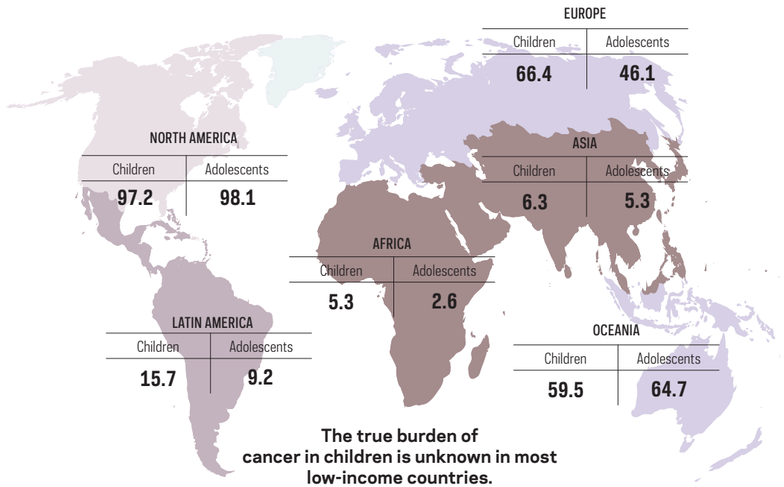
CANCER IN CHILDREN

The childhood cancer burden is strongly related to level of development, with high incidence in high-income countries but higher mortality in low-income countries.

FIGURE 13.1

Percentage (%) of the population in which frequency of cancer is measured on each continent in children (age 0–14 years) and adolescents (age 15–19 years)



The true burden of cancer in children is unknown in most low-income countries.

Cancers occurring in childhood and adolescence differ markedly from cancers in adults in their incidence and tumor characteristics. Worldwide, the average annual incidence in children aged less than 15 years is 140 new cases per million children, although there are threefold variations between world regions and ethnic groups. FIGURE 13.2 The low rates recorded by population-based cancer registries in some low-income countries are thought to result from under-diagnosis. FIGURE 13.1 The most common cancers in children are leukemia and lymphoma, while the major cancers among adults, such as carcinoma of the lung, breast or colon, are rare in children. The incidence of carcinomas increases progressively with age, and together with lymphomas or germ cell tumors they become the most common cancers in adolescents aged 15–19 years, with the overall incidence rate rising to 185 per million. In contrast, the incidence of embryonal tumors, such as neuroblastoma, retinoblastoma, and nephroblastoma is very low in adolescents. FIGURE 13.3

More than half of long-term survivors of childhood cancer experience chronic health conditions.

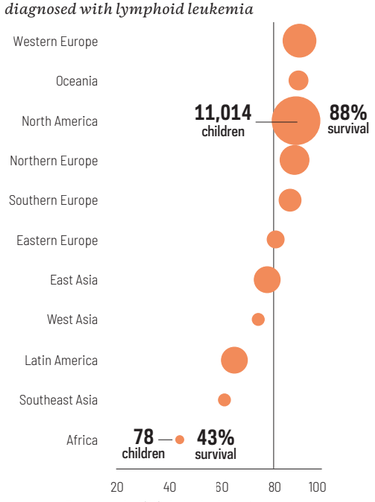
The incidence of cancer in children and adolescents has been increasing by 0.5 to 1 percent per year in the high-income countries with established cancer registries over the past few decades. Although the increase may in part reflect more frequent diagnosis facilitated by advanced imaging techniques, other factors may have also contributed. Exposures to high doses of ionizing radiation, high birth weight and certain genetic syndromes have been consistently associated with increased risk of cancer in children. The role of other risk factors, such as air pollutants, tobacco or pesticide use, older parental age, or fewer children per family is debated. Potentially protective effects of breastfeeding and folate supplementation are being investigated.

More than 80% of childhood cancer patients in high-income countries survive 5 years after their diagnosis. In many low-income countries, in contrast, the outlook is much less favorable because of suboptimal access to care, late diagnosis, treatment abandonment, inadequacy of therapy, and the financial burden. Survival of childhood cancer patients has been assessed in only a few low-income countries. FIGURE 13.4

As survival of cancer patients improves over time FIGURE 13.5, many survivors experience chronic health conditions later in life as a consequence of their cancer or the anti-cancer therapy.

