ACB News

The Association for Clinical Biochemistry & Laboratory Medicine | Issue 678 | August 2022

Checkmate and well plaid!
Winner at the Scottish regional meeting

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Meeting reports:
- **Immunology**
- **Scotland Region Meeting**
- **Executive War College Conference**

Professor James Shepherd Obituary

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ACB News

The bi-monthly magazine for clinical science

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The Association for Clinical Biochemistry & Laboratory Medicine

Better Science, Better Testing, Better Care

ISSN 2754-0863

Front cover: ACB President Bernie Croal with John King Award winner Jonathan Strachan and ACB Scotland President, Becky Pattenden

Message from the President

Just get on with it!

At time of writing, the UK is in the middle of a heatwave with record temperatures being recorded across the country. This of course adds further pressure on healthcare, with capacity already stretched to the limit. Many of us will also have contracted COVID-19 (again) recently, disrupting both planned holidays and work rotas. But, we just get on with it . . .

Meanwhile, UK Government remains effectively paralyzed as we await the election of a new Prime Minister and the subsequent cabinet – until then, important decisions on healthcare policy and spending will sadly be delayed at a time when there is much urgency. Meanwhile, we just get on with it . . .

Pay awards this year were never going to meet the demands and expectations of public sector employees. With inflation rising above 10% this year, offerings below 5% will be seen as an effective pay cut, coming at a time when the cost of living becomes increasingly difficult for many. The prospect of industrial action will of course raise its head. This will be an important decision for all of us to consider, and while many of us will have refused to participate in the past, there is the realisation that this is about more than just our personal finances but also about future recruitment and retention of staff. Meanwhile, we just get on with it . . .

Our services are also being impacted by inflationary pressures with some of our consumables and reagents seeing price increases well above even inflation. This of course puts further pressure on our budgets, which will already be impacted

heavily by the "unfunded" pay rises just announced. So, more efficiency targets/cuts will be upon us. But we just get on with it . . .

So, while we can and we do just get on with it, it is important that we also collectively make our views and our voices heard both through the ACB channels and locally, by lobbying management and politicians about the continued importance of the work we all do and the threats facing our services.

So, no good news stories here! – for that, have a read of our Annual Report and summary. The ACB remains highly active with significant output from all of our areas, all made possible of course by the much-valued input from our members and ACB staff team.

Now, go and just get on with enjoying the rest of the Summer! ■

Bernie Croal, ACB President

ENHANCE YOUR CARDIAC TESTING PANEL

The heart of the matter is, Cardiovascular disease (CVD) is a leading cause of death worldwide and continues to increase in prevalence. A growing body of research indicates that further markers for the diagnosis and prognosis of cardiac risk needs to be considered, as the conventional markers such as LDL-C, HDL-C, total cholesterol and triglycerides, only detect a mere 20% of all atherosclerotic cardiovascular disease patients.

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CEO Update

As we push on into summer the ACB staff team, Council and Executive are busy forging ahead with a full programme of activity.

On the environmental sustainability front we have held an NHS Net Zero webinar with Abbott, built a workshop into the forthcoming UKMedLab programme and have started partnership discussions with like-minded organisations in our sector to start building collaborative action and practical support to members. Our thanks to Rob Shorten, Anna Sanders, Callum Goolden and Rebecca Jones who have stepped forward as the ACB's sustainability champions to lead on this work. More to follow soon.

Our Director of Conference and Events Sarah Robinson is busy with the UKMedLab Organising Committee plans as well as leading a discussion across committees and regions to agree our long-term strategy for events and meetings. This will include a bid to bring EuroMedLab to London in 2025.

We continue our work with the Lab Tests Online Board and innovation partner, Goldstone, to develop the vision and operating model for a future version of Lab Tests Online. The ambition is to build a PaaS (Platform as a Service) that will be fully interoperative with NHS systems to inform patients and healthcare professionals to make better informed choices and decisions around testing. We have a few live funding applications in place and continue to broaden our network of support for this crucially important project.

Members approved a new simplified membership offer at this year's AGM which will be launching in 2023 alongside enhanced benefits and flexible payment options. The staff team is hard at work putting the infrastructure in place to facilitate this important change.

We are due to complete the sale of the 4th Floor of Tooley Street on 5th August and Council has taken the exciting decision to not only maximise the financial return with our choice of investment vehicle but also to ensure our funds do good by placing them with a specialist impact investment firm. We plan to tell you more about this in future issues.

We said goodbye to Past President Neil Anderson and Finance Director Mike Bosomworth at this year's AGM. I want to thank them both personally for their support and encouragement since I joined the ACB in November 2019. Neil's and Mike's leadership and strategic approach has been invaluable in creating a culture of change and innovation, which has enabled the organisation to move forward to be fit for the future. At the same time, I'm delighted to welcome the new President-Elect, Kath Hayden and Finance Director, Ben Nicholson. I look forward to working with you both on the next stage of the ACB journey.

Here's wishing you all a fabulous (and slightly cooler) summer and I look forward to seeing you at UKMedLab in November.

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*Data from Royal Devon and Exeter NHS Foundation Trust

Awards and election of Emeritus, Fellow and Honorary Members

At the AGM, Members unanimously agreed to the Council's proposal of the following membership awards:

- **Fellows** – Dr John Frater, nominated by the Trent, Northern and Yorkshire Region; Dr Mike Badminton, nominated by the Wales Region; Dr Paul Thomas, nominated by the South West and Wessex Region; Ms Catherine Shearing, nominated by the Scotland Region; Dr Peadar McGing, nomination by the Republic of Ireland Region
- **Honorary Members** – Professor Terry Lappin, nominated by the Northern Ireland Region; Professor William Garry John, nominated by the Southern Region.

In addition, the **President's Shield** was given in May to Dr Mike Bosomworth, outgoing Director of Finance.

Congratulations to all on these well-deserved recognitions of their hard work and significant contributions to the profession over many years.

Fundraiser in support of Ed Wilkes

"Ed Wilkes is an amazing colleague and has dedicated his career in the NHS to helping others. Now, he needs our help."

Ed's colleagues at North-West London Pathology and Imperial Healthcare NHS Trust have organised a fundraiser for him. A few weeks before Ed's wife, Meg, was due to give birth to their first child, he was in a life-changing bike accident. This left him paralysed from the chest down. In order to make the modifications to his house and purchase vital equipment required to help him regain some independence as a husband and new father, he needs £60,000.

If you'd like to make a contribution to this fundraiser, click here.

Sudoku

This month's puzzle

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

Solution for June

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

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ACB Members awarded at UNIVANTS of Healthcare Excellence Awards

The UNIVANTS of Healthcare Excellence Awards seek to recognise elite teams from all over the world that strategically mobilised insights from laboratory medicine into greater outcomes and overall patient care.

