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Evaluation of Pharmacist-Led Transitions of Care (TOC) Discharge Pilot Program for Reducing 30-day Readmission Rates in Patients with Chronic Obstructive Pulmonary Disease (COPD)

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OBJECTIVES

- Implement a workflow to provide PTC services for patients with COPD
- Compare rates of readmission and Emergency Department (ED) visits between patients who receive PTC services and patients who do not receive PTC services

Primary Endpoint

- Rates of 30-day readmission and 30-day ED visits for admitted patients with COPD

Secondary Endpoints

- Number and nature of pharmacy interventions
- Compliance with guideline-directed medical therapy (GDMT)

BACKGROUND

- COPD is the fourth leading cause of both death and hospital readmissions in the U.S.¹
- Hospitalization for COPD exacerbation is associated with an increased risk of 1-year mortality.²
- 86% of COPD mortality occurs among patients aged 65 years or older with the highest incidence among those older than 85 years old.³⁻⁴
- COPD incurs a total economic cost of approximately \$50 billion annually.⁵
- Comprehensive and collaborative pharmacist-led transitions of care (PTC) services, which involves admission medication history, discharge medication reconciliation, and discharge medication counseling, have demonstrated a significant impact on 30-day readmissions at several health-systems.^{1,2,7}
- Providence Portland Medical Center (PPMC) has identified an opportunity to improve PTC services for COPD patients in the hopes to decrease readmission rates.

Readmission Rates	11/29/18-2/28/19	11/29/19-2/28/20	11/29/20-2/28/21
COPD	10.81%	15.52%	18.92%

METHODS

Study Design

- Single-center, tertiary care (500-bed) medical center
- Retrospective chart review to collect baseline data on control group
- Prospective chart review to collect data on intervention group

Data Collection

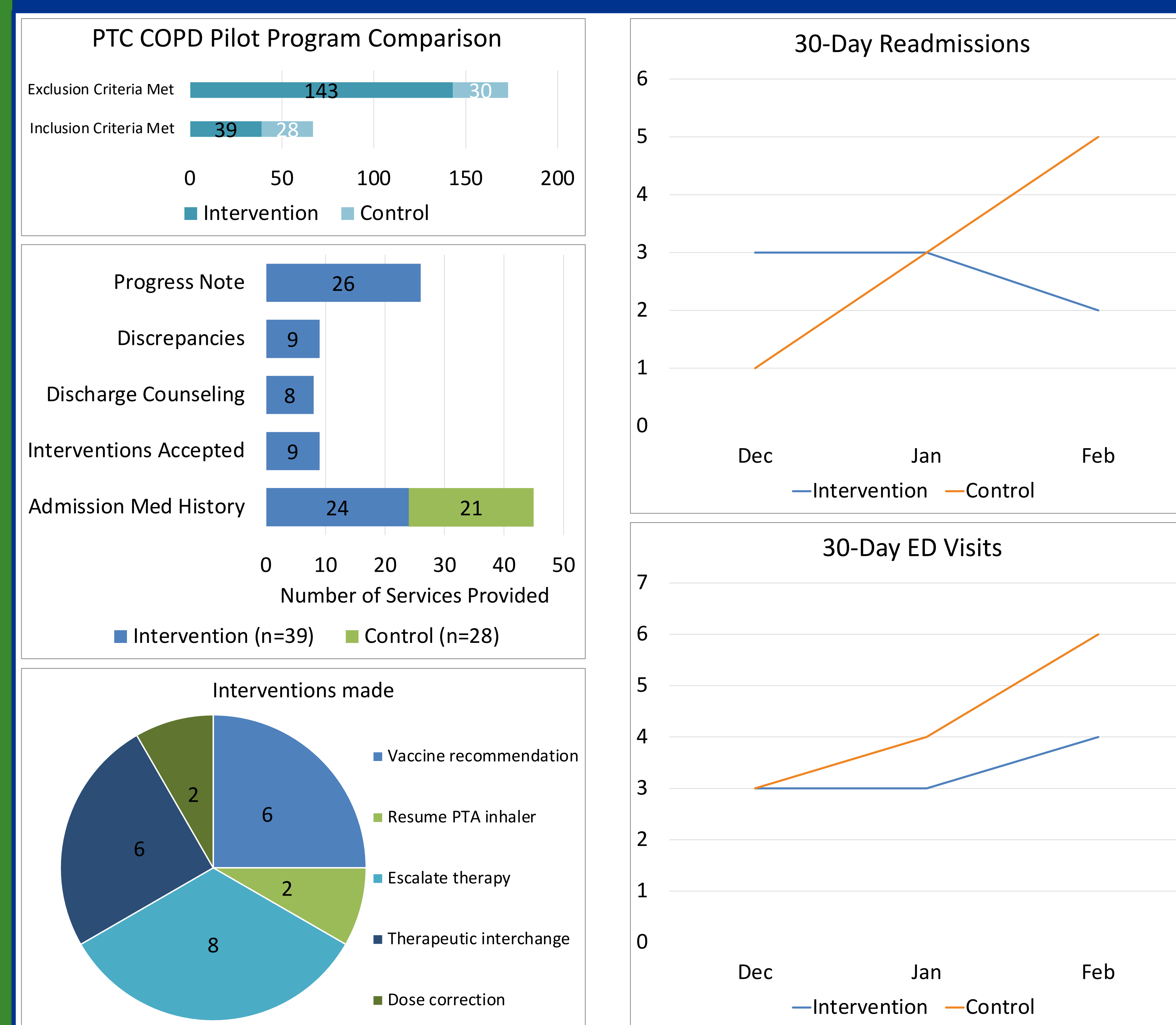
- Control group: 11/29/2020-2/28/2021
- Intervention group: 11/29/2021-2/28/2022
- Statistical analysis: Chi-square test

