

**Evaluation of a Pharmacist-provided COPD Self-management Intervention Program on Hospital Readmission Rates after Acute Exacerbation of COPD**

Clayton J. Hamilton, PharmD  
PGY1 Pharmacy Resident, VA Montana Health Care System, Fort Harrison

Spring 2018

MONTANA VA Health Care System

Veterans Health Administration

## Disclosure Statement

I have no real or apparent conflicts of interest, including relationships with pharmaceutical companies, biomedical device manufacturers, or other organizations who' products or services are related to this presentation.

VETERANS HEALTH ADMINISTRATION

1

## Objective

At the conclusion of this educational activity participants should be able to:

- Describe four key components of a COPD self-management education session.

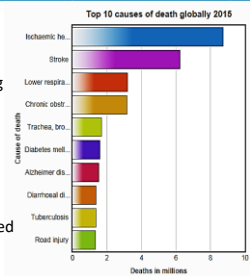
VETERANS HEALTH ADMINISTRATION

2

## Background

### Chronic Obstructive Pulmonary Disease (COPD)

- In 2015, COPD was the fourth leading cause of death worldwide.
- Veterans are 1.5 times more likely than non-veteran civilians to carry a diagnosis of COPD.
- Approximately 1 in 5 patients admitted with COPD exacerbation are readmitted within 30 days.



VETERANS HEALTH ADMINISTRATION

The top 10 causes of death. World Health Organization. *Rehospitalizations among Patients in the Medicare Fee-for-Service Program*. Finkelstein J, Cho E. *Association of Veteran status with COPD prevalence stratified by gender*. *Am J Respir Crit Care Med*. 2013;187:2.

3

## Background

- What is a self-management intervention (SMI)?
- SMIs for COPD have previously shown positive patient benefits.
- There is currently limited evidence describing outcomes associated with a pharmacist-led COPD SMI.

VETERANS HEALTH ADMINISTRATION

Jankman NH, Westland H, et al. *Do self-management interventions in COPD patients work and which patients benefit most? An individual patient data meta-analysis.* *Int J Chron Obstruct Pulmon Dis*. 2016;11:2063-2074

4

## Purpose

Develop and implement a pharmacist-led COPD SMI with appropriate follow-up for patients who were admitted for COPD exacerbation

VETERANS HEALTH ADMINISTRATION

5

## Objectives

**Primary outcomes:**

- Total number of readmissions within 30 days after the index hospitalization.

**Secondary outcomes:**

- The length of time between the index admission and first readmission
- All-cause mortality.

VETERANS HEALTH ADMINISTRATION 6

## Inclusion/Exclusion Criteria

Patients identified upon admission for COPD exacerbation.

**Inclusion Criteria:**

- Veterans admitted for acute exacerbation of COPD
- Veterans willing to participate in a COPD SMI.

**Exclusion Criteria:**

- Veterans with COPD admitted for pneumonia or virus-related exacerbation

VETERANS HEALTH ADMINISTRATION 7

## Design & Methods - Protocol

```

    graph TD
      A[Veteran identified as COPD SMI candidate upon admission for exacerbation] --> B[A pharmacist, resident, or student provides SMI to Veteran prior to discharge]
      B --> C[Veteran receives follow-up call 7 days after hospital discharge]
      C --> D[Veteran receives follow-up call 30 days after hospital discharge]
    
```

VETERANS HEALTH ADMINISTRATION 8

## Design & Methods - SMI

**Prior to the SMI:**

- Does the patient have an active order for a maintenance and emergency inhaler?
- What is the resistance to inhalation of the inhalers the Veteran is currently using?
- Request that the patient fill out a COPD assessment test (CAT).

VETERANS HEALTH ADMINISTRATION 9

## Design & Methods - SMI

**Key components for a COPD SMI:**

- Address patient barriers to recovery
- Provide a COPD action plan
- Assess inhaler technique
- Discuss smoking cessation/vaccinations as needed

VETERANS HEALTH ADMINISTRATION 10

## Design & Methods - SMI

**Managing your COPD**

- When you start feeling short of breath, use your fast-acting or rescue inhaler. It will work quickly to help you breathe easier.
- Your long-acting or maintenance inhaler must be used every day whether you feel short of breath or not. NEVER use your long-acting inhaler as a rescue inhaler.

