

# Pathology News

May 2009 - ACB Focus Special Edition

## Electronic links available to all

We pride ourselves on our turn round times and put great emphasis on meeting the targets that we set.

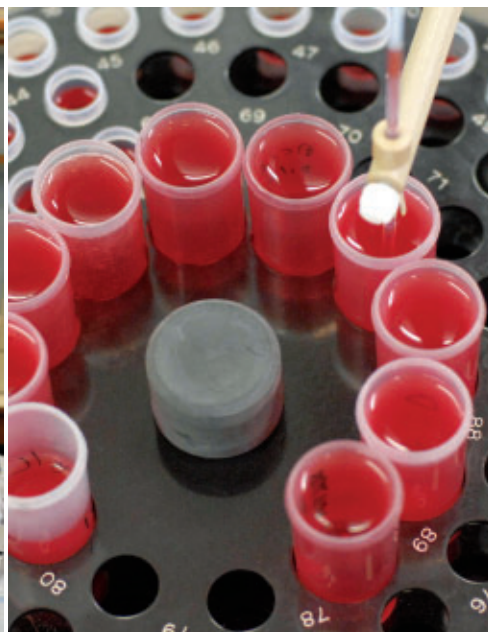
Our paper results are sent by first class post and we use dedicated staff in the laboratory to ensure that work from other laboratories is handled as securely and efficiently as possible. We also offer electronic look-up of results. This can be useful when you have clinicians wanting results in a hurry or if for any reason the paper result has not come back to you.

If you would like your laboratory to be registered for this service then please contact [alan@cityassays.org.uk](mailto:alan@cityassays.org.uk) who will set you up on the system.

## Trace elements service

We have now installed a second ICP-MS for the analysis of trace elements. This means we have been able to remove aging atomic absorption instrumentation and transfer remaining assays over to ICP-MS.

Investing in this new technology enables us to widen our repertoire of elements of clinical interest. For selenium, copper and zinc we are concentrating on improving our turn round times. We have also reviewed our pricing structure and when all three tests are referred to us we are pleased to be able to offer a simpler price of just £15 per analyte.



**ACB Focus 2009:  
Come and meet  
our staff on  
Stand 37 ...**

... and try our Focus stand quiz with a special prize for every correct entry!



## Information on our Website

Please visit our website to download information leaflets about the tests that we do for other laboratories.

[www.cityassays.org.uk](http://www.cityassays.org.uk)

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# TPMT audit for 2008/09

In the last year we have continued to undertake measurement of thiopurine s-methyl transferase (TPMT) activity for over 180 trusts around the country, as well as analysing samples from Europe, Asia, South Africa and the USA.

Since initiating the service in 2003, we have seen a major shift in clinical use of the test. Previously TPMT activity was measured in patients already on thiopurine therapy in whom toxicity was suspected. Now, the trend follows clinical guidelines that patients should be pre-screened prior to commencing therapy.

## Continued investment

We have continued to invest in the service in terms of both people and equipment. Our service now

includes TPMT phenotyping and follow-on genotyping where relevant. A straightforward fixed price is charged for the service, with no additional charges incurred if DNA testing is also undertaken.

## Performance audit 2008/09

<b>Total number of requests:</b>
16,300 (16% increase from 2007/08)
<b>Number of hospitals served:</b>
200
<b>Number of deficient (&lt;6)</b>
51 (0.3%)
<b>Number of low results (6-34)</b>
1,523 (9.3%)
<b>Number of normal results (35-79)</b>
14,346 (87.9%)
<b>Number of high results (80 plus)</b>
390 (2.4%) [TPMT activity nmol/6-MTG/g Hb/hr]

## True costs

We have reviewed the last calendar year of our service to determine the true cost of assessing TPMT status. The cost of detecting each TPMT deficient patient calculates at £9,109. The cost of detecting patients who are either deficient or heterozygous, where therapeutic alterations may be considered, is just £295.

With the current growth of our TPMT service we have been able to keep our price for the coming year the same as last year, at just £29.

