

Are we overestimating lifetime cancer risks?

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The method employed in Australia to calculate the lifetime risks of cancer diagnosis and mortality overestimates these risks, especially for men, according to the authors of research published online today by the *Medical Journal of Australia*.

The Australian Institute of Health and Welfare (AIHW), like many cancer registries, calculates cumulative risk from cross-sectional data to estimate lifetime risks of cancer diagnosis and mortality. Its method assumes there are no competing causes of death, which may lead to overestimation of lifetime risk.

Researchers led by Dr. Anthea Bach from West Moreton Hospital and Health Service, and Dr. Kelvin Lo from Westmead Hospital, analyzed publicly available annual AIHW data on age-specific cancer incidence and mortality—for [breast cancer](#), [colorectal cancer](#), [prostate cancer](#), melanoma of the skin, and lung cancer—and all-cause mortality in Australia, between 1982 and 2013. They calculated lifetime risks of cancer diagnosis and cancer-specific death, adjusted for competing mortality, and compared their estimates with the corresponding risks published by the AIHW.

"AIHW estimates were consistently higher than our competing mortality-adjusted estimates of lifetime risks of diagnosis and death for all five cancers," the authors found.

"Differences between AIHW and adjusted estimates declined with time for breast cancer, prostate cancer, colorectal cancer, and lung cancer (for men only), but remained steady for lung cancer (women only) and melanoma of the skin. In 2013, the respective estimated lifetime risks of diagnosis (AIHW and adjusted) were 12.7 percent and 12.1 percent for breast cancer, 18.7 percent and 16.2 percent for prostate cancer, 9.0 percent and 7.0 percent (men) and 6.4 percent and 5.5 percent (women) for colorectal cancer, 7.5 percent and 6.0 percent (men) and 4.4 percent and 4.0 percent (women) for melanoma of the skin, and 7.6 percent and 5.8 percent (men) and 4.5 percent and 3.9 percent (women) for [lung cancer](#).

"Our results indicate that cancer agencies, including the AIHW, may

overestimate the risks of people being diagnosed with or dying from a particular cancer."

The authors stressed that they were not criticizing the AIHW.

"The method used by the AIHW is employed by many [cancer registries](#); further, software that facilitates accounting for competing risk was not available when AIHW began calculating lifetime risks."

The implications of the study results were that, "as lifetime risk estimates are widely cited in health promotion campaigns, they may cause public misperceptions of the risk of a [cancer](#) diagnosis or death", the authors wrote.

"Australian agencies should consider adopting methods for adjusting for competing mortality when estimating [lifetime](#) risks, as currently employed in North America and the United Kingdom, to increase the accuracy of their estimates," the authors concluded.

More information: Anthea C Bach et al. Is the risk of cancer in Australia overstated? The importance of competing mortality for estimating lifetime risk, *Medical Journal of Australia* (2019). [DOI: 10.5694/mja2.50376](#)

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