

# What Immunoassay Presumptive Screens Miss: Raising The Bar With UltraDetect™ by Acutis



Acūtis

# Why High-sensitivity Presumptive Screening Matters

## Acutis UltraDetect™ vs Traditional Immunoassay

Presumptive drug screening is the first and often only gateway to detecting substance use before a reflex to confirmatory testing can be performed. When a presumptive result is positive or inconsistent with the expected outcomes, it is typically reflexed to a more sensitive and specific method, most commonly LC-MS/MS (liquid chromatography–tandem mass spectrometry), to precisely identify and quantify the compounds involved.

**Yet across the industry, outdated immunoassay methods are routinely missing key drug use events due to high cutoff thresholds, poor cross-reactivity, and inconsistent performance.**



*Drugs such as buprenorphine, amphetamines, benzodiazepines, and cocaine/heroin yield false negative immunoassay [screen] results due to low cross-reactivity and non-reactivity...*

Medicare LCD L3465

Despite its limitations, there is a critical dependency on presumptive screening. When the presumptive test fails to detect drug use, the opportunity for a reflex to confirmation, and for clinical action, is lost.

Conversely, a false positive result can lead to confrontational or accusatory discussions between patient and counselor, damaging trust and consuming valuable time and resources in response to a result that ultimately proves inaccurate.



*We have solved an industry-wide problem with a high-sensitivity presumptive screen.*

Gregory Hobbs  
PhD, DBACC, FACB

# The Problem with Traditional Immunoassay Screens

Laboratories still rely on enzyme immunoassay (EIA) for presumptive testing. **EIA was never designed to keep up with today's drug landscape, and it has several well-documented limitations:**

**High Cutoff Thresholds** → Traditional EIAs have relatively high detection limits, meaning low-level or recent drug use often goes undetected, resulting in false negatives.

**Poor Cross-Reactivity** → EIAs are often not optimized for many commonly prescribed or abused medications. For example, widely used benzodiazepines such as lorazepam, clonazepam, alprazolam (Xanax), and midazolam frequently go undetected.

**Unintended Cross-Reactions** → Conversely, some non-target drugs may trigger a positive result, leading to false-positives and unnecessary consequences for the patient.

## Acutis UltraDetect™: A New Standard

To address these limitations, Acutis has developed a **high-sensitivity presumptive screen** that redefines what early-stage testing can achieve:

**Lower Cutoff Thresholds** → Our screens are calibrated to detect lower concentrations of drugs, significantly reducing the risk of false negatives.

**Enhanced Drug Coverage** → We've optimized our screen to detect a wider range of benzodiazepines and other challenging drug classes that traditional assays miss.

**Reduced False Positives** → Better target specificity means more reliable results, and less unnecessary reflex testing or confrontation with patients.

This advancement bridges the gap between rapid screening and definitive testing, ensuring that critical cases don't slip through the cracks.

## Closing the Gap

Our scientists have analyzed the most common failure points in traditional immunoassay-based drug screening. Acutis research has identified key areas where standard presumptive tests often fall short in sensitivity, specificity, and cross-reactivity across high-risk drug classes.