For further details on any aspect of our TPMT service please contact Dr Nicola Barlow, email - [nicola@cityassays.co.uk](mailto:nicola@cityassays.co.uk)



## Gilbert's Syndrome confirmation - UGT1A1\*28

We are now able to offer genotyping of UGT1A1\*28 to other trusts.

This is of particular interest in confirming a tentative diagnosis of Gilbert's Syndrome, and also in pharmacogenomics to pre-screen patients who are going to start treatment on drugs such as Irinotecan where the UGT1A1 enzyme pathway is important to their metabolism.

Our turn round target for this test is just 3 working days and our price £29.

## Faecal Elastase

For the past 18 months we have been able to report faecal elastase-1 results on very wet stools we use a novel pre-analytical technique, which allows measurement of enzyme activity in dried faecal material and is not affected by the water content of the stool. About 11% of all samples we receive are analysed by this method.

### Total faecal elastase analyses in 2008 : 2825

Performed 314 analyses by dried faecal method (11%).

159 were unsuitable for analysis by conventional method and would not have been otherwise reported.

Of the 155 samples analysed by both dried and conventional methods, 57 had changed classification with dried analysis.

# 6-Thioguanine Nucleotide service supports TPMT

The last year has seen growing interest in our assay for 6 thioguanine-nucleotides (6-TGN), which has complemented our TPMT service for several years.

Thiopurine drugs such as azathioprine are converted to active metabolites, mainly 6-TGN, and the accumulation of high levels of these are responsible for side effects of thiopurine drugs. Therapeutic drug monitoring of 6-TGN concentrations can be useful for:

- Ensuring correct treatment in patients who are TPMT heterozygotes and have a lower TPMT activity than normal.
- Checking compliance.
- Patients not responding to standard doses of the drug.

Patients with deficient or low TPMT activity produce excess 6-TGN and it is strongly advised that TPMT status is tested prior to commencing on thiopurine drug therapy.

Clinical practice in 6-TGN requesting varies markedly in the United Kingdom. Large workload increases have come, in the main, from just a few centres, as well as a considerable interest from paediatric centres.

We have a growing amount of data indicating that in many patients the dose of thiopurine drugs being given is not achieving active metabolites levels within the therapeutic range. Furthermore, repeat analysis after dose alteration

suggests titration to within the therapeutic range is relatively simple to achieve.

6-TGN analysis is available for £29 for those laboratories who already make use of our TPMT service. Further details: Dr Nicola Barlow. email: nicola@cityassays.co.uk.

Our current turn-round target for this assay is just 3 working days and we hope to reduce this as the workload and our investment in the service moves forward.

Furthermore, later this year, we hope to be able to offer analysis of the second major metabolite of thiopurine drugs found in erythrocytes, 6-methylmercaptopyrimidine, alongside 6-TGN testing.

## 25-Hydroxyvitamin D service

### One year on!

It has been a year since we launched our new 25-hydroxyvitamin D LC-MS/MS assay and it has been a great success.

Developed in-house our assay uses a liquid-liquid extraction method and is capable of separate measurement of 25-hydroxyvitamin D<sub>2</sub> and D<sub>3</sub>.

The inter-variation of the assay (n=50) for vitamin D<sub>2</sub> is 8.4% (9.0 µg/L) and for vitamin D<sub>3</sub> 7.7% (15.5 µg/L). The limit of quantification (signal to noise ratio of >10 and intra variation of ≤10% for n=10 samples) is 1.1 µg/L for vitamin D<sub>2</sub> and 4.0 µg/L for vitamin D<sub>3</sub>.

To ensure that the same high quality of service is maintained as our workload grows, future plans include increasing the capacity of our current analyser and investing in a second LC-MS/MS system.

