

Time Trend and Age-Period-Cohort Effect on Prostate Cancer Mortality in Tyrol, Austria after Introduction of PSA Testing

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Abstract

Objective It was the objective of this study to analyse in detail the time trend for prostate cancer mortality in the population of Tyrol. In Tyrol, PSA tests were introduced in 1988/89 and since 1993 they have been offered to all men age 45 to 74 free of charge; more than two-thirds of all men age 45 to 74 had at least one PSA test in the last decade.

Methods The analysis is based on the official mortality files for Austria. We applied the age-period-cohort model by Poisson regression, as proposed by Clayton and Schifflers. Separate models for Tyrol and Austria without Tyrol were set up starting with age term and were expanded for period and cohort terms if model fit improved substantially. Mortality data range from 1970 to 2003, and we tested the hypothesis that mortality is reduced in the last five year period group 1999 to 2003, i.e. six to ten years after introducing the PSA test free of charge.

Results For Tyrol the full APC model with age and period and cohort terms fits fairly well. Period terms show a significant reduction in prostate cancer mortality in the last five years with a risk ratio of 0.67 (95% CI 0.55, 0.81) for Tyrol, whereas in Austria without Tyrol no effect was seen with a risk ratio of 1.00 (95% CI 0.95, 1.01), each compared to the mortality rate in the period 1989-1993.

Conclusion The result of our analysis is in line with other observations showing a reduction in prostate cancer mortality after introducing PSA testing. While waiting for the results of randomised screening trials, which are not expected until 2008-2010, these findings support the evidence that PSA testing offered to a population free of charge can reduce prostate cancer mortality.