Sandwell and West Birmingham Hospitals NHS
NHS Trust

Where EVERYONE Matters

Pathology news

April 2013 – Hospital & Primary Care Edition

Blood Sciences Lab Up and Running

For the last three years we have been planning a new Blood Sciences laboratory, which comes into service this month.

Our new laboratory will help increase the efficiency and effectiveness of our service to both hospital and community users. It is based on the first floor of our Sandwell laboratory in the former Microbiology Department. This has now been turned into a large open plan laboratory space which is equipped with state of the art high throughput analysers.

During April, many of our staff are relocating from our current automated laboratories in City Hospital to Blood Sciences at Sandwell. This brings the biochemistry, haematology, immunology and serology work all into the same space, enabling us to make important improvements to the way we work. At the same time, we will be using new analytical platforms. There will be changes to several reference intervals and improvements to the services we offer.

We hope that the impact on users will be positive. Please do appreciate that behind the scenes we are moving services on quite a large scale and bear with us during our period of change, which commences on **Tuesday 9 April 2013**.

Call Centre

The combined call centre for our Blood Sciences laboratory is as follows:
Biochemsitry, Haematology, Immunology, Serology: 0121 507 5162
Microbiology: 0121 507 4261

Key Pointers for Our New Labs

Transport from GP Surgeries

The transport pick-up times will stay as they are at present.

Electronic Requesting & Reporting

You can order tests using the electronic ordering system as normal. Electronic results will also move over so that you receive them on your computer just as you do now. If you are not yet using electronic test ordering please contact Nick Lines on
Email: nick.lines@nhs.net
Tel: 0121 507 5366

Not Doing Electronic Ordering?

Wasim and Raj overseeing electronic test ordering in Pathology IT

The benefits of using the electronic ordering system are clear and we have invested heavily in the implementation of this. We see a reduction in error rates and lost samples as well as much more efficient sample processing.

If members of your team are not yet using electronic ordering or need further training then please contact Was Iqbal on
Email: wasimiqbal@nhs.net
Tel: 0121 507 5761

Getting the Sample Right....

Blood Samples

We see the minimum error rate with samples taken by our phlebotomists in one of our clinics or on wards. When samples are taken by ward or surgery staff it is very important that they are labelled correctly. The following are essential:

- **Bar Code Printers:** please ensure that ink cartridges are changed regularly so bar codes are printed clearly. The correct bar code paper needs to be used the right way up.
- **Sample Bar Codes:** please ensure that samples are labelled with the appropriate bar code positioned correctly. For example the glucose sample (grey top) is labelled with the number that requests glucose and the ochre sample (yellow top) with the number that requests U&E, and so on.

Please maintain your printer so bar codes are readable

Please label your samples with full details

Urine, Stool & Sputum

Samples from GPs are often rejected due to being mislabelled, or even unlabelled. Unfortunately we receive dozens of such samples every day. This means that patients have to be contacted to provide a new sample. It is highly desirable to label sample containers as you hand them to patients to minimise these problems. When handwriting, rather than using an electronic order label, the details required are:

- Full name
- Date of birth
- NHS Number
- Date and time of sampling

The perfect electronic request samples

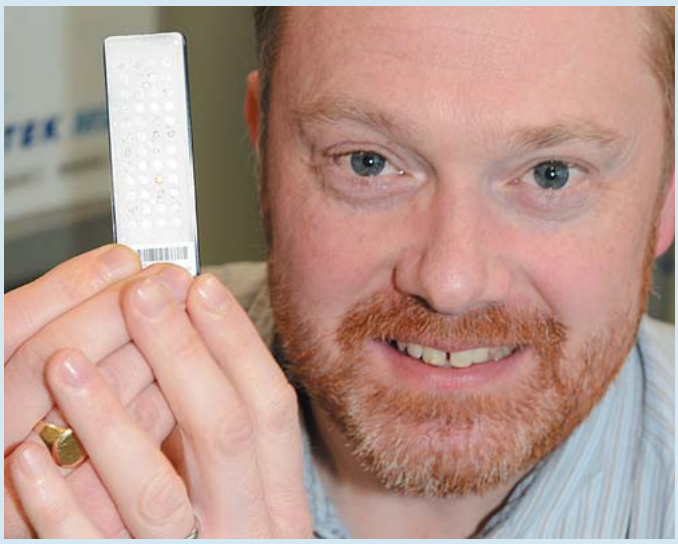
Automation Arrives in Microbiology

Microbiology has recently installed a new urinalysis system and an automated agar plate processor used for urine and faecal cultures.

