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## **D31 SIOP19-0423 Cumulative Burden of Subsequent Neoplasms, Cardiovascular and Respiratory Morbidity in Long-Term Survivors of Childhood and Young Adult Cancer**

L. Smith<sup>1</sup>, A. Glaser<sup>1</sup>, D. Greenwood<sup>1</sup>, R. Feltbower<sup>1</sup>

<sup>1</sup>*University of Leeds, Leeds Institute for Data Analytics, Leeds, United Kingdom*

**Background/Objectives** : Many studies of the late effects of treatments in long-term childhood cancer survivors focus upon one single disease. However, long-term survivors are at increased risk of multiple chronic conditions. In this study we estimate the cumulative burden of subsequent tumours, cardiovascular and respiratory morbidity in long-term survivors of young people with cancer.

**Design/Methods** : Information on five-year survivors of cancers diagnosed aged 0-29 years from 1992-2010 were extracted from the Yorkshire Specialist Register of Cancer in Children and Young People. Hospital admissions for cardiovascular and respiratory conditions were obtained via linkage to all hospital inpatient admissions from 1997-2015. All subsequent malignant neoplasms (SMN) diagnosed were ascertained from national cancer registrations. The cumulative incidence for each outcome was estimated, with death as a competing risk. The mean cumulative count was used to estimate the cumulative burden of all events where an event was either a hospitalisation for respiratory or cardiovascular disease or SMN diagnosis. Multiple failure-time survival models were used to assess the association between treatment exposures and cumulative burden.

**Results** : A total of 3686 long-term survivors were included. By age 40 the cumulative incidence of an admission for respiratory disease was 51% (95% CI 46-55), cardiovascular disease was 25% (95%CI 22-28), developing a SMN was 6% (95%CI 5-8) and admissions for both respiratory and cardiovascular disease was 12% (95%CI 10-14). By age 40, an average of 212 events per 100 survivors were observed (95%CI 176-260). The risk of experiencing multiple events was higher for those treated with chemotherapy drugs with known lung toxicity (HR=1.22, 95%CI 1.04-1.42).

**Conclusions** : Survivors of childhood and young adult cancer experience a high burden of morbidity due to respiratory, cardiovascular diseases and SMNs. This research identifies the importance of considering multiple morbidities and recurrent events when quantifying the burden of late effects.