

New Study Shows Urine Drug Testing Data Serve as Powerful Early Warning System, Help to Explain Regional Changes in Fatal Overdose

SAN DIEGO, CA, UNITED STATES, June 16, 2026 /EINPresswire.com/ -- New research published in [Drug and Alcohol Dependence](#) led by Andrew Huhn, PhD, MBA, Associate Professor of Psychiatry and Behavioral Sciences at Johns Hopkins University School of Medicine and co-authored by [Millennium Health](#) researchers demonstrates that urine drug testing (UDT) data can quickly

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Eric Dawson, Millennium Health

identify regional changes in drug exposure that may alter fatal overdose risk. Analyzing more than 2.1 million UDT specimens from over 575,000 patients between 2019 and 2025, the research team found that changes in fentanyl exposure—as measured by fentanyl concentrations and detection rates—closely tracked with and can help stakeholders better understand changes in regional fentanyl overdose deaths.

Key Findings

- Increases in fentanyl detection rates (+104%) and concentrations (+333%) in UDT aligned with the dramatic increases in fentanyl-related overdose deaths nationally (+94%) between 2019-2023
- Fentanyl detection rates (-25%) and concentrations (-28%) in UDT fell in 2024, mirroring declines in fentanyl purity reported by the Drug Enforcement Administration and fentanyl-related deaths during this period
- Amid declining fentanyl concentrations, heroin detection in specimens that were positive for fentanyl increased across the U.S. but most strikingly in the West, suggesting increased adulteration of the illicit fentanyl supply with heroin to offset “weak” fentanyl
- Strong regional differences emerged throughout the period of study:
- The West had the highest fentanyl concentrations and strongest correlation between concentration and overdose deaths
- The South, Midwest, and Northeast showed stronger relationships between fentanyl detection rate and overdose
- Forecasting models using UDT data closely tracked with monthly fentanyl overdose deaths

Real-Time Insights for a Rapidly Changing Drug Supply

Urine drug testing data provide near real-time insight into drug use and exposure trends and can complement traditional surveillance measures by delivering more timely and specific information.

“UDT data can help minimize the lag between the reporting of overdose mortality and current trends, giving public health officials, clinicians, and policymakers earlier visibility into these trends,” said Angela Huskey, PharmD, CPE, Chief Clinical Officer, Millennium Health, “helping to facilitate more timely and informed responses to an evolving crisis.”

Why It Matters

Accounting for over 68% of all fatal drug overdoses in 2024, synthetic opioid overdose deaths remain a significant public health crisis despite recent declines. In order to mount strategic and targeted responses, novel, agile, and timely surveillance systems are needed to keep pace with rapid changes in drug use and a volatile and constantly evolving drug supply.

Monitoring drug use in real time with UDT data can improve response strategies by:

- Identifying emerging hotspots
- Detecting shifts in the potency and composition of the drug supply
- Informing targeted prevention and treatment efforts

“These findings highlight the critical role of urine drug testing as a highly specific and novel real-time surveillance tool,” added Eric Dawson, PharmD, Vice President of Clinical Affairs at Millennium Health, “providing timely insight into the ever-changing illicit opioid supply and evolving drug use threats.”

About the Study

The study evaluated fentanyl concentration and detection rate (described as prevalence) in UDT samples and compared them with synthetic opioid overdose death data across the four U.S. Census regions: Northeast, Midwest, South, and West. Advanced statistical and time-series modeling techniques were used to identify and explain overdose trends.

About Millennium Health

Millennium Health is an accredited [specialty laboratory](#) with over 15 years of experience in drug testing. We provide objective information about patients’ recent use of prescription medications and/or illicit drugs which helps clinicians monitor and treat millions of Americans living with chronic pain, substance use disorders, mental health disorders or other health conditions. Our ability to monitor drug use trends allows us to alert clinicians, health agencies and others to real-time drug use changes to help inform more targeted drug overdose prevention and response strategies to save lives.

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