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Lung cancer mortality in European men: Trends and predictions

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ABSTRACT

Lung cancer mortality in men from the European Union (EU) peaked in the late 1980s at an age-standardised (world standard population) rate over 53/100,000 and declined subsequently to reach 44/100,000 in the early 2000s. To provide a comprehensive picture of recent trends in male lung cancer mortality in Europe, we analyzed available data from the World Health Organization up to 2009 and predicted future rates to 2015. Lung cancer mortality rates in EU men continued to fall over recent years, to reach a value of 41.1/100,000 in 2005–2009. The fall was similar at all-ages and in middle-aged men (less than 2% per year over most recent years), but was appreciably larger in young men (aged 20–44 years, over 5% per year). A favourable trend is thus likely to be maintained in the foreseeable future, although the predicted overall EU rate in 2015 is still over 35/100,000, i.e., higher than the US rate in 2007 (33.7/100,000). Over most recent calendar years, overall male lung cancer rates were around 35–40/100,000 in western Europe, as compared to over 50/100,000 in central and eastern Europe. Within western Europe, lung cancer rates were lower in northern countries such as Sweden, but also Finland and the UK (below 30/100,000), where the tobacco-related epidemic started earlier and rates have long been declining, whereas mortality was high in Belgium (51.6), France (42.3), the Netherlands and Spain (around 43.0), where the epidemic started later but is persisting. Widespread measures for smoking control and cessation in middle-aged European men, i.e., in the generations where smoking prevalence used to be high, would lead to appreciable reductions in male lung cancer mortality in the near future. This is particularly urgent in central and eastern European countries.

1. Introduction

Lung cancer mortality in men from the European Union (EU) peaked in the late 1980s at an age-standardised (world standard population) rate over 53/100,000 and declined subsequently to reach 44/100,000 in the early 2000s, with a larger fall in middle-aged men, from 80 to 61/100,000 [1]. After the mid/late 1990s, downward trends in male lung cancer mortality were observed in most European countries, including those from central and eastern Europe with the highest mortality and the most unfavourable trends until the late 1990s [1–3]. In the early 2000s, however, there were still large differences in lung cancer mortality across Europe, with rates between 35 and 45/100,000 in the largest western European countries (France, Germany, Italy, and the UK), and between 55 and 80/100,000 in Hungary, Poland, Russia and a few other central and eastern Europe countries.

In order to provide an up-to-date comprehensive picture of trends and predict short-term burden of lung cancer mortality in European men, we analyzed available data to 2009 using joinpoint analysis and age-period-cohort (APC) analysis [4].

2. Materials and methods

We obtained official male death certification data for lung cancer from the World Health Organization (WHO) database for 33 European countries from 1970 to 2009, when available [5]. Mortality data for the EU as a whole from 1970 to 2007 were generated by aggregating data from its 27 member states as defined in January 2007, with the exclusion of Cyprus for which data were available for a limited number of most recent years only. No interpolation was made for missing data in the computation of single country

Abbreviations: APC, age-period-cohort; CIs, confidence intervals; EAPC, estimated annual percent change; EU, European Union; ICD, International Classification of Diseases; OR, odds ratio; PI, prediction intervals; WHO, World Health Organization.

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rates. For the calculation of the EU rates, when data were not available for a country, the nearest available data (i.e., generally that of the previous or subsequent year) were replicated. In Belgium, 2004 data were used for 2000–2003, and 2005 data were used for 2005–2007; in Denmark, 2006 was used for 2007; in Germany, 1973 was used for the whole 1970–1974 quinquennium, and 1978 was used for 1979; in Italy, 2003 was used for 2004, and 2006 for 2005; in Latvia, the 1980–1984 quinquennium was replicated over 1970–1974 and 1975–1979; in Luxembourg, 1971 was used for 1970; in Poland, 1996 was used for 1997, and 1999 for 1998; in Portugal, 1971 was used for 1970 and 2003 was replicated over the whole 2003–2007; in Romania, 1978 was used for 1979; in Slovenia

