

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 3836

**Publication Number:** P2522

**Abstract Group:** 10.1. Respiratory Infections

**Keyword 1:** COPD - exacerbations **Keyword 2:** Infections **Keyword 3:** COPD - management

**Title:** *Pseudomonas aeruginosa* exacerbations in COPD patients

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**Body:** Background: *Pseudomonas aeruginosa* is found in COPD patients sputum in 4-15%, mainly in those with advanced disease and / or in those requiring mechanical ventilation. Currently, there are no data to justify an empiric antibiotic therapy against *Pseudomonas aeruginosa* when a new COPD exacerbation occurs in a patient with a previous *Pseudomonas aeruginosa* exacerbation. Methods: We conducted a retrospective study to analyse microbiological ecology exacerbations in COPD patients with at least one *Pseudomonas aeruginosa* exacerbation Results: Among the 243 COPD patients hospitalized during the study period (2007-2011), only 23 (9.5%) had at least one *Pseudomonas aeruginosa* exacerbation (between 1 and 11 exacerbations per patient). They presented a new *Pseudomonas aeruginosa* exacerbation in 54% of cases. From one to another exacerbation, the *Pseudomonas aeruginosa* susceptibility changed, with a wild type *Pseudomonas aeruginosa* in 58% of cases during the first exacerbation and 42% during the next one. COPD patients with GOLD stage IV were rarely hospitalized for a wild *Pseudomonas aeruginosa* exacerbation ( $p = 0.01$ , 15% vs.83% in GOLD stage II and III patients) Conclusion: In this pilot study, the microbiological ecology of COPD exacerbation differed from one exacerbation to another, contrary to that observed in cystic fibrosis patients.