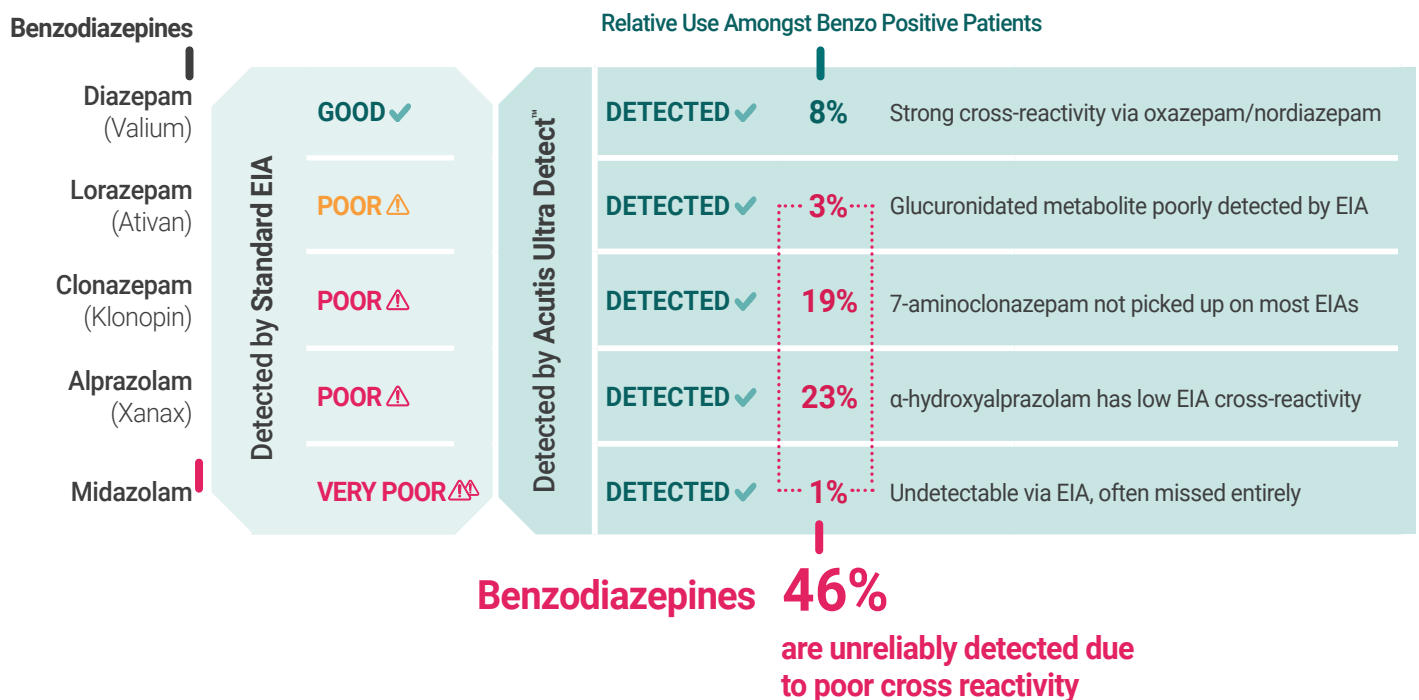
In response, we developed a proprietary high-sensitivity presumptive screen that directly addresses these limitations. This enhanced screening method is designed to detect lower drug concentrations and capture compounds that are frequently missed or misidentified in conventional screens. The result is a more accurate, reliable first-line test that supports timely clinical decisions and improves patient care outcomes.

## Benzodiazepine Analysis

Amongst a patient population of 6,000 samples tested using Acutis UltraDetect, 46% of the samples contained a formulation of Benzodiazepines that are not picked up in traditional immunoassay-based screens due to poor cross-reactivity.

Results for our high-sensitivity presumptive test for benzodiazepines show that we are detecting drugs such as lorazepam, clonazepam, alprazolam (Xanax), and midazolam that frequently go undetected in immunoassay presumptive screens.

## Comparative Detection: Standard EIA vs. Acutis UltraDetect™



## Cocaine Analysis

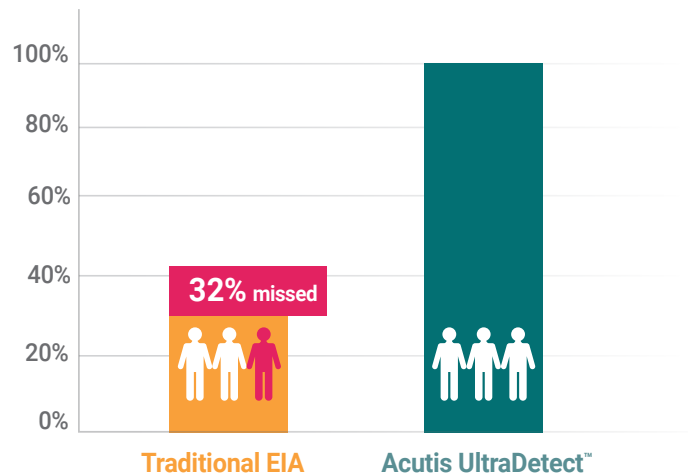
Cocaine use is rising.

This is especially in combination with other substances like opioids and alcohol, driving an increase in overdose deaths and relapse events. Despite its high addiction potential and severe health risks, traditional presumptive screening methods are often failing to detect cocaine use in time for intervention due to the inadequate detection cutoff thresholds.

Standard immunoassay screens typically use a cutoff of 150 ng/mL for the cocaine metabolite benzoylecgonine. Acutis analysis shows that **32% of positive cocaine cases are missed** at this threshold compared to a more sensitive 50 ng/mL cutoff.

### Comparative Detection: Standard EIA vs. Acutis UltraDetect™

**32%**  
missed by traditional EIA  
screens but detected  
by Acutis UltraDetect™



**Acutis UltraDetect™**  
extends detection window.  
Traditional screens likely  
to miss past 3 to 4 days.

Cocaine has a relatively short detection window in urine, especially when screened at higher cutoff levels.

