MAYO CLINIC LABORATORIES

NEW TEST

Notification Date: September 29, 2020
Effective Date: October 13, 2020

Metanephrines with 3-Methoxytyramine, 24 Hour, Urine

Test ID: META3

Useful for:

A first- and second-tier screening test for the presumptive diagnosis of catecholamine-secreting pheochromocytomas and paragangliomas

Testing in conjunction with or as an alternative to plasma metanephrine or catecholamine testing

Profile Information:

Test ID	Reporting Name	Available Separately	Always Performed
3MT1	3-Methoxytyramine, U	Yes (Order 3MT)	Yes
METAF	Metanephrines, Fractionated, 24h, U	Yes	Yes

Method Name:

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

Reference Values:

3-Methoxytyramine:
Males: < or =306 mcg/24 hours
Females: < or =242 mcg/24 hours

METANEPHRINE
Males
Normotensives
3-8 years: 29-92 mcg/24 hours
9-12 years: 59-188 mcg/24 hours
13-17 years: 69-221 mcg/24 hours
> or =18 years: 44-261 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <400 mcg/24 hours

Females
Normotensives
3-8 years: 18-144 mcg/24 hours
9-12 years: 43-122 mcg/24 hours
13-17 years: 33-185 mcg/24 hours

> or =18 years: 30-180 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <400 mcg/24 hours

NORMETANEPHRINE
Males
Normotensives
3-8 years: 34-169 mcg/24 hours
9-12 years: 84-422 mcg/24 hours
13-17 years: 91-456 mcg/24 hours
18-29 years: 103-390 mcg/24 hours
30-39 years: 111-419 mcg/24 hours
40-49 years: 119-451 mcg/24 hours
50-59 years: 128-484 mcg/24 hours
60-69 years: 138-521 mcg/24 hours
> or =70 years: 148-560 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <900 mcg/24 hours

Females
Normotensives
3-8 years: 29-145 mcg/24 hours
9-12 years: 55-277 mcg/24 hours
13-17 years: 57-286 mcg/24 hours
18-29 years: 103-390 mcg/24 hours
30-39 years: 111-419 mcg/24 hours
40-49 years: 119-451 mcg/24 hours
50-59 years: 128-484 mcg/24 hours
60-69 years: 138-521 mcg/24 hours
> or =70 years: 148-560 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <900 mcg/24 hours

TOTAL METANEPHRINE
Males
Normotensives
3-8 years: 47-223 mcg/24 hours
9-12 years: 201-528 mcg/24 hours
13-17 years: 120-603 mcg/24 hours
18-29 years: 190-583 mcg/24 hours
30-39 years: 200-614 mcg/24 hours
40-49 years: 211-646 mcg/24 hours
50-59 years: 222-680 mcg/24 hours
60-69 years: 233-716 mcg/24 hours
> or =70 years: 246-753 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <1300 mcg/24 hours

Females
Normotensives
3-8 years: 57-210 mcg/24 hours
9-12 years: 107-394 mcg/24 hours
13-17 years: 113-414 mcg/24 hours
18-29 years: 142-510 mcg/24 hours
30-39 years: 149-535 mcg/24 hours
40-49 years: 156-561 mcg/24 hours

50-59 years: 164-588 mcg/24 hours
60-69 years: 171-616 mcg/24 hours
> or =70 years: 180-646 mcg/24 hours
Reference values have not been established for patients that are <36 months of age.
Hypertensives: <1300 mcg/24 hours

Specimen Requirements:

Supplies: Urine Tubes, 10 mL (T068)

Submission Container/Tube: Plastic urine tube

Specimen Volume: 10 mL

Collection Instructions:
1. Complete 24-hour urine collections are preferred, especially for patients with episodic hypertension; ideally the collection should begin at the onset of a “spell”.
2. Collect urine for 24 hours.
3. Add 10 g (pediatric: 3 g) of boric acid or 25 mL (pediatric: 15 mL) of 50% acetic acid as preservative at start of collection.

Minimum Volume: 4 mL

Specimen Stability Information:

Specimen Type	Temperature	Time
Urine	Refrigerated (preferred)	28 days
	Ambient	28 days
	Frozen	28 days

Cautions:

Pheochromocytoma is a rare, though potentially lethal, tumor of chromaffin cells of the adrenal medulla that produces episodes of hypertension with palpitations, severe headaches, and sweating ("spells"). Patients with pheochromocytoma may also be asymptomatic and present with sustained hypertension or an incidentally discovered adrenal mass.

Pheochromocytomas and other tumors derived from neural crest cells (eg, paragangliomas and neuroblastomas) secrete catecholamines (epinephrine, norepinephrine, and dopamine). Dopamine secreting tumors are rarer than norepinephrine and epinephrine secreting tumors.

3-Methoxytyramine (3MT), metanephrine, and normetanephrine are the metabolites of dopamine, epinephrine, and norepinephrine, respectively. These metabolites are further metabolized to vanillylmandelic acid.

Pheochromocytoma cells also have the ability to oxymethylate catecholamines into metanephrines that are secreted into circulation.

In patients that are highly suspect for pheochromocytoma, it may be best to screen by measuring plasma free fractionated metanephrines (a more sensitive assay). This test may be used as the first test for low-suspicion cases and also as a confirmatory study in patients with a less than 2-fold elevation in plasma free fractionated metanephrines or catecholamines. This is highly desirable, as the very low population incidence rate of

pheochromocytoma (<1:100,000 population per year) will otherwise result in large numbers of unnecessary, costly, and sometimes risky imaging procedures.

Complete 24-hour urine collections are preferred, especially for patients with episodic hypertension; ideally the collection should begin at the onset of a "spell."

CPT Code:
82542
83835

Day(s) Setup:
Monday through Friday; 4 p.m.

Analytic Time:
3 days (not reported on Sundays)

Questions
Contact Kim Terrio, Laboratory Technologist Resource Coordinator at 800-533-1710.