ACB News

The Association for Clinical Biochemistry & Laboratory Medicine | Issue 660 | August 2019

In this issue

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Front cover: Professor Neil Anderson, incoming President of the ACB, with Professor Ian Young, Past President

ACB News

The bi-monthly magazine for clinical science

Issue 660 • August 2019

Tooley Street Update

There have been some significant changes in the Tooley Street Office. The Executive commissioned a review of staffing and structures, which was carried out at the beginning of the year by Sue Thorn, a consultant who specialises in medical and scientific associations and who was for many years Chief Executive of the Society for Endocrinology.

Sue's recommendations were accepted and a key one was the appointment of a Chief Executive to be based in Tooley Street. Sue was appointed as Interim CEO, working part time, until a permanent CEO is appointed. The role was advertised in July with interviews to be held in August.

In addition, Christine went on maternity leave in May and has had a little boy, Leo. She will be away until next year.

Two new staff have been appointed to improve capacity. These are Cinzia Jones and Sakinah Williams (pictured below, left to right respectively).

Mike Lester has been given a shift of role to focus on Member Services, IT and ACS.

Cheryl will continue to focus on events and accounts and Nic will continue to spend much of his time on SSIEM.

It is anticipated that these changes will improve staff cover and reduce the overload. ■

Condolences

It is with regret that we have been informed of the sad news of the death of ACB Retired Member Dr Alistair Munro.

Dr Munro joined the Association in 1979 and lived in Worcester, having previously worked at Worcestershire Royal Hospital until his retirement in 2011. Dr Munro held the position of West Midlands representative of the Clinical Practice Section from 2006-2010. ■

Sudoku

This month's puzzle

			I		R			
	S						M	
I				C				H
S	R						H	E
C	H	E	M	I	S	T	R	Y
R	M			H			S	I
			C		E			
E								M

Solution for June 2019

C	H	E	M	I	S	T	R	Y
T	M	I	Y	E	R	C	H	S
Y	S	R	T	H	C	E	M	I
H	I	T	S	Y	M	R	C	E
S	Y	M	R	C	E	H	I	T
R	E	C	H	T	I	Y	S	M
E	C	H	I	S	T	M	Y	R
I	R	Y	E	M	H	S	T	C
M	T	S	C	R	Y	I	E	H

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There's More to Quality Management than Accreditation

Thursday 12th September 2019

This seminar is for anyone working in Laboratory Medicine struggling to get to grips with the advantages of a Quality Management System. It brings together the cream of Laboratory Medicine and Quality Management professionals in the UK. They will share with you their expertise; explaining the Value Proposition Concept and how it applies to Laboratory Medicine from the point of view of laboratories, the diagnostic industry and the patient!

09:00 Arrival and Registration
09:50 Introduction to the day *Jonathan Middle (AQMLM)*
10:00 History of the Value Proposition Concept *Jonathan Middle (AQMLM)*
10:40 Overview of Value in Laboratory Medicine *Chris Price (Oxford University)*
11:20 Short break
11:40 The Value of Accreditation *John Ringrow (UKAS)*
12:20 Lunch
13:20 The IFCC Task Force: Impact of Laboratory Medicine on Clinical Management and Outcomes (TF-ICO) *Mike Hallworth (IFCC)*
14:00 The Value of 'Lab Tests On Line' *Danielle Freedman (Luton & Dunstable)*
14:40 Value of the Diagnostic Industry *Doris Ann Williams (BIVDA)*
15:30 Tea
15:50 The Patient's Perspective *Ian Watson (Aintree)*
16:30 Close and departure

The meeting will be fully accredited for the Royal College of Pathologists CPD scheme and recognised by the Institute of Biomedical Science CPD scheme.

Delegate Fees:
Book today to take advantage of our early bird fees.
Members: £50 Non-members: £75*

BMS and Clinical Scientist Trainees:
£50 – please ask for details

For more information or to register: **www.aqmlm.org.uk/forthcoming**

*By opening an AQMLM account today and booking the meeting, you will automatically be enrolled as an AQMLM member until September 2020; giving you access to many member benefits and exclusive discounts for future meetings.

The Venue: The Birmingham Research Park is 4 miles from Birmingham City Centre, adjacent to the University of Birmingham campus and the new Queen Elizabeth Hospital. It is easily accessible by rail, road and air.

Birmingham Research Park
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Meet the President . . .

Professor Neil Anderson

I was born in Belfast and came over to England in the late 70s at the height of the troubles. I went to University in London and Aberdeen before joining the West Midlands Training Scheme for Basic Grade Clinical Biochemists in 1988. Currently I am a Consultant Clinical Biochemist and the Clinical Director of Clinical Diagnostic services at University Hospital Coventry and Warwickshire. In addition I am the Lead Healthcare Scientist for the Trust and hold a visiting Professorship at Coventry University.

