Overview: Drug use can lead to adverse events and overdose scenarios where individuals present to emergency departments for clinical evaluation and/or treatment. The culprit can be traditional drugs (e.g., heroin, fentanyl, cocaine, methamphetamine) or novel psychoactive substances (NPS); however, proper drug testing methodologies must be employed for accurate identification and characterization. Street-level drug preparations can contain undeclared or unwanted substances, such as toxic adulterants or NPS, which can potentiate effects or lead to adverse reactions. Understanding emerging drug trends and drug testing results can help direct new or revised approaches to clinical treatment and harm reduction efforts.

Objective: A partnership between the American College of Medical Toxicology (ACMT) and the Center for Forensic Science Research and Education (CFSRE) was established to comprehensively assess the role and prevalence of synthetic opioids and other drugs among suspected overdose events in the United States. This report provides new information regarding comprehensive drug testing of clinical biological specimens collected after suspected opioid overdoses in various cities across the United States.

Purpose: This report provides new information regarding comprehensive drug testing of clinical biological specimens collected after suspected opioid overdoses in various cities across the United States.

Testing: Analysis was performed via liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS). The scope of testing targeted more than 900 drugs, including a vast majority of NPS and metabolites. Drug classes included opioids, stimulants, cannabinoids, and benzodiazepines, among others.

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Summary:
- Distinct geographical differences were observed (e.g., opioids, NPS)
- Fentanyl was the most commonly detected opioid nationally (76%)
- Combined opioid and stimulant use was common nationally (63%)
- Several NPS were detected (incl. opioids, benzodiazepines, cannabinoids)