H22 An Analysis of Risk Factors Involving All-Terrain Vehicle (ATV) Deaths

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Learning Overview: After attending this presentation, attendees will better understand the categorized risk factors of ATV-related deaths, including modifiable risk factors that could potentially reduce the mortality rate of ATV-related deaths.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by re-approaching medical examiner investigator reporting on modifiable risk factors relating to ATV deaths, creating a more consistent database for factors that can influence ATV-related deaths.

Each year, there are approximately 650 deaths and 100,000 injuries that involve ATVs.[1] Recognized risk factors of ATV-related accidents and deaths include not wearing a helmet, riding with more than the recommended number of riders, adequate training, driving on paved roads, and young age of the driver.[1] This significant number of ATV-related injuries and deaths warrant an even more detailed investigation of risk factors. This study presents a series of 11 ATV-related deaths in western Michigan where an investigation and/or postmortem examination was performed in order to review the circumstances of individual ATV-related deaths and identify modifiable and non-modifiable risk factors.

Of all ATV-related deaths reviewed, 10 of the 11 decedents were male (91%). The manner of deaths was all accidental (91%), except for one (9%), which was a suicide where a male was found dead in a closed garage with a running ATV. Most commonly, the decedent was the driver (64%), all deaths occurred on ATVs while performing non-work-related activities, and the cause of death was most frequently due to blunt force injuries (64%). Seven decedents (64%) were found ejected from the ATV, two of which were found with the ATV on top of them, which is suggestive that seatbelts were not used. All but two deaths occurred off paved roads, which while this is a United States Consumer Product Safety Commission recommendation, the-off road locations increase the risk of poorer visibility and are potentially more difficult to navigate terrain. In addition, most deaths occurred early in the morning or late in the evening, which is suggestive of decreased visibility as a contributing factor to ATV-related deaths. Of note, the ages of decedents range from 11 years to 82 years (mean age of 39 years) and the majority of cases (55%) had no evidence of alcohol or illicit drugs at the time of death, which is suggestive that age and alcohol/illicit drugs are not strong indicators for increased risk of ATV-related deaths.

This study was most interested in identifying modifiable risk factors of ATV-related deaths, such as use of seatbelts and helmets, in order to reduce ATV-related deaths in the future. While Medical Examiner Investigators (MEI) often included this information in their written report or demonstrated in photographs at the scene, the information provided was not consistent. Therefore, this presentation suggests an additional checklist of specific ATV-related investigative information that could have potential impact in reducing future ATV-related deaths: (1) safety measures of ATV and ATV occupants (seatbelt availability; evidence of seatbelt use; protection around cabin (ex: roof, roll bars, and windshield); evidence of helmet use (if so, location and type of helmet); number of occupants involved in accident; experience and training of driver; known alcohol/drug use of occupants; and significant underlying natural diseases of occupants); (2) circumstances of crash (time; level of visibility; crash location (off-road versus paved road, groomed trail versus ungroomed area); type of crash; location of decedents; and extent of damage to ATV); and (3) ATV-specific information (make; model; horsepower/torque; passenger capacity; and sit versus straddle).

Reference(s):

1. United States Consumer Product Safety Commission Infographic. *ATV Deaths & Injuries*. https://onsafety.cpsc.gov/blog/2018/05/18/cpsc-infographic-atv-deaths-injuries/. Accessed July 26, 2018.

ATV, Deaths, Safety