Compliance with Appropriate Treatment on Discharge in Patients with COPD Exacerbation: A Retrospective Quality Improvement Project

A. Karki1, C. A. Thurm2, J. Morante3, A. Karki4, N. Sawaged5, A. Khan5; 1
1Department of Pulmonary and Critical Care Medicine, University of Florida, Gainesville, FL, United States, 2C/O TJH Med. Services, Jamaica Hospital, Jamaica, NY, United States, 3Pulmonary Medicine, Jamaica Hospital Medical Center, Jamaica, NY, United States, 4Kist Medical College and Teaching hospital, Kathmandu, Nepal, 5Department of Medicine, Jamaica Hospital Medical Center, Jamaica, NY, United States.

Introduction

Currently, over 11 million people in the US carry a COPD diagnosis and the disease is responsible for more than 6% of deaths annually. It has an immense economic burden. In 2010, the projected annual cost of COPD in the United States, as determined by the National Heart, Lung, and Blood Institute was $49.9 billion. COPD exacerbation is the major reason for hospital admission in this subset of patients . Inadequate maintenance therapy likely plays a role in exacerbations and need for hospitalization.

While latest practice guidelines outline the importance of long-acting bronchodilators in patient management, a retrospective study of Medicare patients demonstrated that a significant proportion were not on appropriate therapy. Similarly, another study showed only a quarter of patients admitted with a moderate COPD exacerbation were treated with maintenance therapy on discharge.

As a single center, quality improvement project, we implemented a best practice alert (BPA) within the Electronic Medical Records (EMR) system for patients being admitted with COPD exacerbation. We carried out a retrospective chart review of patients admitted before and after the BPA had been put in place to document its effect.

Figure 1

COPD Exacerbation Discharge Medication Guidelines

1. Complete course of systemic corticosteroids. (Duration of therapy should generally not be more than 5-7 days.)
2. Complete course of antibiotics, if indicated. (Duration of therapy should generally not be more than 5-7 days.)
3. Maintenance Bronchodilators [Avoid inhaled corticosteroid (ICS) monotherapy]:

   Long-Acting Anti-Muscarinic Agonist (LAMA) *or*
   Long-Acting Beta-Agonist (LABA) plus LAMA *or*
   LABA plus ICS *or*
   LABA plus LAMA plus ICS
4. In addition to above: Short-Acting PRN ONLY Bronchodilator. (Avoid Short-Acting PRN ONLY Bronchodilator monotherapy):

   Beta agonists: Albuterol, Levalbuterol ± Anticholinergic: Ipratropium
5. Patient capable of using devices for delivery of inhaled medication? For assistance, Respiratory Therapy x7126
6. Patient unable to use standard devices? Consider Nebulizer
7. Chronic bronchitis and Severe COPD (FEV1 <50% of predicted)? Consider addition of Roflumilast (Should not use with emphysema alone i.e., without chronic bronchitis).
8. Insurance covers prescribed medications?
9. Within 48 hours prior to discharge check O_2 Saturation at rest and with ambulation. Order supplemental oxygen if indicated.
10. Follow-up in less than 4 weeks (earlier is preferable).

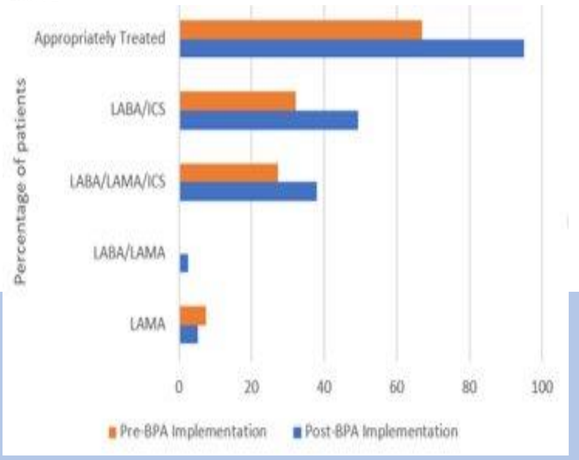
Methods and Materials

- **Study Design:** Retrospective Chart Review
- **Study Location:** : Jamaica Hospital Medical Center (A not-for-profit, community, teaching hospital in Queens, NY)
- **Study Method:** A retrospective chart review was conducted from Jan 1, 2016 to December 30, 2016 of patients with an admitting diagnosis of COPD exacerbation. Charts were reviewed for the accuracy of diagnosis and discharge medications. Patients initially admitted with a diagnosis of COPD exacerbation but subsequently found to have an alternative diagnosis were excluded.

After initial chart review, a BPA was introduced into the EMR to help guide physicians in their choice of discharge medications. (Figure 1)

A subsequent retrospective chart review was then conducted for the period of August 1, 2016 to February 17, 2017 to gauge the effectiveness of the newly placed BPA in altering physician prescription practice .

Chart 1



Results

There were 229 patients in the group prior to the new alert being implemented and 77 afterwards. The first group was discharged on appropriate therapy 67% of the time versus 95% in the post-alert subset. (Table 1 and Chart 1).

No patients received ICS monotherapy and only 2.6% received SABA alone. In the post-BPA patient set.

TABLE 1:	Pre-BPA Implementation	Post-BPA Implementation
Number of Patients	**229**	**77**
Male	114(49%)	37(48%)
Female	115(51%)	40(52%)
Appropriately Treated	**152(67%)**	**74(95%)**
LABA/ICS	73(32.2%)	38(49.4%)
LABA/LAMA/ICS	62(27.3%)	29(37.9%)
LABA/LAMA	0(0%)	2(2.6%)
LAMA	17(7.5%)	4(5.2%)
Not Appropriately Treated	**77(33%)**	**4(5%)**
ICS	2(0.9%)	0(0%)
LABA	0(0%)	1(1.3%)
SAMA	8(3.5%)	0(0%)
SABA	28(12.3%)	2(2.6%)
None	42(18.5%)	1(1.3%)

Conclusions

Our initial chart review of patients discharged with a diagnosis of COPD exacerbation demonstrated that the number of patients sent home with a long acting bronchodilator +/- an inhaled corticosteroid was greater than that seen in previously published data. However, this was still suboptimal. A BPA incorporated into the hospital EMR led to a significant improvement in compliance with published guidelines.

Our institution will retain the alert to assist providers in rational prescribing and clinical decision support. The utilization of best practice alerts or similar order sets is recommended to other facilities as a supplemental strategy for optimizing patient management.

References

1.Lozano R, Naghavi M, Foreman K, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 2012; **380**(9859): 2095-128.

2.Trends in COPD (chronic bronchitis and emphysema): morbidity and mortality. American Lung Association website. http://www.lung.org/finding-cures/our-research/trend-reports/copd-trend-report.pdf.

3.Mittmann, N., et al. "The cost of moderate and severe COPD exacerbations to the Canadian healthcare system." Respiratory medicine 102.3 (2008): 413-421.

4.Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease

5.Rutschmann, Olivier T., et al. "Knowledge of guidelines for the management of COPD: a survey of primary care physicians." Respiratory medicine 98.10 (2004): 932-937.

6.Make, Barry, et al. "Undertreatment of COPD: a retrospective analysis of US managed care and Medicare patients." Int J Chron Obstruct Pulmon Dis 7 (2012): 1-9

© Poster Template by Genigraphics® 1.800.790.4001 www.genigraphics.com