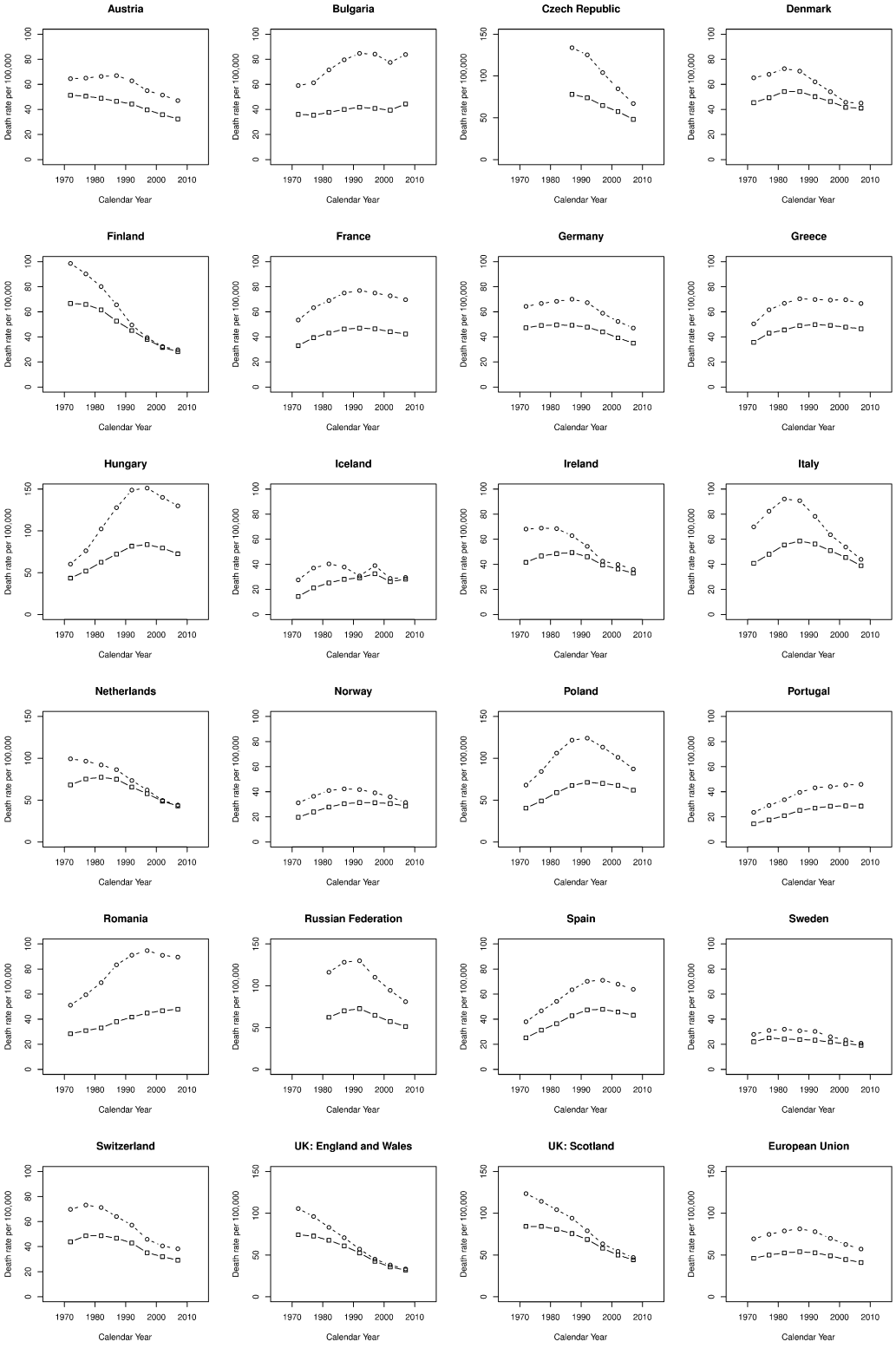

Fig. 1. Trends in age-standardized (world standard population) death rates for lung cancer per 100,000 men (all ages and 35–64 years) in selected European countries and the EU as a whole from 1970 to 2009. All ages □—□ truncated 35–64 years ○—○.