

International incidence of childhood cancer, 2001–10: a population-based registry study



Eva Steliarova-Foucher, Murielle Colombet, Lynn A G Ries, Florencia Moreno, Anastasia Dolya, Freddie Bray, Peter Hesselting, Hee Young Shin, Charles A Stiller, and the IICC-3 contributors*

Summary

Background Cancer is a major cause of death in children worldwide, and the recorded incidence tends to increase with time. Internationally comparable data on childhood cancer incidence in the past two decades are scarce. This study aimed to provide internationally comparable local data on the incidence of childhood cancer to promote research of causes and implementation of childhood cancer control.

Methods This population-based registry study, devised by the International Agency for Research on Cancer in collaboration with the International Association of Cancer Registries, collected data on all malignancies and non-malignant neoplasms of the CNS diagnosed before age 20 years in populations covered by high-quality cancer registries with complete data for 2001–10. Incidence rates per million person-years for the 0–14 years and 0–19 years age groups were age-adjusted using the world standard population to provide age-standardised incidence rates (WSRs), using the age-specific incidence rates (ASR) for individual age groups (0–4 years, 5–9 years, 10–14 years, and 15–19 years). All rates were reported for 19 geographical areas or ethnicities by sex, age group, and cancer type. The regional WSRs for children aged 0–14 years were compared with comparable data obtained in the 1980s.

Findings Of 532 invited cancer registries, 153 registries from 62 countries, departments, and territories met quality standards, and contributed data for the entire decade of 2001–10. 385 509 incident cases in children aged 0–19 years occurring in 2·64 billion person-years were included. The overall WSR was 140·6 per million person-years in children aged 0–14 years (based on 284 649 cases), and the most common cancers were leukaemia (WSR 46·4), followed by CNS tumours (WSR 28·2), and lymphomas (WSR 15·2). In children aged 15–19 years (based on 100 860 cases), the ASR was 185·3 per million person-years, the most common being lymphomas (ASR 41·8) and the group of epithelial tumours and melanoma (ASR 39·5). Incidence varied considerably between and within the described regions, and by cancer type, sex, age, and racial and ethnic group. Since the 1980s, the global WSR of registered cancers in children aged 0–14 years has increased from 124·0 (95% CI 123·3–124·7) to 140·6 (140·1–141·1) per million person-years.

Interpretation This unique global source of childhood cancer incidence will be used for aetiological research and to inform public health policy, potentially contributing towards attaining several targets of the Sustainable Development Goals. The observed geographical, racial and ethnic, age, sex, and temporal variations require constant monitoring and research.

Funding International Agency for Research on Cancer and the Union for International Cancer Control.

Copyright © 2017 World Health Organization; licensee Elsevier. This is an Open Access article published under the CC BY-NC-ND 3.0 IGO license which permits users to download and share the article for non-commercial purposes, so long as the article is reproduced in the whole without changes, and provided the original source is properly cited. This article shall not be used or reproduced in association with the promotion of commercial products, services or any entity. There should be no suggestion that WHO endorses any specific organisation, products, or services. The use of the WHO logo is not permitted. This notice should be preserved along with the article's original URL.

Lancet Oncol 2017

Published Online

April 11, 2017

[http://dx.doi.org/10.1016/S1470-2045\(17\)30186-9](http://dx.doi.org/10.1016/S1470-2045(17)30186-9)

*Contributors listed in the appendix

Section of Cancer Surveillance, International Agency for Research on Cancer, Lyon, France

(E Steliarova-Foucher PhD, M Colombet MSc, A Dolya MSc, F Bray PhD); Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD, USA (L A G Ries MS); Paediatric Cancer Registry, National Cancer Institute, Buenos Aires, Argentina (F Moreno PhD); Department of Paediatrics and Child Health, Stellenbosch University, Tygerberg Children's Hospital, Tygerberg, South Africa (P Hesselting PhD); Seoul National University Children's Hospital, Institute of Cancer Research, Seoul, South Korea (H Y Shin PhD); and National Cancer Registration and Analysis Service, Public Health England, Oxford, UK (C A Stiller MSc)

Correspondence to:

Dr Eva Steliarova-Foucher, Section of Cancer Surveillance, International Agency for Research on Cancer, World Health Organization, Lyon 69372, CEDEX 08, France steliarova@iarc.fr

See Online for appendix