I am passionate about Clinical Scientists taking significant leadership role in Trusts and Healthcare systems in order to raise the profile of what we do and how we can influence every clinical pathway. I would like to see Clinical Scientists and laboratories leading the translation of novel techniques and processes into practice and finally looking at the enhanced role that Clinical Biochemists can play in the direct delivery of patient care and how we can build on the excellent work carried out by Past President Gwyn McCreanor on prescribing and patient group directions.

It was an incredible honour being asked to become President of the Association that I have been a member all of my professional life. I have nothing but praise for the past Presidents and especially Ian Young who has led the Association with distinction and passion. One thing that immediately struck me on assuming the role, is the incredibly good standing the Association is held in. The fact that individuals, groups, organisations and Government all want to hear our view is a credit to all members of the Association but especially those that are office holders.

There are many areas of focus for the ACB in the future, especially as this is against a background of service rationalisation, standardisation across pathways and professional development. Three areas I would like the ACB to focus on in the coming two years are:

- **Greater engagement with the membership, through meetings, surveys and in particular in developing a new website.** There is an opportunity to develop a website which will engage with members, to teach and educate and to serve as a focus for scientific reference. We are also changing the way the ACB Office operates, again to focus on the interaction with the membership.
- **The meetings we run – Focus, FiLM and the Regional meetings** – are highly regarded, with excellent speakers and relevant themes. However, with so many calls on our time and reduced sponsorship opportunities, how can we

ensure they continue to grow and develop to meet the needs of the membership and wider profession.

- **How the ACB can shape the future in considering emerging areas.** The two areas I believe that we should lead on are: the development of enhanced clinical roles for Clinical Biochemists and the translation of novel diagnostic tests and processes. We will aim to produce and publish position papers in both of these areas.

On to the interesting stuff:

Favourite sport
I like all sports but I am passionate about Irish Rugby for which I am punished for being a relentless optimist.

Best ever holiday
An extended family holiday to Sri Lanka, where we met up with a Sri Lankan friend from work. The welcome I received from his family and friends was incredible. Whilst there we went to see some test match cricket, a tea plantation, a safari and took one of the great train journeys from Kandy to Colombo. A stunning trip.

What makes you happy?
Aside from doing stuff with my family, my two English Pointer dogs provide hours of pleasure.

What makes you sad?
The over simplification of complex things and the person who thought it would be a good laugh to leave the above dogs loose by the side of a motorway when they were 5 months old.

What is your favourite meal?
Breakfast

Most important lesson life has taught you?
Speak up, if you don't your voice is not heard.

Tell us a joke
Most are better after a few drinks at Focus, but one that made me laugh recently was: What do you call a hen that can count her eggs? . . .
Answer: A mathemachicken! ■

Update on FiLM and Focus

Sue Thorn, Interim CEO, ACB

The debrief meeting for FiLM and Focus was held in June, chaired by Sarah Robinson, and the consensus was that both meetings had been successful. There are always ideas to take away for improvement and the planning for 2020 will take these factors into account.

We have appointed a Professional Conference Organiser to help with both meetings in 2020 and 2021 and this will ensure that we have up-to-date systems for online registrations and abstract processing, which should deal with many of the concerns. Focus 2020 will take place in the ICC Waterfront in Belfast on 13th-15th May 2020. The conference dinner will be at the Titanic Museum and the welcome evening will be at The Dark Horse. FiLM will again be at Austin Court in Birmingham on 28th and 29th January 2020.

Content-wise, both 2019's meetings were appreciated by delegates, with almost all sessions being highly scored on the feedback forms. A few highlights from delegate feedback were:

Feedback on FiLM

- 'Great program, excellent speakers and topics'.
- 'This meeting completely exceeded expectations! … although the interesting programme was what first attracted me to the meeting, the content and quality of the speakers really did surprise me and surpassed my expectations'.
- 'Always a great meeting. Very relevant and thought provoking'.
- 'Overall excellent meeting! Keep it up!'

Feedback on Focus

- Immunoassay interferences and their impact on patient care by Dr Carmen Wiley – 'An elegant tour of the subject and brought me bang up to date!'
- Adjusted serum calcium by Dr Emma Ritchie – ' Lectures like this are very beneficial especially regarding tests that we do day in and day out and challenge our thinking'.
- Urine acidification: what the data shows by Dr Ravinder Sodi – 'Likely to change process within own lab based on this information'.
- Novel psychoactive agents by Dr Duncan Stephen – 'Fascinating!'; 'Really enjoyed this, was very interesting!'
- Severe hypoglycaemia due to insulin autoimmune syndrome: diagnostic difficulty due to anti-insulin IgA by Dr David Church – 'A worthy winner! A wonderfully logical scientific approach to investigation of a fascinating case, and beautifully presented.'
- Lies, damned lies and statistics in research – improving efficiency in research and reducing the impact of misconduct – examples from vitamin D research by Prof Alison Avenell – 'Best talk of the meeting'; 'Truly eye-opening, both fascinating and shocking'; 'Excellent!'

