Misclassification of causes of death among a small all-autopsied group of former nuclear workers: Death certificates vs. autopsy reports

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The U.S. Transuranium and Uranium Registries performs autopsies on each of its deceased Registrants as a part of its mission to follow up occupationally-exposed individuals. This provides a unique opportunity to explore death certificate misclassification errors, and the factors that influence them, among this small population of former nuclear workers. Underlying causes of death from death certificates and autopsy reports were coded using the 10th revision of the International Classification of Diseases (ICD-10). These codes were then used to quantify misclassification rates among 268 individuals for whom both full autopsy reports and death certificates with legible underlying causes of death were available. When underlying causes of death were compared between death certificates and autopsy reports, death certificates correctly identified the underlying cause of death's ICD-10 disease chapter in 74.6% of cases. The remaining 25.4% of misclassified cases resulted in over-classification rates that ranged from 1.2% for external causes of mortality to 12.2% for circulatory disease, and under-classification rates that ranged from 7.7% for external causes of mortality to 47.4% for respiratory disease. Neoplasms had generally lower misclassification rates with 4.3% over-classification and 13.3% under-classification. A logistic regression revealed that the odds of a match were 2.8 times higher when clinical history was mentioned on the autopsy report than when it was not. Similarly, the odds of a match were 3.4 times higher when death certificates were completed using autopsy findings than when autopsy findings were not used. This analysis excluded cases where it could not be determined if autopsy findings were used to complete death certificates. The findings of this study are useful to investigate the impact of death certificate misclassification errors on radiation risk estimates and, therefore, improve the reliability of epidemiological studies.

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