

# European Respiratory Society Annual Congress 2013

**Abstract Number:** 2727

**Publication Number:** P4356

**Abstract Group:** 10.1. Respiratory Infections

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

**Title:** Clinical relevance of respiratory pathogens in patients hospitalised with acute exacerbations of chronic obstructive pulmonary disease

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**Body:** Rationale: Acute exacerbations of Chronic Obstructive Pulmonary Disease (AECOPD) are associated with substantial acute morbidity, mortality, and cost. Aims: To assess the impact of viral / bacterial infection on length of hospitalization, and to determine whether any routinely used clinical markers can differentiate causes of exacerbations during hospital admission. Methods: All patients admitted to Wishaw General hospital over a 6-month period with AECOPD were included prospectively. Clinical history and demographics, chest radiograph, serum inflammatory markers and attempted collection of viral throat gargles and sputum for microbiology were obtained during hospital admission with AECOPD. Results: There were 199 COPD exacerbation episodes in 166 patients Complete data for sputum and virology were available in 77. The mean length of stay in patients with bacterial infection (n=13) was 5.6 (3.5 – 7.8) vs. 5.4 (3.8 – 7.0) for viral (n=14), 3.3 (1.0 – 5.6), for viral/ bacterial co-infection (n=6), and 6.1 (4.2 – 8.0) for non-infective exacerbations (n=44) (P=0.64). There were no significant differences in terms of peak WCC or the presence of consolidation on CXR between the four groups. Peak CRP was significantly higher in bacterial infections than non-infective exacerbation, but did not discriminate bacterial from viral infections. Symptoms were poor discriminators of underlying infection. Conclusion: Length of stay in hospital in patients with acute exacerbations of COPD is not affected by positive virology or microbiology. Neither routine blood tests nor clinical symptoms can be used to differentiate between causes of exacerbation.