

K30 The Impact of Reducing the Ethanol Threshold for Performing Drug Testing in Driving While Intoxicated (DWI) Cases

Teresa R. Gray, PhD*, Houston, TX 77054

Learning Overview: Forensic toxicology laboratories often employ tiered testing protocols for Driving Under the Influence (DUI)/DWI cases where all cases are tested for Blood Alcohol Concentration (BAC), but drug testing is performed only if the BAC is below a laboratory-defined threshold. The BAC threshold for drug testing varies by laboratory but is usually between 0.08–0.15g/100mL. For many years, the Harris County Institute of Forensic Sciences used a drug testing threshold of 0.17g ethanol/100mL. The decision point was lowered to 0.10g ethanol/100mL in June 2015 in response to recommendations from county policy makers. After attending this presentation, attendees will understand how the lowered decision point impacted drug positivity rates and case throughput.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by allowing attendees to assess whether the change in drug testing policy was effective and would have significantly impacted impairment interpretation for cases with BACs between 0.10–0.17g/100mL.

Methods: DUI/DWI cases were tested for volatiles using dual column headspace gas chromatography-flame ionization detection. Drug screening, if required, was performed with a 9- or 11-panel Enzyme-Linked Immuno-Sorbent Assay (ELISA) and/or liquid chromatography/time-of-flight mass spectrometry targeting at least 34 drugs or metabolites. Confirmation testing was performed with gas or liquid chromatography coupled with single or tandem mass spectrometry. DUI/DWI case results from 2.5 years before and after the threshold change (January 2013–December 2017) were extracted from the laboratory's information management system.

The potential for drug impairment (i.e., pharmacological action, ethanol-drug interaction, drug concentration) was assessed for cases with BACs between 0.10–0.17g/100 mL, understanding that predicting the likelihood or magnitude of impairment based on drug presence or concentration alone is fraught with difficulty. Cases were divided into five groups based on drug findings: (1) negative drug results; (2) non-impairing drugs or inactive metabolites; (3) only Central Nervous System (CNS) depressants; (4) only cannabis, defined as the presence of Δ -9-Tetrahydrocannabinol (THC) above the detection limit of 1ng/mL; and (5) CNS stimulants or multiple drug classes.

Results: With a 0.17g/100mL BAC threshold, approximately 50% of the 5,059 DWI cases from January 2013–June 2015 were drug tested; by reducing the threshold to 0.10g/100mL, less than 25% of the 7,503 DWI cases from July 2015–December 2017 were drug tested, saving the laboratory over 2,000 drug screens and hundreds of confirmation tests. Changes to staffing levels, testing procedures, and casework priorities precluded meaningful analysis of how the threshold change impacted turnaround time.

The drugs found in casework were not impacted by the reduced threshold, as the ten most prevalent analytes remained consistent: norcarboxy-THC, THC, alprazolam, benzoylcegonine, hydrocodone, meprobamate, acetaminophen, carisoprodol, cocaine, and cocaethylene. Heroin (measured as 6-acetylmorphine), methamphetamine/amphetamine, and phencyclidine use in drivers appears to be more commonly associated with low (<0.10g/100mL) or no alcohol use, as positivity rates were greater after the reduction in drug testing threshold.

Among drivers whose BAC were between 0.10–0.17g/100mL, most (~65%) had negative drug tests and another ~6% were positive for only non-impairing drugs or metabolites. Approximately 6% were positive for one or more CNS depressants, usually at therapeutic concentrations. For these CNS depressant cases, the drugs would, at most, enhance the ethanol effect. Approximately 10% were positive for cannabis only. Concurrent alcohol and cannabis use have been associated with greater impairment than alcohol alone; therefore, the presence of THC was considered as having “significant” impacts on interpretation. Finally, approximately 12% of drivers had CNS stimulants or multiple drug classes. For this group, the impact of the drug(s) on intoxication interpretation could vary depending on the type of drug, individual tolerance, the phase of intoxication (e.g., the rush or crash of stimulants), and concentration. To be conservative, the presence of CNS stimulants or multiple drug classes was considered as having “significant” impacts on interpretation.

Since the implementation of the new testing protocol, stakeholders have provided little feedback. Additional testing is rarely requested and is usually limited to higher level offenses (e.g., intoxication manslaughter or felony murder).

Conclusions: Changing the drug testing threshold from 0.17 to 0.10g/100mL dramatically reduced the number of cases requiring drug testing without significantly impacting impairment interpretation. The drug results in over 70% of drivers with BACs between 0.10–0.17 were negative or non-impairing. While the change in testing policy was effective in Harris County, these results may not be applicable to other jurisdictions due to differences in alcohol-impaired driving prevalence, drug usage rates, laboratory testing capability and staffing resources, law enforcement programs targeting drugged driving, and local statutes regarding alcohol- and/or drug-impaired driving.

DWI, Drugged Driving, Ethanol