Patient population: stage III or IV non-small cell lung cancer. The median [Q1, Q3] survival time is…

Primary endpoint: pneumonitis. Median [Q1, Q3] time to pneumonitis.

The standard survival analysis ignoring the influence of cancer may be subject to immortal time bias, which means the primary endpoint cannot occur during the study period. Patients who had dead from cancer cannot have a chance to have pneumonitis. On the other hand research subjects are “immortal” in that they must survive long enough to experience pneumonitis.

The immortal time bias is the error in estimating the association between predictors and the primary endpoint. It can lead to overestimate and/or underestimate of feature impacts and weaken predictive ability.

Competing risk is a popular technique to simultaneously model multiple endpoints and account for risk of death from cancer as a competing event…. [Introduction of competing risk]