A review of all meetings is planned over the next year to ensure that our meetings provision is relevant to all sectors of the membership. This will be informed by a survey of members so please do respond when the survey comes out. Any changes will be implemented from 2022. ■

The Diggle Microbiology Challenge

These multiple-choice questions, set by Dr Mathew Diggle, are designed with Trainees in mind and will help with preparation for the Microbiology Part 1 FRCPath exam.

Question 14 from June's ACB News

Plasmodium falciparum:

A) Attacks only senescent erythrocytes
B) Produces multiple infection of erythrocytes
C) Enlarges the size of the erythrocytes
D) Produces schuffner's dots
E) Characteristically produces clinical relapses

Answer

B) P. falciparum can infect any age of reticulocyte/erythrocyte leading to a higher parasitaemia. P. vivax and P. ovale produce dormant hypnozoites which can lead to clinical relapse and also enlarge erythrocytes. P. vivax produces Schuffner's dots, P. malariae prefers mature erythrocyte.

Question 15

A 22-year old female medical student recently returned from Tanzania presents with a history of haematuria. On investigation schistosomal serology is shown to be positive. Select the treatment of choice:

A) Albendazole
B) Ivermectin
C) Mebendazole
D) Praziquantel
E) Suramin

The answer to Question 15 will appear in the next issue of ACB News – enjoy! ■

NHS
Black Country Pathology Services

Trace elements

Our trace elements laboratory has reviewed its prices which from 1st April 2019 are as follows:

ASSAY	PRICE REDUCED TO	TURNROUND
Chromium blood	**£15**	**1-2 days**
Chromium urine	**£20**	**2-5 days**
Cobalt blood	**£15**	**2-5 days**
Cobalt urine	**£20**	**2-5 days**
Chromium & Cobalt	**£28**	**1-2 days**
Copper urine	**£18**	**2-3 days**
Lead	**£18**	**2-3 days**
Selenium, Copper & Zinc (serum)	**£11 each or £25 all three**	**1-2 days**

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Deacon's Challenge Revisited

No 3 - Answer

A solution containing a substance of molecular weight 400 at a concentration of 3 g/L transmitted 75% of incident light of a particular wavelength in a 1 cm cuvette. Calculate the % of incident light of the same wavelength that would be transmitted by a solution of the same substance at a concentration of 4 g/L and calculate the molar absorption coefficient for that substance at this wavelength.

There are several ways to approach this problem. The simplest is to do the second part first and calculate the molar absorption coefficient.

$$\text{Absorbance} = \log_{10} \frac{I_o}{I} = \varepsilon \times l \times c \quad \text{(i)}$$

where I_o = intensity of incident light = 100%

I = intensity of transmitted light = 75%

ε = molar absorption coefficient = ?

l = path length of cuvette = 1 cm

c = molar concentration = $\frac{\text{conc (g/L)}}{\text{MW}} = \frac{3}{400} = 0.0075$ mol/L

Substitute these values into equation (i) and solve for ε:

$$\log_{10} \frac{100}{75} = \varepsilon \times 1 \times 0.0075$$

$$\log_{10} 1.333 = 0.0075\ \varepsilon$$

$$\varepsilon = \frac{\log_{10} 1.333}{0.0075} = \frac{0.1249}{0.0075} = 16.7 \text{ litres cm}^{-1} \text{ mol}^{-1}$$

For the first part of the question substitute the new concentration (4 g/L) expressed in molar terms, and the molar absorption coefficient into equation (i) and solve for I:

$$c = \frac{\text{conc (g/L)}}{\text{MW}} = \frac{4}{400} = 0.01 \text{ mol/L}$$

$$\log_{10} \frac{100}{I} = 16.7 \times 1 \times 0.01$$

$$\log_{10} \frac{100}{I} = 0.167$$

$$\frac{100}{I} = \text{antilog } 0.167$$

$$I = \frac{100}{\text{antilog } 0.167} = \frac{100}{1.469} = 68\%$$

Question 4

In a Cancer Clinic where the prevalence of ovarian malignancy is 40%, a tumour marker has a specificity of 88% and a sensitivity of 92%. Calculate the predictive value of a positive test result.

If this test was used as a screening tool in all patients attending a General Gynaecological Clinic with a cancer prevalence of 0.4%, what would be the predictive value of a positive test in this population?

FRCPath, November 2000

Clinical Biochemistry MSc Final Call for Birmingham

Jonathan Berg, Black Country Pathology Services

The Universities of Surrey and Birmingham pioneered postgraduate education for Clinical Biochemistry from the 1970s in the United Kingdom. The Surrey course was established by the formidable Professor Vincent Marks with the equally pioneering Professor Tom Whitehead heading up the University of Birmingham training.
The two courses became predominant and produced many excellent NHS scientists who helped develop and lead Clinical Biochemistry in the huge growth period from the 1970s on to the Millennium.

In the 1970s the Birmingham course had lecturers Larry Kricka and Roy Pover heading things up and Professor Whitehead casting a watchful eye on proceedings. Their successful educational approach lay in the considerable professional input from clinical scientists working in hospital laboratories across the Midlands. In later years the course became totally organised by senior laboratory professionals with Peter Gosling in particular putting huge effort in to take the course forward. The very light touch from the University of Birmingham was perhaps recognition of the dedication of those who organised and delivered the course. More recently the University has taken a more central role with Dr Vivek Dhir and Dr Alex Richter in particular putting in huge efforts to ensure success in recent years.

