

Multiple tumours in survival estimates.

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In international comparisons of cancer registry based survival it is common practice to restrict the analysis to first primary tumours and exclude multiple cancers. The probability of correctly detecting subsequent cancers depends on the registry's running time, which results in different proportions of excluded patients and may lead to biased comparisons. We evaluated the impact on the age-standardised relative survival estimates of also including multiple primary tumours. Data from 2,919,023 malignant cancers from 69 European cancer registries participating in the EUROCARE-4 collaborative study were used. A total of 183,683 multiple primary tumours were found, with an overall proportion of 6.3% over all the considered cancers, ranging from 0.4% (Naples, Italy) to 12.9% (Iceland). The proportion of multiple tumours varied greatly by type of tumour, being higher for those with high incidence and long survival (breast, prostate and colon-rectum). Five-year relative survival was lower when including patients with multiple cancers. For all cancers combined the average difference was -0.4 percentage points in women and -0.7 percentage points in men, and was greater for older registries. Inclusion of multiple tumours led to lower survival in 44 out of 45 cancer sites analysed, with the greatest differences found for larynx (-1.9%), oropharynx (-1.5%), and penis (-1.3%). Including multiple primary tumours in survival estimates for international comparison is advisable because it reduces the bias due to different observation periods, age, registration quality and completeness of registration. The general effect of inclusion is to reduce survival estimates by a variable amount depending on the proportion of multiple primaries and cancer site.