



## Pathology/Biology Section - 2016

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### H31 Comparison of Safe vs. Unsafe Sleep Environments in Sudden, Unexpected Death in Infants

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After attending this presentation, attendees will understand the difference between safe and unsafe sleeping environments and their impact in the determination of cause and manner of death in infant deaths.

This presentation will impact the forensic science community by highlighting the role of an unsafe sleep environment in sudden, unexpected death in infants.

Distinguishing between natural disease and potential asphyxia in infant deaths can be problematic, if not impossible. Between 2011 and 2013, there were significant changes in the way infant deaths were investigated and how cause and manner of death were designated. The terms “Sudden Infant Death Syndrome (SIDS),” “Sudden, Unexplained Death in Infancy (SUDI),” “unknown natural causes,” and “undetermined” have all been used somewhat interchangeably in cases in which there is no clear cause of death. These deaths were selected for study in more detail to see if there are any differences in sleeping position, demographics, and birth, medical, family, and social history between infants in “safe” versus “unsafe” sleeping environments that stand out.

A search of the Cook County Medical Examiner’s Office database from 2011 to 2013 was performed for decedents between the ages of 0 and 12 months in which “SIDS,” “SUDI,” or “undetermined” were listed as the cause of death. The case files were reviewed and records made of demographic data, cause and manner of death, and data related to sleeping environment, circumstances surrounding death, birth history, medical history, family history, and social history of parents.

During the period of 2011-2013, there were 193 infants who died suddenly and unexpectedly in Cook County, Illinois. Of these cases, 44 were designated as accidental deaths with cause of death as asphyxia due to overlay, wedging, or suffocation. The remaining 149 cases included cases signed out as SIDS (n=16, 11%), SUDI (n=48, 32%), and undetermined (n=85, 57%). Of these 149 cases, there was an equal distribution of gender with 74 (50%) males and 75 (50%) females and the average age was 3.1 months (range 0.25 to 12 months). There were racial differences with 108 (72%) of the infants being black and 41 (28%) being white.

This study defined safe sleeping environments as a crib, bassinet, pack and play, baby swing, or car seat, while unsafe sleeping environments included bed-sharing with others, an adult-size bed, couch/sofa, play pen, in the arms of sleeping parents, and when the sleeping environment was unknown. Out of the 149 cases, there were 29 (19%) with safe sleeping environments and 120 (81%) with unsafe sleeping environments. There were no differences with regard to age, gender, race, or gestational age at delivery between the two groups. Interestingly, 43% of the infants in the safe sleeping group were exposed to cigarette smoking or illicit drugs before and after birth. Low birth weight was seen in 33% of the infants in the safe sleeping group compared with 20% in the unsafe group. With regard to how the infants were placed to sleep, 33% of infants in the safe group were placed to sleep prone, while 17% were placed prone in the unsafe group. Despite being in what is considered to be a safe sleeping environment, there was soft bedding present in approximately 99% of all cases. There were no differences between the two groups with regard to illnesses during infancy, prenatal care, and maternal education level.

The contribution of unsafe sleeping environments to infant mortality remains unclear. It is possible that in some cases, there were natural diseases or genetic abnormalities that contributed to death. Some benefit may be derived from genetic testing and a new policy includes saving tissue for this purpose.

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#### Infant Death, Sleep Environment, SIDS/SUDI