The final examinations meeting for Birmingham MSc: Jonathan Berg (Professorial Lead), Vivek Dhir and Alex Richter (University Course Organisers and Tutors), Frances Boa (External Examiner) and Rachel Webster (Year 3 Course Lead)

In the last few years the move to national training programmes has seen the Birmingham course contribute, but things have not been easy. The National School of Healthcare Science allowed Trainees to choose between two courses. A failed Nottingham course saw a rushed move to rebase the Midlands MSc at the University of Birmingham and course organisers put huge efforts into re-establishing the course. However, the low numbers making Birmingham their preference meant that the course has become financially unsustainable. This leaves the course at Manchester as the only source of Clinical Biochemistry STP MSc training in the United Kingdom.

The final cohort of six Birmingham students successfully completed their MSc in July 2019. All of them have secured jobs well before they sat their final year exams. The course ended with an informal dinner. Speaking for a few seconds at the dinner Professor Jonathan Berg said that the strong bond that these Trainees had formed with each other was clear and would certainly be maintained as their careers developed. He encouraged them to take forward all they had learnt, including not accepting the 'norm', as they move into more senior positions and help lead our profession into the future! ■

Daniel Isemede, Vivek Dhir (University of Birmingham course organiser), Anthony Jackson, Jonathan Berg (Professorial Lead), Rachel Webster (Final Year Lead), Frances Boa (External Examiner), Kathleen Rice, Lauren Hughes, Freya Hassall and Robert Williams

STP Elective Placement – New Experiences in Sierra Leone

Michaela Fitzpatrick-Milton, King's College London*

For my STP elective placement, I wanted to experience healthcare science in a different part of the world, somewhere without the same resources that we have in the UK. This is what led me to the Nixon Memorial Hospital in Sierra Leone. Sierra Leone is situated in West Africa, on the Atlantic Ocean, and is renowned for its significance during the abolition of the transatlantic slave trade. In 1787, 400 formerly enslaved African Americans, Afro-Caribbeans, Africans, Southeast Asians, and Black British people settled in the Province of Freedom, now known as the capital city, Freetown. They travelled there from London, under the protection of the Committee for the Relief of the Black Poor. The story of the Nixon Memorial Hospital begins in 1930, when a British nurse was residing with her husband, a Methodist minister, in Segbwema which is a town in the Kailahun District in the Eastern Province of Sierra Leone. She started treating sick people from the community on the veranda of their bungalow and it became clear that there was a need for medical care in the region. In 1950 Alderman John Nixon, previously Lord Mayor of Newcastle, contacted the Methodist Missionary Society to donate money for medical services to a developing country in memory of his late wife. This money went towards building a hospital in Segbwema. In later years the Nixon Hospital became renowned for its clinical excellence and established nursing school.

During the Sierra Leone civil war (1991–2002) the hospital was ransacked and destroyed. As a result of the ongoing destruction, staff members fled, and the hospital eventually closed. At the end of the war some of the staff returned. Over the following decade significant efforts were made to rebuild the hospital. The nursing school re-opened in 2006 and the hospital began providing inpatient and outpatient care to children and adults, along with a community health programme. The operating theatre was later refurbished and doctors from local towns and those visiting from further afield came to support the ongoing clinical work. Technical teams have assisted in improving water supplies and setting up solar powered lighting for the wards. However, in 2014 the Ebola epidemic hit West Africa. Very sadly the hospital lost five staff members to Ebola, including four nurses. The Ebola crisis had a significant impact on the hospital's ability to provide care to the community and the nursing school was forced to close. On 17th March 2016, the WHO declared the country Ebola-free and since then the hospital has continued to progress.

Friends of Nixon is a London based charity that supports the work of the Nixon Memorial Hospital. They facilitate improvements in the healthcare it offers by providing funding for training opportunities, supplying medical provisions, and initiating community work and sustainable projects. When enquiring

* Based at Southampton General Hospital at the time of this elective

about the possibility of doing my elective at Nixon Memorial Hospital, Friends of Nixon put me in touch with the lab there. Before my trip, I wrote to them asking if there was anything they might need that I could bring with me. They asked for slides for preparing blood films for Malaria diagnoses as well as gloves for personal protective equipment, all of which my department at Southampton General Hospital were kindly able to donate. When I arrived I was warmly welcomed by all the lab staff, including four trained lab technicians and one volunteer. Sierra Leone used to be a British Colony so English is the official language, however due to the historical cost of education many adults are not able to speak English all that well. The main languages in the Eastern province are Krio (a form of broken English) and Mende, which is the main tribe in the region. The language barrier made communication with patients and staff members tricky for me but everyone there was eager to teach me Mende and Krio and with their help and encouragement I managed to learn a little.