**SMI session (Opening):**

- Address patient concerns
- Brief disease state overview
- COPD action plan review

GREEN  
ZONE  
Good

- No new symptoms
- Medications are controlling your usual symptoms
- Able to do usual activity

**Your action to take:**  
Your symptoms are controlled. Continue your treatment plan. Keep up the good work!

YELLOW  
ZONE  
Caution

- More short of breath, even after rescue inhaler
- More wheezing/chest tightness
- Worsening cough/more mucus
- Fever/signs of infection
- Using rescue inhaler more often

**Your action to take:**  
Call your primary care provider or pulmonologist to discuss your symptoms.

RED  
ZONE  
Alert

- Chest pain
- Struggling to breathe
- Wheezing / chest tightness at rest
- Trouble thinking

**Your action to take:**  
Call 911 or go to the Emergency Room!

VETERANS HEALTH ADMINISTRATION 11

## Design & Methods - SMI

**SMI session (inhaler technique assessment):**

- Assess patient knowledge of their COPD inhaler regimen
- Utilize placebo inhalers to visually assess technique
- Check actual inhalation force using an In-Check Dial Device
- Ensure patient has an Aerochamber device at home

VETERANS HEALTH ADMINISTRATION 12

## Design & Methods - SMI

**SMI session (Closing):**

- Discuss expectations for steroids and/or antibiotic withdrawal
- Review expectations for recovery from exacerbation
- Ask if patient has received a flu and pneumonia shot
- Is the patient actively smoking?
- Assess patient confidence to manage their COPD at home

VETERANS HEALTH ADMINISTRATION 13

## Baseline Characteristics

Characteristic	Historical Group	Intervention Group
Sample Size (N)	15	15
Age (Mean ± SD)	73.4 ± 6.5	72.5 ± 11.2
Gender (% male (#))	93.3% (14)	100% (15)
Ethnicity (N (%))		
White	15 (100%)	13 (86.7%)
Native American	0 (0%)	2 (13.3%)
Actively smoking on admission (N (%))	4 (26.7%)	7 (46.7%)
Length of Stay (Mean ± SD)	3.3 ± 2.0	2.8 ± 1.5

VETERANS HEALTH ADMINISTRATION 4

## Results: Hospital SMI Visit

Assessed prior to SMI	Outcome
Active maintenance inhaler on chart upon admission	14/15 (93.3%)
Active emergency inhaler on chart upon admission	13/15 (86.7%)
SMI Assessment	Outcome
Number of COPD exacerbations over previous year (Mean ± SD)	1.5 ± 0.6
Previously received pneumonia and latest flu shot	11/15 (73.3%)
Veterans willing to discuss smoking cessation	2/6 (33.3%)

VETERANS HEALTH ADMINISTRATION 15

## Results: Hospital SMI Visit

SMI Inhaler Technique Assessment Data	Outcome
Visually correct inhaler technique on first try	1/15 (6.7%)
Correct inhaler technique with verbal training	13/14 (92.9%)
Initial inhalation force reading on In-Check Dial Device	Too forceful: 6/15 (40%) Good: 8/15 (53.3%) Too weak: 1/15 (6.7%)
Correct In-Check Dial Device technique with practice	13/15 (86.67%)
Patient has an Aerochamber device at home	9/15 (60%)
An Aerochamber was provided if patient did not have one at home	6/6 (100%)

VETERANS HEALTH ADMINISTRATION 6

## Results: 7-day follow-up call

**A total of 13 of 15 Veterans completed the 7-day phone call follow-up**

7-day follow-up call assessment	Outcome
Veteran still has the COPD action plan document	9/13 (69.2%)
Missed an inhaler dose(s) since hospitalization	7/13 (53.8%)
Able to describe proper inhaler technique	5/13 (38.5%)
Able to describe proper inhaler technique after training	8/8 (100%)
Has practiced inhalation with In-Check device since discharge	7/13 (53.8%)
Veteran willing to discuss smoking cessation	1/5 (20%)