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> ≥ 18 years of age Primary or secondary COPD diagnosis 	<ul style="list-style-type: none"> Live outside of the Oregon and SW Washington region Cognitive impairment, dementia, or disabling psychiatric disease Patients transitioned to hospice or comfort care measures

Baseline Characteristics

	BASELINE CHARACTERISTICS		COPD-RELATED CHARACTERISTICS	
	Intervention (n=39) (%)	Control (n=28) (%)	Intervention (n=39) (%)	Control (n=28) (%)
Female, n	21 (53.8)	14 (50.0)		
Male, n	18 (46.2)	14 (50.0)		
Age (years + SD)	66 ± 9.8	64.7 ± 10.4		
Ethnicity				
Caucasian	35 (89.7)	20 (71.4)		
Black	1 (2.6)	7 (25.0)		
Asian	1 (2.6)	0 (0.0)		
Refused	1 (2.6)	0 (0.0)		
Other	1 (2.6)	1 (3.6)		
Comorbid conditions				
Asthma	3 (7.7)	7 (25.0)		
Diabetes Mellitus	9 (23.1)	7 (25)		
Heart Failure	17 (43.6)	17 (60.7)		
Hypertension	18 (46.2)	18 (64.3)		
Coronary Artery Disease	8 (20.5)	4 (14.3)		
Substance Abuse	11 (28.2)	10 (35.7)		
Vaccination Status				
Tdap	26 (66.7)	23 (82.9)		
Pneumococcal	21 (53.8)	16 (57.1)		
Influenza	18 (46.2)	23 (82.9)		
COVID-19	33 (84.6)	29 (103.6)		
Smoking Status				
Current Smoker	23 (59.0)	24 (85.7)		
Former Smoker	16 (41.0)	10 (35.7)		
Non-smoker	0 (0.0)	1 (3.6)		
GDMT, PTA				
Yes	21 (53.8)	21 (75.0)		
No	18 (46.2)	7 (25.0)		
New Diagnosis	0 (0.0)	2 (7.1)		
GDMT, Discharge				
Yes	30 (76.9)	20 (71.4)		
No	9 (23.1)	14 (50.0)		
History of ED Visits, Last 12 Months				
0	22 (56.4)	17 (60.7)		
1 to 2	13 (33.3)	9 (32.1)		
3 to 4	2 (5.1)	2 (7.1)		
> 4	2 (5.1)	6 (21.4)		
History of Hospitalization, Last 12 Months				
0	16 (41.0)	10 (35.7)		
1 to 2	17 (43.6)	12 (42.9)		
3 to 4	3 (7.7)	6 (21.4)		
> 4	3 (7.7)	7 (25.0)		
O2, Home Use				
Yes	13 (33.3)	15 (53.6)		
No	26 (66.7)	20 (71.4)		
FEV1				
Mild (> 80%)	1 (2.6)	1 (3.6)		
Moderate (50-79%)	12 (30.8)	5 (17.9)		
Severe (30-49%)	11 (28.2)	12 (42.9)		
Very Severe (< 30%)	3 (7.7)	4 (14.3)		
N/A	12 (30.8)	13 (46.4)		
FEV1/FVC				
> 0.7	9 (23.1)	2 (7.1)		
< 0.7	11 (28.2)	13 (46.4)		
N/A	19 (48.7)	20 (71.4)		
Discharge Disposition				
Home	33 (84.6)	26 (92.9)		
SNF	4 (10.3)	1 (3.6)		
ALF	1 (2.6)	1 (3.6)		
Other	1 (2.6)	5 (17.9)		

Outcomes



DISCUSSION

Baseline Population

- Mean age ~65 ± 10 years with a slightly greater proportion of females; predominantly Caucasian descent
- Comparable comorbidities, vaccination status, and smoking status in both groups

Study Endpoints

- Admission medication history reviewed by pharmacy in both groups: ~61.5%
- Note: all other PTC services applied to the intervention group only
 - Pharmacy residents made a total of 24 interventions
 - 9 interventions (36.8%) made were accepted by the provider
 - Discharge education was documented in 8 patients (20.5%)
 - Discrepancies upon discharge were retrospectively noted in 9 patient discharges (23.1%)
 - Discharge progress notes were signed and routed to the primary care provider (PCP) in 26 discharges (66.7%)
- No difference was noted in the primary outcome per chi-square test
 - 30-day readmissions (8 vs. 9; $p=0.2806$)
 - 30-day ED visits (10 vs. 13; $p=0.0771$)

Pilot Limitations

- Limited number of patients with COPD admitted for COPD exacerbation
- Discharge notification was insufficient for pharmacy to perform all PTC services prior to discharge
- Documentation highly variable with rotating pharmacy residents during the PTC shift
- Evening PTC shift does not overlap with that of the discharging team during the day

CONCLUSION

- Implementing a proactive workflow upon discharge was recognized as an area where pharmacists may optimize transitions of care
- A difference was not noted from implementation of this pilot PTC program
- PTC services from other studies were noted to have the potential to impact medication discrepancies upon discharge and reduce rates of readmission at 30 days

Future Directions

- Revisit caregiver education piece of PTC practice
- Facilitate understanding of PTC and relation to pharmacy services and its implications

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