K43 The Results of the National Safety Council's Alcohol, Drugs and Impairment Division (NSC ADID) Survey of Drug Testing in Driving Under the Influence of Drugs (DUID) and Traffic Fatality Investigations

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After attending this presentation, attendees will be able to compare their laboratory practices for toxicological testing in drug-impaired driving and traffic fatality cases and evaluate their cutoff limits for screening and confirmation of commonly encountered drugs to other United States and Canadian laboratories.

This presentation will impact the forensic science community by providing results from a survey conducted under the NSC ADID regarding laboratory practices to update the current guidelines and recommendations for laboratory testing in DUID and traffic fatality investigations to improve standardization.

The purpose of this project is to provide toxicology laboratories with a list of commonly encountered analytes and appropriate screening and confirmation thresholds in DUID cases and motor vehicle fatalities. Standardization of analytical testing addresses concerns highlighted in the 2009 National Academy of Sciences (NAS) Report.[1] Additionally, having a standardized approach will improve the quality of statistics reported for DUID and motor vehicle fatality cases.

Toxicology laboratories were surveyed about their drug testing practices, specifically with respect to the matrices tested, scope of testing, cutoff concentrations for screening and confirmation, and whether they are in compliance with the 2013 guidelines and recommendations.[2] Changes in drug trends and improvement in testing technologies and capabilities of forensic toxicology laboratories were also addressed. The survey was sent via SurveyMonkey® to individuals who confirmed their participation, and ultimately 70 completed surveys were included in the data analysis.

Of the responding laboratories, 90% test blood samples, 68% test urine samples, and 1% test oral fluid samples in DUID casework. Screening methods for blood include Enzyme-Linked Immuno-Sorbent Assay (ELISA) (71%), Gas Chromatography/Mass Spectrometry (GC/MS) (50%), Liquid Chromatography/Mass Spectrometry (LC/MS) (34%), Enzyme-Multiplied Immunoassay Technique (EMIT) (11%), and Liquid Chromatography/Time-Of-Flight (LC/TOF) (9%). Urine screening included ELISA (46%), GC/MS (37%), EMIT (27%), LC/MS (26%), and LC/TOF (6%). Confirmatory methods were 87% GC/MS and 73% LC/MS for blood samples, and 77% GC/MS and 46% LC/MS for urine samples. A total of 34% of respondents reported unconfirmed screen results, with many commenting that the report states the result is not confirmed. Reasons for reporting unconfirmed results included legal time constraints, confirmatory testing not available, relevance of the drug, or poly-drug case policy.

Compliance with the scope of testing and cutoff limits from the 2013 recommendations revealed that 15% of the laboratories met or exceeded the recommendations, while 47% are currently changing their methods in order to meet them. For blood, screening for opiates and confirmation of cannabinoids and opiates were the most frequent categories for which the recommendations were not met.

Updates to the 2013 cutoffs and recommended test menu will be determined at a consensus meeting of the participating laboratories in November, with distribution by NSC ADID in early 2017.

Reference(s):

1. Committee on Identifying the Needs of the Forensic Science Community. *Strengthening Forensic Science in the United States: A Path Forward*. National Research Council of the National Academies, 2009.
2. Logan B.K., Lowrie K.J., Turri J.L., Yeakel J.K., Limoges J.F., Miles A.K., Scarneo C.E., Kerrigan S.B.A., Farrell L.J. Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities. *Journal of Analytical Toxicology.* 2013 Aug; 37(8): 552-558.

DUID, Cutoffs, Guidelines