

Division of Laboratory Medicine

Biochemistry

Metadrenalines

Pseudonyms: sometimes called metanephrines, normetadrenalines or normetanephrines; **Please Note:** This test is NOT 'catecholamines'.

Quantification of normetadrenaline and metadrenaline and 3-methoxytyramine is used for the detection of phaeochromocytomas, which are tumours of the adrenal medulla that secrete increased amounts of catecholamines. Phaeochromocytomas are a rare but treatable cause of hypertension and due to the high prevalence of hypertension it is important to be able to identify individuals with a phaeochromocytoma for further investigation and management.

General information

Collection container:

K-EDTA tube (Sarstedt purple top) 4.9mL

NOTE Requests for metadrenalines in paediatrics are rare, because the typical clinical scenario is diagnosis of neuroblastoma and the analysis required in this setting is for catecholamines (noradrenaline, dopamine, HMMA, HMA) for diagnosis and monitoring. If in doubt, refer to the duty biochemist on 0161-701-2255.

Specimen transport/special precautions:

Sample must reach lab and be separated & frozen within 1 hour of collection.

Preferably take sample with patient recumbent after an overnight fast.

Laboratory information

Method principle:

Samples are analysed by mass spectrometry at the Wythenshawe laboratory.

Biological reference ranges:

Metanephrine <510 pmol/L Normetanephrine <1180 pmol/L 3-methoxytyramine (3-MT) <180 pmol/L
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Turnaround times:

Results should be available within 2 weeks of sample receipt.

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Clinical information

Factors known to significantly affect the results:

Physiological

In addition to analytical interference there are a number of drugs that can alter the levels of metanephrines through physiological routes. The majority appear to lead to an increased level of metanephrines so could provide false positive results and therefore should be considered when elevated excretion is detected in patient samples.

The table below highlights some of the drug groups that can induce an increase in metanephrine levels. In addition it is important to remember that some clinical situations, such as CPR, may require the administration of adrenaline and/or noradrenaline which will increase levels of their metabolites soon afterwards.

	Normet	Met
Tricyclic antidepressants Amitriptyline, nortriptyline, imipramine	+++	-
α-blockers (nonselective) Phenoxybenzamine	+++	-
α-blockers (selective) Doxazosin, terazosin, prazosin	-	-
β-blockers Atenolol, metoprolol, propranolol, labetalol*	+	+
Monoamine oxidase inhibitors Phenelzine, tranycypromine, selegiline	+++	+++
Sympathomimetics Ephedrine, pseudoephedrine, amphetamines, albuterol	++	++

Table 1. Drug-induced increases in metanephrines.

+++, substantial increase, ++, moderate increase, +, mild increase if any, -, little or no increase.

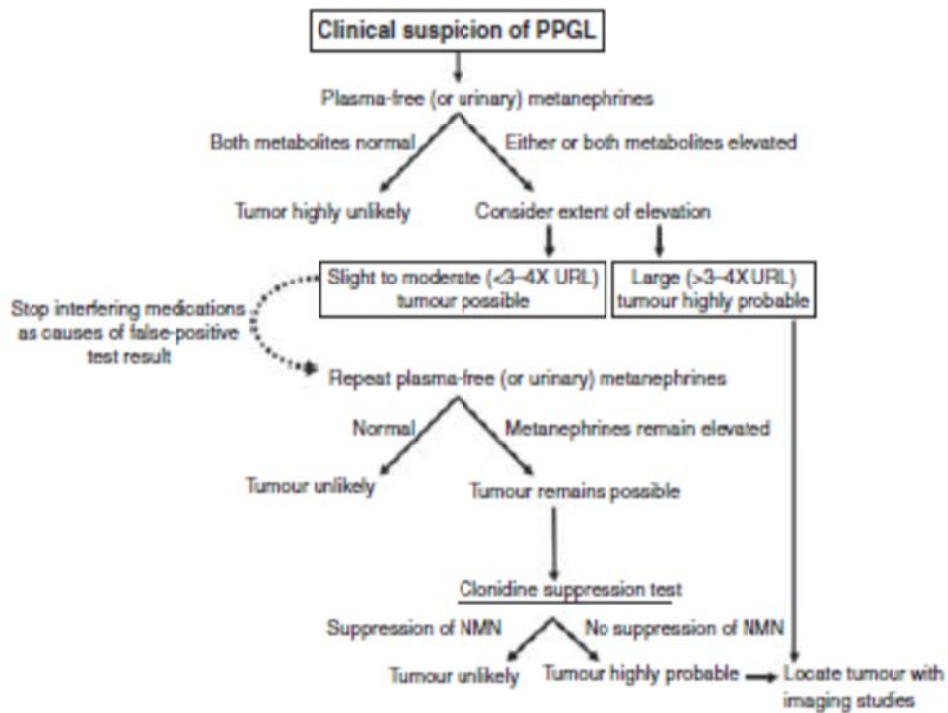
*Labetalol can also cause direct analytical interference with some methods. Taken from Burtis *et al.* 2006.

Burtis, C.A., Ashwood, E.R. and Bruns, D.E. (2006). Tietz textbook of clinical chemistry and molecular diagnostics. Fourth Edition, Elsevier Saunders, St. Louis, Missouri, USA.

Clinical decision points:

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PPGL = pheochromocytoma and paragangliomas.

The algorithm for interpretation of results has been taken from the review by van Berkel et al (Eur J Endo 2014; 170: R109 – R119). Locally, the clonidine suppression test is not used.

(Last reviewed November 2019)