



H39 Reclassification of Sudden Infant Deaths in New Mexico

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After attending this presentation, attendees will understand the complexities surrounding the certification of unexplained infant deaths. Attendees will learn how changing classification schemes have impacted the downward trend of infant deaths after the introduction of the “Back to Sleep” campaign in New Mexico. Additionally, attendees will be able to apply knowledge gained to augment and standardize the practice of coding sudden infant deaths.

This presentation will impact the forensic science community by the presentation of a collaborative effort in reclassification of infant death in New Mexico and how this has impacted appropriate coding and standardization of these cases, particularly taking into account the diagnostic shift in manner of death. Standardization in coding necessitates that medical death investigators are familiar with the changing classification scheme and the implications for statistical tracking of infant death cases.

Background: The classification “Sudden Infant Death Syndrome” (SIDS) was coined to place sudden unexpected deaths of infants with no apparent cause of death into a category of exclusion to facilitate research. In practical use, the classification became a diagnosis, implying that SIDS was due to underlying disease processes; however, as scene investigation improved, forensic pathologists have realized that this is a far more heterogeneous group, consisting of cases of undiagnosed natural diseases, accidental suffocations associated with unsafe sleep environments, and covert homicides. Infant deaths certified as SIDS have decreased, in the decade surrounding the implementation of the American Academy of Pediatrics’ “Back to Sleep” Campaign introduced in 1994. As this decline represented a decrease in the number of accidental asphyxia deaths, it demonstrates that these deaths were erroneously being classified as SIDS. The other reason for the decline in SIDS death certifications is also obscured by a diagnostic shift from SIDS to “undetermined.”

Purpose: The intent of this study is to determine the extent of variation in certifying sudden unexpected infant deaths that exists among pathologists at a statewide medical examiner’s office and to investigate the changing trends of certifying these deaths in New Mexico.

Methods: A computerized query of all infant deaths less than one year of age between 2006 and 2011 yielded 134 cases originally certified as SIDS, Sudden Unexplained Infant Death (SUID), asphyxia, suffocation/strangulation, and undetermined. Scene, autopsy, and ancillary testing data were extracted from electronic and paper records and summarized into reports with accompanying scene and autopsy photographs when available. Nine forensic pathologists blinded to the original certification rendered a new cause/manner of death using current conventions. New diagnoses were compared to the original diagnoses as listed in the computerized records system and their corresponding ICD-9 coding by the Bureau of Vital Statistics using inter-observer agreement analysis (kappa statistics).

Results: The 134 study cases fell into three broad, original diagnosis categories: SIDS/SUID (66 cases), asphyxia/suffocation (23 cases), and undetermined (45 cases). Study population demographics demonstrated that 56.7% of the cases involved co-sleeping with an adult and 31% of cases were positioned prone to sleep.

When compared to original certification, a diagnosis of SIDS was not rendered by any pathologist in the study. All 66 cases originally coded as SIDS were classified to alternatives such as suffocation/strangulation or undetermined, with rare exceptions by three different pathologists involving natural deaths due to infectious causes or congenital anomalies. The pathologists reclassified more SIDS cases as undetermined (range 30-50 cases between pathologists) than as asphyxia/suffocation (range 14-34 cases between pathologists). Of the 23 cases originally called asphyxia/suffocation, most remained as such (range 8-21); however, some pathologists reclassified them as undetermined (range 2-15). The 45 undetermined cases largely remained undetermined (range 23-40), yet many were reclassified as asphyxia/suffocation (range 5-19), infectious (range 1-3), or as due to other causes (1).

Overall, poor agreement was observed between study pathologists and the original cause of death assigned to the infant deaths, with kappa statistics ranging from -0.15 to -0.01. The comparison of assigned manner to the originally assigned manner resulted in slightly better agreement, with kappa statistics falling in the “slight” to “fair” classifications of 0.08-0.18. When comparing certifications between reviewing pathologists only, moderate agreement was identified between the most experienced and the most junior pathologists, with a kappa of 0.46 and 0.42 for cause and 0.45 and 0.46 for manner.



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Conclusions: The practices of certifying SUIDs have shifted significantly over time, which may account for a large proportion of the decline in deaths certified as SIDS. Although poor inter-observer agreement existed between the original and reviewing pathologists in this study, no reviewing pathologist coded any study case as SIDS/SUID, accurately reflecting a diagnostic shift in the field. This study demonstrates the importance of consistency in the approach to certifying unexplained infant deaths.

Sudden Infant Death Syndrome, Sudden Unexplained Death, Classification