MAYO CLINIC LABORATORIES

# Test Definition: AMPHU

Amphetamines Confirmation, Random, Urine

## Overview

### Useful For

Confirming drug exposure involving amphetamines such as amphetamine and methamphetamine, phentermine, pseudoephedrine/ephedrine, methylenedioxyamphetamine (MDA), and methylenedioxymethamphetamine (MDMA)

### Special Instructions

- Clinical Toxicology CPT Code Client Guidance

### Method Name

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

### NY State Available

Yes

## Specimen

### Specimen Type

Urine

### Ordering Guidance

For situations where chain of custody is required, a Chain of Custody Kit (T282) is available. For chain-of-custody testing, order AMPHX / Amphetamines Confirmation, Chain of Custody, Random, Urine.

Additional drug panels and specific requests are available; call 800-533-1710.

### Additional Testing Requirements

If urine creatinine is required or adulteration of the specimen is suspected, the following test should also be ordered, ADULT / Adulterants Survey, Urine.

### Specimen Required

**Supplies:** Sarstedt Aliquot Tube, 5 mL (T914)
**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
**Additional Information:**
1. No specimen substitutions.
2. STAT requests are **not accepted** for this test.

3. Submitting less than 1 mL will compromise our ability to perform all necessary testing.

### Forms

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

### Specimen Minimum Volume

1.5 mL

### Reject Due To

| | |
|---|---|
| Gross hemolysis | OK |
| Gross icterus | OK |

### Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| Urine | Refrigerated (preferred) | 28 days | |
| | Ambient | 28 days | |
| | Frozen | 28 days | |

## Clinical & Interpretive

### Clinical Information

Amphetamines are sympathomimetic amines that stimulate the central nervous system activity and, in part, suppress the appetite. Phentermine, amphetamine, and methamphetamine are prescription drugs for weight loss. All other amphetamines are Class I (distribution prohibited) compounds. In addition to their medical use as anorectic drugs, they are used in the treatment of narcolepsy, attention-deficit disorder/attention-deficit hyperactivity disorder and minimal brain dysfunction.

Because of their stimulant effects, the drugs are commonly sold illicitly and abused. Physiological symptoms associated with very high amounts of ingested amphetamine or methamphetamine include elevated blood pressure, dilated pupils, hyperthermia, convulsions, and acute amphetamine psychosis.

### Reference Values

Negative
Positive results are reported with a quantitative result.

Cutoff concentrations by liquid chromatography tandem mass spectrometry:
Amphetamine: 25 ng/mL
Methamphetamine: 25 ng/mL
Phentermine: 25 ng/mL
Methylenedioxyamphetamine: 25 ng/mL
Methylenedioxymethamphetamine: 25 ng/mL

Pseudoephedrine/ephedrine: 25 ng/mL reported as negative

### Interpretation

The presence of amphetamines in urine is a strong indicator that the patient has used one of these drugs within the past 3 days.

Methamphetamine has a half-life of 9 to 24 hours and is metabolized by hepatic demethylation to amphetamines. Consequently, a sample containing methamphetamine usually also contains amphetamine. Amphetamine has a half-life of 4 to 24 hours.

Amphetamine is **not** metabolized to methamphetamine; absence of methamphetamine in the presence of amphetamine indicates the primary drug of abuse is amphetamine. However, trace amounts of methamphetamine can be detected in amphetamine-based prescription drugs (eg, Adderall), but the concentrations are typically less than 1% of the amphetamine concentrations.

3,4-Methylenedioxymethamphetamine (Ecstasy, MDMA) is metabolized to 3,4-methylenedioxyamphetamine (MDA).

Methylenedioxyethylamphetamine (MDEA) is also metabolized to MDA.

The detection interval in urine for amphetamine type stimulants is typically to 3 to 5 days after last ingestion.

This test will produce true-positive results for urine specimens collected from patients who are administered Adderall and Benzedrine (contain amphetamine); Desoxyn and Vicks Inhaler (contain methamphetamine); Selegiline, and famprofazone (metabolized to methamphetamine and amphetamine); and clobenzorex, fenproporex, mefenorex, and fenethylline, which are amphetamine pro-drugs and metabolized to amphetamine.

### Cautions

Over-the-counter sympathomimetics such as ephedrine and phenylpropanolamine are occasionally detected in the screening immunoassay.

### Clinical Reference

1. Baselt RC. Disposition of Toxic Drugs and Chemicals in Man. 10th ed. Biomedical Publications; 2014
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 and then analyzed by liquid chromatography tandem mass spectrometry for the presence of amphetamines.(Unpublished Mayo method)

### PDF Report

No

### Day(s) Performed
Monday through Friday

### Report Available
3 to 5 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
80325 (if appropriate for select payers(
80359 (if appropriate for select payers)
Clinical Toxicology CPT Code Client Guidance

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| AMPHU | Amphetamines Confirmation, U | 97161-4 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| 2934 | Amphetamine-by LC-MS/MS | 20410-7 |
| 29278 | Phentermine-by LC-MS/MS | 20557-5 |
| 2550 | Methamphetamine-by LC-MS/MS | 16235-4 |
| 29279 | Pseudoephedrine/Ephedrine-by LC-MS/MS | 58707-1 |
| 29280 | MDA (Ecstasy metabolite)-by LC-MS/MS | 20545-0 |
| 29281 | MDMA (Ecstasy)-by LC-MS/MS | 18358-2 |
| 21197 | Amphetamines Interpretation | 69050-3 |