



## EVALUATING INTERVENTIONS UNDER THE BUNDLED PAYMENTS FOR CARE IMPROVEMENT (BCPI) INITIATIVE: A CASE STUDY FOR THE COPD MARKET

Susan Suponic<sup>1</sup> and Kjell Nygren<sup>2</sup>  
<sup>1</sup>Navigant Consulting, Lawrenceville, NJ, USA <sup>2</sup>Sanofi, Bridgewater, NJ, USA

### BACKGROUND

- The US Healthcare market is increasingly moving towards alternative payment models (APMs) where CMS aspires to have 50% of its payments through alternative payment models (e.g., Value based care) by 2018.
- Five key programs are being implemented by CMS/Medicare: Acute Care Episodes (ACE), Medicare Shared Savings Program (MSSP), Bundled Payments for Care Improvement (BPCI), Comprehensive Care for Joint Replacement (CCJR), and the Oncology Care Model (OCM).
- Given the move towards value-based payments, it is important to have robust methods in place to allow for an evaluation of the impact of specific interventions on outcomes that impact on value-based payments (e.g., re-hospitalization rates).

### OBJECTIVES

- Investigate analytical approaches for assessing the impact of post-hospital interventions on re-hospitalization rates associated with COPD bundled care episodes.
- Focus particular attention on approaches that help control for selection biases associated with different interventions with the aim of arriving at robust but easy to interpret methods.
- Compare the outcomes of different approaches and make recommendations regarding the most appropriate way to assess the effectiveness of interventions.

### METHODOLOGY

- Health plan data covering inpatient admissions, outpatient services, and outpatient RXs is leveraged to create an episode-level dataset containing information related to the initial hospitalization, post-hospitalization services/outcomes, and specific types of interventions.
- Two approaches to the evaluation of the effectiveness of the interventions are examined. The first is a naive approach comparing patients receiving interventions (without controlling for DRG codes or LOS), and the second a cohort based approach grouping patients based on DRG codes and initial LOS.

### RESULTS

#### DATA

- 4,623 Patients admitted for inpatient care during the first 6 months of 2013 with a COPD related DRG code (190 COPD W MCC, 191 COPD W CC, or 192 COPD W/O CC/MCC).
- Metrics related to the following were included.
  - Demographics (Age, Gender, State, MSA).
  - Initial Hospitalization (DRG Code, LOS, Net and Gross Pay, Discharge Status).
  - RX Therapy upon discharge (Flags for Various RX Categories present within 7 days).
  - Post-hospitalization Office Visits (count of 30, 60, and 90 day office visit counts).
  - Re-hospitalization rates overall and specifically for COPD (with 30, 60, and 90 days of discharge).
  - Net and Gross Pays post for 90 day window following hospitalization (Outpatient Services, Re-admissions, RXs).

#### INTERVENTIONS AND OUTCOMES EXAMINED

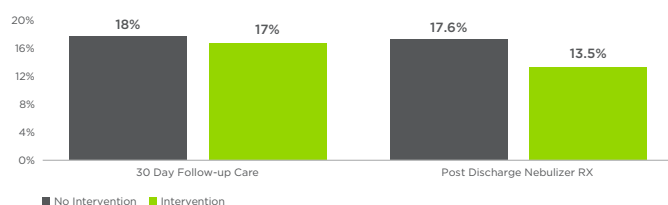
- Two interventions (Follow up Office-Visits within 30 days of Hospitalization and a Nebulizer RX within 7 days of discharge) were examined.
- The impact on 90 day re-hospitalization rates were examined.

#### NAÏVE ANALYSIS

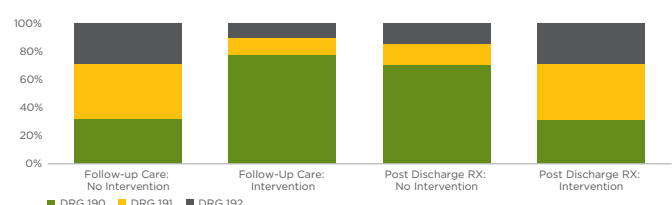
A Naïve analysis suggests that Nebulizers are effective interventions while follow-up care within 30 days is not...

A closer look at patients with and without exposure to the interventions, however, suggests that these differences may be driven by selection biases and not by the interventions themselves...

90 Day Hospitalization Rates (With and Without Interventions)



Mix of Patients with and without exposure to Interventions



#### IMPACT OF 30 DAY FOLLOW-UP VISITS CONTROLLING FOR INITIAL DRG AND LOS

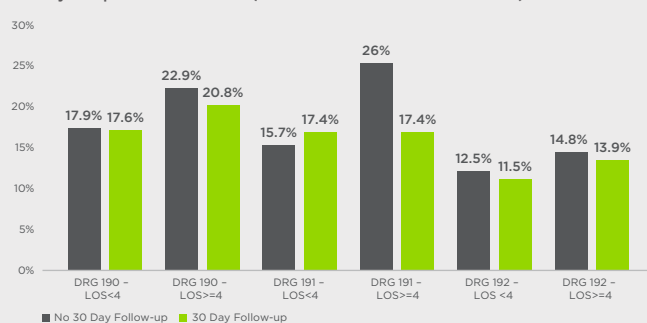
A Cochran-Mantel-Haenszel test of differences between patients with and without 30 day follow-up visits after controlling for the Initial DRG and LOS is not statistically significant (p=0.3670).

#### IMPACT OF NEBULIZER USE CONTROLLING FOR INITIAL DRG AND LOS

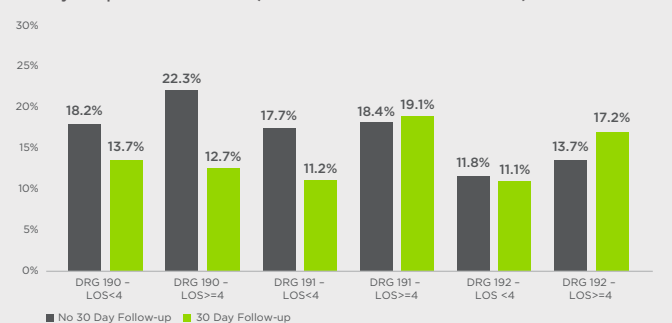
A Cochran-Mantel-Haenszel test of differences between patients with and without a nebulizer RX after controlling for the Initial DRG and LOS is statistically significant (p=0.0167).

When tested by themselves the differences for DRG 190 - LOS >=4 and DRG 191 - LOS <4 were statistically significant.

90 Day Hospitalization Rates (With and Without Interventions)



90 Day Hospitalization Rates (With and Without Interventions)



### CONCLUSIONS

- The move towards alternative payment models and value-based care has increased the importance of developing evidence to show innovations can help improve metrics tracked under these models.
- As most of these metrics are not tracked as part of clinical trials, evaluations must often be conducted post-launch using Real World Data.
- Naïve analyses comparing patients with and without exposure to specific interventions without controlling for important covariate may be deceptive.
- The Cochran-Mantel-Haenszel test is useful when comparing groups with and without exposure to interventions while controlling for covariates.
- Our analysis of the COPD market suggests that Nebulizer RX following COPD hospitalizations reduced hospitalization rates while follow-up office visits do not show a significant benefit.