**Traditional immunoassays with a 150 ng/mL threshold may miss use that occurred more than 3 to 4 days prior.**

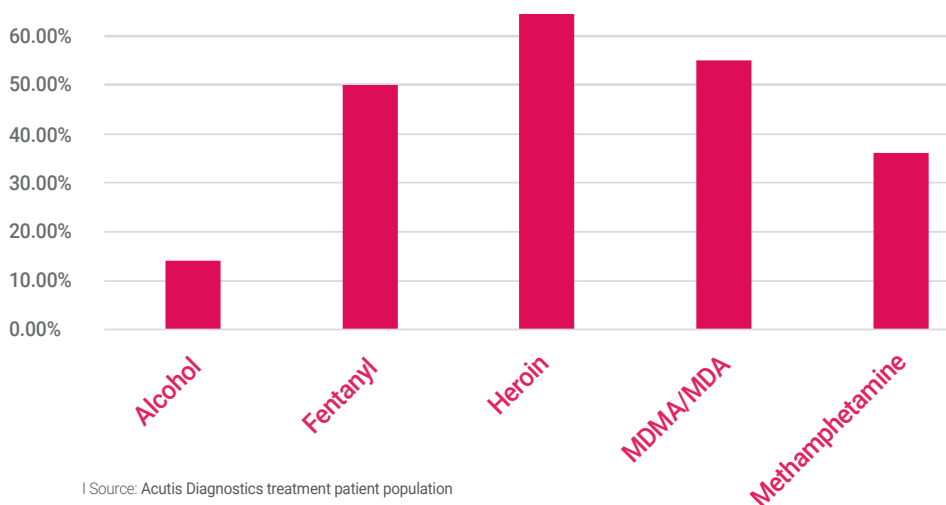
By lowering the cutoff to 50 ng/mL, the detection window is extended, allowing clinicians to identify use that would otherwise be overlooked. This extended window is critical in treatment settings where timely insight into relapse or co-use can shape immediate clinical decisions.

## Cocaine Co-use: A Pressing Problem

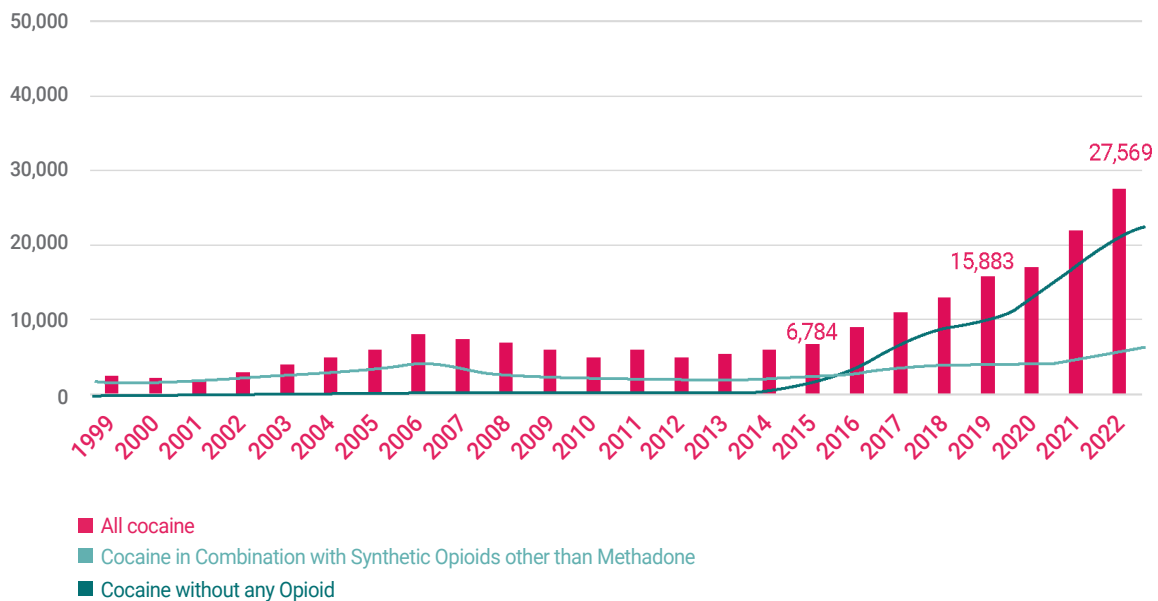
Cocaine use is of increased concern due to its co-use with other substances, particularly opioids, alcohol, and amphetamines.

Data from the CDC and Acutis Diagnostics show that **overdose deaths involving cocaine have sharply risen when combined with opioids**, underscoring the danger of poly-substance use.

### Rate of Co-use With Cocaine



### U.S. Drug Overdose Deaths Involving Cocaine\* By Opioid Involvement, 1999-2022



\* Among deaths with drug overdose as the underlying cause, the cocaine category was determined by the T40.5 ICD-10 multiple cause-of-death code.  
 Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2022 on CDC WONDER Online Database, released 4/2024

## Amphetamine Analysis

Amphetamines, encompassing both prescribed medications like Adderall and illicit substances such as methamphetamine, are prevalent in various patient populations.

