Test Definition: TBSU

Targeted Benzodiazepine Screen, Random, Urine

Overview

Useful For

Determining compliance or identifying illicit benzodiazepine drug use

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

Profile Information

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

Special Instructions

- Clinical Toxicology CPT Code Client Guidance

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.

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

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 drug or metabolites found are consistent with the patient's prescribed medications. However, if unexpected benzodiazepine parent or metabolites are found, confirmatory testing can be requested at an additional charge.

Specimen Required

Supplies: Sarstedt Aliquot Tube 5 mL (T914)
Collection Container/Tube: Plastic urine container
Submission Container/Tube: Plastic, 5-mL tube
Specimen Volume: 1 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

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross icterus	Reject

Specimen Stability Information

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

Clinical & 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 either 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 the parent drug and its metabolites in the urine.

Reference Values

Not detected (Positive results are reported with qualitative "Present" results)

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-Desmethylclobazam: 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 is 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(4):489-526
2. Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 43

Performance

Method Description
The urine sample is diluted with internal standard and then analyzed by liquid chromatography tandem mass spectrometry using a high-resolution accurate mass orbitrap detector.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
3 to 4 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & 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 account representative. 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. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
G0480
80347 (if appropriate for select payers)
Clinical Toxicology CPT Code Client Guidance

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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
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-Desmethylclobazam	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
604887	Zolpidem	94104-7
604888	Zolpidem Phenyl-4-Carboxylic acid	94103-9
604949	Benzodiazepine Interpretation	69050-3
LPPB	List prescribed benzodiazepines	29305-0