The analyser enables use of new specimen containers which minimise handling errors. It has an enhanced cell counting process, resulting in improved negative predictive value and fewer urines require culture thus speeding up turn round time.

For 18 months we have been using the VITEK MS MALDI –TOF bacterial identification system. This enables us to identify yeast and bacterial isolates in approximately 20 minutes, saving over 18 hours from our previous methods. We now identify over 200 isolates per day.

We hope to expand this service to include direct identification of organisms from positive blood culture bottles, rather than agar growths in the next few months.



Nathan with the sample holder for the MALDI-TOF

Community POCT

Within Pathology we have a team of staff who oversee point of care testing across our three hospital sites.

POCT devices include those for glucose, pregnancy testing, INR, urinalysis and blood gas analysis. Staff are involved in the distribution of kits and meters as well as maintenance, troubleshooting and training. High level scientific input is available to review new potential uses for POCT.

Significant progress has been made towards harmonisation of devices, overcoming many clinical governance issues and enabling cost savings to be made. We have successfully introduced POCT result transfer to electronic patient records.

We are a point of contact for advice to GPs interested in working on appropriate POCT. Do get in touch with Vanessa Lane, POCT Manager
Email: vanessalane@nhs.net
Tel: 0121 507 6027

James trains Clare on the use of a POCT glucose analyser. Over 1,500 staff undergo annual training and re-certification in the Trust each year

Malarial Parasites

The Pathology department routinely monitors errors that are made during sample processing. It has come to our attention malarial parasite requests are often problematic and common problems include:

- **'Malarial parasites'** has sometimes been written as a clinical detail rather than a request which can lead to the lab staff missing the request. If handwritten forms are used then please write 'malarial parasites' in the test request area.

This problem is always overcome by using electronic requesting and selecting the **'MP'** set which allows our reception staff to accept this request.

Sonia assesses a blood film for Malarial parasite presence

Adjusted Calcium Reporting

From the 1st May 2013 'Total Calcium' and 'Adjusted Calcium' results will both be reported on all requests for serum calcium.

Why 'Adjusted'? Calcium is strongly bound to proteins in blood, especially albumin. If albumin is low, total calcium levels will be measured as low, even though the level of 'active' or ionised calcium may be normal. The adjusted calcium value compensates for the serum albumin and this can often give the best assessment of levels.

Adjusted calcium is calculated using measured total calcium and albumin. Pathology Harmony has recommended that each laboratory derives its own equation as this can be method dependant.

There are a number of situations where adjusted calcium is not always reliable and this includes:

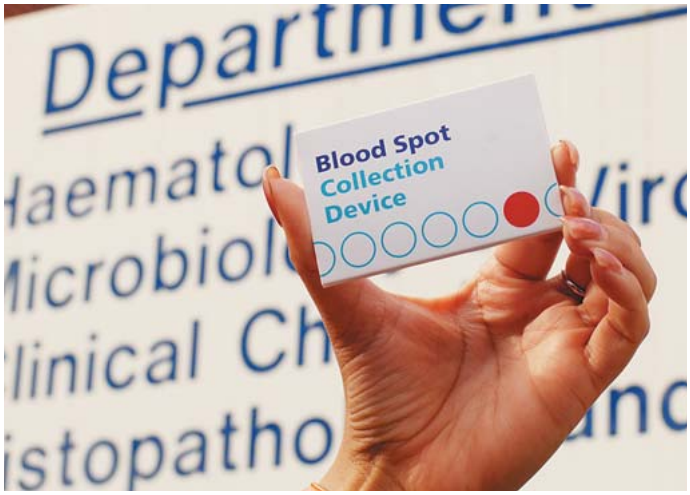
- Neonates
- Serum albumin less than 20 g/L
- Marked acid-base disturbance
- After major surgery or blood transfusion.

Blood Spot Innovation

We have been developing blood spot techniques as an alternative to venepuncture for a number of our tests.

This has included the design of a new blood spot collection device which is patent protected and is being commercialised. The first assay that we have introduced is a Vitamin D direct to the public service. This has been running since August 2011 and now sees samples coming to us from all over the world for vitamin D measurement.

