



MEMORANDUM

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To: Capital Health Clinics and Physicians
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From: Dr. Amy Lou
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Date: September 25, 2012

Subject: **New Assay for Urine Catecholamines**

Effective October 1, 2012, urine catecholamines method of analysis will change from High Performance Liquid Chromatography (HPLC) to HPLC-Tandem Mass Spectrometry (LC-MS/MS). The cost for this testing will **decrease** from \$35.02 to \$27.50.

Reason for Change:

LC-MS/MS offers state-of-the-art technology. It will improve the quality of catecholamine testing by providing higher selectivity, sufficient accuracy and precision, as well as shorter instrumental analysis time compared to the existing HPLC method.

Ordering Recommendation:

Urine catecholamines analysis continues to be first-line test for suspected catecholamine-secreting neuroendocrine tumors (pheochromocytoma or neuroblastoma). Although plasma and urinary metanephrines are reported to be slightly superior to urinary catecholamines, they are currently not available in Nova Scotia and the cost to refer this testing out of province is extremely high.

Specimen Requirements:

Patient Preparation: Abstain from medications that affect catecholamines levels for 72 hours prior to collection.

Sample Collection: The optimal specimen for this testing is a 24-hour urine, refrigerated during collection. Mass per day calculations are not reported for patients younger than 18 years of age. For those, the ratio of the concentration of catecholamine to creatinine will instead be provided.

New Reference Intervals:

Reference intervals for 24-hour urine			
Age	Epinephrine (nmol/TV*)	Norepinephrine (nmol/TV)	Dopamine (nmol/TV)
≥ 18 years	0-136.5	0-591	392-2500

*indicates total volume (TV) of 24 hour urine collection (ie: nmol/day)

Reference intervals for random urine (Ratio- to Creatinine)			
Age	Epinephrine (µmol/mol urine creatinine)	Norepinephrine (µmol/mol urine creatinine)	Dopamine (µmol/mol urine creatinine)
0-11 months	0-231	17-207	177-952
1-4 years	0-51	17-194	59-900
4-10 years	3-57	18-72	162-531
10-18 years	2-36	3-70	89-332

Clinical Interpretations:

Smaller increases in catecholamine concentrations (less than two times the upper limit) usually are the result of physiological stimuli, drugs, or improper specimen collection. Significant elevation of one or more catecholamines (three or more times the upper reference limit) is associated with an increased probability of a neuroendocrine tumor.

If you have any questions, please contact Bassam.Nassar@cdha.nshealth.ca at (902) 473-2225, Amy.Lou@cdha.nshealth.ca at (902) 473-1528 or Shauna.Thompson@cdha.nshealth.ca at (902) 473-4065.

Thank you for your attention.

References:

1. Optimal collection and storage conditions for catecholamine measurements in human plasma and urine. Clin Chem 1993; 39:2503-8.
2. Effect of urine pH, storage time, and temperature on stability of catecholamines, cortisol, and creatinine. Clin Chem 1998; 44: 1759-62.
3. Liquid chromatographic evaluation of age related changes in the urinary excretion of free catecholamines in pediatric patients. Clin Chem 1984; 30: 301-3.
4. Analysis of catecholamines in urine by positive ion electrospray tandem mass spectrometry. Clin Chem 2002; 48:2 323-31

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