Testing in the lab covers MPS testing for malaria, the Widal test for Typhoid, glucose for diabetes and hypoglycaemia, sputum staining for tuberculosis, urine dipstick analysis, urine and stool microscopy, and blood grouping for blood transfusions. All of these use point of care methodologies, which involved going to the patient bedside to collect samples and perform the tests, or patients coming into the lab to have samples taken. There was one manual centrifuge that could only two samples at one time. On my first day there, the lab manager asked me to take a blood sample from a patient, shaking my head I said, "I'm sorry I have zero training in phlebotomy", "Ah, but in Africa we do everything" he replied, and he was right. Seeing the way they practice healthcare science with the absolute bare minimum was truly inspiring. They cover everything from phlebotomy and blood transfusion, through to biochemistry and even microbiology. Although their resources are limited, they make a massive difference to the treatment of so many patients.

The solar panels in the hospital grounds that provide electricity for the wards and the lab

Many of the tests employed in the laboratory would not be considered sufficient to provide a diagnosis for these diseases in the UK. For example, a positive malaria MPS test in the UK would be confirmed by inspection of a thin blood film under a microscope. However, due to limitations in sourcing slides to prepare films the Nixon lab are not always able to provide this. During my visit the blood fridge was not working. Every time a transfusion was required, family members were grouped and following a match the patient was immediately transfused after donation as there was nowhere to refrigerate the units. The lab had contacted an engineer a month prior to my visit to try and repair the fridge, but due to travel problems, cost and a lack of trained engineers this was just not possible. I remembered my training in blood transfusion and the extent of testing and regulations involved prior to any transfusion, as well as the amount of blood units that are requested and not necessarily even used. It made me appreciate how lucky we are to have that standard of service in the UK, and to have it for free.

A member of the laboratory team performing sputum staining for Tuberculosis

One of the most common tests performed in the lab is haemoglobin measurement on the HemoCue point of care analyser. This helps to assess whether or not a blood transfusion is required in patients presenting with anaemia, often as a result of malaria. Unfortunately, a few days into my visit the HemoCue stopped working. We carried out some basic troubleshooting and cleaning to see if we could resolve the issue, but we had no luck. We drove to the nearest main town, Kenema, to see if we could find someone who might be able to fix it, but again we had no luck. In its place, we resorted to spotting patients' blood onto filter paper and using the haemoglobin colour chart to estimate the haemoglobin level which was very subjective and inaccurate. When I returned back to the UK, I told Friends of Nixon about the faulty Hemocue, and they've since been able to source a brand new analyser and send it out to the lab.

The most significant thing I learnt from this experience is the true benefit of a free healthcare system like the NHS. In Sierra Leone many people are not able to find work due to a lack of industry and lack of education. It is therefore very difficult to earn money. Healthcare is free and subsidised by the government but only for pregnant women, lactating mothers, and children under 5 years of age. For an adult hospital admission the average cost is £3.50 and for a child it is around £1.50. Basic surgeries can cost the equivalent of hundreds of pounds. In terms of lab tests, testing and treatment for malaria, HIV and tuberculosis is subsidised by the government, however all other tests are in the range of £1-£2 per test. Payments are also required for any drugs prescribed through the pharmacy. These prices may not seem like a lot but this is a significant cost for the people of Segbwema, and often people aren't able to pay. For this reason, it's not uncommon that when people get sick they delay seeking medical help until it's almost too late.

With the help and support of Friends of Nixon, the Nixon Memorial Hospital continues to improve the care it provides to the community of Segbwema, if you are interested in finding out more about current projects or how you can help please visit:
https://www.friendsofnixon.org

I am very thankful to Rob Burnie from Friends of Nixon for the opportunity to visit Nixon Hospital and to all of the staff there who made me feel so welcome and part of the team during my stay in Segbwema. I am also extremely grateful to my department and colleagues at Southampton General Hospital for supporting me with my elective placement.

Performing stool analysis

ACB Wales Spring Meeting 2019

Helen Bailey, Trainee Clinical Scientist, CAVUHB and
Anthony Jackson-Crawford, Trainee Clinical Scientist, ABUHB

Towards a national LFT pathway

Dr Andrew Yeoman (Consultant Hepatologist, ABUHB) began the day with a summary of the different approaches to investigating and managing patients with abnormal LFTs. He then further described the ongoing Gwent Liver Plan project, which is assessing the use of an ALT:AST ratio in identifying patients in need of further investigation, including FibroScan. He concluded with a discussion around efforts to determine a single, All Wales approach to LFT investigations.

IgG4-related disease: the mysteries, the management and the diagnosis

Next, our guest speaker Professor Eleanor Barnes (Hepatology and Experimental Medicine, Oxford) gave us a tour through what is currently known about the pathophysiology of IgG4 related disease. Of particular interest was her leadership in the generation of an IgG4-related disease registry of patients and samples, recruiting patients from across the UK and mainland Europe, to study the clinical course, response to treatment and prognosis of patients diagnosed with IgG4-related disease.

