DevCan: General Population Lifetime and Age-Conditional Risks of Developing and Dying of Cancer

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Cancer registry incidence data and mortality data can be used to compute the lifetime and age-conditional risks of developing and dying from cancer. These risk estimates are useful for study planning, for risk estimation, and as a measure of the population burden of cancer. They also form a useful baseline measure of comparison for more detailed risk models that take into account individual behaviors and risk factors. Challenges in estimating the general population risk of developing cancer include obtaining estimates of cancer incidence that include only the first cancer of a specified site in the numerator and only the cancer-free population in the denominator. The DevCan software (http://srab.cancer.gov/devcan/) employs recently revised methodology to obtain these risk estimates (and their standard errors) by using cross-sectional incidence and mortality data applied to a hypothetical cohort of individuals in a multiple-decrement life table. Inputs to the program include incidence rates for the first cancer of a specified type, mortality for all causes, and mortality for the specified cancer. The program estimates the cancer-free population iteratively for each successive age group. The software comes supplied with several data sets (SEER 9, SEER 12, US mortality data); alternatively, users may import their own data. Risk in the absence of other causes of death (i.e.,!cumulative incidence) can also be computed. Users can easily perform sensitivity analyses of the results (e.g., what would the lifetime risk of prostate cancer be for blacks if they experienced the same other-cause mortality as whites). Lifetime risk, although a popular metric, is often misunderstood and assumes that the current cross-sectional rates will apply for a person's entire lifetime. Shorter age-conditional estimates (e.g., the risk from 50-60, given one is cancer-free at age 50) provide more understandable and credible estimates of risk.