We're thrilled that UK-based teams were recognised across all three major award categories:

- Top global winners: **Croydon University Hospital**
- Recognition of distinction: **UHCW NHS Trust and Warwick Medical Schoo**l
- Recognition of achievement: **Hampshire Hospitals NHS Foundation Trust**

Special congratulations are in order for the ACB Members that were part of the three teams:

- **Leslie Perry from Croydon University Hospital**, who, along with his colleagues Linda Cheyenne Vaccari, Ian Cormack and Sarah Horne, won with an initiative that sustained 97% opt-out HIV testing in the Emergency Department, decreasing mortality from 32% to 0% over an 18-month period.
- **Neil Anderson, Lisa Berry and Dimitris Grammatopoulos from UHCW NHS Trust and Warwick Medical School**, who, along with their colleagues Asad Ali and Harpal Randeva, were recognised for an initiative that addressed COVID-19 clinical and translational challenges via multidiscipline integrated diagnostic networks.
- **Kirsty Gordon** and **Ross Sadler from Hampshire Hospitals NHS Foundation Trust**, who, along with their colleagues Kate Fenna, Noel Ryman, Francis Smith and Simon Whitehead, were recognised for an initiative that improved patient pathway for diagnosis, follow up and monitoring of Multiple Myeloma (MM), and involved multi-disciplinary collaboration to improve the pathway from the initial request to long-term monitoring.

On behalf of the team at UHCW NHS Trust and Warwick Medical School, Dimitris Grammatopoulos said, *'We are delighted and proud to be honoured with the Recognition of Distinction award from the UNIVANTS of Healthcare Excellence Program. These awards recognise integrated clinical care teams that work together to achieve better health system performance through new technology, insights and solutions. These values were at the core of the team from UHCW NHS Trust and Warwick Medical School that addressed COVID-19 clinical and translational challenges via multidiscipline integrated diagnostics networks.'*

For aspiring applicants, Dimitris said *'a strong message on the importance and value of the multidiscipline approach is crucial, as well as a good understanding of the application process'.* He also indicated that it can be an exciting learning experience to *'emphasise some of the best practices across key performance indicators and how these advance healthcare delivery and impact in patient care'.*

Applications for UNIVANTS 2022 open in August 2022

In the meantime, **learn more about the award** and get inspired **by the projects delivered by this year's winning teams**.

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*Alinity i TBI is used in conjunction with other clinical information.

REFERENCES: 1. Alinity i TBI H22974R01. Instructions for use. Abbott Ireland Diagnostics Division. Sligo, Ireland; October 2021. **2.** Data on file at Abbott. **3.** Bazarian JJ, Biberthaler P, Welch RD, et al. Serum GFAP and UCH-L1 for prediction of absence of intracranial injuries on head CT (ALERT-TBI): a multicentre observational study. *Lancet Neurol*. 2018;17(9):782-789. doi:10.1016/S1474-4422(18)30231-X **4.** Wang KKW, Kobeissy FH, Shakkour Z, Tyndall JA. Thorough overview of ubiquitin C-terminal hydrolase-L1 and glial fibrillary acidic protein as tandem biomarkers recently cleared by US Food and Drug Administration for the evaluation of intracranial injuries among patients with traumatic brain injury. *Acute Med Surg*. 2021;8(1):e622. doi:10.1002/ams2.622 **5.** Bazarian JJ, Welch RD, Caudle K, et al. Accuracy of a rapid GFAP/UCH-L1 test for the prediction of intracranial injuries on head CT after mild traumatic brain injury. *Acad Emerg Med*. 2021;10.1111/acem.14366. doi:10.1111/acem.14366 **6.** Michelson EA, Huff JS, Loparo M, et al. Emergency department time course for mild traumatic brain injury workup. *West J Emerg Med*. 2018;19(4):635-640. doi:10.5811/westjem.2018.5.37293

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Join the Mentoring Programme for bespoke 1:1 career support

We're proud to launch the ACB Mentoring Programme with bells and whistles, facilitating peer support between members and enhancing their career potential.

The programme, delivered via a third-party software specialising in fostering mentoring relationships, supports you while you build a mentor and/or mentee profile, choose someone to mentor or be mentored by, and helps you focus the mentoring interaction on achievable goals during a strictly-limited time period.

We invite all members to register as a mentor, a mentee, or both, depending on what stage you are at in your career and your experience in the various aspects of the wider profession. **Get started here** by setting up a profile.

Why should you become a mentor and/or mentee?

If you're at a point in your career when you can support your peers' development, being a mentor gives you the satisfaction of being valued as a role model, on top of enhancing your communication and coaching skills.

You may also want to be a mentee if you're dealing with specific job challenges or looking to progress on a certain career path and want to get practical advice from someone with more experience in the area.

What can you mentor on?

To keep interactions goal-focussed, the Mentoring Programme is split into three areas: Professional development, Personal skills and competences, and Leadership and management. More specific goals can be set between mentors and mentees.

How does the ACB Mentoring Programme work?

First, you set up an account and a profile on the **Mentoring Programme platform** – if you want to both mentor and be mentored, you'll need two profiles. Mentees can view mentors' profiles and request a mentoring interaction on a specific topic, lasting approximately eight weeks, with a one-hour conversation every fortnight. Tips and guidance are offered to both parties throughout the interaction.

We can't wait to see the results of your mentoring interactions in a few weeks' time. For questions and additional support, contact our Membership Manager, Mike Lester, at **mike@acb.org.uk** ■

Credit Amy Hirschi

New course on whole genome sequencing and infection coming soon

Mike Lester, ACB Membership Manager

We are delighted to announce that funding has been secured from Health Education England and the National School of Healthcare Science for the ACB to deliver a new free course on whole genome sequencing and infection: clinical interpretation and implementation of microbiological whole genome sequencing techniques. It seeks to answer the question, *'How does whole genome sequencing, other molecular technologies and the management of generated data impact on patient pathways and outcomes in the management of infectious diseases?'*

We are partnering with Great Ormond Street Learning Academy to deliver the course in an exciting virtual learning environment including lectures, case studies, reflective practice, group working (including student-led presentations), webinars, tutorials and workshops. The hard work has begun and the course development is well underway.

Three cohorts of up to 100 students, starting from early 2023, will be formed from a range of healthcare professionals including nurses, medical practitioners, healthcare scientists and other allied health professionals. There will be a suite of pre-course learning prior to the week-long courses, so everyone receives a good level of understanding in the area.

To register your interest **click here** and stay tuned for updates!

ACB webinar facilitated by Abbott: The laboratory's role in achieving the NHS Net Zero ambition

This webinar focused specifically on Design, Construction, Behaviour and Supply Chain elements related to Net Zero.

Chair: **Lisa Harrison, Marketing Director (North Europe), Abbott**

Speakers:

- **Stephanie Robinson,** Business Development Manager, My Green Lab
- **Helen Dent**, Chief Operating Officer, BIVDA
- **Bill Leedham**, Mechanical Engineering Technical Director, Silcock Leedham Consulting Engineers (SLCE)
- **Jason Richards,** Technical Director, Zero Energy Design

What is Net Zero and what are the priorities?

Net Zero policies aim to reduce carbon emissions to the lowest possible amount in any given situation. Carbon neutral policies, on the other hand, focus on not increasing carbon emissions and achieving overall carbon reduction through off-setting.

