## COPD-Related Mortality and Co-morbidities in Northeastern Italy, 2008-2012: A Multiple Causes of Death Analysis

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INTRODUCTION: Analysis of COPD mortality based only on the underlying cause of death (UCOD) derived from death certificates underestimates disease burden. We analyzed the burden of COPD, as well as the pattern of reporting COPD and its co-morbidities in death certificates, using multiple-cause of death (MCOD) records.

METHODS: All 220,281 death certificates of decedents aged  $\geq$ 40 years in the Veneto region (northeastern Italy) were analyzed through 2008-2012. The UCOD was selected by the Automated Classification of Medical Entities software. COPD was defined by ICD-10 codes J40-J44 and J47 based either on the UCOD or on any mention of COPD in death certificates (MCOD). Annual age-standardized COPD death rates were computed for 40-85 year-old subjects.

RESULTS: COPD was mentioned in 7.9% (and selected as the UCOD in 2.7%) of death certificates. In about half of these, COPD was mentioned in Part II only. After circulatory and neoplastic diseases, the most frequent chronic diseases reported in certificates with any mention of COPD were diabetes (15.2%) and dementia/Alzheimer (8.9%). Between 2008 and 2012, age-standardized death rates (/100,000/year) decreased from 39.8 to 34.0 in males and from 12.7 to 11.3 in females in the UCOD analyses. These trends were confirmed, although figures were three times greater, in the MCOD analyses.

CONCLUSIONS: MCOD analysis should be adopted to fully evaluate the burden of COPDrelated mortality. Our findings support a decreasing trend in COPD-related mortality in northeastern Italy between 2008 and 2012, in line with other recent studies in Europe and beyond.

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