

## Factors that Predict Exacerbation Severity and Recovery Measured with the Exacerbations of Chronic Obstructive Pulmonary Disease (EXACT) Tool

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**Background:** Exacerbations are an important problem in COPD and a main target of treatment. Standardized measurement of exacerbation severity has not been done and factors that predict exacerbation severity are poorly understood. **Objective:** To identify factors that account for variations in exacerbation severity and recovery using the EXACT, a new validated daily diary designed to quantify exacerbation outcomes in COPD. **Methods:** Prospective observational study of 222 COPD patients with clinician-confirmed exacerbation. Patients completed the EXACT on Days 1-27. Clinical assessments with ratings of improvement were performed during clinic visits on Days 10 and 27 ( $\pm 2$ ). Repeated-measures ANOVA was used to identify predictors of exacerbation severity (EXACT) over Days 1-10 and Days 1-27, testing the effects of clinician-reported etiology, presence of chronic bronchitis, comorbidity, disease severity (stable state FEV-1), age, time, and etiology-by-time interaction. **Results:** Sample: Mean age=65 ( $\pm 10$ ); 47% male; stable FEV<sub>1</sub>=51% pred ( $\pm 20$ ); clinical successes=60% (128/213) at Day 10 and 79% (169/213) at Day 27. Both models were significant ( $p < 0.0001$ ) with etiology-by-time interactions (Days 1-10;  $F=13.11$ ;  $p < 0.0001$ ; Days 1-27;  $F=24.28$ ,  $p < 0.001$ ). Main effects were found for age only for Days 1-10 ( $F=4.81$ ,  $p=0.029$ ) and stable FEV-1 only for Days 1-27 ( $F=5.88$ ,  $p=0.016$ ). **Conclusion:** Results suggest exacerbation etiology has a significant effect on exacerbation severity and recovery, with age a contributing factor during the early stages of exacerbation. Underlying disease severity plays an important role over the extended recovery period.

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