

# Death Certificates Underestimate Diabetes

Data came from the Translating Research Into Action for Diabetes initiative.

BY CONNI BERGMANN KOURY, EDITOR-IN-CHIEF

Investigators used information from the Translating Research Into Action for Diabetes (TRIAD) study to determine the frequency of reporting of diabetes on death certificates of decedents with known diabetes, define factors associated with reporting diabetes and describe trends in reporting over time.

According to results from *Diabetes Care*, diabetes is more likely to be reported on the death certificates of individuals with diabetes who die of cardiovascular causes. Lead author Laura N. McEwen, MPH, PhD, and colleagues, found that the reporting of diabetes on death certificates has been stable over time. "Death certificates underestimate the prevalence of diabetes among decedents and present a biased picture of the causes of death among people with diabetes," they wrote. Dr. McEwen is from the departments of internal medicine and epidemiology at the University of Michigan.

Data were obtained from 11,927 patients with diabetes enrolled in the multicenter, prospective, observational TRIAD study of diabetes in managed care. Data on 540 decedents were obtained from the National Death Index, the investigators said. The primary dependent variable was the presence of ICD-10 codes for diabetes on the death certificate. Researchers also recorded the covariates age at death, sex, ethnicity, education, income, duration of diabetes, type of diabetes, diabetes treatment, smoking status and number of comorbidities.

Dr. McEwen and colleagues found that diabetes was recorded on 39% of death certificates and as the underlying cause of death for 10% of decedents with diabetes. "Diabetes was significantly less likely to be reported on the death certificates of decedents with diabetes dying of cancer," they wrote. Predictors of diabetes being recorded anywhere on the death certificate included longer duration of diabetes and insulin treatment. Longer duration of diabetes, insulin treatment and fewer comorbidities were associated with recording diabetes as the underlying cause of death.

There are three ways in which diabetes can be recorded on a death certificate. In part 1, diabetes may be recorded as either the underlying cause of death or as an antecedent condition. In part 2, diabetes may be recorded as a signifi-

cant condition contributing to death but not resulting in the underlying cause given in part 1.

There are many problems related to the reliability and validity of cause-of-death information on death certificates, according to the authors. Problems stemming from inaccuracy of diagnosis, variation in interpreting the causal role of the disease, variations in nosological coding, lack of training in death certificate completion and improper completion of death certificates.

"Individuals who have diabetes recorded as a cause of death may not be representative of all decedents with diabetes," Dr. McEwen said. The National Health and Nutrition Examination Survey I Epidemiological Follow-up Study found that diabetes was recorded as an underlying cause of death among women with diabetes (21%) more frequently than men with diabetes (7%). Hispanic or Latino ethnicity may also be associated with more frequent recording of diabetes on death certificates, especially when death is due to cardiovascular disease.

Previous investigators have hypothesized that diabetes reporting on death certificates may improve because of the increasing prevalence of diabetes, highly publicized results of clinical trials and increased media coverage of the disease.

"Attribution of death to diabetes is often a subjective judgment on the part of certifying physicians," Dr. McEwen wrote. "Results from our study suggest that the frequency of recording has remained constant despite an increase in the prevalence of diabetes since 1986.

Adding check boxes for common conditions of interest would likely improve recording of diabetes as a coexistent condition on death certificates. "Without such an intervention, death certificates are not a good source of data to estimate the strength of associations between the presence of diabetes and specific causes of death," they concluded. ■

*Laura N. McEwen, MPH, PhD, is from the departments of internal medicine and epidemiology, University of Michigan. She may be reached at [lmattei@umich.edu](mailto:lmattei@umich.edu).*

McEwen LN, Kim C, Haan M, et al. Diabetes reporting as a cause of death. *Diabetes Care*. 2006;29:247-253.