PROJECT ECHO: OD-FIT

Overdose Fatality Investigation Techniques

Postmortem Toxicological Investigation of Drug Overdose Deaths

The certification of the cause and manner of death typically requires the analysis of fluids and tissues obtained from a decedent for the presence of intoxicants. Additionally, public health agencies often use toxicological data in their surveillance of drugs, including emerging psychoactive substances. Analyzing drugs requires state-of-the-art instrumentation (e.g., high-resolution mass spectrometry) to accurately identify drugs, drug metabolites, and other substances. The interpretation of drug test results must be contextual, assessing the scene, autopsy, microscopic findings, drug inventory (count), medical history, and Prescription Drug Monitoring Program (PDMP) data.

Relevant Terminology:

- **NPS**: New psychoactive substance
- **ME/C**: Medical examiner and coroner
- **PDMP**: Prescription Drug Monitoring Program

Key takeaways:

- The analysis of drugs, drug metabolites, and other substances utilizes various techniques configured to identify and quantify relevant over-the-counter, prescription, and illicit drugs. Recent advances in analytical toxicology include using high-resolution mass spectrometry to identify NPS.
- In addition to specifying the scope of analysis, the ME/C should provide sufficient information to the toxicology laboratory to conduct a thorough and relevant analysis of the decedent's fluids and tissues. A condensed MDI history and suspected drugs should be indicated.
- Most fatal drug overdoses involve polysubstance use, including the ingestion of depressants and stimulants. The interpretation of the drug test results is complex and should include an assessment of (1) predominant drug effect, (2) combined drug effect, (3) frequency of drug administration, and (4) the administration of an antagonist.
- The ME/C must know the capabilities of the toxicology laboratory, including what is and is not tested. The scope of testing may not include all substances, and targeted analyses may be necessary. When the toxicology results are not as expected, the ME/C should consult with the toxicologist regarding the scope of analysis and the need to perform additional analyses or referral laboratory testing. Analyzing scene evidence, including paraphernalia, is often useful in identifying a new drug.

To learn more about the Toxicological Investigation of Drug Overdose Deaths, check out the session recording and slides or email odfitecho@astho.org for more information.

References:

This project and publication were supported by the cooperative agreement number, CDC-RFA-OT18-1802, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

- American Academy of Forensic Sciences (AAFS). "Standard for the Analytical Scope and Sensitivity of Forensic Toxicological Testing of Blood in Medicolegal Death Investigations, ANSI/ASB Standard 119." 2021. Available at https://www.aafs.org/asb-standard/standard-analytical-scope-and-sensitivity-forensic-toxicological-testing-blood-0.

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