Impact of a COPD Care Bundle on Hospital Readmission Rates

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Background

- Chronic obstructive pulmonary disease (COPD) will become the third leading cause of death worldwide in 2020[1]
- Currently COPD is the third leading cause of hospital readmissions in the United States[2]
- Substantial variability in the quality of care provided to COPD patients has been identified across the continuum of care[2]
- In October 2014, the Centers for Medicare and Medicaid Services (CMS) introduced penalties for hospitals with excess 30-day readmission rates after hospitalizations for an acute exacerbation of COPD (AECOPD)
- Our objective was to implement an evidence based interdisciplinary COPD care bundle to reduce 30-day readmission rates as well as improve patient outcomes in hospitalized patients with AECOPD
  - These strategies focused on chronic disease state management, optimization of pharmacotherapy, outpatient follow up, and assisting with access to medications

Methods

- A quality improvement initiative of the implementation of an interdisciplinary COPD care bundle at Overlook Medical Center (OMC)
  - Pre-intervention period: January – December 2017
  - Intervention period: January – December 2018
- COPD Care Bundle Components:
  - Interdisciplinary Team: Pulmonary Nurse Practitioner, Transitions of Care Clinical Pharmacists, Respiratory Therapists, Nurses, Case Managers, & Social Workers
  - Pulmonary Nurse Practitioner Consult
    - ➢ Anxiety and Depression Screening
    - ➢ Ensured appropriate medications: intravenous corticosteroids, nebulized bronchodilators, inhaled corticosteroid, stress ulcer and venous thromboembolism prophylaxis
    - ➢ Ensured orders for durable medical equipment
  - Transitions of Care (TOC) Clinical Pharmacist Interventions:
    - ➢ Disease State Management: COPD disease education including patient self-management with COPD action plan, medication education, identification of nonadherence, assessment and optimization of inhaler technique including utilization of the In-Check Dial for applicable patients, smoking cessation counseling as well as optimization of pharmacotherapy
    - ➢ Assistance with Access to Medications
    - ➢ Medication Reconciliation
  - Respiratory Therapy (RT)
    - ➢ Certified Tobacco Treatment Specialist (CTTS) Consult
  - Outpatient Initiatives
    - ➢ 7 day or less pulmonary follow up appointment, home RT consult COPD disease state management
- Inclusion Criteria: inpatient admission to OMC with a principal diagnosis of AECOPD, age greater than 18 years of age
- Exclusion Criteria: left against medical advice, expired during admission, refusal of COPD Care Bundle, and inability to participate in education
- Primary Endpoints: 30-day hospital readmissions
- Secondary Endpoints: 60 and 90-day hospital readmissions, escalation in pharmacotherapy for COPD, pharmacy interventions, hospital length of stay

Results

Table 1: Baseline Characteristics

	Control (n=189)	COPD Care Bundle (n=127)	P values
Admission Source			
Clinic Referral	11 (5.8)	16 (12.6)	0.046
Home	168 (88.9)	96 (75.6)	0.003
Skilled nursing facility	10 (5.3)	7 (5.5)	0.932
Transferred from another facility	0 (0)	8 (6.3)	0.001
Age, Mean (SD)	74.7 (11.1)	71.9 (10.9)	0.027
Sex, Female	105 (55.6)	79 (62.2)	0.24
Race			
White	134 (70.9)	94 (74.0)	0.524
Black	21 (11.1)	24 (18.9)	
Asian	2 (1.1)	1 (0.8)	
Declined/other	21 (11.1)	8 (6.3)	
Primary Payer			
Traditional Medicare	120 (63.5)	63 (49.6)	0.014
Managed Medicare	34 (18.0)	31 (24.4)	0.174
Medicaid	10 (5.3)	19 (15.0)	0.007
Commercial	22 (11.6)	13 (10.2)	0.693
Charity Care	3 (1.6)	0 (0)	0.277
Self-pay	0 (0)	1 (0.8)	0.402
Discharge Status			
Home	147 (77.8)	107(84.3)	0.132
Long term care	39 (20.6)	16 (12.6)	
Hospice	3 (1.6)	4 (3.1)	
Smoker at admission	47 (24.9)	38 (29.9)	0.325
Hospitalized in the past year	80 (42.3)	58 (45.7)	0.557
Pulmonology Consult (yes)	129 (68.3)	100 (78.7)	0.041
Advanced Directive (yes)	101 (53.4)	34 (26.8)	<0.001
Palliative Consult (yes)	10 (5.3)	6 (4.7)	0.82
PT consult (yes)	68 (36)	88 (69.3)	<0.001

All values are n (%) unless specified

Table 2: Secondary Outcomes

	Control (n=189)	COPD Care Bundle (n=127)	P values
Length of stay, median (min-max)	4 (1-21)	4 (1-29)	0.1698
Escalation of COPD maintenance therapy			
Yes	42 (22.2)	57 (44.9)	<0.001
No	113 (59.8)	25 (19.7)	<0.001
Not needed	34 (18)	45 (35.4)	0.001