FIGURE 13.4

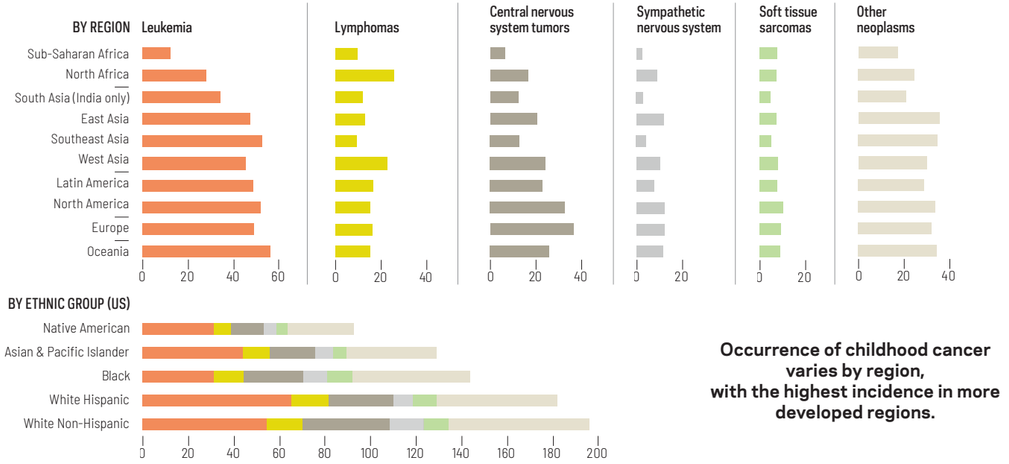
Five-year age-standardized net survival (%) observed in the available cohorts of cases diagnosed with lymphoid leukemia



Survival from lymphoid leukemia is over 80% in more developed regions.

FIGURE 13.2

Age-standardized cancer incidence rates (world) per million population, 2001–2010



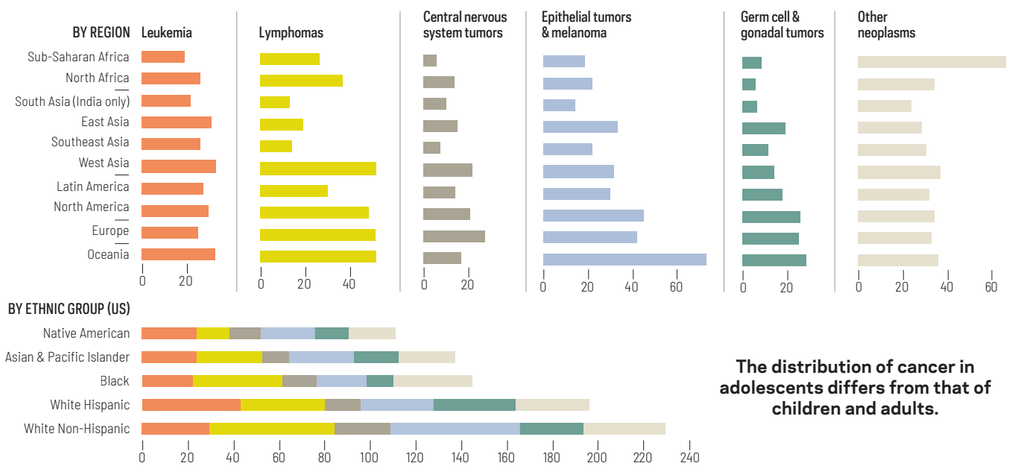
CHILDREN AGE 0–14 YEARS

Occurrence of childhood cancer varies by region, with the highest incidence in more developed regions.

15–19 YEARS

FIGURE 13.3

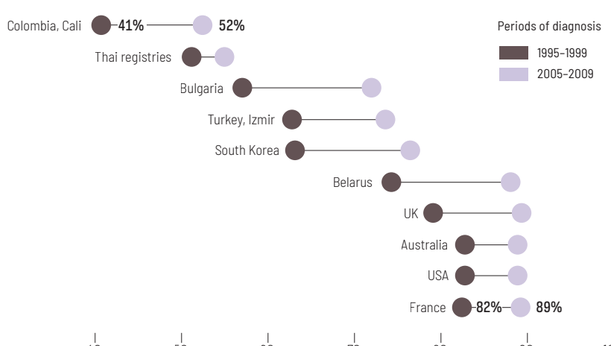
Age-standardized cancer incidence rates (world) per million population, 2001–2010



The distribution of cancer in adolescents differs from that of children and adults.

FIGURE 13.5

Changes in 5-year age-standardized net survival (%) for children aged 0–14 years diagnosed with acute lymphoid leukemia, select countries 1995–2009



ACCESS CREATES PROGRESS

Burkitt lymphoma is the most common pediatric cancer in many parts of sub-Saharan Africa. While about 90% of children with Burkitt lymphoma in high-income countries can be cured with timely treatment including high-intensity chemotherapy and supportive care infrastructure, about 50% of children with the disease in resource-constrained settings where such treatment is not feasible can be cured with a simplified protocol.