

# Risk of subsequent primary leukaemias among 69,460 five-year survivors of childhood cancer diagnosed from 1940 to 2008 in Europe

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## RISK OF SUBSEQUENT PRIMARY LEUKEMIAS AMONG 69,460 5-YEAR SURVIVORS OF CHILDHOOD CANCER IN EUROPE: A COHORT STUDY WITHIN PANCARESURFUP

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## **Background**

Survivors of childhood cancers are at risk of developing subsequent primary leukemias (SPLs), but the long-term risks after 20 years following treatment are still unclear. We investigated the risk of SPLs in 5-year childhood cancer survivors using a large-scale pan-European (PanCareSurFup) cohort and evaluated variations in the risk by cancer and demographic factors.

## **Methods**

This largest-ever assembled cohort comprises 69,460 5-year childhood cancer survivors from 12 European countries. Standardized incidence ratios (SIRs) and absolute excess risks (AERs) were calculated. Cumulative incidence was calculated accounting for competing risk of death.

## **Results**

One hundred and fifteen survivors developed a SPL including 86 subsequent primary myeloid leukemias (SPML) and 17 subsequent primary lymphoid leukemias (SPLL); of these SPLs, 31 occurred beyond 20 years from first childhood cancer diagnosis. Compared with the general population, childhood cancer survivors had a 4-fold increased risk (SIR = 3.7; 95%CI: 3.1-4.5) of developing leukemia, and eight leukemias per 100,000 person-years (AER = 7.5; 95%CI: 6-9.2) occurred in excess of that expected. The risks remained significantly elevated beyond 20 years from first primary malignancy. Overall, the risk ratio for SPML (SIR = 5.8; 95%CI: 4.6-7.1) was higher than that for all other SPLs combined.

## **Conclusions**

We demonstrate that beyond 20 years after childhood cancer diagnosis survivors experience an increased risk for SPLs compared to that expected from the general population. Our findings show that awareness for symptoms potentially related to subsequent leukemias among long-term survivors of childhood cancer needs to continue well into middle age.