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In the prevailing era of cardiovascular and chronic diseases, the causes of death seldom operate in isolation. The researchers of the Interdisciplinary Center on Population Dynamics (CPop) at the University of Southern Denmark aim to assess the impact of distortions in statistically significant associations between causes-of-death on the overall structure of cause-of-death dependencies. Focusing on the causes of death for USA in 2019, they study all possible scenarios for independence of diseases by optimizing the marginal distributions in the respective contingency tables.

They select the independence scenario that corresponds to the minimal intervention in the contingency table and study the effect of setting up independence between diseases i and j on the relationships between i or j and any other disease outside this pair. Their findings indicate significant, mostly decreasing, strength of the latter. The most pronounced effects are observed in the loss of association for mental and behavioral disorders with other respiratory diseases, heart diseases with endocrine, nutritional, and metabolic disorders, as well as heart diseases with mental and behavioral disorders. They show that assuming independence even for a single pair of otherwise dependent causes of death, can have an impact on the overall cause-of-death structure. Our results may serve as a reference point when optimizing strategies for multimorbidity prevention.