K42 Methamphetamine Involved MVA Fatalities in Phoenix: A Seven Year Postmortem Study

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After attending this presentation, attendees will learn about the fatality statistics associated with motor vehicle accidents (MVAs) involving opera- tors driving under the influence of methamphetamine in the Phoenix Metropolitan area for the past seven years.

This presentation will impact the forensic community and/or humanity by increasing awareness not only in Arizona but throughout the United States concerning the growing problem of driving under the influence of drugs, in particular methamphetamine.

The Maricopa County Office of the Medical Examiner (OME) provides medicolegal investigations into all deaths in a population of 3.7 million to determine the cause and manner of death. In this study, the 31,274 cases admitted to the office between 2000 and 2006 were examined, and of those cases, 2,449 were ruled MVAs. Of those 2,449 MVAs, 168 of them tested positive for methamphetamine. It was reported by OME Investigators and various law enforcement agencies that the driving behavior of these individuals included speeding (16), running a red light (14), collisions caused by either crossing the center line of traffic (31) or rear-ending another vehicle (10) or other various means (32), single vehicle accidents caused by leaving the roadway (21) and roll-overs (27), as well as other erratic driving behavior (17).

In each case, a blood sample was screened using ELISA for the presence of methamphetamine with a 0.05 mg/L cutoff value. Each sample that screened positive was then extracted by liquid-liquid extraction using d10-amphetamine and d11-methamphetamine as internal standards followed by pentafluoropropionic anhydride derivatization. This extract was then analyzed quantitatively using selected ion monitoring (SIM) mode with gas chromatography/mass selective detection (GC/MSD) using electron impact ionization with a limit of detection of 0.01 mg/L and a limit of quantification of 0.025 mg/L. The methamphetamine results for the 168 methampheta- mine involved MVAs ranged from 0.025 mg/L to 11.34 mg/L, with an average of 1.05 mg/L and a median of 0.53 mg/L. Of these cases, 117 of them (70%) were above the suggested therapeutic value of 0.20 mg/L with 19 of those (11%) above 2.5 mg/L. The amphetamine results ranged from 0.025 mg/L to 1.16 mg/L, with an average of 0.11 mg/L and a median of 0.08 mg/L.

When this data is broken down by year, it shows a trend of increasing numbers of methamphetamine involved MVAs each year from 2000-2004, with a plateau since 2004 despite yearly increases in county population, OME admitted cases, and total MVA cases. Because methamphetamine is currently the most frequently encountered clandestinely produced drug in the United States, various federal and state laws have recently been passed that place restrictions on the sale of methamphetamine precursors, and that increase the consequences faced by methamphetamine offenders. In the state of Arizona, there have been various government and private sponsored programs to combat the growing problem of illicit methamphetamine use. There is some hope that these laws and organizations will help to curb the methamphetamine use in Maricopa County; ultimately decreasing the number of methamphetamine involved MVA fatalities the office receives each year.

Data concerning 2007 methamphetamine involved MVAs is currently being collected and will be added to the current data, and presented along with the seven years represented so far.

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