Economic analyses

7 | ESTIMATION OF BENEFIT OF PREVENTION OF OCCUPATIONAL CANCER FOR COMPARATIVE RISK ASSESSMENT: METHODS AND EXAMPLES

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Objectives The objective of this study is to quantify the life years or QALY (quality-adjusted life year) gained and financial savings for the prevention of a case of occupational cancer.

Methods We retrieved the National Cancer Registry data and linked with the National Mortality Registry to estimate the survival functions for major occupational cancer: lung, liver, urinary bladder, and malignant mesothelioma. Assuming constant hazard for each type of cancer, we extrapolated survival functions to the life time, by a semi-parametric method. For each patient, we simulated an age- and gender-matched normal person based on vital statistics of Taiwan to estimate the life expectancy, had one not developed the cancer. By retrieving the reimbursement data from the National Health Insurance Research Database, we were able to calculate the lifetime healthcare expenditures spent by patients. A cross-sectional survey of utility of the quality of life among 165 liver cancer patients provided the values to adjust the survival function and estimate the expected QALY loss.

Results The expected life years gained from prevention would be 15.4–16.6, 12.6–14.1, 3.1–5.4, and 17.3–14.0, accordingly, for liver, lung, urinary bladder, and malignant mesothelioma. And the lifetime healthcare spending for the National Health Insurance of Taiwan would be 0.7–0.53, 0.71–0.83, 1.28–1.50, and 0.37–0.41 millions NT dollars (one US dollars=30 NT dollars) accordingly, for the above cancer. The benefit of prevention of a case of liver cancer was estimated to be 17.5 QALY.

Conclusions The above figures can be used for comparative assessment, creating incentive for prevention.