

Abstract ISLCCC 2026

Subsequent malignant neoplasms (SMNs) among 56,000 childhood cancer survivors with individual patient data (IPD): the international IPD-SMN study

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BACKGROUND-AIM: Childhood cancer survivors face an elevated risk of developing subsequent malignant neoplasms (SMNs). Insufficient statistical power associated with limited participant numbers in individual cohorts preclude addressing knowledge gaps on risks and risk factors for specific SMNs. Because of this, pooling data from well-established cohorts worldwide is crucial. For some of the most common SMNs, such as breast cancer, sarcomas, and colorectal cancers, substantial knowledge on treatment-related risks already exists and/or international efforts are underway to further investigate those risks. However, for several other important types of SMNs international collaboration is needed to gather sufficient data to address knowledge gaps. This study aims to investigate risks and risk factors for three types of SMNs: subsequent lung cancer, thyroid cancer, and melanoma using internationally pooled data.

METHODS: We will pool and harmonize data on childhood cancer treatment, sociodemographics, lifestyle behaviors, and SMNs from six childhood cancer survivor cohorts in North America and Europe into a single database at the Princess Máxima Center. This effort will leverage infrastructure previously established for studying breast cancer risk in female childhood cancer survivors by including the following cohorts: the Dutch Childhood Cancer Survivor Study-LATER cohort, the North American Childhood Cancer Survivor Study, the St Jude Lifetime Cohort Study, the French Childhood Cancer Survivor Study, the Swiss Childhood Cancer Survivor Study, and the Dutch Hodgkin Late Effects Study. These cohorts all have detailed information available on cancer treatment, such as details on radiotherapy fields and doses, specific chemotherapy agents and doses, hematopoietic stem cell transplantation, and on SMNs. We will estimate long-term relative and absolute risks of the three SMN subtypes, as well as treatment-related risk factors. For lung cancer, we will evaluate risks associated with chest radiotherapy field and dose, specific chemotherapy agents, smoking, and the interaction between treatment and smoking. For thyroid cancer, we will determine risks associated with chemotherapy among survivors not treated with radiotherapy, and chemotherapy-related risks in addition to radiotherapy. For melanoma, we will determine risks associated with radiotherapy, chemotherapy, hematopoietic stem cell transplantation, and family history of melanoma. Experts in the field of late effects, (pediatric) oncology, radiation oncology, pulmonology, endocrinology, and dermatology will be closely involved during the project. We will conduct time-to-event analyses.

RESULTS: We expect to include approximately 56,000 survivors, with currently reported minimum counts of 119 subsequent lung cancers, 760 subsequent thyroid cancers, and 268 subsequent melanomas across participating cohorts. Due to the unique international data, we anticipate significant new results with both scientific and clinical impact.

CONCLUSION: The expected results of the IPD-SMN study will provide relevant input for childhood cancer treatment protocols and survivor surveillance protocols. Findings on subsequent thyroid cancer can, for example, be used to update the IGHG thyroid cancer surveillance guideline. Moreover,

the dataset will serve as a robust source of childhood cancer survivor data for elucidating other knowledge gaps on SMNs.

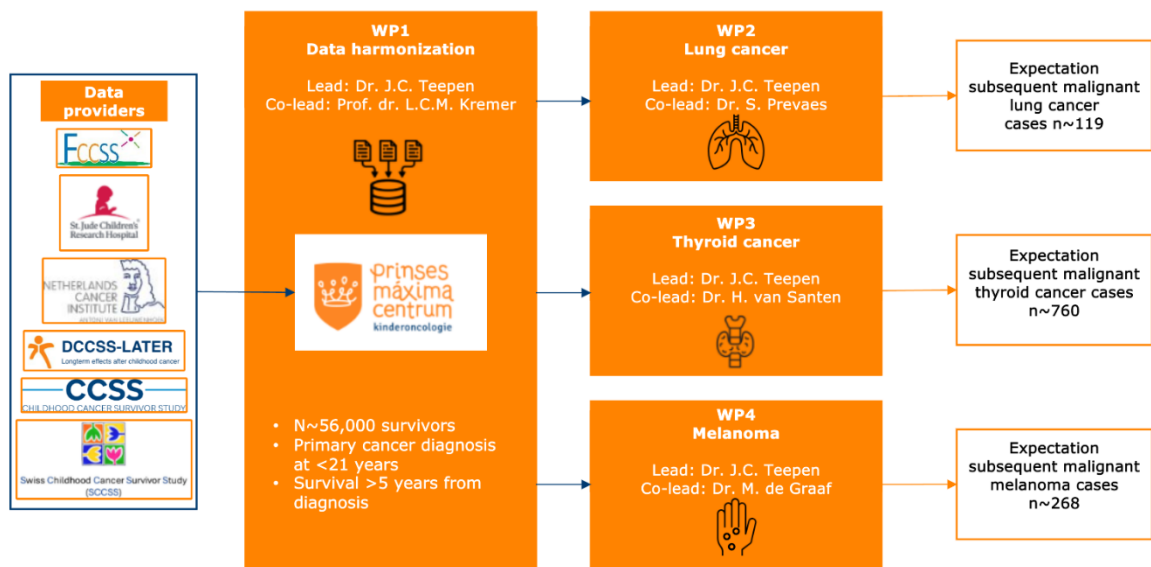


Figure 1. Overview of the IPD-SMN study