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# Teenagers and young adults still fare worse than children for many common cancers, according to Europe-wide study

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More young people of all ages are surviving cancer than ever before, but new research published today in *The Lancet Oncology* journal shows that adolescents and young adults have a lower chance of surviving eight relatively common types of cancer than children, according to the latest data from a long-running study of cancer survival across Europe.

The authors say that variations in survival between age groups are due to a number of factors including: delays in diagnosis and treatment, a lack of treatment guidelines and clinical trials specifically for teenagers and young adults, as well as differences in the biology of some cancers.

"The good news is that the number of children, adolescents and young adults surviving for at least 5 years after diagnosis has risen steadily over time in Europe", explains lead author Dr Annalisa Trama at The National Institute of Cancer in Milan, Italy. "Across all cancers, the level of improvement is similar in these age groups, this contrasts with earlier results that adolescents and young adults diagnosed up to the 1990s were lagging behind children in terms of survival."

"However," adds Dr Trama, "we found that adolescents and young adults still tend to die earlier than children for several cancers common to these age groups, particularly blood cancers like leukaemias and non-Hodgkin's lymphoma (NHL)."

The latest EUROCARE-5 report includes, for the first time, comparison of survival between adolescents and young adults (aged 15-39 years), children (aged 0-14 years) and adults (aged 40-69 years), who were diagnosed from 2000 to 2007, and followed-up to at least 2008. The researchers analysed data from population-based cancer registries covering all or part of 27 European countries, and estimated 5-year survival for 56505 cancer cases in children, 312483 in adolescents and young adults, and 3567383 in adults. They also analysed changes in survival over time from 1999 to 2007.

For adolescents and young adults, survival at 5 years from diagnosis for all cancers combined is generally good with 82% now surviving (2005-07) up from 79% in 1999-2001, in children survival improved from 76% to 79% over the same period (figure 2).

Overall, adolescents and young adults had slightly better 5-year survival than children because they were diagnosed more often with cancers with a fairly good prognoses—Hodgkin's lymphoma, NHL, germ cell tumours, melanoma, thyroid cancer, and breast cancer (figure 1).

However, the overall survival rates conceal differences between specific cancers. Survival was significantly worse for adolescents and young adults compared with children for eight relatively common cancers affecting both age groups—acute lymphoid leukaemias (55.6% vs 85.8%), acute myeloid leukaemias (49.8% vs 60.5%), Hodgkin's lymphoma (92.9% vs 95.1%), NHL (77.4% vs 83.0%), astrocytomas (type of brain tumour; 46.4% vs 61.9%), Ewing's sarcoma of bone (49.3% vs 66.6%), rhabdomyosarcoma (cancer of soft tissue like muscle; 37.8% vs 66.6%), and osteosarcoma (the most common type of bone cancer; 61.5% vs 66.8%). Additionally, between 1999 and 2007 survival rates remained unchanged for adolescents and young adults for other relatively common cancers such as acute myeloid leukaemia (at around 50%), soft-tissue sarcomas (about 70%), and fibrosarcomas

(around 80%; table 3 and figure 2).

Adolescents and young adults had a survival advantage over adults for almost all major cancers affecting both age groups, supporting the idea that younger patients with few other illnesses are likely to fare better than older patients (table 4). There are only two types of cancer for which adolescents and young adults were at a survival disadvantage—breast (83.5% vs 87.0%) and prostate (79.9% vs 89.8%). "This reflects the fact that younger women often present with larger, higher-grade cancers that are more advanced, and that prostate disease tends to be more aggressive in younger men", explains Dr Trama.

The authors point out that this analysis pre-dates recent initiatives to improve outcomes for adolescents and young adults that have been implemented in several European countries. "The European Network for Teenagers and Young Adults with Cancer is advocating collaboration between paediatric and adult oncologists, greater access to clinical trials and research to improve treatments for this specific age group, as well as developing adolescent and young adult-specific practice guidelines, encouraging healthier lifestyles and the greater involvement of patients and patients support groups", says Dr Trama. "This study will provide an important starting point from which to evaluate whether these initiatives will reduce the gulf in survival between European adolescents and young adults and children with cancer."

Writing in a linked Comment, Professor Philippe Autier from the University of Strathclyde Institute of Global Public Health at the International Prevention Research Institute, Lyon, France notes that in order to understand these survival data more detailed information is needed, "At a clinical level, assessing the causes of death occurring during the relative survival follow-up might provide information on whether patients died from the cancer itself, from disease management, or from another cause. Knowledge of causes of death might help to

unveil associations between cancers, treatments, socioeconomic factors, quality of life, and causes of death. Qualification and quantification of deaths associated with therapies are required to improve patient management. To this end, and similar to initiatives in the past year taken for children with cancer, the identification and characterisation of health events possibly associated with cancer therapies in adolescents and young adults should be carried out, with training for assessors of cause of death in the use of the list of identified health events."

**More information:** Annalisa Trama et al. Survival of European adolescents and young adults diagnosed with cancer in 2000–07: population-based data from EUROCARE-5, *The Lancet Oncology* (2016). DOI: 10.1016/S1470-2045(16)00162-5

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