Reaching Net Zero requires balancing carbon emissions with the amounts absorbed through carbon sink, which includes natural environments like grasslands and rainforests and non-natural ones such as landfills.

Emissions are classified in three different scopes:

- **Scope 1** includes direct emissions, such as those relating to building, vehicles, heating and cooling.
- **Scope 2** includes indirect emissions under your control, such as purchased electricity and offsite heating.
- **Scope 3** includes indirect emissions that are not under your control, but which you can influence, such as supply chain logistics and employee travel.

In the design and construction of labs, carbon emissions come in two main forms:

- **Embodied carbon** is more applicable to new builds as it's associated with the materials used in the building.
- **Operational carbon** is associated with the running of the building, including heating, cooling, ventilation and lighting.

How will NHS Net Zero impact pathology networks?

Some core behaviours must change, such as the thinking around 24/7 labs. If lights, computers or any other equipment are not being used, then employees should switch them off.

If behavioural change does not happen at a cultural level, then the carbon savings from planning and design work can be undone. Imagine a well-insulated home with triple-glazed windows that is designed for energy savings – if you turn on the heating and open the windows at the same time, the savings are lost.

Stephanie Robinson suggested that one way to approach behavioural change is to assign at least one Net Zero champion in your laboratory service, for example the Environmental Health and Safety (EHS) manager, the facilities manager, or a staff member who is excited to take this on. Then, start putting actionable and realistic plans in place, such as setting a lower target for energy or water consumption.

Bill Leedham shared a framework that can help pathology services track their

Net Zero impact: be lean, be clean, be green, be seen. Being lean means using less energy, being clean means being operationally efficient, being green means being energy efficient and being seen means displaying smart building data.

What can pathology services do to create their own NHS Net Zero plans?

While Net Zero policies can have an impact on new builds, 80% of the buildings in 2050 have already been built. So, a lot of the work will need to go into energy efficiency, refurbishments, supply chains and de-carbonising from fossil fuels to renewables.

Jason Richards gave the example of a recent refurbishment project, where the standard one laptop plus two monitors were replaced with one laptop with a larger screen size plus one large monitor for 700 members of staff, saving thousands of tonnes of embodied carbon in the process.

Helen Dent spoke about supply chain management strategies we can incorporate. For example, the estates/facilities teams and procurement teams within pathology services should work more closely to integrate technical requirements with sustainability requirements before the point of tender.

The NHS has published a timeline for Net Zero procurement, stating that, from April 2024, all suppliers must publish a carbon reduction plan for Scope 1 and 2. However, laboratory services can also apply pressure on their suppliers by requesting carbon reduction information, as this can influence their understanding of customer requirements and the speed of delivery. Requesting supplies in fewer deliveries can also help reduce your lab's carbon footprint.

Stephanie Robinson recommended the My Green Lab resources, which include free reports and energy saving guidelines, the International Laboratory Freezer Challenge and the official My Green Lab Certification.

Further resources

NHS England – Delivering a Net Zero NHS
NHS England – Supplier Net Zero timeline
My Green Lab Freezer Challenge
My Green Lab Certification

Stephanie Robinson and her team at My Green Lab can answer members' questions **through this form**. ■

ACB Annual General Meeting

A time for reflection and to share in the exciting things ahead

Dr Sarah Glover, Company Secretary

Annual Report 2021 and the President's Report

Although we have seen less direct effects of the COVID-19 pandemic, we have increasingly seen the after-effects, including long patient care waiting lists, backlogs and an economic downturn. Despite this, the Association maintained its strong profile and developed an impressive suite of activities.

In 2021, we have continued our five-year roadmap to increase the reach and influence of the Association by:

- Rebranding and relaunching our national meeting to UKMedLab, held online and attracting over 400 delegates in June 2021
- Redeveloping our digital platform, winning the Best Digital Transformation Award at the Association Awards UK
- Growing our membership by 4.6%
- Increasing the readership of the *Annals of Clinical Biochemistry* to 1.3 million downloads
- Moving up five places in the rankings of best laboratory medicine journals to 15th place
- Rebranding and relaunching the Research and Innovation Grant
- Launching a new strategic industry partnership initiative, starting with Abbott, with many members joining our co-hosted webinars.

In 2022, we are building on these developments by:

- Developing a series of short courses on Whole Genome Sequencing and Infection, in partnership with Great Ormond Street Learning Academy and with funding from Health Education England
- Reimagining and relaunching Lab Tests Online with the Lab Tests Online Board, the Royal College of Pathologists and the Institute of Biomedical Science
- Developing our own educational resources, under the working title the Laboratory Medicine Learning Academy, aiming to provide interactive tailored learning, as well as links and portals to other resources such as the EFLM Academy and the North American Adaptive Learning
- Launching and growing the brand new Mentoring Programme
- Undergoing a review of the membership structure and benefits
- Being guided by our Equality, Diversity and Inclusion working group to meet such aims across all areas of activity
- Establishing an Environmental Sustainability working group to devise a strategy and action plan for the ACB and its members to engage in the 'Net Zero' agenda.

Further digital development is planned and we are currently working towards UKMedLab22, taking place in London from 7th-9th November 2022.

In addition, we are considering submitting a bid to host EuroMedLab25.

As an Association, we are currently where we want to be, with a stronger and more visible voice in laboratory medicine, providing members with the resources

needed to learn, train and function as professionals.

Currently, post-pandemic recovery and the uncertainty in the UK Government may impact our implementation of new ideas and initiatives. It can also be an opportunity for the laboratory medicine sector to demonstrate its vital importance, particularly in influencing patient pathways, driving efficiencies and improving patient outcomes.

Accounts and Balance Sheet for 2021

Like other organisations, we have seen some unexpected costs during the COVID-19 pandemic, however we have kept close management control of our finances, reporting a surplus of approximately £40,000.

The accounts satisfied our auditors H W Fisher LLP and were presented and accepted by the members present. These auditors were reappointed for this coming year.

In 2022, we have developed a new investment strategy and appointed new investment managers. We are progressing with the sale of the 4th floor, 130-132 Tooley Street, London SE1 2TU, expected to be finalised by the end of August 2022.

Election of Officers and President-Elect

Dr Mike Bosomworth reached the end of his term of office as Director of Finance. Ben Nicholson has been elected to the role of Director of Finance, an Honorary Officer position that sits on the Association Executive and Council.

This year we introduced a new selection process for the President-Elect. Following a successful interview by the Nominations Committee and a proposal to Council on 31st May 2022, our President-Elect is Dr Katharine Hayden, assuming the

office of President starting from our AGM in 2023.

All other Honorary Officers remain in post for at least the coming year.

Review of membership structure for 1st January 2023

Since our last significant membership review in 2008/9, there have been huge changes in laboratory medicine and the Association. Following Council approval, a working group has undertaken a full membership review over the course of three months, considering our target membership groups and the benefits of membership.

The aims were to simplify membership, engage with members from a diverse range of institutions, deliver high value services and diversify subscription payment options. The recommendation from Council was to simplify the membership structure to Student, Member and Retired, starting with

1st January 2023. The categories of Emeritus, Fellow and Honorary remain unchanged.

