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## Impact of Discrepancies Related to Chronic Obstructive Pulmonary Disease Medications on Hospital Length of Stay

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## Background

- Medication reconciliation (MR) is performed with the patient and/or caregiver and healthcare professional to develop a list of current medications specific to the patient and is used to address therapeutic duplications, omissions, drug interactions, dosing errors, etc.<sup>1,2</sup>
- Chronic Obstructive Pulmonary Disease (COPD) is defined as an acute worsening of respiratory symptoms associated with variable degrees of physiological deterioration which may result in an exacerbation.<sup>3</sup>
- At the Providence Veterans Affairs Medical Center (PVAMC), MR is done on admission to the emergency department (ED) and documented in Computerized Patient Record System (CPRS). Medication reconciliations used for this study were completed by pharmacy personnel on the general medicine floor in addition to those completed in the ED.
- Patients admitted to the hospital for a COPD exacerbation are classified as severe; mild exacerbations are treated out-patient.<sup>3</sup>

**Purpose:** To investigate a relationship between discrepancies with COPD medications and length of stay (LOS) of COPD exacerbations as there is a lack of published data associating number of discrepancies from MR completed by pharmacy personnel with COPD medications and hospital LOS in Veterans ≥ 65 years of age.

## Objectives

- Primary Objective:** To determine whether discrepancies related to COPD medications identified through MR by pharmacy personnel at PVAMC impact length of stay of COPD exacerbations in Veteran patients ≥65.
- Secondary Objectives:** To evaluate the addition of new COPD medications at discharge and COPD-related readmissions within 30 days of discharge of last documented COPD exacerbation.

## Methods

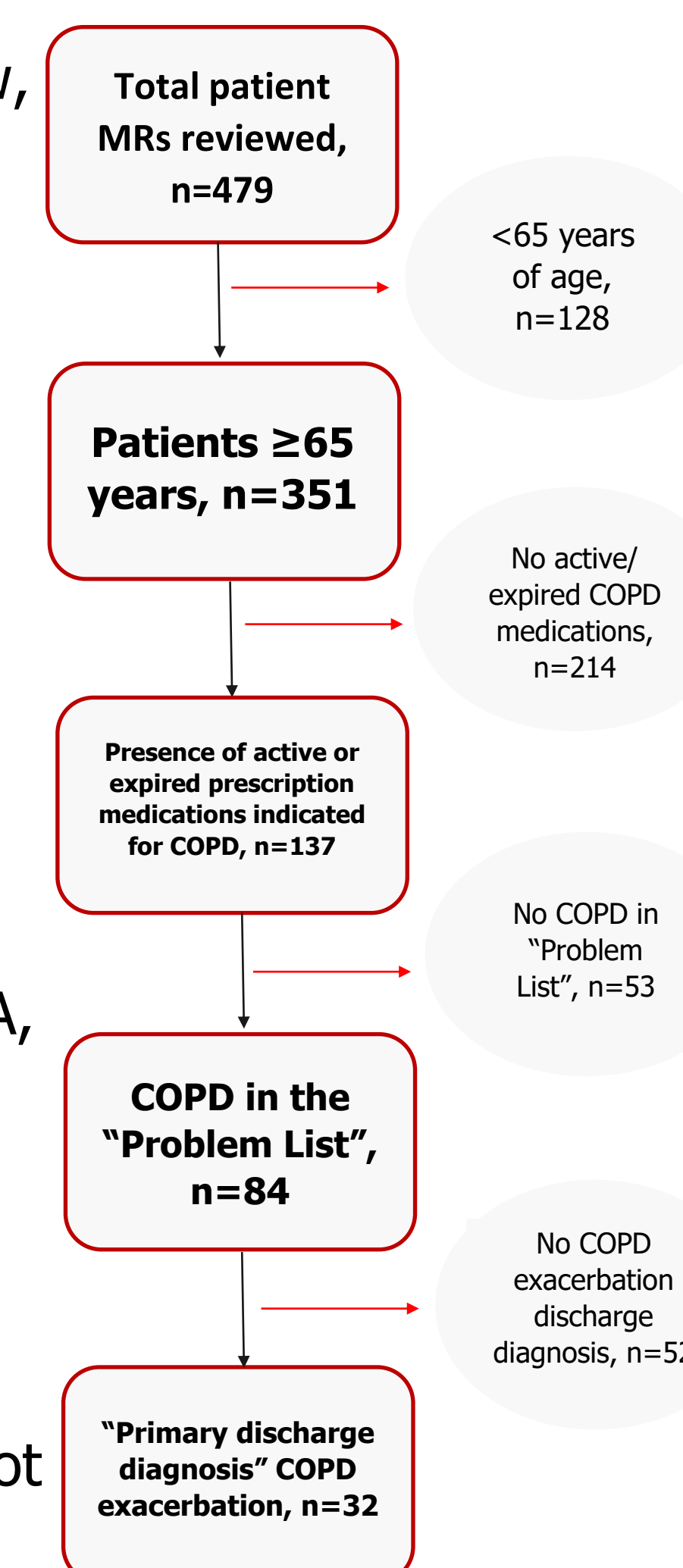
- Study Design:** Retrospective cohort study
- Data Collection:** Discrepancies were screened via CPRS electronic chart review, documented into a standardized data collection form, and compared with the patients' LOS. Discrepancies were defined as differences in patient reported COPD medications compared to documented COPD medications in CPRS.

