EXPECTED CUMULATIVE INCIDENCE IN THE PRESENCE OF COMPETING RISKS

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In many epidemiological studies one is interested in estimating the expected survival for a cohort of patients. That is particularly useful when the aim is to compare what it is observed for the cohort under observation to what it would be expected for this outcome in the general population. Several methods have been proposed to estimate the expected survival for a cohort using mortality rates in the general population. Although the methods are well understood for assessing expected overall survival, far less is available for the parallel problem of competing risks.

As a motivating example, we consider a subpopulation in the context of a long-term Mayo study on osteoporosis; the event of interest is skeletal fractures in patients with asthma, with death as a competing risk. Although the incidence rate of fractures in asthmatics is higher, there is also earlier mortality which offsets it; in terms of public health impact the lifetime risk of fracture might not be much different than for a non-asthmatic. We extend the observed cumulative incidence (CI) estimate to create a population expected CI. Simulations studies show the estimate to be unbiased in samples of moderate size.

We believe that the expected CI is a useful suppliment to the observed CI to analyse exposure data in the presence of competing risks.