

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 3636

**Publication Number:** P1000

**Abstract Group:** 6.1. Epidemiology

**Keyword 1:** COPD - exacerbations **Keyword 2:** Epidemiology **Keyword 3:** No keyword

**Title:** Costs of exacerbations in COPD

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**Body:** Background Chronic obstructive pulmonary disease (COPD) is one of the most common chronic and disabling diseases worldwide, and exacerbations affect resource burden and healthcare costs. Aim To examine the costs of exacerbations in relation to degree of severity of COPD and of exacerbations. Methods The study sample was identified in earlier clinical examinations of general population cohorts within the OLIN (Obstructive Lung Disease in Northern Sweden) studies. The cohort consisted initially of 993 subjects with COPD according to the GOLD spirometric criteria. In 2009-2010, telephone interviews on resource utilization were made to a sample of 244 subjects, stratified by disease severity. Interviews were performed quarterly to minimize the risk of recall bias. Exacerbations were identified by asking questions on extra resource use due to respiratory problems, and were divided into different levels of severity, depending on intensity of resource use. Results At least one exacerbation was reported by 84 subjects (36%). A significant relationship was found between severity of exacerbations and costs. The mean annual total cost per exacerbation was: €9 (mild), €21 (mild/moderate), €205 (moderate), and €2,715 (severe). A significant relationship was also found between severity of COPD and costs. The mean annual total cost according to disease severity was: €71 (mild), €209 (moderate), €1,133 (severe), and €3,298 (very severe). The prevalence-weighted cost of all exacerbations for an average subject with COPD was about €200, accounting for about 35% of the direct costs of COPD. Conclusions The costs for exacerbations increase considerably by severity of exacerbation and also by severity of COPD. The prevention of exacerbations could be very cost-effective.