

Pathology News

September 2007 - IBMS Congress Special Edition

Overcoming those Send Away Blues

Welcome to a special edition of Pathology News from Sandwell and West Birmingham Hospitals NHS Trust. We have been continually developing our services for tests referred to us in recent years. Now, we feel it is time to get out and meet many of the hundreds of laboratories that send work to us. What better way to do this than by taking a stand at the IBMS exhibition in Birmingham.

On our stand at the IBMS Congress we will have details of some of the tests we undertake for other Trusts, including specialist tests from Clinical Biochemistry, Haematology and also Microbiology.

Meet the Experts

We will also have a special session each lunchtime during the two hour exhibition break, 12-2pm, where you will be able to meet one of our experts for the different tests on offer as follows:

Mon: TPMT Pharmacogenomics is here big time! Dr Loretta Ford

Tues: Daptomycin susceptibility ... when to order Dr Jenny Andrews

Weds: P50 oxygen saturation explained Dr Sukhjinder Marwah

The meet the experts sessions will be informal small group talks. You will be able to come along and raise your own points or listen to a semi structured discussion from our experts. We will have user information leaflets for a number of our referred tests on our stand.



Some of the sample reception team receiving samples for referred in tests.

IBMS Congress: our stand is F3

Located in the walkway
between registration and
the main lecture hall.

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Guess the weight of the Stone!

Come along to our stand and try and guess the weight of the bladder stone. Everyone who completes an entry form and has a guess receives a prize. If you get close to the real weight then there is a special prize for you to win.



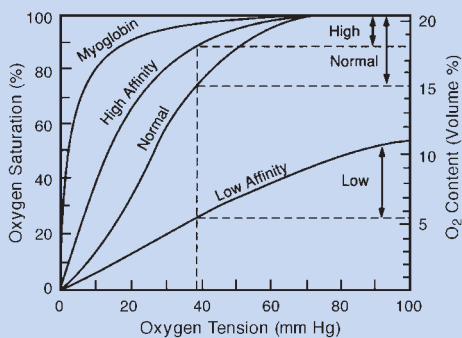
P50 Explained

More than 200 haemoglobin variants with high oxygen affinity have been reported in the literature. In about one third of these, the increase in oxygen affinity is responsible for a compensatory erythrocytosis. Increased pH, temperature and 2,3 DPG within red blood cells leads to elevated levels of P50 indicating haemoglobin with lower oxygen affinity which is observed in sickle cell disease. Conversely, decreases in P50 is exhibited in conditions with high affinity oxygen haemoglobin such as HbF which may lead to secondary polycythaemia.

P50 levels in conjunction with Erythropoietin levels may be used for the diagnosis of secondary polycythaemia caused by high oxygen affinity haemoglobin.

Our Assay

The P50 assay uses the TCS Hemox-analyser equipped with latest software. The assay is performed on the day of specimen arrival.



Due to storage changes in the whole blood sample, the assay is normally performed on a fresh sample. However, our laboratory has demonstrated storage change up to 48 hours has minimum effect on P50 value. Therefore, P50 assay may be performed on a sample up to 48 hours old as long it is accompanied by a normal control sample taken at the same time.

Individualising Thiopurine Drug Therapy

Individuals can respond in very different ways to the same medication. Adverse reactions can occur even with widely used drugs and in some circumstances be so severe they are life threatening.

Azathioprine is a drug that suppresses the immune system and is used to treat organ transplant recipients, leukemia, inflammatory bowel disease and other autoimmune disorders such as eczema.

Out of every 300 people in the UK one person lacks a properly functioning enzyme called thiopurine s-methyltransferase (TPMT). Individuals with no TPMT activity can become severely ill or even die if treated with standard doses of azathioprine.

A further 10% of the population have low levels of TPMT activity and can develop less severe side effects to azathioprine such as nausea, vomiting, fever or rash.

Use of TPMT Assay

Testing patient TPMT activity prior to starting azathioprine drug treatment can be used to

- Identify patients with no TPMT activity who should not be treated
- Identify those 10% of patients with low TPMT activity, which can still be successfully treated if the dose of azathioprine is reduced.

Our Service

In 2003 at City Hospital Birmingham we established a rapid testing service for TPMT, which has made the test more freely available. Currently over 200 UK hospitals use our TPMT service as well as a number from

overseas. A recent audit of our service showed:

Patients tested	27,000
Deficient patients identified	90
Av. turnaround time	1.9 days

In addition to testing patient TPMT activity in the blood we perform genetic analysis to identify the actual mutations of the TPMT gene responsible for causing the low TPMT activity. This genetic test is particularly useful for determining a patient's TPMT status after they have received a blood transfusion, as the donor blood interferences with our standard TPMT assay which measures the actual TPMT activity of blood.