Industry partner talks

Our first industry partner talk was about risk stratification of cardiovascular disease in asymptomatic individuals using high sensitivity troponin, given by Gordon Avery (Medical Affairs Manager, Abbott Diagnostics). Data showing that increases in troponin in an asymptomatic patient can indicate a future increased risk of cardiac events were shown and discussed.

Our second industry partner talk was given by Mark Pugh (Clinical Marketing Manager, Siemens Healthcare) on the topic of the ELF test in the NAFLD liver pathway. Specifically, this looked at the role of ELF testing in categorising patients with an indeterminate FIB-4 score, and was a really useful adjunct to our other LFT pathway talks throughout the day.

MGUS: What is the significance?

To close the AM session, Dr Ali Mahdi (Consultant Haematologist, ABUHB) discussed the challenges of monitoring MGUS patients, potential solutions to patient over monitoring, and a rare phenomenon of monoclonal gammopathy of clinical significance. Incidental small paraproteins are fairly common and the majority of patients will not progress to smouldering or multiple myeloma, but will have lifelong monitoring. Using specific risk factors, low risk patients can be identified and hence not undergo monitoring.

Fatty Liver – The patient story

After lunch, Dr Soha Zouwail (Consultant Chemical Pathologist, CAVUHB) presented an insightful interview from an asymptomatic patient, with raised ALT, who went on to develop liver cirrhosis and hepatocellular carcinoma. Thankfully, due to being diagnosed with NAFLD and closely monitored throughout their disease progression they were able to have a lifesaving liver transplant. The patient stressed how significant the monitoring was, and emphasised the empowering nature of information.

Liver plan – The UHW experience

Dr Zouwail took to the floor again to present UHW's experience on implementing the liver plan discussed earlier in the morning. In the small pilot project, the use of fibrosis scoring tools (FIB-4 and NFS) appeared to predict patients with intermediate or advanced fibrosis, confirmed by FibroScan.
The suggestion of using targeted screening, so high risk patients are diagnosed along with patients with abnormal liver blood tests was discussed. The challenges with implementation are access to FibroScan instruments with inevitable referral increases, and agreeing an All Wales consensus for a defined patient pathway.

Update on diagnosis and management of porphyria

To conclude, Dr Mike Badminton (Consultant Metabolic Specialist, CAVUHB) discussed the pathophysiology, diagnosis and management of porphyria, with real case examples. Exciting future treatments including RNA interference therapy (Givosiran) and gene therapies were also discussed. To reiterate the main learning point; in acute attacks send an urgent urine PBG and in cutaneous porphyria cases send a plasma EDTA, both protected from light. The Cardiff Porphyria team are always happy to be contacted to answer any questions. ■

ACB Retired Members' Group

Ruth Lapworth

Two excellent presentations were given to the 30 retired members who attended the eighth meeting of the Retired Members' Group at the ACB Conference Suite in Tooley Street on 13th May 2019.

The first speaker, Mr Mike Hallworth, gave a thought-provoking overview on "Outcomes – based Laboratory Medicine". Mike explained that his interest in this area was a consequence of the publication of his editorial 'The 70% claim: what is the evidence base?' in the *Annals of Clinical Biochemistry* 2011; 48: 487-88. His view is that as a profession, while we are convinced of the value of laboratory medicine in effective and safe patient care, there is very little evidence to support its contribution to the overall process of diagnosis and patient management.

He stated that although laboratory medicine is the single highest volume activity in terms of throughput, tests have not been assessed in terms of their contribution to the integrated value chain ie the process starting with the patient and ending with an outcome. In those studies where performance of tests has been assessed this has usually been reported as compliance against guidelines rather than the entire value chain.

Mr Hallworth then highlighted a recent study reported in the April 2019 edition of ACB News describing a novel integrated healthcare project to optimise pathways for patients with acute coronary syndrome. His view is that it is essential that tests are used appropriately and that there are better evaluations linking them to specific outcomes.

The second part of Mike's presentation focused on medical errors which are the third leading cause of death. Diagnostic errors are experienced in 5% of patients. Laboratory causes include inappropriate testing (over or under test utilisation) as well as misinterpretation of results. It is also recognised that communication of results to the requesting physician is of huge importance in terms of patient welfare. However, the associated problem of information overload experienced by junior medical staff in secondary care is a major issue.

Mr Hallworth concluded by confirming that traditionally we have focused our professional work on aspects of service provision such as quality assurance, standardisation and method development rather than outcome studies. The purpose and role of biomarkers in clinical pathways need to be clearly defined if improvements in diagnosis and patient management are to be made.

The second presentation given by Dr Dennis Wright on "Big Data and Machine Learning in Laboratory Medicine" challenged the audience to think differently about data and the way in which it could be utilised in laboratory medicine. In his talk Dennis shared some of the concepts and tools used in machine learning which he had gained from a book by Aurélien Géron entitled *Hands-On Machine Learning with Scikit-Learn and TensorFlow* (O'Reilly Media. 2017).

He began by explaining that the Oxford English Dictionary definitions of 'intelligence' and 'learning' mean that the preferred term for the tool used in manipulating data is machine learning rather than artificial intelligence.