The pre-circulated Appendix paper details the proposed membership categories, along with their respective benefits and the simplified fee structure.

- **Students and Retired members** (with limited content made available) – free
- **Full members** in their first five years of membership – £150
- **Full members** – £240

Members currently in Ordinary subscription band 1 will also receive the discounted fee for five years, starting with 2023, and members of the Association of Clinical Biochemists in Ireland will also be entitled to the discounted fee.

We will also introduce the option to pay via monthly subscription.

In line with the proposed membership structure, changes to the Articles of Association and the Bye-laws were proposed and unanimously agreed by the members present.

We also used the opportunity to assess some of the language used throughout the Articles and Bye-Laws to be more inclusive.

Thanks

Thanks to outgoing Director of Finance Dr Mike Bosomworth.

Thanks also to outgoing Past President Professor Neil Anderson who led the Association superbly through some difficult times as President (2019-2021) and while serving on the Association Executive and Council (2018-2022). ■

The National Audit Meeting at UKMedLab22

This year, the National Audit Meeting will be held on 7th November, during the UKMedLab22 week (7th-9th November), at the Royal College of Pathology's venue Events @ No 6, 6 Alie Street, London.

Expect a packed programme full of presentations, interactive discussions and audit posters to engage with.

If you submitted an abstract for the National Audit Meeting and it is accepted, you will have to physically attend the event.

Booking for the National Audit Meeting will open soon. ■

Condolences

It is with great sadness that we must inform you of the death of ACB Retired member Mrs Alison Blake who passed away in May 2022.

Mrs Blake joined the ACB in 1979 and was last known to be based in Glasgow. ■

I remember when . . .

by William Marshall

While sorting through some old papers during a much-needed clear-out, I came across a typewritten set headed 'Personal History of Clinical Biochemistry, of King's College Hospital and Medical School', written by Professor Charles Gray.

Gray worked at King's from 1938 until his retirement in 1976, a period when chemical pathology was rapidly developing as an essential requirement in diagnosis and management. I owe him a special debt for two reasons: firstly, he gave me my first job following my PhD, job-sharing with Michael Norman, a junior job in the diagnostic laboratory and a research fellowship supported by Miles-Ames; and secondly, because he encouraged me to read medicine and facilitated my doing so. He also negotiated a Leverhulme Scholarship for me, which provided much needed financial support.

Gray reports that his first action was to obtain a copy of *Chemical Methods in Clinical Medicine* by one Dr G.A. Harrison, which he read diligently in his office (what junior Biochemist has their own office these days?).

He reports that the laboratory received 10 or 12 samples each day, consisting mostly of blood urea, uric acid and the occasional plasma sodium or potassium – the former by a gravimetric technique, the latter by colorimetry. Even when I joined the laboratory in 1970, and was put in charge of the five channel Technicon Autoanalyser (with sodium and potassium now being measured by emission spectrophotometry), it was considered a busy day if we processed 40 specimens. Almost every day, a determination of basal metabolic rate was performed (presumably for the diagnosis of hyper- and hypothyroidism).

Early in his career, Gray was asked to perform a calcium balance study on a child suspected of having hyperparathyroidism. This complicated procedure showed that she was indeed suffering from this condition. She underwent surgical exploration but no enlarged parathyroids were found. A second calcium balance study confirmed the results of the first, but a second neck exploration failed to detect any enlarged glands. Gray refused to do a third balance study and when the girl's neck was explored for the third time, an ectopic, enlarged parathyroid gland was detected.

After WW2, the scope, range of techniques and reliability of chemical assays grew rapidly. Gray reports that these included measurements of enzymes in plasma (with the exception of amylase, which was well established before the war), largely due to improvements in the quality of colorimeters. The introduction of flame emission spectrometry revolutionised the measurement of sodium and potassium. And later, the introduction of immunoassays, using C-14 and 3-H labelled compounds (all prepared in-house), revolutionised the assessment of endocrine diseases. Further developments included increased automation and the introduction of immunometric assays, and of course the introduction of computers, initially just to process the data produced by analysers, and later to drive the analysers themselves.

Gray and his colleagues were active in research. He became internationally known for his work on the porphyrias and adrenal cortical disease, and actively encouraged his juniors to participate in this work. His was perhaps the golden age of Clinical Biochemistry. ■

ACB new Members 2022

The ACB is proud to introduce you to our new Members who have joined us since the last edition of *ACB News* and we hope everyone will extend a warm welcome to:

Takeshi Fujisawa, Facility Manager, Queen's Medical Research Institute
Karen Barclay-Elliott, Clinical Scientist, University Hospital Coventry and Warwickshire NHS Trust
Shane O'Connell, Senior Medical Scientist, Bon Secours Hospital
Jasveen Sehmi, Clinical Scientist (Virology), Guy's and St Thomas' NHS Foundation Trust
Mohamed Ali, ST3 in Chemical Pathology, Salford Royal NHS Foundation Trust
Samantha King, Principal Clinical Scientist, University Hospital of North Midlands
Vanessa Lo Curto, Trainee Healthcare Scientist, Royal Surrey NHS Foundation Trust
Sophie Ward, Viapath Group LLP
David Marshall, Senior Clinical Scientist, Wythenshawe Hospital
Caitlin Kyle, Trainee Clinical Scientist, Royal Oldham Hospital
Charlie De Havilland, Trainee Clinical Scientist, University Hospital Southampton NHS Foundation Trust
Lawrence Johnson, Chief Medical Officer & Medical Laboratory Director, Clinical Reference Laboratory Inc, USA
Shoshanna May, Clinical Scientist, Royal Sussex County Hospital
Stacey Green-Thompson, Trainee Clinical Scientist, St George's University Hospitals NHS Foundation Trust
Mesfer Al Shahrani, Assistant Professor of Clinical Biochemistry, King Khalid University

Corporate Members
X-Labsystems, UK
Launch Diagnostics, UK
Mast Group Limited UK
Greiner Bio-One Ltd UK ■

Publication Deadlines

To guarantee publication, please submit your article by the 1st of the preceding month (i.e. 1st September for October 2022 issue) to:
editor.acbnews@acb.org.uk
We try to be as flexible as possible and will accept articles up to the 20th to be published if space allows. Otherwise they will be held over to the next issue. If we are aware that articles are imminent, this gives us more flexibility and we can reserve space in anticipation.
If in doubt, please contact Gina Frederick, Lead Editor, via the above e-mail. ■

LAB TESTS ONLINE UK

Your Trusted Guide

Peer Reviewed • Non-Commercial • Patient Centred

Produced by The Association for Clinical Biochemistry & Laboratory Medicine

With support from The Royal College of Pathologists — Pathology: the science behind the cure; IBMS

Lab Tests Online-UK is a non-commercial website written by practising laboratory medics and scientists with lay editorial review of content to ensure its suitability. The aim of the website is to help patients and the public, including healthcare professionals, understand the many clinical laboratory tests that are used in diagnosis, monitoring and treatment of disease.

