**Occupational Contribution to Chronic Bronchitis and COPD; an ATS/ERS task force update.**

**Short Version 10 Milano, ERS**

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Six existing reviews (Blanc 2007, Eisner 2010, Mazitova 2010, Omland 2014, Fishwick, Alif 2016) identified 33 papers relating to the occupational contribution to COPD or chronic bronchitis (CB). An additional literature search from 2014 to 2016 identified a further 11 papers for inclusion.

Table 1 summarises the 32 heterogenous COPD studies, dealing with both never smoking and mixed smoking populations, used varying definitions of COPD, and also employing differing physiology assessment protocols both with and without bronchodilator.

Limiting the analysis to only the 24 statistically significant COPD studies, the median PAF for occupational contribution to the burden of COPD was 21.1% (range 4% to 65.3%). If all 32 studies were considered irrespective of significance, the median PAF was identified to be 16.2% (range 0% to 65.3%). Three studies assessed the PAFs (respectively 18.3, 48 and 53%) specifically in non-smokers [Lee 2015, Wurtz 2015 and Toren 2014]. There were only 7 studies that clearly used post bronchodilator lung function as an outcome. If only these were considered, a median PAF of 9% was identified, with a range between 4 and 65.3%.

Table 2 summaries the 13 studies included for CB. Limiting the analysis to only the 10 significant CB studies, the median PAF for occupational contribution to the burden of CB was 15.5% (range 4% to 56.8%). If all studies were considered irrespective of significance, the median PAF was identified to be 15% (range 0.19% to 56.8%). Only one study assessed the PAF (12%, not significant) in non-smokers [Zock 2001].

Other papers felt to be of importance included the identification of an accelerated annual decline in FEV1 in males with early COPD exposed specifically to fume (Harber et al). Additionally, each year of fume exposure was associated with a 0.25% predicted reduction in post-bronchodilator FEV1. Equally, Blanc *et a*l confirmed a global association between COPD and occupation exposures using an ecological approach, noting that the prevalence of occupational exposures predicted COPD prevalence; with a 0.8% increase in COPD prevalence per 10% increase in occupational exposure.

The heterogeneous nature of the studies makes comment on association at sub-group levels more difficult. Nevertheless, data from non-smoking populations and studies using post bronchodilator lung function are particularly compelling as strength of this paper and support further associations between such exposures and the burden of COPD. The findings of this review have significant biological plausibility, summarised previously in some detail by others (including Eisner 2010).

This review has considered both the development of CB and COPD in the context of workplace exposures, focussing on available evidence since the last ATS consensus statement (Balmes 2003). It has identified a number of relevant population based studies that uphold and strengthen the conclusion of the original consensus; that at least 15% of both CB and COPD burdens could be attributed to harmful inhaled occupational exposures. Workplace interventions designed to reduce these harmful exposures will reduce the overall population burdens of these two chronic and disabling conditions.

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