The importance of handling big data

Dr Dennis Wright with Mike Hallworth

and machine learning has been recently highlighted in an independent report: *Preparing the healthcare workforce to deliver the digital future* by Dr Eric Topol on behalf of the Secretary of State for Health and Social Care. The report published in February 2019 makes recommendations that will enable NHS staff to make the most of innovative technologies such as genomics, digital medicine, artificial intelligence and robotics to improve services, helping to ensure a sustainable NHS.

Dr Wright described some of the approaches to machine learning such as supervised and unsupervised learning, the use of image recognition matrices, recurrent neural networks and reinforcement learning. He then gave an impressive demonstration of the use of image recognition with a Raspberry Pi computer to identify a banana!

Image recognition may however be of clinical benefit. A study at Moorfields Eye Hospital has successfully used images from optical coherence tomography to identify macular degeneration with the same accuracy as specialists using the same images and clinical findings. Dr Wright's view is that recurrent neural networks (currently used to analyse time series in, for example, the stock exchange or automatic translation) could have a role to play in predicting laboratory results where serial measurements are routinely used in patients to monitor treatment.

The next meeting will be held on **Monday 4th November 2019** at the ACB Conference Suite.

It may be possible to hold a meeting outside London in 2020, either in Belfast at Focus or in Birmingham. A survey will be sent out later in the year to assess if there is sufficient interest for a meeting to be held at either of these locations. ■

Industry Insights:
Transparency of Industry Activity and Credentialing

Doris-Ann Williams, Chief Executive, BIVDA

Many of you will be aware of the greater need for transparency between industry and healthcare professionals around the world. This is obviously laudable in principal but leads to frustration as sponsorship of meeting and meeting attendees is becoming more and more complicated. The diagnostics industry itself has a strong code of practice to adhere to in regards to this as well as covering commercial activity.

A further complication for us is the credentialing organisations which have been springing up. These are mainly commercial organisations and work with individual Trusts to help monitor industry meetings with NHS staff. All very well and good except these each demand annual fees from companies to provide credentials to each member of staff and with the proliferation of these organisations it is becoming very expensive for companies.

I suspect that many of you will have been oblivious to this so far, merely expecting that industry visitors report to Pathology reception to sign in. But some three years ago, in anticipation of these organisations multiplying, BIVDA set up a committee with other life science industry associations including the Association for the British Pharmaceutical Industries (ABPI) to look at finding one scheme which NHS England could recognise (and hope the devolved Nations would as well).

After discussions it was agreed that this should be a register of company employees which was held independently from both industry and the NHS. The Academy of Healthcare Science seemed to be a good fit and were enthusiastic to work with us.

The scheme has been worked on and polished and was finally launched about a year ago after gaining accreditation from the PSA (Professional Standards Authority). As the only credentialing scheme to have this approval we felt we were in a strong position to provide a good service to the NHS at very low cost to industry. The NHS Chief Scientist, Professor Dame Sue Hill, wrote to all NHS Trust Chief Executives to encourage them to use the LSI Register.

However, the other commercial organisations developed appointment systems which has again given them a more attractive edge to the LSI Register. Disappointingly, the NHS seems reluctant to do more to encourage use of the LSI Register. We have pressed ahead and from the start of August, the LSI Register also offers an appointment scheme to Trusts.

Ideally all industry staff going into an NHS hospital will be credentialed so you will be able to ascertain from looking them up that they are appropriately trained. This includes service engineers as well as commercial and technical staff. Each person will have a photo ID with QR code and GS1 Compliant barcode to make looking for them on the LSI Register straightforward.

BIVDA and its members fully support the need for transparency and maintaining professional standards when working with our NHS colleagues. It is becoming more and more difficult and costly for industry to meet with its end users so if you can encourage use of the LSI Register in your own Trust this would be very helpful. ■

Randox RX series gains NGSP Certification for Direct HbA1c

On 1st July 2019, Randox Laboratories announced its achievement in being awarded the Manufacturer Certification by the National Glycohaemoglobin Standardization Program (NGSP); for direct HbA1c testing on three of its clinical chemistry analysers; the RX modena, RX imola and RX daytona+.

NGSP is recommended for laboratories conducting diabetes-related clinical trials and is only granted on the basis of 98% accuracy. With the global prevalence of diabetes mellitus increasing rapidly, affecting roughly 8% of the total population, the achievement of this certification emphasises that Randox RX series clinical chemistry analysers correlate with global standards and deliver accurate, reliable and precise results for direct HbA1c testing; helping clinicians make informed decisions for patients with diabetes.

The Randox automated immunoturbidimetric HbA1c test exhibits high accuracy and reproducibility with the added advantages of using liquid reagents with good stability, and on-board pre-treatment of samples; therefore, offering an improved method for the rapid direct measurement of HbA1c in human blood.

