



Pathology/Biology Section - 2015

H125 All-Terrain Vehicle and Snowmobile-Related Deaths

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After attending this presentation, attendees will: (1) understand the demographics of snowmobile and All-Terrain Vehicle (ATV)-related deaths; (2) appreciate common patterns of injury and toxicology findings in snowmobile and ATV-related deaths; (3) understand the various mechanisms of death encountered in snowmobile- and ATV-related deaths, including blunt force trauma and asphyxia; and, (4) have a better appreciation for the unique aspects of investigating deaths due to snowmobile- and ATV-related activities.

This presentation will impact the forensic science community by increasing awareness of the fact that snowmobile- and ATV-related deaths represent an important category of motor vehicle deaths investigated by Medical Examiner/Coroners (ME/Cs). ME/Cs should be familiar with injury patterns and common circumstances surrounding snowmobile- and ATV-related deaths, which are distinct from each other and from other motor vehicle-related deaths. Toxicology testing and interpretation are also important components of a death investigation of snowmobile- and ATV-related deaths. Detailed examination of the demographic characteristics, injury patterns, toxicology findings, and circumstances preceding injury may be helpful for implementing safety recommendations to reduce risk of injury and death.

In this study, the characteristics of ATV- and snowmobile-related deaths that occurred in southeastern Minnesota between 1999 and 2013 are described. During this time period, there were 10 snowmobile-related deaths and 16 ATV-related deaths. All snowmobile-related deaths occurred between the months of December and April, and all ATV-related deaths occurred between April and November. The average age of all deaths was 35.8 years (37.4 years for snowmobile deaths and 31.8 years to ATV-related deaths) with an overall male-to-female ratio of 7.67 (10.0 for snowmobile deaths and 4.33 for ATV-related deaths). Survival of greater than one day occurred in approximately 40% of snowmobile- and ATV-related deaths. Toxicology testing on the day of initial injury was available in 18 of the 26 deaths and showed that 66.7% of snowmobile-related deaths and 16.7% of ATV-related deaths were associated with a blood ethanol concentration above 80mg/dL. The circumstances surrounding injury could be categorized into four patterns: (1) struck a stationary object; (2) struck a moving object; (3) roll-over/ejection; and, (4) other. The percentages for circumstances of snowmobile accidents were 30% (struck a stationary object), 50% (struck a moving object), 20% (roll-over/ejection), 0% (other), and for ATV accidents 31.3%, 12.5%, 25.0% and 31.3%, respectively. The primary blunt force injury compartment (head, torso, or non-blunt force) was determined for both snowmobile- and ATV-related deaths and found to be 70%, 30%, and 0% for snowmobile-related deaths, and 62.5%, 25.0%, and 12.5% for ATV-related deaths, respectively. The “other” category for ATV-related deaths included one drowning and one compressional asphyxial death.

Snowmobile, All-Terrain Vehicle, Motor Vehicle Deaths