Impact of a multi-disciplinary care team on 30-day readmission and mortality in COPD patients

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Background

- Chronic obstructive pulmonary disease (COPD) is one of the leading causes of hospital admission and death in the United States
- 44% rehospitalization and 55% mortality rate at 5 years after hospital discharge for COPD exacerbations[1]
- The 2020 national average 30-day COPD readmission and mortality were 22.7% and 10.7%, respectively[2]
- Implementation of collaborative multi-disciplinary care teams (MDCT) that provide COPD education, including pharmacists who address medication adherence barriers, reduces hospital readmissions, mortalities, and associated costs[3]

Objectives

Purpose
- To evaluate the impact of MDCT on 30-day readmission and mortality in COPD patients at Northern Light Eastern Maine Medical Center

Primary Outcome
- Composite endpoint of both 30-day post-discharge all cause readmission and mortality rate

Secondary Outcome
- Composite endpoint of both 30-day post-discharge COPD readmission and mortality rate

Subgroup Analysis
- COPD exacerbation admissions
- Non-COPD exacerbation admissions

Methods

Study Design
- Retrospective observational cohort trial

Target Population
- Hospitalized patients with COPD

Inclusion Criteria
- 18 years or older
- Admitted during the study periods
- Diagnosed with ICD-10 code J44.9 for COPD with acute exacerbation
- Diagnosed with ICD-10 code J44.1 for COPD without acute exacerbation

Exclusion Criteria
- Hospitalized for less than 24 hours
- Pregnant
- Pneumonia
- Active COVID-19 infection

Study Period
- Control group is set from September 2019 to January 2020
- Intervention group is set from September 2021 to January 2022

Target Exposure
- Receive COPD education and transition of care arrangements at discharge

Exposure Definition
- Provided with COPD patient education materials
- Educated by nursing on green/yellow/red action plan daily
- Educated by pharmacist on inhaler use at discharge
- Verify by care management for follow up appointment
- Provided with medication cost assistance resources
- Referred to pulmonology rehabilitation
- Referred to ambulatory care pharmacist for smoking cessation

Study Approval
- Institutional Review Board (IRB) under exempt status
- IRB study number 2021-026

Results

	Intervention group n =111	Control group n = 217	P value	OR (95% CI)
30-day all cause readmission and mortality [n (%)]	8 (7.21)	64 (29.46)	<0.001	0.18 (0.08 – 0.4)
30-day COPD related readmission and mortality [n (%)]	0 (0)	16 (7.37)	0.002	

COPD exacerbation admission subgroup	Intervention group n =12	Control group n = 37	P value
30-day all cause readmission and mortality [n]	1	10	0.25
30-day COPD related readmission and mortality [n]	0	6	0.31

Non-COPD exacerbation admission subgroup	Intervention group n =99	Control group n = 180	P value
30-day all cause readmission and mortality [n]	7	54	<0.001
30-day COPD related readmission and mortality [n]	0	10	0.016

Baseline characteristics	Intervention group n =111	Control group n = 217	P value
Median age [years (IQR)]	68 (14.50)	70 (15.00)	
Median # of med classes [n (IQR)]	2 (2)	2 (3)	
Median # of inhalers [n (IQR)]	2 (2)	2 (2)	
Home O2 Need [n (%)]	24 (21.62)	40 (18.43)	0.56
Asthma [n (%)]	21 (18.92)	36 (16.59)	0.64
CHF [n (%)]	22 (19.82)	41 (18.89)	0.88
Lung Disease [n (%)]	29 (26.13)	58 (26.73)	1.00

Admission History	Intervention group n =111	Control group n = 217	P value
Median length of stay [days (IQR)]	5 (6)	4 (4)	
Previous COPD hospitalization [n (%)]	34 (30.63)	70 (32.26)	0.80
Hospitalization in the past year [n (%)]	64 (57.66)	124 (57.14)	1.00

Smoking History	Intervention group n =111	Control group n = 217	P value
Past Smoker [n (%)]	76 (68.47)	190 (87.55)	<0.001
Current Smoker [n (%)]	42 (37.83)	77 (35.48)	0.72
Median pack year [(IQR)]	40 (6)	38 (10)	

Discussion

Conclusion
- Significant reduction in 30-day all cause readmission and mortality
- Significant reduction in 30-day COPD readmission and mortality
- Support the practice of collaborative multidisciplinary care team

Limitations
- Past medication history data incomplete and/or inconsistent
- Target exposure differs depending on the time of discharge

References

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