



K63 Toxicological Findings in Driving Under the Influence Cases in Northeast Ohio: A Six-Year Study

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Learning Overview: After attending this presentation, attendees will have a better understanding of drug prevalence in a recent Driving Under the Influence/Driving Under the Influence of Drugs (DUI/DUID) population.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing data on recent drugged drivers in the United States.

Background: There are more than six million motor vehicle accidents in the United States annually. Drug testing of operators of motor vehicles has become a routine occurrence, especially if serious injuries or fatalities occur. Knowledge of the prevalence of drugs in these individuals will provide evidence to assist policy makers in the public health effort to improve roadway safety.

Objective: The objective of this study was to review all driving cases submitted to the Lake County Crime Laboratory for toxicology testing by law enforcement during the period January 1, 2012, to December 31, 2017, in Lake and Ashtabula Counties, Ohio.

Methods: Blood and/or urine were submitted for each case and a standard protocol utilized to determine the tests to be conducted. Testing for volatiles by headspace gas chromatography in blood and urine was initially performed. If the ethanol concentration was below the per se level (per se=blood 0.08; urine 0.11 g%), the specimen was assayed by enzyme-linked immunosorbent assay screen for amphetamine, barbiturates, benzodiazepines, cannabinoids, carisoprodol, cocaine/metabolites, fentanyl, methadone, methamphetamine, opiates, oxycodone, phencyclidine, tramadol, tricyclic antidepressants, and zolpidem. Screening positive results were confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). A general drug screen by solid phase extraction followed by GC/MS for alkaline, neutral, and acidic drugs was also performed based upon case history. Additional confirmatory testing was performed as indicated by the case narrative, further investigation, or law enforcement request.

Results: A total of 845 cases were identified. Blood and urine were submitted in 25% of the cases with 46% blood-only and 29% urine-only submissions. Only confirmed drug testing results are presented. No drugs, including ethanol, were detected in 30 cases (3%). The most common drug detected was ethanol ($n=442$; 52%, range; mean and median (g%)- blood 0.010–0.410; 177, 174; urine 0.012–0.474; 210, 215) followed by opioids (36%), benzodiazepines (22%), and marijuana (21%). Other prevalent drugs included cocaine/metabolites, sympathomimetic amines, and carisoprodol/meprobamate. More than one drug were identified in 319 cases (37% of the total number of cases) with 93 cases (11% total) containing more than three compounds (62% of these occurred 2015–2016). Barbiturates and phencyclidine accounted for less than 3% of the positive cases. The highest number of individual drugs associated with a single case was 12. Codeine/morphine was the most prevalent opioid combination and alprazolam, clonazepam/7-aminoclonazepam, and diazepam/metabolites were prevalent for the benzodiazepines. Trends observed included the proportion of cases positive for ethanol decreased over the study period, from 66% of all cases in 2012 to 37% in 2017. The proportion of cases positive for opioids increased from 2012 (18%) to a high of 57% in 2016.

Conclusion: A six-year evaluation of potential drugged driving cases demonstrated that at least one drug was detected in more than 95% of cases. Furthermore, a noteworthy number of cases reflected poly drug use.

Driving Under the Influence, Impaired Driving, Toxicology