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Recent cancer survival in Europe: a 2000-02 period analysis of EURO CARE-4 data.

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BACKGROUND: Traditional cancer-survival analyses provide data on cancer management at the beginning of a study period, and are often not relevant to current practice because they refer to survival of patients treated with older regimens that might no longer be used. Therefore, shortening the delay in providing survival estimates is desirable. Period analysis can estimate cancer survival by the use of recent data. We aimed to apply the period-analysis method to data that were collected by European cancer registries to estimate recent survival by country and cancer site, and to assess survival changes in Europe. We also compared our findings with data on cancer survival in the USA from the US SEER (Surveillance, Epidemiology, and End Results) programme. **METHODS:** We analysed survival data for patients diagnosed with cancer in 2000-02, collected from 47 of the European cancer registries participating in the EURO CARE-4 study. 5-year period relative survival for patients diagnosed in 2000-02 was estimated as the product of interval-specific relative survival values of cohorts with different lengths of follow-up. 5-year survival profiles for patients diagnosed in 2000-02 were estimated for the European mean and for five European regions, and findings were compared with US SEER registry data for patients diagnosed in 2000-02. A 5-year survival profile for patients diagnosed in 1991-2002 and a 10-year survival profile for patients diagnosed in 1997-2002 were also estimated by the period method for all malignancies, by geographical area, and by cancer site. **FINDINGS:** For all cancers, age-adjusted 5-year period survival improved for patients diagnosed in 2000-02, especially for patients with colorectal, breast, prostate, and thyroid cancer, Hodgkin's disease, and non-Hodgkin lymphoma. The European mean age-adjusted 5-year survival calculated by the period method for 2000-02 was high for testicular cancer (97.3% [95% CI 96.4-98.2]), melanoma (86.1% [84.3-88.0]), thyroid cancer (83.2% [80.9-85.6]), Hodgkin's disease (81.4% [78.9-84.1]), female breast cancer (79.0% [78.1-80.0]), corpus uteri (78.0% [76.2-79.9]), and prostate cancer (77.5% [76.5-78.6]); and low for stomach cancer (24.9% [23.7-26.2]), chronic myeloid leukaemia (32.2% [29.0-35.7]), acute myeloid leukaemia (14.8% [13.4-16.4]), and lung cancer (10.9% [10.5-11.4]). Survival for patients diagnosed in 2000-02 was generally highest for those in northern European countries and lowest for those in eastern European countries, although, patients in eastern European had the highest improvement in survival for major cancer sites during 1991-2002 (colorectal cancer from 30.3% [28.3-32.5] to 44.7% [42.8-46.7]; breast cancer from 60% [57.2-63.0] to 73.9% [71.7-76.2]; for prostate cancer from 39.5% [35.0-44.6] to 68.0% [64.2-72.1]). For all solid tumours, with the exception of stomach, testicular, and soft-tissue cancers, survival for patients diagnosed in 2000-02 was higher in the US SEER registries than for the European mean. For haematological malignancies, data from US SEER registries and the European mean were comparable in 2000-02, except for non-Hodgkin lymphoma. **INTERPRETATION:** Cancer-service infrastructure, prevention and screening programmes, access to diagnostic and treatment facilities, tumour-site-specific protocols, multidisciplinary management, application of evidence-based clinical guidelines, and recruitment to clinical trials probably account for most of the differences that we noted in outcomes.