You can see more at: **www.vitamindtest.org.uk**. Based on our experience with Vitamin D we are now establishing blood spot testing for a number of tests and one idea is to be able to do a full diabetic screen on a blood spot which patients can post to the laboratory.



Pathology Bees...

We have been running a Pathology Apiary for the last three years as a teambuilding initiative.

During the summer we look through our bees once a week, often on Tuesday lunchtimes. As well as Pathology staff we welcome visitors from the wider hospital or indeed GP practice staff to help us.

We announce our sessions on Twitter, usually on the morning. You can reply to the tweet asking to book on the session. Follow us on **Twitter: @cityassays** to keep in touch.

www.cityassays.org.uk

Sandwell and West Birmingham Hospitals NHS
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What a Twitter...

... Tweets about specialist tests
... Direct to the public testing
... A touch of humanity
Join in the fun: @Cityassays

Common Adult Reference Intervals

Our printed and electronic results should have the relevant reference intervals printed alongside them.

Some ranges are age and sex dependent so it is important not to apply ranges from one patient report to other results.

Here we provide common reference intervals.

Biochemistry Results

ANALYTE	REFERENCE INTERVAL	UNITS
U&E		
Sodium	133 - 146	mmol/L
Potassium	3.5 – 5.3	mmol/L
Urea	2.5 – 7.8	mmol/L
eGFR	>90	mL/min
Liver Function		
Albumin	35 - 50	g/L
Bilirubin	< 21	umol/L
Alkaline phosphatase (adult)	20-130	U/L
Alanine amino transferase	< 41	U/L
GGT (male)	< 64	U/L
GGT (female)	< 45	U/L
Lipids, Glucose and Calcium		
Cholesterol	2.5 – 5.0	mmol/L
HDL-Cholesterol (male)	>1.0	mmol/L
HDL-Cholesterol (female)	>1.2	mmol/L
Triglycerides (fasting)	< 2.3	mmol/L
Glucose (fasting)	3.6 – 6.0	mmol/L
Adjusted Calcium	2.2 – 2.6	mmol/L
Thyroid		
TSH	0.27 – 4.20	mU/L
FT4	12 – 22	nmol/L
FT3	3.1 – 6.8	pmol/L

Haematology

ANALYTE	REFERENCE INTERVAL	UNITS
Full blood count		
Haemoglobin Hb (male)	125 – 180	g/L
NB new range implemented 27th March 2013		
Haemoglobin Hb (female)	115 – 160	g/L
NB new range implemented 27th March 2013		
WBC	4.0 – 11.0	$x10^9/L$
Platelets	150 – 450	$x10^9/L$
MCV	79 – 99	fl
HCT (PCV) (Male)	38 – 54	L/L
HCT (PCV) (Female)	30 – 50	L/L
MCH	27.0 – 34.5	pg
Neutrophils (Caucasian)	2.0 – 7.5	$x10^9/L$
Neutrophils (non Caucasian)	1.7 – 7.5	$x10^9/L$
Lymphocytes	1.0 – 4.5	$x10^9/L$
Monocytes	0.2 – 0.8	$x10^9/L$
Eosinophils	0.0 – 0.5	$x10^9/L$
Basophils	0.0 – 0.1	$x10^9/L$
Reticulocytes	20 – 100	$x10^9/L$
ESR No reference range quoted		
Coagulation		
PT	12.4 – 18.3	Seconds
INR	0.85 – 1.25	(ratio)
APTT	22.7 – 34.1	Seconds
APTT ratio	0.75 – 1.30	(ratio)
Haematinics		
Vitamin B12	187 - 883	pg/ml
Folate	3.1 – 20.0	ng/ml
Ferritin (Males)	25 – 380	ng/ml
Ferritin (Females post menopausal)	25 – 380	ng/ml
Ferritin (Females child bearing age)	10 – 300	ng/ml
HBA1C Target Values		
Diabetic	44 – 58	mmol/mol
Non-diabetic	20 – 42	mmol/mol

Hb and MCHC move from g/dl to g/L

Historically, haematology laboratories around the UK have reported Haemoglobin (Hb) and Mean Cell Haemoglobin Concentration (MCHC) using different units of measurement. This has been identified as a clinical risk by the Department of Health's Pathology Harmony group, who have recommended that all laboratories report as g/L.

- **Our laboratories will be reporting Hb and MCHC in g/L from 27th March 2013.**

We will be adding comments to all reports which highlight this important change.

