Umeclidinium/Vilanterol (UMEC/VI) Compared with Tiotropium (TIO) for Time-to-First Inpatient Admission Among Patients with Chronic Obstructive Pulmonary Disease in a Managed Care Population

Poster No. 1465

David Slade[1], MD, Riju Ray[1], MD PhD, Chad Moretz[1], ScD, Guillaume Germain[2], MSc, François Laliberté[2], MA, Qin Shen[3], PhD, Mei Sheng Duh[4], MPH, ScD, Sean MacKnight[2], MScPH, Beth Hahn[1], PhD

[1]GlaxoSmithKline, LLC, Research Triangle Park, NC, USA; [2]Groupe d'analyse, Ltée, Montréal, QC, Canada; [3]GlaxoSmithKline LLC, Collegeville, PA, USA; [4]Analysis Group, Boston, MA, USA.

Aims

- Umeclidinium/vilanterol (UMEC/VI) has been shown to significantly improve lung function in patients with chronic obstructive pulmonary disease (COPD) compared to monotherapy (LAMA or LABA),[1-3] and UMEC/VI has been associated with lower lifetime medical costs and better cost effectiveness compared with tiotropium (TIO).[4]
- However, there is limited evidence on the impact of these therapies on hospitalizations, which is the largest medical cost driver for COPD.
- This study examined the time-to-first and rate of COPD-related inpatient admissions among patients with COPD who initiated maintenance therapy with UMEC/VI versus TIO.

Methods

Study Design

A retrospective cohort study was conducted identifying patients from Optum's de-identified Clinformatics Data Mart database initiating UMEC/VI or TIO from January 1, 2014 to December 31, 2018, with the earliest fill date defined as the index date. Patients initiating therapy on UMEC/VI were propensity score matched 1:1 with patients on TIO.

Key Inclusion Criteria

- ≥40 years of age as of index
- ≥12 months continuous enrolment prior to the index date
- ≥1 primary or secondary diagnosis of COPD during 1-year pre-index or on the index date
- For the readmission analysis, patients were required to have ≥1 on-treatment COPD-related admission and ≥30 days of continuous eligibility following the discharge date of their first admission

Key Exclusion Criteria

- ≥1 pharmacy claim for ICS-, LABA-, or LAMA-containing controller during the 1-year pre-index or on the index date
- ≥1 pharmacy claim for a non-index controller medication on index date
- ≥1 diagnosis of asthma in any position during the study period

Outcomes

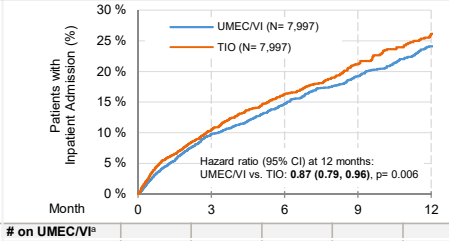
- **Time-to-First On-Treatment COPD-Related Inpatient Admission**
  - Assessed with Kaplan-Meier survival analysis; risk of admission was compared using hazard ratios from Cox regression models
- **Rate of COPD-Related Inpatient Admissions & Readmissions**
  - Rates of admissions were compared using rate ratios from Poisson regression models; confidence intervals (CIs) and p-values were calculated using bootstrap procedures

Results

Table 1. Matched Cohorts' Demographic and Clinical Data at Baseline

Characteristics	UMEC/VI N=7,997	TIO N=7,997	Std. Dif. (%)
Age, mean (SD)	70.9 (9.8)	70.9 (9.8)	0.1
Female, %	47.1	47.6	1.0
Payer			
Commercial, %	20.0	19.5	1.3
Medicare, %	80.0	80.5	1.3
Quan-Charlson Comorbidity Index, mean (SD)	3.3 (2.5)	3.3 (2.5)	0.9
Chronic pulmonary disease, %	89.1	89.8	2.1
Hypertension, %	75.7	75.8	0.3
Diabetes, %	30.9	31.2	0.6
Peripheral vascular disorders, %	30.5	30.7	0.4
Cardiac arrhythmias, %	29.9	30.2	0.6
COPD-related Exacerbations, mean (SD)	0.50 (0.8)	0.49 (0.8)	1.0
COPD-related Hospitalizations, Mean (SD)	0.31 (0.71)	0.33 (0.66)	2.8
COPD-related Outpatient Visits, mean (SD)	3.1 (6.9)	3.0 (8.7)	0.8
COPD-related Medical Costs (Total), mean (SD)	$11,335 (31,071)	$11,738 (27,462)	1.4