LTO-UK fact of the month

Our pages are constantly being reviewed and updated as new developments in Laboratory Medicine are made and to ensure that the information is as current as possible. Recently, the following content has been looked at. Tests gastrin, plasma viscosity, LDH, PCV (packed cell volume), non-HDL cholesterol and lithium have been reviewed, and hepatitis, under our conditions list, has also been updated. This is especially appropriate as World Hepatitis Day fell on 28th July.

Meet the Lab Tests Online-UK Board

Former (and founding) LTO-UK Chair, Mike Hallworth

No stranger to most people reading this, Mike trained in Chemistry at the University of Oxford and in Clinical Biochemistry in Leeds, before working as a Clinical Biochemist in hospitals in England and Scotland. He was Consultant Clinical Scientist at the Royal Shrewsbury Hospital from 1989 to 2014 and served as ACB Chairman (the position that has now become the President) from 2000 to 2003. In that role, Mike attended an AACC Annual Meeting in Chicago in July 2001 where he met with AACC officers, who told him of a web project they were developing to help patients understand their laboratory tests.

Inspired by the potential of such a resource and with the backing of ACB Council, Mike set to work with AACC to develop a UK version of the website. LTO launched in the US in August 2001 and Mike became the first Chair of the LTO-UK Board. He obtained a grant of almost £90,000 from a UK charitable foundation and worked with the Board (Stephen Halloran, Jonathan Kay, James Maguire and Ian Godber) and many volunteer editors to adapt and develop the AACC content. LTO-UK was launched at the Department of Health in London in June 2004 – the first site outside the US. Mike received the Healthcare Scientist of the Year Award in 2008 for his work. He is now retired, but still enjoys acting as a content editor for LTO-UK.

More recently, Mike volunteered to be one of our army of volunteers who stand around at conferences we attend to talk to delegates and spread the gospel about LTO-UK!

What's new on LTO?

We attended the big WONCA (World Organisation for Family Doctors) event at ExCeL in London back in late June which incorporated the annual RCGP Conference we usually attend in the autumn. We spoke to lots of GPs and other healthcare professionals about promoting the site to their patients.

How to get involved

Join the editorial team

If you are interested in contributing to the vital work of the editorial team to keep the website up-to-date and to introduce new material please contact us for more information.

Become a Lab Tests Online-UK champion

Join our army of Champions and promote LTO-UK locally and nationally. Champion packs provide a great starting point with ideas and marketing materials, for more information or to join our champions please contact us.

Promote LTO at national events

We're also on the lookout for people to represent LTO-UK at conferences to speak to delegates and let them know how great the website is for the patients they care for, or indeed as a resource for their own education. If you're interested, please contact the LTO Office at the email below.

Email: **labtestsonlineuk@acb.org.uk** Website: **labtestsonline.org.uk** Follow u

UKMedLab22

London • 7-9 November

We're back in person!

We're delighted to announce our 2022 National Meeting will be back in person – and right in the heart of London in the Royal College of Pathologists' fabulous new purpose-built venue: Events @ No 6.

UKMedLab22 will feature internationally renowned speakers, national experts, discussions and debates for senior laboratory professionals – and be a much needed opportunity to reconnect with colleagues!

Monday 7 November

- Biochemistry Training Day
- Microbiology Training Day
- National Audit Meeting

Tuesday 8 November & Wednesday 9 November

- Science & Education and Leadership & Management conference streams

CPD accreditation applied for

To find out about sponsorship opportunities, please email cheryl@acb.org.uk

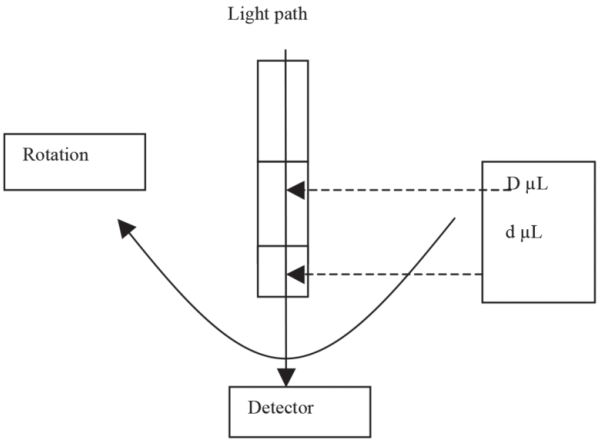
Look out for more details at:
bit.ly/UKMedLab22

The Association for Clinical Biochemistry & Laboratory Medicine

Deacon's Challenge Revisited

No 21 - Answer

A centrifugal analyser is designed so that the light travels on a longitudinal path through the rotating cuvette (which has a constant cross-section C cm^2) rather than perpendicularly through the sides of the cuvette as is more usual. A solution of a light absorbing compound Y, volume d µL at a concentration of y mmol/L, is diluted with a volume D µL of an optically clear reagent.



Using the Beer-Lambert equation, prove that the absorbance of light through the diluted solution of Y is independent of the volume of diluent (D) when absorbance is measured longitudinally in this system.

MRCPath, November 2002

The Beer-Lambert equation is:

$$A = \varepsilon \times l \times c$$

Where
A = absorbance
ε = molar absorptivity
l = path length
c = molar concentration

Volume of cuvette = Cross-sectional area x path length .....(i)

Where C = Cross-sectional area (cm^2)
l = Depth of solution in cuvette (cm)
$(D + d)$ = volume of cuvette (µL)

Since 1000 µL = 1 cm^3, $\frac{(D + d)}{1000}$ = volume of cuvette (cm^3)

Substitute these values into equation (i) and rearrange to give an expression for l in terms of D,d and C:

$$\frac{(D + d)}{1000} = C \times l$$

$$l = \frac{(D + d)}{1000C}$$

Calculate the concentration of Y in the cuvette:

$$\text{Conc in cuvette (mmol/L)} = \frac{\text{initial conc (y mmol/L)} \times \text{Vol of Y (d µL)}}{\text{Final vol (D + d) µL}}$$

$$= \frac{(y \times d)}{(D + d)}$$

Substitute these derived values for path length (l) and final concentration into the Beer-Lambert equation:

$$A = \varepsilon \times \frac{(D + d)}{1000C} \times \frac{(y \times d)}{(D + d)}$$

Cancelling the (D + d) terms which appear on both the top and bottom of the equation eliminates the D term:

$$A = \frac{\varepsilon \times y \times d}{1000C}$$

Therefore the absorbance is independent of the volume of diluent (D). ■

Question 22

A urine collection was handed in by a patient which he said he had collected over the previous day. Calculate the creatinine clearance given that the sample was found to have a creatinine concentration of 7.2 mmol/L in a volume of 3.2 L. The serum creatinine concentration taken during the collection was 94 µmol/L. Give the most likely cause for this result.