All values are n (%) unless specified

Figure 1. Primary and Secondary Outcomes: Readmission Rates (%)

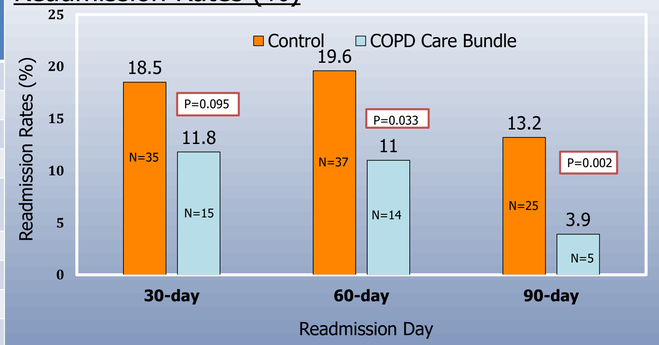
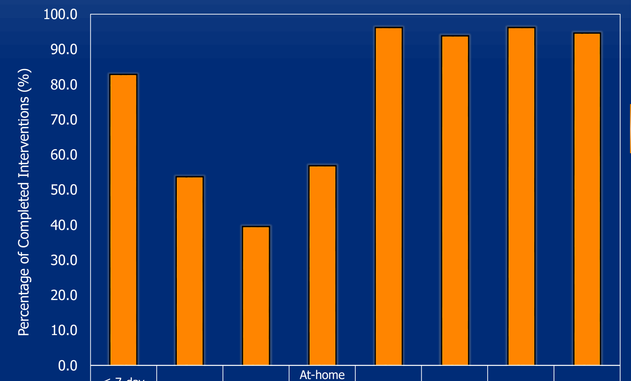


Table 3: Secondary Outcomes: Pharmacist Interventions

TOC Clinical Pharmacist Interventions N=87	Number of Patients	Time Spent, average minutes, (Min-Max)
TOC Clinical Pharmacist Consult	87 (68.5)	67.1 (10-220)
Disease State Management	85 (66.9)	31.5 (10-90)
Assistance with Access to Medications	58 (45.7)	31.8 (10-90)
Medication Reconciliation	65 (51.2)	32.9 (10-115)

All values are n (%) unless specified

Figure 2: Other COPD Care Bundle Interventions



	≤ 7-day Plumonary Follow Up Appointment at Discharge	Dietary Consult	Smoking Cessation Consult	At-home COPD Disease State Management Consult	Depression Screening	Anxiety Screening	GERD Screening	Sleep Apnea Screening
Percentage of Patients	82.7	53.5	39.4	56.7	96.1	93.7	96.1	94.5
Number of Patients	105	68	50	72	122	119	122	120

Discussion

- Baseline characteristics:
  - More patients in COPD care bundle were referred from a clinic and transferred from another site, suggesting higher acuity of illness
  - Slightly older patients in control group, however not clinically significant
  - More patients in COPD care bundle were Medicaid beneficiaries: a socioeconomic disparity that may affect readmission rates (15% vs 5.3% , p=0.007)
  - Increased pulmonology and physical therapy consults during admission in COPD care bundle arm, improved care transitions
  - Significant reduction in advanced directives in COPD care bundle arm attributed to documentation changes
    - Control arm included patients with a documented living will or POLST and the COPD Care Bundle arm included patients with a POLST alone
- 30-day hospital readmissions reduced by 6.7% (p=0.095)
  - Not statistically significant, however a notablemeaningful difference
  - A larger number of patients should be included to determine statistical significance
  - Readmission rates below expected CMS readmission rate of 18.5%
- 60 and 90 day readmission rates reduced by 8.6 and 10.7%, respectively (p<0.05)
  - Delineates the sustainability of the COPD care bundle
- Increased escalation of COPD maintenance therapy by 27.7% and reduction in no escalation of therapy by 39.3% (p<0.001)
  - TOC clinical pharmacists consulted 68.5% of patients with an average time spent of 67.1 minutes/patient and identified an average of 2.8 (1-9) significant errors
  - TOC clinical pharmacist involvement allowed for pharmacotherapy optimization, a potential factor implicated with readmission rates
- Majority of COPD Care bundle patients received 7-day or less pulmonary follow up appointment and screening for depression, anxiety, GERD, and sleep apnea
- Increased referral to at-home COPD disease state management and smoking cessation can help to reduce potential readmissions
- Limitations:
  - Retrospective chart review
  - Data obtained based on ICD-10 coding for only AECOPD principle diagnosis; does not depict all patients who have received COPD Care bundle
  - Readmissions unknown from outside facilities

Conclusion

- Our results demonstrate that an evidence based interdisciplinary care bundle: Shaped and improved patient care, reduced readmissions, and optimized pharmacotherapy through TOC clinical pharmacist consultation
- Future directions: Expansion of cohort to include secondary diagnosis of AECOPD and CMS criteria for Hospital Readmissions Reduction Program

Disclosures/Acknowledgements

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References

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