K19 Survey of Practices in Toxicological Investigation of Drug-Impaired Driving

Kayla Lowrie, MS, 520 Stevens Dr, Apt 208, King of Prussia, PA 19406; Jennifer L. Turri, BS, W 3901 Johnson Rd, Vulcan, MI 49892; Jillian K. Yeakel, MS, 105 Revere Dr, Harleysville, PA 19438; and Barry K. Logan, PhD, NMS Labs, 3701 Welsh Rd, Willow Grove, PA 19090*

After attending this presentation, attendees will be able to compare their laboratory's practices with peer laboratories and evaluate typical cutoffs used for drug screening and confirmation. This presentation will describe data from a survey carried out to evaluate the practices of forensic toxicology laboratories performing analysis in the investigation of Driving Under the Influence of Drugs (DUID) cases. The survey was sponsored by the National Safety Council's Committee on Alcohol and Other Drugs (NSC CAOD).

This presentation will impact the forensic science community by providing data to support updating of general recommendations for laboratory testing in DUID investigations in order to improve consistency and standards of screening and confirmation.

The purpose of this survey was to evaluate scope and sensitivity of testing, compliance with the current recommendations for DUID testing, and changes in patterns of drug use by drivers in DUID investigations that might warrant updating of previous recommendations. This research aimed to assist in critically reviewing and updating the current guidelines and recommendations for the toxicology community.

An online web-survey instrument was used. The survey questions focused on scope and sensitivity for drug screening and confirmation, analytical methods, and ability to meet previously published recommendations.[1] The final revised survey was sent to confirmed participants via the online survey. Follow-up emails and phone calls were used to obtain additional information or clarify responses. In spite of these efforts, some participants did not respond to all questions; therefore, the data represents 96 surveys completed to the point where they were deemed sufficiently complete for inclusion in the data analysis.

It was indicated that 80% of responding labs test blood samples and 68% reported testing urine samples in DUID casework. Few labs reported testing oral fluid, and not consistently. Screening methods for blood testing were mostly Enzyme-Linked Immuno-Sorbent Assay (ELISA) (34%), Gas Chromatograph/Mass Spectrometry (GC/MS) (28%), Liquid Chromatography/Mass Spectrometry (LC/MS) (17%), and Enzyme Multiplied Immunoassay Technique (EMIT) (13%). No labs reported using Liquid Chromatography Time-Of-Flight (LCTOF) screening for blood. For urine, 29% reported GC/MS screening, ELISA (27%), EMIT (23%), and LC/MS (14%). For confirmatory testing, 52% of labs reported using GC/MS, while 36% used LC/MS. Labs were asked about reporting unconfirmed results, and 33% indicated they would report those under some circumstances, including insufficient sample, lack of a confirmatory procedure (with a recommendation to have testing sent out), and emphasized the inclusion of disclaimer about the presumptive nature of the result.

Respondents were asked whether their laboratories practices were consistent with the 2007 recommendations. Responses varied by drug and matrix. For screening purposes, the majority of labs reported meeting or exceeding the guideline recommendations for drugs of abuse, including carboxyTHC, benzoylecgonine, benzodiazepines, MDA, barbiturates, methadone, opiates, and PCP. The majority did not meet the recommendations for amphetamines. Drugs for which the majority of laboratories did not meet the recommendations for confirmatory testing were mostly therapeutic drugs including trazodone, nortriptyline, carisoprodol, zolpidem, topiramate, and methadone.

Participants were asked to indicate which additional drugs should be included in the recommendations for routine screening and confirmation. At least 75% of the 68 participants who responded to this question indicated that mephedrone, zopiclone, and buprenorphine should be included in future recommendations for blood sample screening. Additionally, at least 50% of the participants indicated that methylone, MDPV, JWH-073, JWH-250, JWH-081, JWH-122, JWH-210, JWH-019, JWH-200, AM-2201, benzylpiperazine, trifluromethylphenylpiperazine, dimethyltryptamine, modafinil, quetiapine, and zaleplon should be included in the future recommendations for blood sample screening.

Based on this input, the NSC CAOD is updating the guidelines for distribution early in 2013.

Reference:

1. Recommendations for Toxicological Investigation of Drug Impaired Driving. Farrell LJ, Kerrigan SBA, LoganBK, *J Forensic Sci*, 2007 Sep;52(5):1214-8.

DUID, Cutoffs, Guidelines

 ** Presenting Author*