MRCPath, November 2002

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 31 from June's ACB News

Adenoviruses:

A. Are associated with genital cancers
B. May cause gastroenteritis
C. May cause conjunctivitis
D. May cause pneumonia
E. May cause warts
F. May cause hepatitis
G. Have more than 50 immunologically distinct types

Answer: A and E are false, all the others are true. *Adenoviruses can cause a wide range of illnesses from the common cold to more severe pneumonia, croup and bronchitis; however, they most commonly cause respiratory illness. In addition, with more than 50 different types, adenoviruses can also cause other illnesses such as gastroenteritis, conjunctivitis, cystitis, and, less commonly, neurological disease and hepatitis. Severe illness caused by adenovirus infection can occur in people with weakened immune systems. These infections can become chronic in nature within infections in tonsils, adenoids and intestines and they can shed the virus for many weeks.*

Question 32

Regarding rash illnesses:

A. Varicella-zoster virus (VZV) infection may cause a vesicular rash.
B. Parvovirus B19 is commonly referred to as Beta 19 disease.
C. There are 3 mammalian Herpesviridae subfamilies known as alpha, beta and gamma-herpesviridae.
D. Monkeypox does not spread from person to person.
E. Chickenpox has been easily distinguishable from smallpox since the early 19th century.

The answer to Question 32 will appear in the next issue of ACB News – enjoy!

Report from the 6th Biotest Immunology Forum 2022: Complex immunodeficiencies: new challenges, new perspectives

Elizabeth Ralph, Clinical Scientist in Immunology, Great Ormond Street Hospital NHS Trust; and Betsy Cleave, Specialist Registrar in Immunology, Queen's Medical Centre, Nottingham University Hospitals NHS Trust

The 6th Biotest Immunology Forum was held on the 9th and 10th of June, in the always lovely surroundings of the Royal Society in central London. This forum brings together professionals working in the field of Primary Immune Deficiency (PID), both clinicians and scientists, to discuss the latest updates and issues in the field. The afternoon started with an overview by Dr David Lowe from the Royal Free Hospital, London of the problems of chronic diarrhoea in various PID. One of the take-home messages was that the gut microbiome plays a key role e.g. there is an association between gut microbiome and the presence of inflammatory cytokines in patients with Chronic Granulomatous Disease (CGD) colitis, while a reduced diversity in the gut microbiome of patients with Common Variable Immune Deficiency (CVID) has been observed, particularly in those with chronic diarrhoea.

Next we looked at CMV in PID, with a triple-hander from Virology and Immunology Consultants at Great Ormond Street Hospital. Prof Judy Breuer gave a whistle-stop tour of the various antiviral therapies available to treat CMV, followed by Dr Catherine O'Sullivan who presented three case studies of patients with CMV treated at Great Ormond Street, and finally Dr Winnie Ip who showed us what the future for treating CMV holds with an overview of cellular therapies for CMV infection currently in development.
The day ended with a round up by Dr Sinisa Savic from St James University Hospital, Leeds of some new genetic discoveries in PID, highlighting three cases. The first case was a patient with C19 deficiency presenting with pneumonias and B cell impairment. The second was a patient who had hypogammaglobulinaemia and was found to have a defect in CRACR2A, part of the calcium channel signalling pathway. The third looked at a patient with specific antibody deficiency who presented with numerous chest infections. They were found to have variants in different genes, CFTR (the gene involved in cystic fibrosis) and CWF192 (a gene involved in mitosis). It is proposed that these variants compounded to give the patient's phenotype, a phenomenon that is becoming increasingly recognised in the field of PID.

The morning of Day 2 was kicked off by Dr Michael Carter from Evelina Children's Hospital who gave a talk on PIMS-TS/MIS-C. He highlighted significant overlap in clinical features of the condition with toxic shock syndrome, rather than Kawasaki disease as previously thought, and this was supported by different clustering of

cytokine profiles for MIS-C compared to Kawasaki disease. He discussed the possible hypotheses for pathogenesis of MIS-C including impaired antigen presentation, interferon signalling and dysregulated T cells, and finished with a discussion of treatment options. This was followed by a presentation from Prof Alex Richter, University of Birmingham, on COVID-19 in PID. She highlighted the impact of COVID-19 on people with immune deficiency. Overall improvements in hospitalisation and fatality rates relating both to vaccination and treatments for COVID-19 have not been as pronounced in those with immune deficiency compared with the immunocompetent population and therefore immune deficient patients remain at risk. The third dose of COVID-19 vaccine gave an excellent response compared to those who did not respond to conventional vaccinations, however hospitalisation and death were higher in those with no pre-existing antibodies. There is still much work to be done in this area.

We then moved on to a presentation from Dr Siraj Misbah, Oxford University Hospitals, covering the various approaches to COVID-19 therapy for immune suppressed patients. He started with an overview of the various approaches to therapy that have been trialled, covering all aspects of the immune system. This included innate immunity (e.g. complement inhibitors, inhaled interferon beta), adaptive immunity (e.g. protective antibody infusion), cytokines (e.g. tocilizumab, JAK inhibitors), and of course antivirals, of which a number are now available. He then moved to focus on pre-exposure prophylaxis. Dr Misbah summarised several trials and studies that are just starting to be reported in the literature (OCTAVE, PROVENT, STORMCHASER and others), so keep an eye out for those over the coming months.

The final session of the morning was led by Prof Siobhan Burns, Royal Free Hospital, who walked us through a series of interactive case studies. We were presented with 3 real-life patients and asked via Slido what we would do in terms of diagnosis and management for each of the cases. These interactive case sessions are always my favourite, as they generate a lot of discussion and are a great way to test and challenge your knowledge and current practice. In particular, the tricky cases of two patients, one with a STAT1 gain-of-function disorder, and one with APDS2 (activated PI3K delta 2) got us all thinking before lunch.

The day ended with a look at secondary immune deficiency, with talks from Prof David Edgar from St James' Hospital and Dr Mohammed Yousuf Karim from Sidra Medicine. Prof Edgar focussed on the management of secondary immune deficiency (SID) in patients with haematological malignancy. He highlighted the lack of robust evidence to guide immunoglobulin replacement in SID, and that immunoglobulin replacement does not prevent all complications in those with SID. The key messages were to measure IgG levels and provide immunoglobulin replacement if IgG <4 g/L with infections, dose immunoglobulin replacement appropriately and stop treatment if possible. Dr Karim highlighted the issues of SID in patients treated with B cell depleting agents. He highlighted the need to consider primary immune deficiency in patients with autoimmune disease and B cell depleting therapies, particularly in those who become very quickly hypogammaglobuliaemic with minimal therapy, especially in paediatric patients.

It was an enjoyable and informative day for all attendees, and a nice chance to catch up with colleagues in the field after lacking face-to-face meetings for so long. ■

ACB Scotland Regional Event

Hannah Worthington, Year 1 STP Trainee, NHS Greater Glasgow and Clyde

The ACB Scotland Regional Event took place on the 21st June 2022, with Healthcare Scientists from all over Scotland gathering to attend. It was great to see so many people in a face-to-face environment, with sponsorship from BIOHIT Healthcare and Waters Ltd.

This regional meeting was the first Scottish meeting to be held face-face since 2019 and provided excellent opportunities for networking, alongside interesting talks on the theme of nutrition. The Scientists Training Programme (STP) trainees in Scotland also had the chance to compete for the John King Award, based on presentations about their MSc projects. The event commenced with a talk from Dr Bernie Croal (Consultant Chemical Pathologist, NHS Grampian), who gave an update on current ACB affairs and on the format and content of upcoming FRCPath exams.

