



Pathology & Biology Section – 2005

G42 Amended Cause and Manner of Death Certification: A Six-Year Review of the New Mexico Experience

Philip R. Croft, MD*, Sarah L. Lathrop, DVM, PhD, and Ross E. Zumwalt, MD, Office of the Medical Investigator, MSC11 6030, 1 University of New Mexico, Albuquerque, NM 87131-0001

After attending this presentation, attendees will understand the state medical examiner office's experience with the amendment of cause and/or manner of death on death certificates, including frequency of amendment, time between original certification and amendment, reasons for amendment, and in what way death certification was changed. This presentation will impact the forensic community and/or humanity by providing information about how, why, when, and how often the cause and/or manner of death is/are amended on death certificates completed by forensic pathologists. While the answers to these questions are of value to the forensic community, little formal study has been undertaken in this area.

At the end of June 2003, the New Mexico Office of the Medical Investigator (OMI) computer database was searched for all amended death certificates signed by OMI pathologists from 1997 through 2002. Each case file was reviewed in order to identify only those death certificates (DCs) with amended cause and/or manner of death fields. Cases that were initially external examinations only and subsequently became autopsies, DCs originally signed out by someone other than an OMI pathologist, "brain only" research-oriented autopsies, and DCs originally signed out as "pending" were excluded. Cause of death (COD), amended cause of death (ACOD), manner of death (MOD), amended manner of death (AMOD), the time elapsed (TE) between the original and amended DCs, and the reasons for the changes were recorded for the remaining cases. The reasons for the changes were categorized as medical records review, histology, investigations, family concerns, microbiology, or error. "Family concerns" included any family member, as well as third parties such as friends, caretakers, or primary physicians. Statistical analyses were performed using SAS version 8.02 statistical analysis software for Windows and Epilinfo 2002.

The database search identified 108 cases that fit the above criteria, 0.86% of all cases handled at OMI over the study period. This total included 81 autopsies and 27 external examinations. One of the 108 cases was amended twice, increasing the total number of amended DCs to 109. Autopsy DCs from 1997 to 1999 were significantly more likely to be amended than those from 2000 to 2002 ($P=0.02$). COD was amended on 62 of these 109 DCs. Twenty-three different CODs were used in these 62 DCs, with arteriosclerotic cardiovascular disease (ASCVD) accounting for almost a quarter. Twenty-nine different ACODs were used on the resulting 62 amended DCs, with intoxicant(s) comprising nearly a third. MOD was amended on 72 of these 109 DCs. Natural deaths had the greatest percentage of amended DCs (1.39%), followed by suicides (1.22%). Overall, there was a significant association between manner of death and the number of DCs amended ($P<0.001$). For external examinations, natural and suicide DCs were significantly more likely to be amended than accidents ($P=0.0002$ and $P=0.019$, respectively). Natural-to-accident (N-A) was the most common direction of change (28 DCs), followed by suicide-to-undetermined (S-U; 14 DCs). The mean TE between the original DC and amended DC was 3.83 months (SD 6.6 months). DCs amended secondary to investigations went the longest between signatures, with a mean of 8 months. The direction of change was significantly associated with TE ($P=0.04$). The directions most associated with an increasing TE were N-S, U-H, N-U, A-U, S-U and N-A. Toxicology was the most common reason for DC amendment (40 DCs) and MOD amendment (28 DCs), followed by family concerns (23 and 19 DCs, respectively) and investigations (13 and 12 DCs, respectively). Toxicology was also the most common reason for amending COD (26 DCs); histology was the second most common reason for COD amendment (11 DCs), followed by both family concerns and medical records review (8 DCs each). Of the fourteen DCs that changed from suicide-to-undetermined, eleven were triggered by family concerns. Of the twelve DCs in which MOD was amended secondary to investigations, nine moved to a MOD of undetermined. Twelve of the 109 DCs had "gunshot wound of head" as the COD, all but one of which had suicide as the MOD. Eight of these eleven suicides were subsequently amended to undetermined, and in ten the impetus was family concerns.

In conclusion, approximately 1% of death certificates signed by OMI pathologists had either cause or manner of death amended, with a slightly higher amendment percentage for external examinations than autopsies. ASCVD was the most commonly amended COD, and intoxicant(s) was the most common ACOD. There was a significant association between MOD and number of amended DCs. By percent, natural and suicide DCs were the most frequently amended. Natural-to-accident and suicide-to-undetermined were the most common directions in which MOD changed. Toxicology was the most common reason for amendment; family concerns were the impetus behind most suicide-to-undetermined amendments, with most of these cases involving gunshot wounds of the head. The average time to amendment was just under 4 months, and direction of change was significantly associated with the time elapsed. This



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information on how, why, when, and how often cause and/or manner of death certification is amended is both interesting and useful to the forensics community.

Death Certificate, Manner of Death, Autopsy