Benefit of prompt versus delayed initiation of single-inhaler triple therapy on exacerbations and healthcare costs among patients with chronic obstructive pulmonary disease in the US

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The authors declare the following real or perceived conflicts of interest in relation to this presentation:

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Background and objectives

- Triple therapy (inhaled corticosteroid, long-acting β2 agonist, and long-acting muscarinic antagonist) is recommended for symptomatic COPD patients at risk of exacerbation.

- The optimal timing of initiation remains unclear. Single-inhaler fluticasone furoate, umeclidinium, and vilanterol (FF/UMEC/VI) was approved for the long-term maintenance of COPD in September 2017.

- This study evaluated the impact of prompt versus delayed initiation of FF/UMEC/VI following a COPD-related exacerbation on the rates of subsequent exacerbations and healthcare costs.
# Methods

## Study

**Retrospective**
- Modest/severe COPD exacerbation on or after September 18, 2017 (index date)
- Initiation of FF/UMEC/VI within 180 days of exacerbation
- Continuous enrollment for ≥12 months pre-index (baseline) and ≥6 months post-index
- ≥40 years of age
- Patients with prior exacerbation during baseline were excluded

**Cohort**

**Real World**

## Study Populations

**Outcomes of Interest**

- Severe COPD exacerbation
- Moderate COPD exacerbation
- Healthcare costs
- Hospital readmission (among patients with severe exacerbation at index)

## Methods

**Data Source:** IQVIA Real-World Claims

**Baseline Period:** 1 year prior to the index date

**Follow-up Period:** Spanned from the index date to the end of continuous enrollment or end of data (September 30, 2019)

Cohorts were balanced using inverse probability treatment weighting (IPTW)

### Study Cohorts

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Delayed</th>
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<tbody>
<tr>
<td>FF/UMEC/VI within 30 days of exacerbation</td>
<td>FF/UMEC/VI 31–180 days after exacerbation</td>
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### Patients

- Fluticasone furoate 100 mcg
- Umeclidinium 62.5 mcg
- Vilanterol 25 mcg

### A total of 1,904 patients (prompt: 529; delayed: 1,375) met the selection criteria
Baseline characteristics

- After IPTW, baseline characteristics were balanced between cohorts
- Mean age was similar (prompt: 59.8 years; delayed: 59.9 years), along with the proportion of females (prompt: 52.4%; delayed: 50.1%)
- The index exacerbation type was similar between cohorts
  - Moderate exacerbation (prompt: 83.6%; delayed: 82.2%)
  - Severe exacerbation (prompt: 16.4%; delayed: 17.8%)
- Medication use was similar between cohorts

![Baseline Medication Use Graph](chart.png)
Prompt initiators had significantly lower rates of exacerbation

- **Overall Exacerbations**: 21% lower rate (RR: 0.79 [95% CI: 0.65–0.94], \( P = 0.004 \))
- **Moderate Exacerbations**: 16% lower rate (RR: 0.84 [95% CI: 0.69–0.99], \( P = 0.038 \))
- **Severe Exacerbations**: 43% lower rate (RR: 0.57 [95% CI: 0.37–0.79], \( P = 0.002 \))

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Prompt initiators had significantly longer time to first exacerbation

Hazard ratio (95% CI) at 12 months:
Prompt vs. Delayed: 0.72 (0.62, 0.83); p<0.001

Median time to exacerbation
Prompt: 367 days
Delayed: 200 days

*Prompt: initiation of FF/UMEC/VI within 30 days of the index date; *Delayed: initiation of FF/UMEC/VI within 31-180 days of the index date

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Prompt initiators had significantly lower costs

**Notes:** PPPY, per patient per year. Total medical costs include hospitalization, outpatient visit, and ER visit costs. Cost differences for prompt versus delayed initiation are shown in teal boxes.

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Prompt initiators trended toward lower readmission

Notes: Evaluated among patients with severe exacerbation at index (Prompt: 99; Delayed: 239). All comparisons were non-significant due to small sample size.

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Conclusions

Compared with the delayed cohort, prompt initiation of FF/UMEC/VI resulted in:

- A significant reduction in annual rate of exacerbation
  - 21% reduction in overall exacerbations (P = 0.004)
  - 16% reduction in moderate exacerbations (P = 0.038)
  - 43% reduction in severe exacerbations (P = 0.002)

- A longer median time to first exacerbation
  - Overall (367 days vs. 200 days); moderate (435 days vs. 292 days)

- Significantly lower total and medical healthcare costs
  - All-cause total costs reduced by $6,293 (P < 0.05)
  - COPD-related total costs reduced by $4,946 (P < 0.05)

- Numerically lower rates of 30-, 60- and 90-day readmissions
  - All-cause readmissions reduced by 22% – 60%
  - COPD-related readmissions reduced by 27% – 82%