Session 1

Karen Smith (Consultant Clinical Biochemist, NHS GG&C) was the Chair for the morning session, which centred around the STP and its trainees.

Susan Johnston (Training Officer and Clinical Scientist, NHS GG&C) was the first speaker of the day, giving an overview of the training scheme and what it entails for each biochemistry trainee involved. This includes the taught component from the University of Manchester and the practical component, involving rotations and written competencies for a variety of areas related to the discipline. Highlighted were the changes to the curriculum that have occurred within the past few years, giving everyone the chance to familiarise themselves with the standards of education and what to expect when employing trainees. Susan also took this opportunity to introduce the current trainees, many of whom were attending their first in-person meeting. The talk focussed on what can be done to help the trainees during their training, such as overseeing rotations and projects and providing opportunities to experience a wide range of departments. Susan also highlighted what the trainees can do for the department, providing incentives for everyone to get involved in training the soon-to-be qualified Clinical Scientists.

John King Award

Next up were the presentations for those competing for the elusive John King Award. In the 1980s the Scottish ACB established the John King Award in memory of John Ian King. Every year a chess 'King' piece trophy is awarded to the junior member making the best presentation in this session, as well as a sum of money to go towards attendance at an educational/scientific meeting.

First up was Russell Brown (Trainee Clinical Scientist, NHSGG&C) with his talk on the development and validation of an LC-MS/MS assay for serum testosterone (T) and dihydrotestosterone (DHT). Currently, these are measured by immunoassay in most circumstances. However, this is less accurate in female samples and it can be difficult to acquire the large sample volumes needed for paediatric cases. The aim was to develop a method which would allow both T and DHT measurement on LC-MS/MS that would

ACB President Bernie Croal, with John King Award contenders Russ Brown, Courtney Watt, Jonathan Strachan and ACB Scotland President Becky Pattenden

accurately measure lower concentrations, with smaller sample requirements.
The clinical utility of T and DHT is mainly to aid diagnosis of Disorders of Sexual Development (DSDs), which are often seen in paediatric populations, or young adults entering puberty. Furthermore, a more sensitive T and DHT method can aid in the interpretation of hCG stimulation tests, which are often used in the investigation of DSDs.

Jonathan Strachan's (Trainee Clinical Scientist, NHS GG&C) talk was on the development and validation of an LC-MS/MS assay for calcitonin in plasma. Calcitonin is released by C cells in the thyroid, therefore this novel method to measure calcitonin can be used as a marker of medullary thyroid cancer and to monitor response to treatment. Currently, this peptide is measured by chemiluminescent immunoassay. This is subject to some sensitivity and interference issues, which can be overcome by measuring via LC-MS/MS. Although measuring calcitonin by LC-MS/MS showed poor reproducibility, Jonathan proved that this is indeed possible, thus taking a step forward in the measurement of intact peptides.

The third speaker was Courtney Watt (Trainee Clinical Scientist, NHS GG&C) and her presentation was based on the development and validation of an LC-MS/MS assay for methylmalonic acid (MMA) in serum/plasma. This test is used to aid the detection of vitamin B12 deficiency, namely in cases where the results from vitamin B12 tests are inconclusive. Vitamin B12 is currently measured by immunoassay, which shows 95% sensitivity, but only 50% specificity. Hence, measuring MMA (co-factor of B12) would better correlate with B12 levels in plasma. Courtney showed that her method was linear within the in-house derived reference range.

Additionally, the LC-MS/MS method for MMA picked up cases of B12 deficiency that had previously been missed by immunoassay.

Session 2

The afternoon session was chaired by Rebecca Pattenden (Consultant Biochemist, NHS Lothian) and focussed on nutrition. Firstly, the afternoon kicked off with the announcement of the winner for the John King Award. Congratulations to Jonathan Strachan for winning this year's award, demonstrating that calcitonin can be measured by LC-MS/MS and further opening discussion for the possibility of measuring other large peptides by this method.

Next, Dr John Wadsworth (Clinical Scientist, Scottish Trace Element and Micronutrient Diagnostic and Research Laboratory, NHS GG&C) gave a talk on micronutrient screens. John defined what constitutes a micronutrient screen and how its components are subject to interferences, mainly in the presence of systemic inflammation. Therefore, it is recommended that CRP and albumin are measured alongside to aid interpretation. Besides analytical interferences, pre-analytical interferences may also affect the results. John highlighted the importance of using trace element-free tubes or non-gel lithium heparin/EDTA in order to prevent contamination and emphasised the importance of centrifuging samples for zinc within four hours of draw. The clinical utility of micronutrient screens was demonstrated in a case presented by John. A patient presenting with low zinc was initially supplemented with zinc and discharged. However, this patient later presented with new symptoms, whereby the micronutrient screen now showed copper deficiency. This is a well-known side-effect of zinc supplementation, as metallothione in the gut preferentially chelates copper for excretion, causing zinc-induced copper deficiency to maintain trace element homeostasis. However, this is easily reversible by stopping zinc supplementation. Upon further investigation, it was noted that hypoalbuminaemia was the cause of falsely low levels of zinc.

The second talk was from Dr Kevin Deans (Consultant Chemical Pathologist, NHS Grampian) regarding the changing landscape of home parenteral nutrition (HPN). There has been a significant increase in the number of people in Scotland on HPN (nutrition that bypasses the gut and goes straight into the bloodstream). Due to this bypassing mechanism, there has to be strict regulation of intake of fluid, energy, fats, carbohydrates and nitrogen, as well as trace elements, micronutrients and electrolytes. This can be a struggle as every patient is different and has a different circumstance which led to the need for HPN. Therefore, this requires a multi-disciplinary effort from pharmacists, medics, surgeons, gastroenterologists, clinical biochemists and microbiologists. HPN also comes with a variety of extra challenges over hospital-based PN. The main challenges are the higher risk of infection due to the open wound containing a line passing nutrient-rich fluid and the rigorous training that patients and family/carers have to go through to minimise the risk. Additionally, PN in general has been shown to affect the liver, causing fatty liver disease, therefore careful monitoring of liver function is required.

Dr Alison Kelly (Consultant Chemical Pathologist, NHS GG&C) discussed parental nutrition within Scotland's hospitals. Parental nutrition is required when there is either a reduction of gut function, or an inability to access enteral nutrition. The bags for hospital nutrition are not often 'tailor-made' for patients and instead are multi-chamber bags, where the best available bag for the patient is selected from a variety of options. For example, patients post-chemotherapy with mucositis and difficulty in swallowing are primarily

given fluids to maintain fluid balance with top-up of priority nutrients as required. Another example highlighted by Alison was in trauma patients, which may be more challenging depending on the severity and location of the trauma. Fluid balance is imperative in these patients to maintain liver function and to correct electrolyte disturbances. In these patients, although they often present hypoglycaemic and with low protein levels, supplementing them with these risks build-up of urea, refeeding syndrome and insulin resistance as a result of pro-inflammatory cytokines. Hence, the take-home message is that PN is patient-specific and continuous monitoring is required.

