

Overview

Useful For

Determining compliance or identifying illicit benzodiazepine drug use

This test is **not intended for** employment-related testing

Highlights

This test uses high-resolution accurate mass spectrometry to identify 27 different benzodiazepines and metabolites for situations when immunoassays are not adequate.

This test offers lower detection limits than previous Mayo Clinic Laboratories-offered screens.Â

This test has the ability to detect "spiked" samples.

Profile Information

Test ID	Reporting Name	Available Separately	Always Performed
LPPB	List prescribed benzodiazepines	No	Yes
TABSU	Targeted Benzodiazepine Screen, U	No	Yes

Method Name

Liquid Chromatography-Tandem Mass Spectrometry, High Resolution Accurate Mass (LC-MS/MS HRAM)

NY State Available

Yes

Specimen

Specimen Type

Urine

Additional Testing Requirements

In most cases, no additional testing is needed after the qualitative targeted benzodiazepine test is performed if the parent or metabolites found are consistent with the patients prescribed medications. However, if unexpected benzodiazepine parent or metabolites are found, confirmatory testing can be requested at an additional charge.

Specimen Required

[Supplies: Aliquot Tube, 5 mL \(T465\)](#)

Collection Container/Tube: Plastic urine container

Submission Container/Tube: Plastic, 5-mL tube

Specimen Volume: 3 mL

Collection Instructions:

1. Collect a random urine specimen.
2. No preservative

Forms

If not ordering electronically, complete, print, and send a [Therapeutics Test Request](#) (T831) with the specimen.

Specimen Minimum Volume

1 mL

Reject Due To

Gross hemolysis	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Frozen	28 days	
	Ambient	72 hours	

Clinical and Interpretive

Clinical Information

Benzodiazepines represent a large family of medications used to treat a wide range of disorders from anxiety to seizures and they are also used in pain management. With a high risk for abuse and diversion, professional practice guidelines recommend compliance monitoring for these medications using urine drug tests. However, traditional benzodiazepine immunoassays suffer from a lack of cross-reactivity with all the benzodiazepines, so many compliant patients taking clonazepam (Klonopin) or lorazepam (Ativan) may screen negative by immunoassay, but are positive when confirmatory testing is done. The new targeted benzodiazepine screening test provides a more sensitive and specific test to check for compliance to all the commonly prescribed benzodiazepines and looks for both parent and metabolites in the urine.

Reference Values

Not Detected

Cutoff concentrations:

Alprazolam: 10 ng/mL

Alpha-Hydroxyalprazolam: 10 ng/mL

Alpha-Hydroxyalprazolam Glucuronide: 50 ng/mL

Chlordiazepoxide: 10 ng/mL

Clobazam: 10 ng/mL

N-Desmethyloclobazam: 200 ng/mL

Clonazepam: 10 ng/mL

7-aminoclonazepam: 10 ng/mL

Diazepam: 10 ng/mL

Nordiazepam: 10 ng/mL

Flunitrazepam: 10 ng/mL

7-aminoflunitrazepam: 10 ng/mL

Flurazepam: 10 ng/mL

2-Hydroxy Ethyl Flurazepam: 10 ng/mL

Lorazepam: 10 ng/mL

Lorazepam Glucuronide: 50 ng/mL

Midazolam: 10 ng/mL

Alpha-Hydroxy Midazolam: 10 ng/mL

Oxazepam: 10 ng/mL

Oxazepam Glucuronide: 50 ng/mL

Prazepam: 10 ng/mL

Temazepam: 10 ng/mL

Temazepam Glucuronide: 50 ng/mL

Triazolam: 10 ng/mL

Alpha-Hydroxy Triazolam: 10 ng/mL

Zolpidem: 10 ng/mL

Zolpidem Phenyl-4-Carboxylic acid: 10 ng/mL

Interpretation

If a benzodiazepine or its corresponding metabolites are identified (present), it indicates that the patient has used the

respective benzodiazepine in the recent past. The absence of expected benzodiazepines or their metabolites may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted or adulterated urine, or limitations of testing. The concentration of the drug must be greater than or equal to the cutoff to be reported as present. If a specific drug concentration is required, the laboratory must be contacted within 2 weeks of specimen collection/testing to request quantification by a second analytical technique at an additional charge.

Cautions

No significant cautionary statements

Clinical Reference

1. Jannetto PJ, Bratanow NC, Clark WA, et al: Executive Summary: American Association of Clinical Chemistry Laboratory Medicine Practice Guideline-Using Clinical Laboratory Tests to Monitor Drug Therapy in Pain Management Patients. J Appl Lab Med 2018;2:489
2. Nader R, Horwath AR, Wittwer CT: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Sixth edition. St. Louis. Elsevier 2017

Performance

Method Description

The urine sample is diluted with internal standard for detection by an high resolution-accurate mass orbi-trap detector.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Saturday

Analytic Time

3 days

Maximum Laboratory Time

5 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

80347

G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
TBSU	Targeted Benzodiazepine Screen, U	94117-9

Result ID	Test Result Name	Result LOINC Value
LPPB	List prescribed benzodiazepines	29305-0
604871	Alprazolam	94116-1
604867	Alpha-Hydroxyalprazolam	19325-0
604891	Alpha-Hydroxyalprazolam Glucuronide	94115-3
604872	Chlordiazepoxide	19385-4
604889	Clobazam	94114-6
604890	N-Desmethyclobazam	94113-8
604873	Clonazepam	19399-5
604267	7-aminoclonazepam	94112-0
604874	Diazepam	19443-1
604880	Nordiazepam	19624-6
604875	Flunitrazepam	19466-2
604866	7-aminoflunitrazepam	94111-2
604876	Flurazepam	19474-6
604868	2-Hydroxy Ethyl Flurazepam	94110-4
604877	Lorazepam	19520-6
604878	Lorazepam Glucuronide	94109-6
604879	Midazolam	19585-9
604869	Alpha-Hydroxy Midazolam	94108-8
604881	Oxazepam	19638-6
604882	Oxazepam Glucuronide	94107-0
604883	Prazepam	19678-2
604884	Temazepam	19698-0
604885	Temazepam Glucuronide	94106-2
604886	Triazolam	19714-5
604870	Alpha-Hydroxy Triazolam	94105-4

Result ID	Test Result Name	Result LOINC Value
604887	Zolpidem	94104-7
604888	Zolpidem Phenyl-4-Carboxylic acid	94103-9
604949	Benzodiazepine Interpretation	69050-3