Purpose: Cancer and cardiovascular disease (CVD) are common causes of morbidity and mortality, and measurement and interpretation of their co-occurrence rate have important implications for public health and patient care. Here, we present the raw and adjusted co-occurrence rates of cancer and CVD in the overall population by using a visually intuitive network approach.

Methods: By using baseline survey and linked health outcome data from 490,842 individuals age 40 to 69 years from the UK Biobank, we recorded diagnoses between 1997 and 2014 of specific cancers and specific CVDs ascertained through hospital claims. We measured raw and adjusted rates of CVD for the following groups: individuals with Hodgkin or non-Hodgkin lymphoma, lung and trachea cancer, uterus cancer, colorectal cancer, prostate cancer, breast cancer, or no recorded diagnosed cancer during this time period. Analysis accounted for age, sex, and behavioral risk factors, without regard to the order of occurrence of cancer and CVD.

Results: A significantly increased rate of CVD was found in patients with multiple types of cancers, including Hodgkin and non-Hodgkin lymphoma and lung and trachea, uterus, colorectal, and breast cancer, compared with patients without cancer by using age and sex-adjusted models. Increased co-occurrence for many CVD categories remained after correction for behavioral risk factors. Construction of co-occurrence networks highlighted heart failure as a shared CVD diagnosis across multiple cancer types, including breast cancer, lung cancer, non-Hodgkin lymphoma, and colorectal cancer. Smoking, physical activity, and other lifestyle factors accounted for some but not all of the increased co-occurrence for many of the CVD diagnoses.

Conclusion: Increased co-occurrence of several common CVD conditions is seen widely across multiple malignancies, and shared diagnoses, such as heart failure, were highlighted by using network methods.

* Presenting author