The Pathology Harmony group was established in Birmingham six years ago. The group is led by Dr Jonathan Berg, our SWBH Pathology Director. It has worked to remove unnecessary differences in areas such as test intervals and even the names that we call our tests. The Pathology Harmony initiative has now been copied around the world.

Find out more at: www.pathologyharmony.org.uk.

Useful Pathology Contacts

Biochemistry	
Consultants	**Dr Jonathan Berg** (Head of Department) jonathanberg@nhs.net Tel : 0121 507 5353 **Dr Elizabeth Hughes** elizabeth.hughes3@nhs.net Tel : 0121 507 3426 **Dr Loretta Ford** loretta.ford@nhs.net Tel : 0121 507 4227 **Dr Steve George** steve.george1@nhs.net Tel : 0121 507 4134
General Enquiries	Tel : 0121 507 5162
Toxicology Lab	Tel : 0121 507 4135/4138
Haematology	
Consultants	**Dr Christine Wright** (Head of Department) christine.wright1@nhs.net Tel : 0121 507 4376 **Dr Yasmin Hasan** yasmin.hasan@nhs.net Tel : 0121 507 3095 **Dr Shivan Pancham** shivan.pancham@nhs.net Tel : 0121 507 3427 **Dr Richard Murrin** richard.murrin@nhs.net Tel : 0121 507 5358 **Dr Farooq Wandroo** farooq.wandroo@nhs.net Tel : 0121 507 3427
General Enquiries	Tel : 0121 507 5162
Microbiology	
Consultants	**Dr Natasha Ratnaraja** (Head of Department) natasha.ratnaraja@nhs.net Tel : 0121 507 4824 **Dr Nimal Wickramasinghe** nwickramasinghe1@nhs.net Tel: 0121 507 6486 **Dr Tranprit Saluja** tsaluja@nhs.net Tel: 0121 507 5742
General Enquiries	Tel : 0121 507 4261/4262
Histology	
Consultants	**Dr Suhail Muzaffar** (Head of Department) suhail.muzaffar@nhs.net Tel : 0121 507 6476 **Dr Parveen Abdullah** parveen.abdullah@nhs.net Tel : 0121 507 6477 **Dr Yum Chan** yum.chan@nhs.net Tel : 0121 507 4224 **Dr Akbar Hussainy** akbar.hussainy@nhs.net Tel : 0121 507 4267 **Dr Madhavi Maheshwari** madhavi.maheshwari@nhs.net Tel : 0121 507 4268 **Dr Navid Momtahan** navid.momtahan@nhs.net Tel: 0121 507 6483 **Dr Asif Quadri** asif.quadri@nhs.net Tel : 0121 507 6484 **Dr Ulises Zanetto** ulises.zanetto@nhs.net Tel : 0121 507 5357
General Enquiries	Tel : 0121 507 4265
Immunology	
Consultants	**Dr Sadia Noorani** (Head of Department) sadia.noorani@nhs.net Tel : 0121 507 4257 **Dr Surendra Karanam** surendrakaranam@nhs.net Tel: 0121 507 8043 **Dr Jonathan North** jonathan.north@nhs.net Tel : 0121 507 4571
General Enquiries	Tel : 0121 507 4258
Pathology	
General Enquiries	Tel : 0121 507 4221 /4222
GP Transport	Tel : 0121 507 5366

Total Cholesterol: HDL Ratio

From 1st April 2013, Total Cholesterol: HDL ratio (TC/HDL) will be reported on all HDL requests. The TC to HDL cholesterol ratio is helpful in predicting atherosclerosis. Evidence shows it is a better predictor then cholesterol alone.

People with diabetes should aim to meet the following blood cholesterol targets:

- **Total cholesterol:** under 4.0 mmol/l
- **LDL levels:** below 2.0 mmol/l
- **HDL levels:** at least 1.0 mmol/l (men) or 1.2 mmol/l (women)
- **Triglyceride levels:** less than (or equal to) 1.7 mmol/l
- **Total cholesterol / HDL ratio:** less than 5

Ordering Pathology Consumables

Consumables that we provide to GPs and wards include:

- Request forms
- Sample tubes and phlebotomy consumables
- Collection bottles

Please note that sufficient consumables are provided for the samples that you send to the SWBH laboratories. Increasingly we are monitoring orders to ensure they relate to the samples that you send back to us.

Jas Kaur or Brenda Pakenham
Tel: 0121 507 4221 / 4222