MAYO CLINIC LABORATORIES

Test Definition: AHPRU

Antihypertension Panel, Random, Urine

Overview

Useful For

Aid in the management of hypertension, especially treatment resistant hypertension

Monitoring compliance in individuals prescribed antihypertensive drug therapy

As a screen to detect non-prescribed use of common diuretics

Method Name

Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Container/Tube: Plastic, 5-mL tube
Specimen Volume: 4 mL
Collection Instructions:
1. Collect a random urine specimen.
2. No preservative

Forms

If not ordering electronically, complete, print, and send a Renal Diagnostics Test Request (T830) with the specimen.

Specimen Minimum Volume

1 mL

Reject Due To

Gross hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	14 days	

Clinical & Interpretive

Clinical Information

Adherence to antihypertensive medication dose and frequency is important for adequate hypertension control. Not taking medications as prescribed is a common and underappreciated cause of resistant hypertension. It can be challenging to suspect and discern medication nonadherence from history alone. This urine assay includes drug targets that are commonly prescribed for hypertension and allows for an objective assessment of whether a patient has taken a prescribed medication in the previous twenty-four hours. If not, a healthcare professional can explore the reason for noncompliance with the patient in a targeted fashion. If there are issues with patient tolerance of a given medication not previously appreciated, alternative regimens can be considered. This targeted information can also help avoid over prescription of additional medications and related complications.

This test can also be used as a screen to detect nonprescribed use of common diuretics.

Reference Values

Not detected: These drugs should not be present in untreated individuals.

Cutoff concentrations:
Amlodipine: 400 ng/mL
Atenolol: 800 ng/mL
Bumetanide: 40 ng/mL
Carvedilol: 40 ng/mL
Chlorthalidone: 4 ng/mL
Clonidine: 40 ng/mL
Furosemide: 4 ng/mL
Hydralazine: 400 ng/mL
Hydrochlorothiazide: 10 ng/mL
Labetalol: 40 ng/mL
Lisinopril: 1000 ng/mL
Losartan: 4 ng/mL
Metoprolol: 40 ng/mL
7-alpha-Thiomethylspironolactone: 10 ng/mL
Terazosin: 4 ng/mL
Torsemide: 40 ng/mL

Interpretation

Antihypertensive medications are reported as either detected or not detected, specific concentrations are not quantified.

This test measures urine concentrations of 7 alpha-thiomethylspironolactone, a major active metabolite of spironolactone. Detection of this metabolite indicates recent intake of spironolactone and can be used to assess patient compliance with spironolactone therapy.

Cautions

Results should be interpreted in context with the patient's prescribed medications.

Clinical Reference

1. Gupta P, Patel P, Strauch B, et al. Biochemical screening for nonadherence is associated with blood pressure reduction and improvement in adherence. Hypertension. 2017;70(5):1042-1048. doi:10.1161/Hypertensionaha
2. Jung O, Gechter JL, Wunder C, et al. Resistant hypertension? Assessment of adherence by toxicological urine analysis. J Hypertens. 2013;31(4):766-774. doi:10.1097/HJH.0b013e32835e2286
3. Tomaszewski M, White C, Patel P, et al. High rates of non-adherence to antihypertensive treatment revealed by high-performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS) urine analysis. Heart. 2014;100(11):855-861. doi:10.1136/heartjnl-2013-305063
4. Peeters LEJ, Kappers MHW, Boersma E, et al. The effect of combining therapeutic drug monitoring of antihypertensive drugs with personalised feedback on adherence and resistant hypertension: the (RHYME-RCT) trial protocol of a multi-centre randomised controlled trial. BMC Cardiovasc Disord. 2023;23(1):87. doi:10.1186/s12872-023-03114-0

Performance

Method Description

Antihypertensives are separated and quantified in urine by liquid chromatography tandem mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Thursday

Report Available

2 to 9 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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

G0481

80377 (if appropriate for select payers)

Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
AHPRU	Antihypertension Panel, Random, U	107229-7

Result ID	Test Result Name	Result LOINC® Value
621682	Amlodipine, Random, U	107228-9
621683	Atenolol, Random, U	3360-5
621684	Bumetanide, Random, U	3409-0
621685	Carvedilol, Random, U	107227-1
621686	Chlorthalidone, Random, U	3478-5
621687	Clonidine, Random, U	52960-2
621689	Furosemide, Random, U	3660-8
621690	Hydralazine, Random, U	16983-9
621691	Hydrochlorothiazide, Random, U	3676-4
621692	Labetalol, Random, U	3705-1
621693	Lisinopril, Random, U	107225-5
621694	Losartan, Random, U	107224-8
621695	Metoprolol, Random, U	3816-6
621696	7a-Thiomethylspironolactone, R, U	12318-2
621697	Terazosin, Random, U	107223-0
621698	Torsemide, Random, U	107222-2
621688	Interpretation, Random, U	59462-2