### Inclusion Criteria:

- Patients admitted to the PVAMC general medicine floor for COPD exacerbation onto a teaching medicine team between February 2018-February 2020
- Patients who were able to participate in and had MR interview performed by pharmacy personnel (*pharmacists, pharmacy residents, and/or University of Rhode Island Advanced Pharmacy Practice Experience students*)
- Veterans ≥65 years of age
- Known history of COPD listed in Problem List in CPRS
- At least one active or expired medication indicated for COPD: SABA, SAMA, LABA, LAMA, ICS, or combination SABA/SAMA, LABA/LAMA, LABA/ICS, or LABA/LAMA/ICS
- Primary discharge diagnosis of 'COPD exacerbation'

**Exclusion Criteria:** patients not evaluated by pharmacy personnel, patients younger than 65 years of age at the time of admission, nursing home patients, patients admitted for condition other than COPD exacerbation, patients who did not have COPD listed in the Problem List.

Figure 1: Study Population



## Results

Table 1: Demographics of Patients without Discrepancies versus With Discrepancies

| Characteristics | Patients without MR discrepancies, n=23 (72%) | Patients with MR discrepancies, n=9 (28%) | P-value (α=0.05) |
|-----------------|---|---|------------------|
| Age, Mean ± SD  | 75.48 ± 8.20                                  | 74.33 ± 9.23                              | <0.001           |
| Sex             |   |   |                  |
| Male, N (%)     | 22 (96)                                       | 9 (100)                                   | 0.719            |

Table 2: Frequency of Documented Discrepancies

| Types of Discrepancies        | n (%)   |
|-------------------------------|---------|
| Inhalers not refilled d/t ADR | 1 (11%) |
| Poor adherence                | 5 (56%) |
| Change in therapy             | 2 (22%) |
| Duplicate therapy             | 1 (11%) |