### Performance audit 2008–2009

<b>Total number of requests</b>	16,580
<b>Patient means</b>	Total 25-hydroxyvitamin D of 19.1 µg/L, Vitamin D <sub>3</sub> 16.4 µg/L, Vitamin D <sub>2</sub> 2.3 µg/L
<b>Number vitamin D deficiency (&lt;10 µg/L Total 25-hydroxyvitamin D)</b>	34% (5607)
<b>Number severe vitamin D deficiency (&lt;6 µg/L Total 25-hydroxyvitamin D)</b>	15% (2552)
<b>Number with significant D<sub>2</sub> present (&gt;60% Total 25-hydroxyvitamin D)</b>	4.5% (739) workload (May 2008 –April 2009)
<b>Number of users</b>	40
<b>Mean turnaround time (time booked in to report printed, incl. weekends)</b>	3.6 days
<b>Number of samples could not be analysed</b>	0.4% workload: <ul style="list-style-type: none"><li>• 58 Insufficient serum sent</li><li>• 6 request form/sample mismatch</li><li>• 1 empty tube received</li><li>• 1 sample leaked transit</li></ul>
<b>Number of user contacts</b>	0.3% workload <ul style="list-style-type: none"><li>• 52 missing reports or wrong address</li></ul>
<b>Analysis could not be performed due to technical/staffing problems</b>	1 day to fix fault with LC pump head 3.5 days routine service of LC-MS/MS system



# Stone Service Doubles Capacity

We have now invested in a second FT-IR machine to enable us to keep pace with the increase in workload

Clearly many laboratories do not wish to analyse the small volumes of stones that they are sent.

Our referral service uses the latest technology which enables us to offer:

- Five day turn round
- Photograph of the stone as part of the result
- Dedicated scientists overseeing interpretation

We have a poster at Focus which looks at the incidence of seemingly factitious stones sent to laboratories and we have observed this as 0.6% of our workload. Such 'stones' have included stale bread, talcum powder and rubber!



# Diethylene glycol service now available

Ethylene glycol and diethylene glycol are two common additives in antifreeze and screen wash. In overdose as little as 30ml can be lethal.

Glycol poisoning should be suspected on an intoxicated patient with a high anion and osmolal gap. We have recently added the measurement of diethylene glycol to this service. Retrospective analysis of stored samples shows that 8% of samples contained diethylene glycol.

The City Hospital glycol service has a turnaround of 2 hours upon receipt and is available 24 hours. It is priced at £100.

For further details please contact Dr Loretta Ford, email - [loretta@cityassays.org.uk](mailto:loretta@cityassays.org.uk)

## cityassays.org.uk

Our website gives basic details for many of the tests that we offer to other laboratories.

This includes:

- Downloadable PDF files of the user information leaflets
- Relevant information and background details for the tests
- Up to date details on the turnaround time for the tests that we offer.



## Specialist assays

Offered by SWBH NHS Trust Pathology Department

General Biochemistry	Turnround	Cost
Vitamin A	3 working days	£12
Vitamin D (Total, D2 and D3)	2 working days	£19
Vitamin E	3 working days	£12
Carotenes	5 working days	£30
<b>TPMT service</b> (Enzyme activity and relevant DNA)	2 working days	£29
Thioguanine nucleotides	3 working days	£29
Faecal elastase-1 service	3 working days	£30
Gilbert's Syndrome (UGT1A1*28)	3 working days	£29
ACE	3 working days	£13
Bile acids	1 working day	£13
Fructosamine	1 working day	£13
Stone analysis	5 working days	£25
<b>Toxicology</b>	<b>Turnround</b>	<b>Cost</b>
Ethylene and diethylene glycol	Available 24 hours	£100
<b>Trace Elements</b>	<b>Turnround</b>	<b>Cost</b>
Copper, Zinc and Selenium	2 working days	£15 each analyte
Manganese	3 working days	£25

## Contact point

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Haematology	<a href="mailto:haem@cityassays.org.uk">haem@cityassays.org.uk</a>	0121 507 4241
Microbiology	<a href="mailto:micro@cityassays.org.uk">micro@cityassays.org.uk</a>	0121 507 4262
Trace elements	<a href="mailto:elements@cityassays.org.uk">elements@cityassays.org.uk</a>	0121 507 4137
Toxicology	<a href="mailto:toxicology@cityassays.org.uk">toxicology@cityassays.org.uk</a>	0121 507 4135