

[Lancet](#). 2004 Dec 11-17;364(9451):2097-105.

Comment in:

[Lancet](#). 2004 Dec 11-17;364(9451):2074-6.

[Lancet](#). 2005 Feb 26-Mar 4;365(9461):753.

Geographical patterns and time trends of cancer incidence and survival among children and adolescents in Europe since the 1970s (the ACCISproject): an epidemiological study.

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BACKGROUND: Cancer is rare before age 20 years. We aimed to use the European database of childhood and adolescent cancer cases, within the Automated Childhood Cancer Information System project, to estimate patterns and trends of incidence and survival within Europe.

METHODS: Comparable, high-quality data from 63 European population-based cancer registries consisted of 113000 tumours in children and 18243 in adolescents diagnosed in 1970-99. Incidence rates and survival were compared by region (east vs west), period, and malignant disease.

FINDINGS: In the 1990s, age-standardised incidence rates were 140 per million for children (0-14 years) and 157 per million for ages 0-19 years. Over the three decades, overall incidence increased by 1.0% per year ($p < 0.0001$) in children (increases for most tumour types), and by 1.5% ($p < 0.0001$) in adolescents (15-19 years; notable increases were recorded for carcinomas, lymphomas, and germ-cell tumours). Overall 5-year survival for children in the 1990s was 64% in the east and 75% in the west, with differences between regions for virtually all tumour groups; 5-year survival was much the same in adolescents. Survival has improved dramatically since the 1970s in children and adolescents, more so in the west than in the east.

INTERPRETATION: Our results are clear evidence of an increase of cancer incidence in childhood and adolescence during the past decades, and of an acceleration of this trend. Geographical and temporal patterns suggest areas for further study into causes of these neoplasms, as well as providing an indicator of progress of public-health policy in Europe.