Analysis of Chronic Obstructive Pulmonary Disease Medications Based on Real-World Data

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Introduction

In China, chronic obstructive pulmonary disease (COPD) as a public health issue has become increasingly significant. The efficacy of medical treatment against COPD is therefore important:

1

In 2019, COPD caused 1.04 million deaths in China, accounting for 32% of global COPD mortality.[1]

2

The outpatient and inpatient cost reached ¥12,552 per year per COPD patient.[2, 3]

3

In 2024, COPD was incorporated into the Basic Public Health Service Program in China.

Objective

To systematically assess the clinical application patterns of commonly prescribed medications for COPD in Shenzhen, China, by using real-world data.

Methodology

We conducted a retrospective cohort study:

- **Sample:** 19,702 patients in Shenzhen who had undertaken COPD medication treatments between 01/01/2019 and 31/12/2023.
- **Method**: we employed descriptive statistics with univariate and multivariate regression models
- **Analysis**: we compared medication patterns between patients in stable-phase (Group A and B, n=9,122) and patients in acute exacerbation-phase (Group E, n=10,580)

An emphasis is placed on the evaluation of clinical efficacy across various drug combinations.

Conclusion

Our study on the COPD medication practices in Shenzhen reveals the overutilization of combination therapies and inadequate adherence to clinical guidelines.

REFERENCES

1. **Safiri S, Carson-Chahhoud K, Noori M, et al.** Burden of chronic obstructive pulmonary disease and its attributable risk factors in 204 countries and territories, 1990-2019: results from the Global Burden of Disease Study 2019. BMJ. 2022 Jul 27;378:e069679. doi: 10.1136/bmj-2021-069679. PMID: 35896191; PMCID: PMC9326843.
2. **Li, J, Feng, R, Cui, Y, et al.** Analysis of the economic burden of pharmacological treatment for COPD patients in tertiary hospitals in China. China Health Economics, 2015, 34(09):66-68.
3. **Yin P, Wu J, Wang L, et al.** The Burden of COPD in China and Its Provinces: Findings From the Global Burden of Disease Study 2019. Front Public Health. 2022 Jun 3;10:859499. doi: 10.3389/fpubh.2022.859499. PMID: 35757649; PMCID: PMC9215345.

Results

1

The overall healthcare institution compliance to COPD guidelines in Shenzhen is relatively high. However:

- deviation from guideline recommendations was observed in treatments received by Group A and B.

2

Significant efficacy differences were observed between the patients in two phases of COPD:

- **Stable phase:**
  1. Theophylline treatment was associated with the lowest efficiency (24.6% one-year readmissions rate)
  2. Treatment combining LABA with LAMA demonstrated superior outcomes (lowest one-year readmissions rates 5.8% and 7.5%)
- **Acute exacerbation phase:**
  1. Treatment combining SABA with SAMA exhibited lower average hospitalisation duration (10.88 days) and lower one-year readmissions rates (51.5%)
  2. Theophylline treatment prolonged the length of patient hospitalisation (13.0 days)
  3. SAMA monotherapy had the highest readmission rate (54.5%)

Table 1. Baseline characteristics and endpoints of stable phase v.s. acute exacerbation phase of COPD

	Total	Stable	Acute	p test
Number (n)	19702	9122	10580	
Male (%)	16248 (82.5)	7297 (80.0)	8951 (84.6)	<0.001
Age (%)				
40-49	809 (4.1)	591 (6.5)	218 (2.1)	<0.001
50-59	2912 (14.8)	1763 (19.3)	1149 (10.9)	
60-69	5986 (30.4)	3159 (34.6)	2827 (26.7)	
70-79	5761 (29.2)	2490 (27.3)	3271 (30.9)	
over 80	4234 (21.5)	1119 (12.3)	3115 (29.4)	
High blood pressure(%)	829 (4.2)	345 (3.8)	484 (4.6)	0.006
Diabetes(%)	311 (1.6)	120 (1.3)	191 (1.8)	0.007
Myocardial infarction(%)	9 (0.0)	0 (0.0)	9 (0.1)	0.014
Heart failure(%)	38 (0.2)	9 (0.1)	29 (0.3)	0.008
Malignant tumor(%)	28 (0.1)	3 (0.0)	25 (0.2)	<0.001
Death(%)	65 (0.3)	0 (0.0)	65 (0.6)	<0.001
Readmission within 1 year(%)	6276 (31.9)	1143 (12.5)	5133 (48.5)	<0.001
Readmission counts (mean(SD))	2.36 (2.23)	1.78 (1.47)	2.49 (2.35)	<0.001
Readmission interval (mean(SD)	115.41 (97.14)	113.95 (94.51)	115.73 (97.72)	0.576
Average readmission hospitalisation days (mean(SD))	12.69 (16.13)	10.60 (104.83)	115.86 (107.34)	<0.001