ERS Annual Meeting
Rate of FEV\textsubscript{1} decline by FEV\textsubscript{1} percent predicted in UPLIFT\textsuperscript{®} and TIOSPIR\textsuperscript{®}

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Introduction:
Studies suggest that in patients with chronic obstructive pulmonary disease, the rate of decline in FEV$_1$ accelerates with increasing age. Factors influencing the rate of decline are poorly understood.

Aims and objectives:
To evaluate the relationship between mean annual rate of FEV$_1$ decline and baseline FEV$_1$ % predicted in patients from the Understanding Potential Long-term Impacts on Function with Tiotropium (UPLIFT®) and TIOtropium Safety and Performance In Respimat® (TIOSPIR®) trials.

Methods:
Annual rate of trough FEV$_1$ decline was calculated for patients on treatment >2 years, stratified by disease severity (baseline FEV$_1$ % predicted). Treatment arms were pooled.
RESULTS

Overall, decline was calculated for 4295 patients from UPLIFT® receiving either tiotropium or placebo.

Demographics did not differ by baseline severity, although GOLD Stage 4 patients (baseline FEV₁ % predicted <30) were slightly younger (60.8 years) with a lower body mass index (BMI) (24.1) compared with other groups (63.6-64.6 years; BMI 25.9-26.8).

Mean annual rate of trough FEV₁ decline was greater in patients with higher baseline FEV₁ % predicted and less in patients with more severe disease (Figure). A similar pattern was observed in patients from TIOSPIR®.
Figure. *The mean annual rate of decline in trough FEV₁ is greater with higher baseline FEV₁ % predicted.*

Patients with ≥3 on-treatment measurements on or after Day 30. Moving average based on a 9% window. FEV₁, forced expiratory volume in 1 second.
CONCLUSIONS

In UPLIFT® and TIOSPIR®, the annual rate of decline in FEV$_1$ is almost linearly correlated to the initial disease status (baseline FEV$_1$ % predicted) and probably less dependent on age.