

Impact Of Death Certificate Misclassifications On Epidemiological Risk

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Death certificates are commonly used as a primary source of information in epidemiological studies investigating the relationship between radiation exposure and health outcomes. However, death certificates may misclassify the underlying cause of death. At the United States Transuranium and Uranium Registries, these misclassification errors have been observed at an overall rate of 25.5% for a group of 275 individuals with internal deposition of actinide elements. This simulation study aims to evaluate whether there is a statistically significant impact on risk estimates resulting from misclassifications. For the analysis, the logistic regression model was used as the risk model. Dose datasets were generated using a log-normal distribution with predefined geometric mean and geometric standard deviation. Subsequently, outcomes were randomly generated using a predefined odd ratio and baseline prevalence. Over- and under-classification rates varied from 0 to 30% were evaluated to assess the impact of misclassification on the risk estimate results. With a forced odd ratio close to 1, misclassification errors on death certificates can result in statistically significant odds ratios from 48% to 52% of the time. With a forced p-value close to 0.05, misclassification errors on death certificates can result in statistically significant odds ratios from 8% to 45% of the time.

USTUR-0686-24A