Quantification of Likelihood That Death Certificate Misclassification Increases Odds Ratios of Dose-Response Relationships

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Objective: The general consensus is that death certificate misclassification is more likely to reduce measures of risk, such as the odds ratio, in epidemiological studies than to increase it. This study quantifies the probability that death certificate misclassification increases the odds ratio.

Methods: This study used a real distribution of dose data, originating from Rocky Flats workers. This dataset contained total cumulative colon doses (Gy) from 5,122 deceased individuals. The probability function associated with a logistic regression was used with an assumed baseline cancer rate of 24% to select an initial scenario for the simulation, which had an odds ratio of 1.85 and p-value of 0.049. Then the effect of over- and under-misclassifications were evaluated.

Results: On average, misclassifications indeed caused decreased odds ratios ; however, a noteworthy percentage of simulations resulted in an increased odds ratio. When over- and under-misclassification rates were both 10% the likelihood that the odds ratio would increase was 20%, and when over- and under-misclassification rates were both 20% the likelihood that the odds ratio would increase was 11%.

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