated using a standardized order set which included delivering a uniform duration of five days of antibiotics and systemic steroids.(1) All participants were provided patient education material that included general information about COPD, medications, and red flag symptoms. Active smokers received tobacco cessation counseling from the treating physician and/or the Hospital Tobacco Consult Service.(2) A short interval follow-up (within 2 weeks) with one of three UAB pulmonologists (SPB, JMW, or MTD) was set up at discharge and individualized referrals were

made to pulmonary rehabilitation, home health, palliative care and hospice as appropriate. Comorbidities such as congestive heart failure, hypertension, diabetes mellitus, anxiety and depression were addressed at these visits and either treated or appropriate referrals made. This included screening for depression and anxiety with the Patient Health Questionnaire (PHQ-4), titration of diuretics and blood pressure medications for patients with congestive heart failure, minimization of systemic corticosteroids, particularly in those with diabetes, and ensuring adequate evaluation for ischemic heart disease. Participants with ESRD and on dialysis were not eligible for the bundle payment initiative per CMS rules. Beginning within the first 2 days after discharge, patients were contacted by an automated telephone system followed by calls by a registered nurse. The automated calls (Emmi Solutions, LLC) were daily telephone calls enquiring about symptoms as well as to address compliance with inhalers, smoking cessation, physical activity, nutrition, vaccines and coping with a chronic health condition. The registered nurse called the patients once a week for 4 weeks and every other week for the duration of the 90-day BPCI period and used motivational interviewing and health coaching to assist participants in understanding their disease, medications, symptoms, and best care practices, including medication adherence and tobacco cessation. Deterioration in a patient's symptoms was relayed to the BPCI physicians or nurse practitioner for appropriate action.

Timeline and Details of Phone Calls

After discharge from the hospital, automated phone calls were placed to each patient using Emmi solutions (Emmi solutions Inc) daily for 2 weeks. These calls included a symptom diary

which triggered escalation of therapy. The calls also included the following educational sessions:

COPD Transition Series

Day 1 : COPD Follow-Up And Medication

Day 3 : COPD Inhalers And Smoking

Day 5 : COPD Exercise, Activity And Nutrition

Day 8 : COPD Infection, Vaccines And Smoking

Day 11 : COPD Coping

Day 14 : COPD After Follow-Up

Multimedia Programs

Day 3 : Smoking Cessation - Thinking About Quitting Smoking

Day 11 : Coping with a Health Condition

A qualified registered nurse followed up with phone calls on a weekly basis on weeks 1, 2, 3, 4, 5, 7, 9 and 13.

Clinical Outcomes

The primary outcome was 30-day all cause readmission rate. Secondary clinical outcomes were 90-day all cause readmission rate, and 30- and 90-day readmission rates due to acute exacerbation of COPD. Clinical data were extracted from our hospital's clinical data warehouse (Cerner PowerInsight®, Cerner Corporation World Headquarters 2800 Rockcreek Parkway North Kansas City, MO 64117).

Financial Considerations

We compared total costs for patients enrolled in BPCI during 2014 with the BPCI target price for 90 days as determined by Medicare. Cost calculations for the BPCI have been described elsewhere.⁽³⁾ Briefly, the BPCI base price was based on historical claims for DRG 190-192 from 7/1/2009 to 6/30/2012 which was then risk adjusted for measures of disease severity, predicted and observed readmission rates, and inflation, using the 2013 Consumer Price Index. This base price was then discounted 3% to derive the BPCI target price. As Medicare disallows access to individual per patient costs, secondary outcomes also included costs incurred per patient over 30 and 90 days in those enrolled in BPCI compared with historical controls, obtained from institutional records. Costs for an index admission as well as 30- and 90-day all cause costs were calculated by summing claims for inpatient and outpatient care submitted to CMS as obtained from the UAB Health Services Foundation.

Additional Results

Costs

CMS disallows use of individualized patient data for small number of patients and hence we could not access a breakup of costs for these patients except for the BPCI target price which includes costs incurred potentially at institutions other than ours. We had per patient data available for hospital and post-hospital care costs for expenses at our institution alone. There was no difference in the per-patient costs for the index admission in the BPCI group as compared to 2012 controls [\$4970 (2703) vs. \$5020 (3706); p=0.921] (Table 3). There was also no difference in the total 30-day costs [BPCI \$6486 (4973) vs. Controls \$5783 (4392); p = 0.309]. The 90-day costs were also similar [BPCI \$7755 (5768) vs. Controls \$7849 (7839); p = 0.929].

UAB hospital spent an additional \$250,000 in operational expenses per year that included \$100,000 per year for a full time nurse practitioner, \$70,000 for a full time nurse, \$35,000 for a part-time nurse, fringe expenses as well as office supplies such as printing and for automated calls and telephone calls.

References

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