Figure 1. Time-to-First On-Treatment COPD-Related Admission



# on UMEC/VI[a]					
At-risk Cohort	7,997	3,065	1,854	1,198	736
IP Admission	0	573	703	787	847
# on TIO[a]					
At-risk Cohort	7,997	2,109	1,104	641	363
IP Admission	0	588	692	743	776

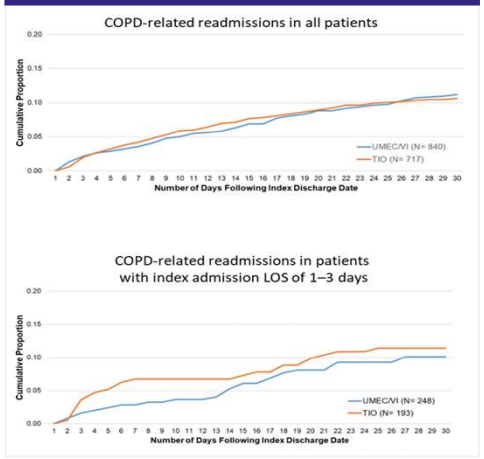
[a]At risk is the number of patients still observed at the specific point in time. IP admission represents the cumulative number of IP admissions from time 0 to the specific time point.

Table 2. Rate of COPD-Related Inpatient Admissions up to 12 Months of On-Treatment Observation

COPD-related admissions[a]	*Number of events*		*Rate (per 100 person-days)*		*Rate Ratio (95% CI)*[b,c]	*P-value*
	UMEC/VI (N=7,997)	**TIO** (N=7,997)	**UMEC/VI**	**TIO**		
On-treatment period[d], mean (SD)	124.4 (118.3)	921.9 (99.0)				
Total person-years	2,725	2,010				
COPD-related admissions[a]	1,056	971	0.106	0.132	0.80 (0.72, 0.92)	**0.008**

[a]COPD-related admissions were defined as hospitalization claims with a primary or secondary diagnosis of COPD. [b]Rate ratios were calculated from Poisson regression models.[c] The 95% confidence intervals and p-values were generated using non-parametric bootstrap procedures. [d]The on-treatment period spanned from the index date up to the earliest of: 12 months, treatment discontinuation, a switch to a non-index medication, death, end of eligibility, or end of data availability.

Figure 2. 30-Day COPD-Related Inpatient Readmissions



Conclusions

- Patients with COPD initiating maintenance therapy with UMEC/VI had significantly lower risk of COPD-related inpatient admissions while on treatment compared with patients on TIO.
- Patients treated with UMEC/VI also experienced 20% fewer COPD-related admissions compared to those on TIO for up to 12 months; however, 30-day readmission rates appeared similar for both groups.

Disclosures

- DS, RR, QS, and BH are GSK employees and hold stocks/shares in GSK. CM is a former GSK employee. GG, FL, MSD, and SM are employees of Analysis Group, Inc., a consulting company that has received research funding from GlaxoSmithKline plc. to conduct the current study.
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References

1. Maleki-Yazdi et al. Respir Med. 2014;108(12):1752-1760
2. Singh et al. BMC Pulm Med. 2015;15:91
3. Decramer et al. Lancet Respir Med. 2014;2(6):472-486
4. Wilson et al. Int J Chron Obstruct Pulmon Dis. 2017;12:997-1008

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