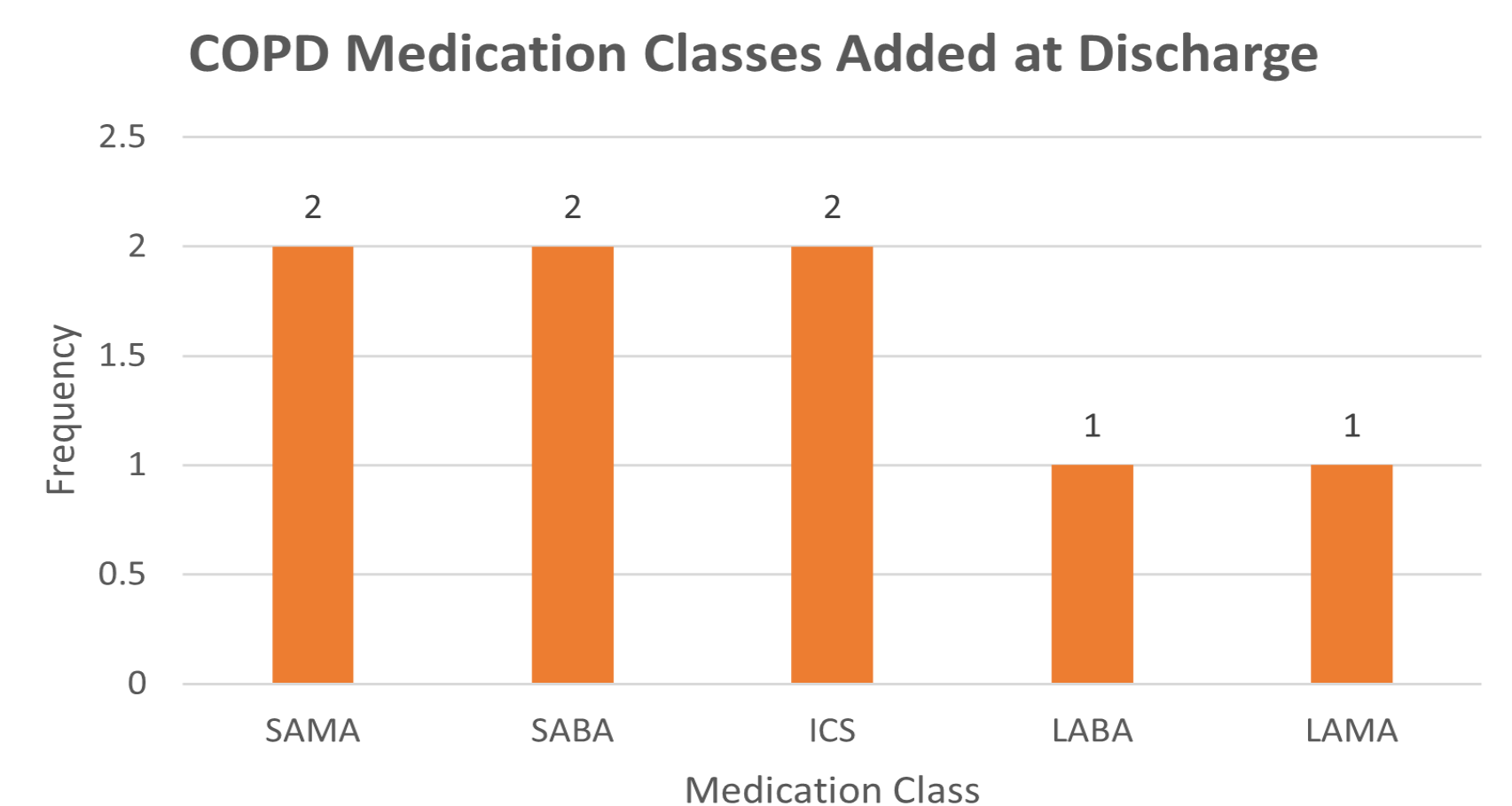
Table 3: Primary Outcome- Mean Length of Stay of Patients without and with Medication Reconciliation Discrepancies

| Outcome                   | Patients without MR discrepancies | Patients with MR discrepancies | Independent Samples t-test, α=0.05 (95% CI) |
|---------------------------|-----------------------------------|--------------------------------|---|
| Length of Stay, Mean ± SD | 11 ± 26.52                        | 4 ± 2.07                       | P= 0.440 (-25.26, 11.26)                    |

Table 4: Frequency of Secondary Outcomes

| Outcome  | Frequency, n (%) |
|--|------------------|
| Addition of COPD medication at discharge           | 6 (18.75%)       |
| Patients readmitted within 30 days of discharge    | 9 (28.13%)       |
| → COPD exacerbation readmission                    | 4 (44%)          |
| →COPD exacerbation readmission with MR discrepancy | 3 (75%)          |

Figure 2: Frequencies of COPD Drug Classes Added at Discharge



## Conclusion

- Discrepancies related to COPD medications identified through MR did not have a significant impact on LOS in patients admitted for COPD exacerbations.
- Opportunity for future research: 75% of all patients included in the study who were readmitted to the hospital within 30 days of discharge had a COPD-related MR discrepancy and were readmitted for a COPD exacerbation. Good adherence to inhaled medications has been shown to decrease severe exacerbations.<sup>4</sup> Future research should investigate ways to improve adherence to reduce COPD exacerbations in this population.

### Study Limitations:

- Sample size of the study population was not large enough to achieve power as defined in the protocol.
- Inclusion criteria did not specify diseases of COPD, including emphysema or chronic bronchitis; patients with these diagnoses were excluded from the study population.
- Many patients were excluded because they did not have a documented diagnosis of COPD in the Problem List but were still receiving treatment for COPD.
- Although not statistically significant, extreme outliers in length of stay in the patients without MR discrepancies exaggerates the difference between the groups.

## References

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