Randox Direct HbA1c Assay Features

- Sample type – suitable for use with whole blood samples.
- Latex enhanced immunoassay method – the Randox assay utilises an immunoassay method making it simple and quick to perform.
- Liquid ready to use reagents – for ease of use and convenience.
- Excellent stability – all reagents are stable to expiry date when stored at +2-8°C or 28 days on board the analyser at approximately 10°C.

Advantages of the RX series Direct HbA1c Testing

- Fully automated on-board haemolysis function for HbA1c testing.
- Continuous loading and STAT sample functionality to enhance productivity in the laboratory (analyser dependent).
- Low sample volumes required.
- 1200 tests per hour including ISE (RX modena).

About Randox Laboratories

As one of the world leaders in the *in vitro* diagnostic industry with over 35 years' experience, Randox is leading the charge in moving from a one-size-fits-all approach towards decisions, practices and products tailored to the needs of the individual. This innovative approach to diagnostics has facilitated the development of revolutionary products designed specifically to enhance a patients' quality of life. ■

theRXseries@randox.com

ACB News Crossword

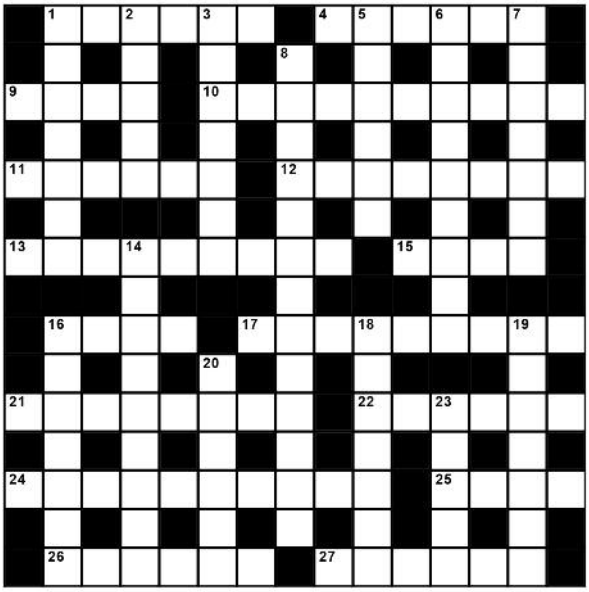
Set by Rugosa

Across

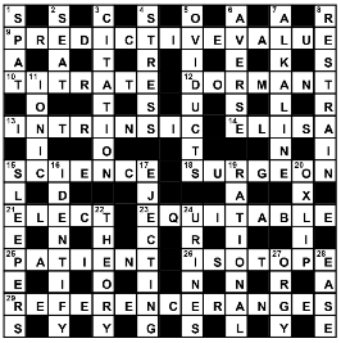
1 Doubtful pharmacists reject scrip for a common medical condition (6)
4 God of Healing assembly: April Fools' Day (not Fridays) (6)
9 Greenhouse effect payments are held back (4)
10 One must inform the patient of this test result, perhaps graciously (10)
11 Inventor of once widely-used lab equipment developed numbness (not MS) (6)
12 Double support for growth in a tea garden (4-4)
13 Official authorisation, removal or sale (9)
15 Send out partial remittances (4)
16 Treatment of some dangerously hard rugby play (4)
17 Male French friend has no current identification for compound (9)
21 Review spiels or articles giving away important plot details (8)
22 Technique organisation (6)
24 Not left in isolation developing charging process (10)
25 What does new name stand for? (4)
26 Mademoiselle leads Monsieur around (6)
27 No male emerged curious about academic award (6)

Down

1 Surprised at the French seal way of reproduction (7)
2 Analyses tries (5)
3 Silver team name new colour (7)
5 Raise trivial objections about the wizard proprietary mood changer (6)
6 Haematological problem, fractures a weak ilium, loses weight (9)
7 Reactive chemical toxin promotion wrong (7)
8 Cagy about abnormal anatomies developed by men (13)
14 Two bends in minimal fusion of metal (9)
16 Detective cut out identification in description of standard cells (7)
18 One proposed candidate French name (male), one French born (female) (7)
19 Quarantine can avoid potential escalation (7)
20 Relaxed sport, sauntered, run out (6)
23 Send money raised for stopwatch (5)



Solution for June Crossword



DIAGNOSING DYSPEPSIA IN PRIMARY CARE

GastroPanel®

GastroPanel® Blood Test

Around 20% of adults suffer with dyspepsia, defined as recurrent, chronic epigastric pain or discomfort, which costs the UK more than £1bn. Gastroscopy is the gold standard examination for patients referred to specialists in secondary care leading to a diagnosis of functional- or non-ulcer dyspepsia in over 60% of cases.

GastroPanel® is a non-invasive laboratory blood test pioneered by BIOHIT HealthCare that identifies gastric pathology as part of a first line investigation of dyspepsia in Primary Care.

Target endoscopy resources towards those at greatest risk for the cost-effective management of dyspepsia

- ◊ *Helicobacter pylori*
- ◊ Atrophic Gastritis
- ◊ Gastric Cancer risk
- ◊ Vitamin and nutrient deficiency
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