This service is the first major example of a pharmacokinetic test that has been introduced nationally with trusts increasingly having policies in place that patients commencing on thiopurine drugs should have their TPMT status determined prior to therapy commencing.



Jayne prepares a TPMT incubation



Daptomycin Sensitivity Testing Now Available

Daptomycin is a new cyclic lipopeptide antibiotic with rapid bactericidal activity against *Staphylococcus aureus* including MRSA.

Daptomycin has recently been shown to be effective in the treatment of MRSA bacteraemia and endocarditis. However, the precise role of daptomycin in the treatment of MRSA bacteraemia and endocarditis remains unclear.

A contributing factor may be the lack of availability of a standardised method for disc susceptibility testing for daptomycin. Microbiologists require a method of daptomycin susceptibility testing in which they can be confident of predicting the clinical outcome when treating serious infections.

Controlling Calcium is the Key

Daptomycin activity in vitro is markedly affected by the concentration of calcium ions and there are unresolved questions about how daptomycin susceptibility should be tested in routine clinical laboratories. Disc diffusion tests are unreliable and EUCAST recommends that the MIC must be determined to allow susceptibility categorization.

City Hospital Service

We have established an assay for daptomycin using the Etest (AB Biodisk). This is a gradient test that is a practical alternative to conventional agar MIC methods.

For daptomycin testing the Etest strip is provided overlaid with a



Jenny Andrews and Beryl Oppenheim are working together on the new Daptomycin service.

constant level of calcium and the testing medium is Mueller Hinton agar that has a consistent inherent level of calcium (25-35 mg/mL).

Three day turn round

Our new assay is now available with a turn round of just three working days. The clinical information leaflet can be downloaded from our website; www.cityassays.org.uk. Further details can be found on page 4.

Improved Faecal Elastase-1 Method for 'Wet' Stools

Human faecal elastase-1 is extremely useful in the study of chronic pancreatitis and is the main biochemical test offered for this condition.

Many samples received in our laboratory have a high water content. This can lead to a false positive result or indeed to the sample being unsuitable for analysis. A recent audit showed the following:

Wet faecal elastase samples	percentage of all samples
Unsuitable for analysis	9.0%
Comment added "interpret results with caution"	8.7%

For this 18% of samples patients have to have further samples taken to get a viable result. For the last six months Dr Petros Kampanis has been working on an adaptation to our method for use with 'wet' stools that now means we are able to get a clinically relevant result on many such samples.

This new method involves the measurement of faecal elastase in a dried faecal sample. From 1st October all samples which are unsuitable for conventional analysis will be assayed using our new technique and much of Petros's recent work has been to study the reference intervals for this modified test. Petros is involved in further work to ascertain if this new methodology can actually give more clinically useful results in all samples over the conventional wet faecal analysis.



Dr Petros Kampanis working on his method enabling "wet" faecal samples to be analysed for Elastase.



'Pain Free' Stone Analysis

Renal stones are a common cause of hospital admission. Indeed it is reported that about 15% of adults will present with a renal or other stone sometime in their lives. Stone analysis is just one element of management but one has to say that the clinical laboratory has often neglected this work. Commonly stone analysis has used tedious manual techniques which tend to have a high component of subjective analysis with low sensitivity.

We have recently updated our stone analytical service with the introduction of a Fourier Transform Infra Red analyser. This technique enables us to first scan a prepared sample of a stone, then compare the spectrum with a databank of over 20,000 stored scans.

Our new service centres on offering relevant clinical information and the package includes:

- Digital image of the stone
- Semi-quantitative results
- Emphasis on clinical interpretation when required
- Rapid turn round of results with a 5-day turn round target

- Further relevant chemical analysis when applicable at no additional charge

We are now able to offer this service to other Trusts and for this financial year our charge is just £20 per sample. For further details please download the information leaflet to be found at www.cityassays.org.uk or use the contact details below.



One of the larger stones analysed by FT IR so far!

Specialist Assays

Offered by **SWBH NHS Trust Pathology Department**

Biochemistry	turnround	cost
Vitamin A	3 days	£10.50
Vitamin D	3 days	£18.00
Vitamin E	3 days	£10.50
Carotenes	5 days	£25.00
TPMT service	2 days	£28.00
Faecal elastase-1	3 days	£28.00
ACE	3 days	£11.00
Stone Analysis	5 days	£20.00

Haematology	turnround	cost
P50	1 day	£127.50
Erythropoietin	3 days	£26.50

Microbiology	turnround	cost
Daptomycin	3 days	£30.00

Contact Point

Department	Email	Telephone
General	info@cityassays.org.uk	0121 507 4233
Biochemistry	biochem@cityassays.org.uk	0121 507 5353
Haematology	haem@cityassays.org.uk	0121 507 4241
Microbiology	micro@cityassays.org.uk	0121 507 4228

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.