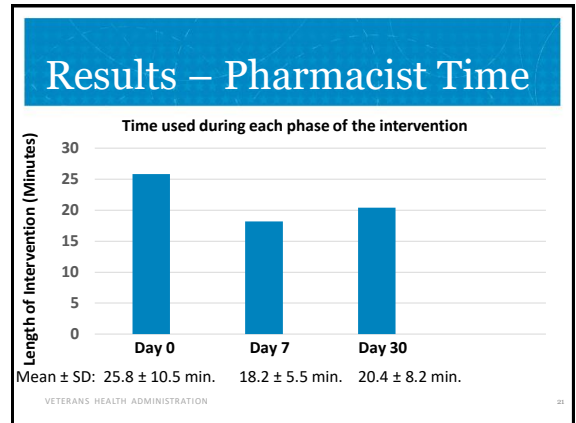
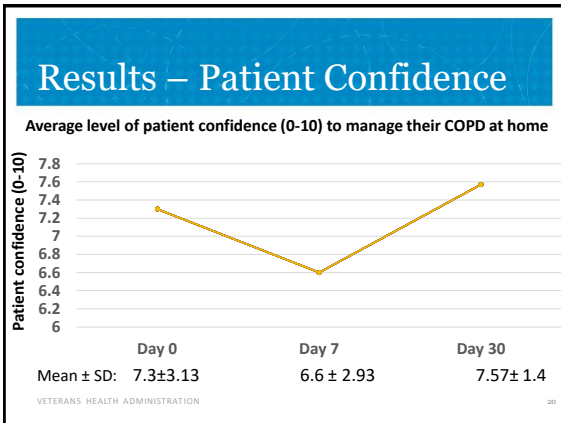
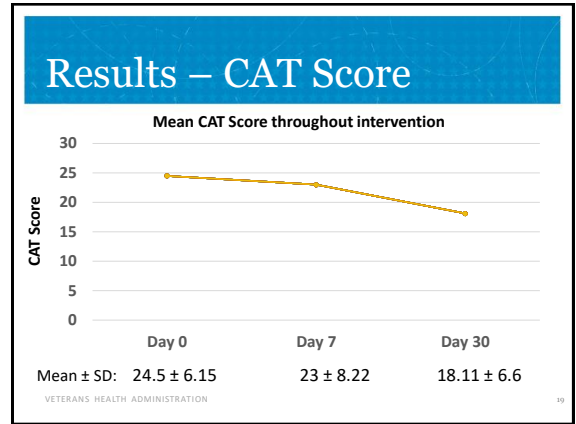
VETERANS HEALTH ADMINISTRATION 17

## Results: 30-day follow-up call

**A total of 9 of 15 Veterans completed the 30-day phone call follow-up**

30-day follow-up call assessment	Outcome
Veteran still has the COPD action plan document	8/9 (88.8%)
Missed an inhaler dose(s) since previous call	3/9 (33.3%)
Able to describe proper inhaler technique	8/9 (88.8%)
Able to describe proper inhaler technique after training	1/1 (100%)
Has practiced inhalation with In-Check device since discharge	5/9 (55.6%)
Veteran willing to discuss smoking cessation	1/3 (33.3%)

VETERANS HEALTH ADMINISTRATION 18



## Results – Primary/Secondary Outcomes

Primary Outcome	Historical Group	Intervention Group	Result
Number of readmissions in 30 days (# of readmission (%))	3/15 (20%)	3/15 (20%)	P=1.0
Secondary Outcomes	Historical Group	Intervention Group	Result
Days from index admission to readmission (Mean ± SD)	3 ± 1.6	18.3 ± 9.6	x
All cause mortality 30-days after discharge (# of deaths (%))	1/15 (6.7%)	0/15 (0%)	P=1.0

VETERANS HEALTH ADMINISTRATION 22

## Conclusions

- No difference was found between 30-day readmission rates for the historical and intervention groups
- The intervention group had a longer time to readmission versus the historical group.
- No difference was found between mortality rates for the historical and intervention groups.

VETERANS HEALTH ADMINISTRATION 23

## Limitations

- Limited duration of follow-up
- Respondent bias may have skewed results
- Small intervention group sample size (n = 15)
- Historical patient charts lacked comparable information (i.e. CAT scores, patient confidence level, etc.)
- Short-term readmission rates may not be an ideal outcome to measure for a SMI.

VETERANS HEALTH ADMINISTRATION

24

## Discussion

- No strong conclusions can be drawn from the primary and secondary outcome results due to limitations.
- A pharmacist-led SMI creates many opportunities to improve patient care.
- Implementing a pharmacist-led SMI in your facility provides many opportunities for learning.

VETERANS HEALTH ADMINISTRATION

23

## Acknowledgements

Airlynn P. Taylor, PharmD

Rory A. Johnson, PharmD, AE-C

Jesse G. Scott, PharmD, BCACP

VETERANS HEALTH ADMINISTRATION

26

## Questions?



VETERANS HEALTH ADMINISTRATION

27