

# How to Handle the Sample

- Urine should be collected in a clean, preservative & acid-free container.
- The container for sample collection must be refrigerated prior to sampling and kept refrigerated throughout.
- Samples must be kept chilled throughout the collection, during storage, and transport (using ice packs and a cool bag).
- Each fresh urine sample must be collected in a separate container and then refrigerated.
- Once chilled, this can then be decanted into the main collection container.
- Contact the lab directly for specific instructions on handling samples.
- Samples should be sent frozen via first-class post or courier. The sample may be allowed to thaw in transit — dry ice or freezer packs are not required during transit.



# Reading the Results

No single mast cell mediator test is definitive; a positive result is not to say that a person certainly has MCAS, as high levels could be attributed to other causes and, similarly, a negative result is not sufficient to rule out an MCAS diagnosis.

However, when considered alongside other diagnostic evidence, these mediator tests can provide reasonable confidence in a diagnosis.

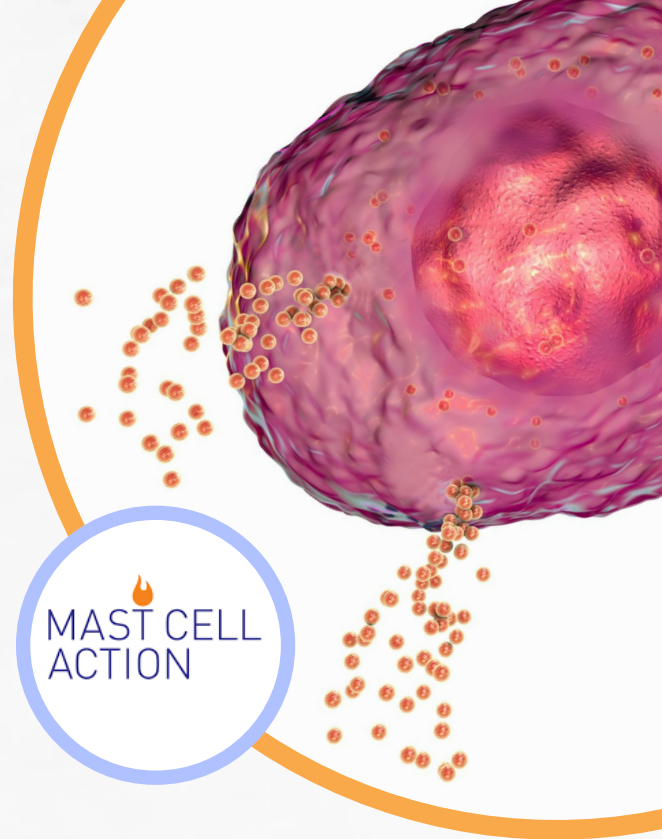
Marker	Normal Range
N-Methyl Histamine	NMH/creatinine ratio (mcg/mmol) <25
Prostaglandin D2, DM, F2α	PG/creatinine ratio (ng/mmol) PGD2: <825 PGDM: <2300 PGF2α: <105

N-methyl histamine is a good specific marker for mast cells but is also present in basophils.

Prostaglandins are not specific to mast cells so not recommended as a single marker.

A positive test in one prostaglandin suggests non-clonal MCAS, whereas a positive result for all three suggests clonal MCAS.

Catecholamines can also be tested with a 24 urine test, which can help to rule out other pathologies.



# Testing For MCAS

This leaflet will cover some important information for healthcare professionals hoping to organise MCAS testing for their patients.

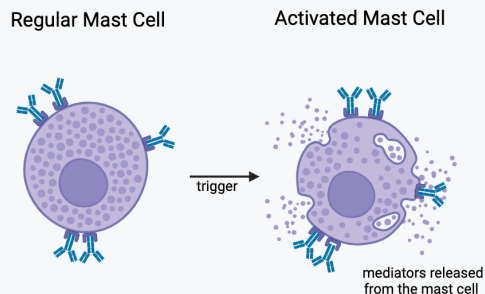
With thanks to Nina Rogers, Dr Bethan Myers and Dr Jōse Costa for their expertise and contribution to this leaflet.

# What is MCAS?

Mast cell activation syndrome (MCAS) is a complex condition that sits within a broad spectrum of disorders associated with oversensitive or inappropriately activated mast cells. MCAS is characterised by the inappropriate or excessive production and/or release of mast cell mediators.

It is recommended that mast cell mediator levels are measured on a 24-hour urine sample when investigating MCAS as symptom flares and the short half-life of mast cell mediators can lead to a normal result in spot urine samples.

Some patients with MCAS may not have evidence of raised mast cell mediator levels (tryptase, urine methylhistamine, and prostaglandins) unless they are symptomatic. If there is a good clinical history but negative results, it is recommended that the tests are repeated at a later date when the patient is symptomatic.






## Forms of MCAS

MCAS can be divided into three non-mutually exclusive forms:

- Primary (Clonal) MCAS is caused by underlying monoclonal mast cell disorders such as monoclonal mast cell activation syndrome (MMAS) and mastocytosis.
- Non-clonal secondary MCAS is not the result of an underlying clonal disorder; mast cells are produced at normal or 'near normal' levels. However, in this condition, mast cells are inappropriately activated during immunoglobulin (Ig)E- and/or non-IgE-mediated allergic reactions to typically unharmed triggers.
- Non-clonal idiopathic MCAS refers to cases where no defined allergic or autoimmune cause has been identified.

## How to Order the Sample

Samples can be ordered from Sheffield Teaching Hospital's Protein Reference Unit.

-  [sht-tr.enquiriesPRU@sheffield.nhs.net](mailto:sht-tr.enquiriesPRU@sheffield.nhs.net)
-  0114 226 9196
-  [pru-sheffield.org.uk](http://pru-sheffield.org.uk)

They offer 24-hour urine testing for methyl histamine, prostaglandin F2 alpha, prostaglandin DM, and prostaglandin D2.

Samples can be sent to:  
Supraregional Protein Reference Unit  
Department of Immunology  
PO BOX 894  
SHEFFIELD  
S5 7YT

Samples can also be ordered from [tdlpathology.com](http://tdlpathology.com)