

K27 Recommendations for Drug Testing in Driving Under the Influence of Drugs (DUID) and Motor Vehicle Fatality Cases—2021 Update

Amanda D'Orazio, MS, NMS Labs, Horsham, PA 19044; Barry K. Logan, PhD, NMS Labs, Horsham, PA 19044; Amanda L.A. Mohr, MSFS, Center for Forensic Science Research & Education, Willow Grove, PA 19090; Ayako Chan-Hosokawa, MS, NMS Labs, Horsham, PA 19090; Curt E. Harper, PhD, Alabama Department of Forensic Sciences, Hoover, AL 35244; Marilyn A. Huestis, PhD, Huestis & Smith Toxicology, LLC, Severna Park, MD 21146; Sarah Kerrigan, PhD, Sam Houston State University Department of Forensic Science, Huntsville, TX 77341; Jennifer F. Limoges, MS, New York State Police, Albany, NY 12226-3000; Laura J. Liddicoat, BS, Madison, WI 53711; Amy Miles, BS, Wisconsin State Lab of Hygiene, Madison, WI 53707; Karen S. Scott, PhD, Arcadia University, Glenside, PA 19038*

Learning Overview: After attending this presentation, attendees can compare their cutoff limits to community consensus recommendations for Tier I compounds and evaluate implementing Tier II compound testing.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by presenting updated recommendations for laboratory testing in DUID and traffic fatality investigations from the National Safety Council's Alcohol, Drugs and Impairment Division (NSC ADID) to improve standardization and data collection to better characterize the DUID problem.

The purpose of this project was to update the 2017 recommendations by re-evaluating Tier I and Tier II scope and cutoffs for screening and confirmation and potential changes to either scope. The recommendations were based on a survey sent to laboratories throughout the United States and Canada about testing practices, scope of testing and cutoffs, matrices tested, and compliance with the 2017 recommendations. Laboratories were also surveyed on drug prevalence and their laboratory methods and resources. The survey was sent via SurveyMonkey™ to laboratories confirming their participation in DUID testing, and ultimately 65 laboratories completed the survey.

A virtual consensus meeting, comprised of 23 forensic science practitioners who participated in the survey, was held to re-evaluate the 2017 recommendations following analysis of the survey results. Participants were selected to include a variety of perspectives based on laboratory type, the number of DUID and traffic fatality cases tested annually, matrices tested, and geographical location. As a result of the consensus meeting, no compounds were added or removed from Tier I. The screening and confirmation cutoffs for carisoprodol in blood and urine were raised to 1,000ng/mL. The blood confirmation cutoff for norbuprenorphine and the urine confirmation cutoff for fentanyl were raised to 1ng/mL. Trazodone and Difluoroethane (DFE) were added to Tier II due to their increased prevalence. The cutoffs for oral fluid were re-evaluated based on ongoing research, current levels of testing, and concentrations in DUID cases. For clarification, the Tier I cutoffs reflect free concentrations and hydrolysis is not required.

While gabapentin has shown an increase in prevalence, promotion to Tier I was difficult to justify at this time due to poly-drug use. Gabapentin is typically present together with other drugs, such as opioids and anti-depressants, at high concentrations. Despite relatively low prevalence for 3,4-Methylenedioxymethamphetamine (MDMA), 3,4-Methylenedioxyamphetamine (MDA), oxazepam, temazepam, oxymorphone, and hydromorphone, these compounds will remain in Tier I due to their relevance in assessing metabolic pathway for parent compounds and usefulness in determining drug abuse patterns. Similarly, when a laboratory is limited to screening by immunoassay, both 7-aminoclonazepam and clonazepam should be tested; however, if other screening technologies are available to the laboratory, then it is acceptable to screen for only 7-aminoclonazepam.

The consensus panel agreed that urine is an inferior matrix to blood and oral fluid and provides less information regarding potential impairment collaboration in DUID and motor vehicle fatality cases. This iteration of recommendations will be the last to include urine as a matrix for testing Tier I and Tier II compounds. Laboratories testing urine for DUID and motor vehicle fatality cases should consider testing blood and/or oral fluid to assess a driver's recent drug use. The panel has also updated recommendations for oral fluid testing requirements, based on increasing amounts of available data and increased attention to oral fluid as a matrix in these cases.

Updates to the 2017 cutoffs and recommended test menu will be distributed by NSC ADID in early 2021.

DUID, Cutoffs, Guidelines