A primary concern with traditional immunoassay presumptive screens is the high cutoff thresholds commonly employed, in some cases as high as 1,000 ng/mL, which can miss lower concentrations of amphetamines present in patients' systems. Moreover, the structural diversity of amphetamine compounds contributes to detection challenges.

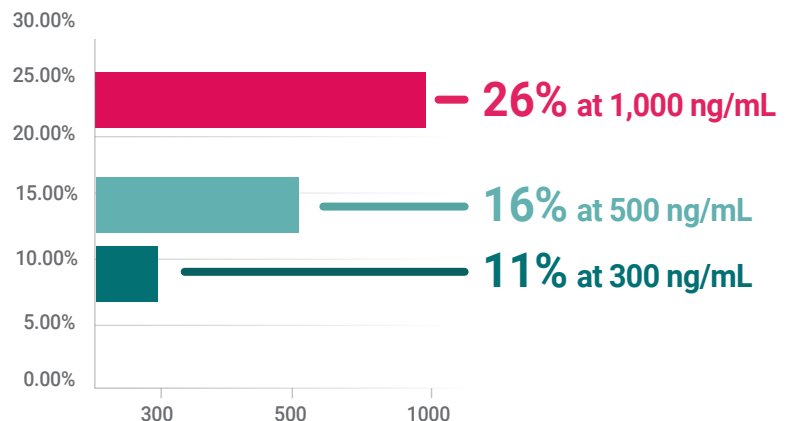
### Amphetamine-Positive Samples: Concentration in ng/mL



| Source: Acutis Diagnostics treatment patient population

### Positive Results Missed By Traditional Screens

**Internal analysis at Acutis reveals a significant detection gap in conventional screening.**



| Source: Acutis Diagnostics










## Opiates Analysis

Immunoassay-based presumptive screening for "Opiates" is primarily optimized for morphine, the classical target molecule. This leads to a common misconception that an "Opiates" screen is equally sensitive for other opioids, such as hydrocodone, hydromorphone, oxycodone, and oxymorphone. However, the reality is that cross-reactivity varies significantly across different opioids.

The table below, excerpted from a leading manufacturer's published specificity data, illustrates the approximate equivalent concentrations (in ng/mL) required to generate a positive result at the assay cutoff level of 300 ng/mL. **Detection of semi-synthetic opioids (hydrocodone, oxycodone, oxymorphone, hydromorphone) requires much higher concentrations to generate a positive result.** For example, at a 300 ng/mL cutoff, oxycodone requires approximately 10,500 ng/mL to trigger a presumptive positive, while oxymorphone requires approximately 37,000 ng/mL.

### Cross-Reactivity of Opiates at 300 ng/mL and 2000 ng/mL Cutoffs

The specificity of the assay was evaluated using 300 ng/mL and 2000 ng/mL as cutoff calibrators. The following table summarizes the results. The compounds in the table below produced a result approximately equivalent to the cutoff calibrator.

| Compound               | 300 ng/mL Cutoff Concentration                                                            | 2000 ng/mL Cutoff Concentration                                                             |
|------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 6-Monoacetyl Morphine  | 280                                                                                       | 2500                                                                                        |
| Codeine                | 180                                                                                       | 1200                                                                                        |
| Dihydrocodeine         |  650   | 4500                                                                                        |
| Heroin                 | 380                                                                                       | 2400                                                                                        |
| Hydrocodone            |  650   | 6500                                                                                        |
| Hydromorphone          |  1400  | 13000                                                                                       |
| Levorphanol            |  10500 |  87000 |
| Morphine               | 300                                                                                       | 2000                                                                                        |
| Morphine-3-Glucuronide |  600   | 5000                                                                                        |
| Morphine-6-Glucuronide | 270                                                                                       | 1350                                                                                        |
| Oxycodone              |  10500 | 9000                                                                                        |
| Oxymorphone            |  37000 | 30000                                                                                       |
| Ranitidine             |  50000 | 300000                                                                                      |

**The stated cutoff levels are misleading.**

## Conclusion

Improving the accuracy of the outdated industry-wide immunoassay presumptive drug screening isn't just a technical upgrade. Acutis UltraDetect™ is a necessary evolution in patient care.

By identifying and addressing the limitations of traditional methods, Acutis has developed a more sensitive, clinically aligned approach that ensures providers have the information they need when it matters most. As substance use patterns shift and co-use risks rise, testing strategies must keep pace. Our high-sensitivity screen is designed to do exactly that.

## Comparative Detection: Acutis UltraDetect™ vs. Traditional EIA Cutoff



\* Acutis Analysis

**Talk To A  
Sales Specialist  
Today**

**1-844-522-8847**  
**sales@acutis.com**  
**acutis.com**

**Acūtis**

400 Karin Lane, Hicksville, NY 11801  
Fax 631-532-1680

