



November 2020

Changes to Catecholamines Fractionation 24-hour Urine and Metanephrines Fractionation 24-hour Urine Testing effective November 23th, 2020

This testing will be performed using a laboratory developed test (LDT) which utilizes liquid chromatography with tandem mass spectrometry detection (LC-MS/MS) to replace the current method which uses liquid chromatography with electrochemical detection (LC-ECD). This new LC-MS/MS assay will provide **enhanced specificity** and is considered the **gold standard** analytical technique for this testing.

There are several important changes associated with this change to LC-MS/MS testing.

Patient Preparation Instructions

Patient preparation instructions have been updated to include new guidance on diet and medication restrictions for both tests. Revised instructions are provided below:

Avoid emotional and physical stress and vigorous exercise as they can increase catecholamine release.

Diet may also influence biochemical tests of catecholamine excess. During collection avoid caffeine containing foods such as coffee, tea, cocoa, chocolate, and other caffeinated beverages. Nicotine and alcohol use should also be avoided prior to and during sample collection. Avoid consuming food products that contain significant quantities of biogenic amines (e.g., fruits, nuts, cheeses, tomatoes, beans and other vegetables, processed meat products, and fermented foods) as they may produce falsely elevated test results.

Medications which may physiologically elevate the concentration of catecholamines, and their metabolites include: alpha-adrenergic receptor

blockers (e.g., phenoxybenzamine); dopamine antagonists (e.g. L-DOPA), calcium channel blockers, centrally acting antihypertensive drugs (e.g. alpha-methyldopa), monoamine oxidase inhibitors (MAOI), sympathomimetic drugs, and tricyclic antidepressants.

You MUST contact your healthcare provider before restricting your diet, fasting or discontinuing any prescription or non-prescription medications. Your healthcare provider will work with you to identify potentially interfering substances and drug treatments and to determine which of them can be safely interrupted and which must be continued for your well-being.

A copy of the updated instructions will also be provided to patients when they visit a Dynacare Laboratory and Health Services Centre (LHSC).

Metanephrines Fractionation 24-hour Urine Testing:

There are several changes related to the reporting, as indicated below:

- The new LC-MS/MS method will report free metanephrines only. The current LC-ECD method reports total metanephrines (free and deconjugated).
- Free metanephrines have been demonstrated to have higher diagnostic accuracy than total metanephrines (Eisenhofer *et al. Clin Chem.* 2018 Nov;64(11):1646-1656).
- Free metanephrine and free normetanephrine results from the new LC-MS/MS method will be approximately 85% lower compared to the total metanephrine/normetanephrine results from the current LC-ECD method.
- The new reporting will also include 3-methoxytyramine.
- New reference intervals have been established for each analyte.

Provided below is a reference interval comparison of the current LC-ECD and new LC-MS/MS testing methods:

Analyte	Current Method	New Method
	Reference interval ($\mu\text{mol/d}$)	Reference interval ($\mu\text{mol/d}$)
Normetanephrine	<3.3	0 to 0.4
Metanephrine	<1.7	0 to 0.2
3-Methoxytyramine	N/A	0 to 0.4

Catecholamine Fractionation 24-hour Urine Testing:

There are no changes to the reporting format of this test. New age-partitioned reference intervals have been established for each analyte.

Provided below is a reference interval comparison of the current LC-ECD and new LC-MS/MS testing methods:

Analyte	Current Method		New Method	
	Age	Reference interval (nmol/d)	Age	Reference interval (nmol/d)
Epinephrine	0 to 11 m	0 to 14	0 to 11 m	0 to 14
	1 y	0 to 19	1 y	0 to 19
	2 to 3 y	0 to 33	2 to 3 y	0 to 33
	4 to 9 y	1 to 55	4 to 9 y	1 to 55
	10 to 14 y	3 to 109	10 to 15 y	3 to 109
	≥15 y	<100	≥16 y	0 to 120
Norepinephrine	0 to 11 m	0 to 59	0 to 11 m	0 to 59
	1 y	6 to 100	1 y	6 to 100
	2 to 3 y	24 to 171	2 to 3 y	24 to 171
	4 to 6 y	47 to 266	4 to 6 y	47 to 266
	7 to 9 y	77 to 384	7 to 9 y	77 to 384
	10 to 14 y	89 to 473	10 to 14 y	66 to 660
≥15 y	<500	≥15 y	66 to 660	
Dopamine	0 to 11 m	0 to 555	0 to 11 m	0 to 555
	1 y	69 to 914	1 y	69 to 914
	2 to 3 y	261 to 1697	2 to 3 y	261 to 1697
	4 to 14 y	424 to 2612	4 to 14 y	400 to 3200
	≥15 y	<2600	≥15 y	400 to 3200

This new test has been developed and its performance characteristics determined by Dynacare. This test has not been submitted to Health Canada for evaluation and, as an in-house validated test, it does not require Health Canada approval. This test has also not been cleared or approved by the US Food and Drug Administration (FDA).

For further information regarding this change, please contact:
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