The final talk of the day was from Mr Phil Stevens (Consultant Surgeon, NHS GG&C) on Glucagon-Like Peptide 2 (GLP-2) analogues for the treatment of short bowel syndrome. GLP-2 analogues can be used in the treatment of intestinal failure and in patients who have lost part of their gut function, thus requiring intravenous support. GLP-2 is a naturally occurring hormone that regulates the growth, proliferation and maintenance of cells within the GI tract. The analogues are chemically designed with a prolonged half-life and work by stimulating increased crypt depth and villus height, thus allowing enhanced fluid and nutrient re-absorption, reducing the need for PN. However, these analogues are only suitable in certain cases, depending on bowel length and the presence of the colon in-continuity. Currently, Teduglutide is the only available analogue that requires daily injections. Some patients may suffer from adverse effects, such as abdominal pain, therefore other alternatives are currently being assessed. An incidental finding in patients on this treatment was an increased incidence of polyps, hence regular colonoscopies are required. However, the overall take-home message is that this therapy and future developments look promising for patients in restoring some of their GI tract function.

This year's conference was a great success and for many provided a sense of the return to 'normality'. It was a privilege to be able to attend and to be able to meet colleagues in person, many of whom I had only met during online calls. All-in-all, it was an excellent day and there is much more to look forward to in the future for the continuously evolving field of nutrition. ■

Report from Executive War College Conference on Laboratory and Pathology Management

Sophie Barnes, Consultant Clinical Scientist, North West London Pathology

In January 2020, whilst at Frontiers in Laboratory Medicine (FiLM), my evaluation form was picked out to win free registration to the equivalent American meeting, the Executive War College Conference on Laboratory and Pathology Management. Fast forward two globally eventful years, and this April I had finally swapped the cold rainy canals of Birmingham for the sun-drenched bayou of New Orleans!

It was a full conference programme, beginning at 7.30 am each morning! A show of hands indicated that 40-50% were first-time attendees like me and a number of these had opened new laboratories because of opportunities arising from testing for COVID-19. Robert Michel, President of The Dark Intelligence Group, Inc and known to many of us from FiLM, opened the main part of the conference with his reflections on the lab industry's coming roller coaster. This whistle stop tour began with "The Great Resignation" and supply chain issues but he also reminded us that the history of the pathology sector shows that disruptors are often great strategic opportunities. Globally, trends in healthcare are perceived to be showing a transition to the provision of more proactive rather than reactive care; more integration of primary care, specialties and care homes; and moving to provision of care in less expensive out-patient settings

rather than necessarily within hospitals. COVID-19 has accelerated the acceptance of testing in homes and telemedicine, which is increasing the consumer's desire for convenience, personalisation, access to technology and transparency (knowing costs in advance is important with the USA payment system). Robert's suggestions were that laboratories can help support this transition by striving to reduce variation in care; identifying patients at risk of acute episodes, on the end of chronic conditions or with redeemable current gaps in care. We should aim to have a quicker work flow; attack

non-value adding processes, continuously improve, use sophisticated informatics (to increase financial stability), collaborate with providers to deliver more value from lab data and contribute to measurable improvement in patient outcomes or cost of care. He noted that laboratory test data is essential for both big data analysis to support population health management and also for personalised medicine.

Another recurring theme of the meeting was looking at generational differences and how this impacts both the workforce and the customer preferences. (One major difference in the US compared to the UK is the marketing activities and "outreach" programmes necessary to attract patients, the "non-inpatient discretionary laboratory users", to use services). Physicians are concerned about quality, turn-around-times and the general patient experience but patient preferences and what they may be willing to pay more for varies by generation groups (Jane Hermansen, Mayo Clinic).
All patients want transparency over costs and minimal wait times. However, Millennials and Generation Z access healthcare very differently to previous generations and are generally looking for easy access, potentially in a retail location with laboratory-supported telehealth and potentially even home phlebotomy.
By 2025, the shift in perspective will be seen in employees as well as patients, as millennials will be the majority of the workforce and this will alter what applicants are looking for in terms of flexibility, work-life balance and organisational identity (Tara Luellen, Lighthouse Lab Services). This may be less of an issue in the UK with common pay and NHS terms and conditions across the country but a reminder to consider what we can provide in terms of flexible working and the ethos of our organisations.

Jason Hipp spoke about building the future of computational pathology and AI at Mayo Clinic. The convergence of pathology, technology and data, along with three technological factors: the cloud, big data and AI has been key to recent developments. Digital histopathology allows interrogation of every pixel and texture and the ability to see images that are not visible to the naked eye. This data can then be data-mined using technology developed for Google or Twitter to determine the significance of the distance between different cell types e.g. lymphocytes and macrophages. AI could then be used to direct pathologists to areas of suspicion. Investment in the digital transformation of healthcare is one of the pillars of Mayo Clinic's 2030 vision with all medical and surgical disciplines digitising and integrating current and historic data. The pathology focus is currently on histopathology but will move on to laboratory medicine. Will it be possible to learn from AI and then use the insight gained from machine learnt algorithms to teach the next generation?

It seems that in the US there is much less incentive to invest in a cradle to grave overview of an individual's health because individuals change insurance companies throughout their working lives. This simple observation made me even more appreciative of the NHS and the value it places on preventative medicine and the early detection and treatment of chronic conditions to improve the quality of life of patients whilst reducing the cost of healthcare over that patient's lifetime.

Many thanks to all at The Dark Report for a really enjoyable and informative time at a full and varied conference. Thank you also to the Association for Clinical Biochemistry and Laboratory Medicine for the associated bursary towards expenses.

A Clinical Biochemist at the cutting edge of medicine

Professor James Shepherd MBChB PhD FRCPath FRCPS(Gla) FMedSci FRSE 1944-2022

Many have expressed their admiration for the life and work of Professor James Shepherd and it is fitting that these messages came from around the world, for Jim was a scientist with global vision. A medal-winning graduate from the School of Medicine at Glasgow University, Professor Shepherd pursued a career in clinical research that spanned four decades, made seminal discoveries, and it is not an exaggeration to say that his endeavours changed the practice of medicine. As a leader in the field of Clinical Biochemistry in the UK he demonstrated with great effect how the application of biochemical insights to clinical questions could lead to extremely worthwhile results. His interest in the role of lipids in cardiovascular disease helped establish and promote the UK's position as a leader in the field.

It was in the mid-1970s that Professor Shepherd developed an interest in lipoproteins and their association with cardiovascular disease. Those were the days when popular debate in scientific (and lay) circles centred on whether cholesterol had any role to play in causing atherosclerosis (and many Clinical Chemists were relied upon to champion the positive view). Early research conducted in Glasgow (after Jim secured an academic position in the Department of Clinical Biochemistry) focussed on the metabolism of LDL and how it was affected by diet and drugs. In these pioneering days, kinetic studies used radioactively labelled lipoproteins and investigations in patients with hypercholesterolaemia and animal models

began to reveal how LDL levels in the circulation were regulated. Seminal studies using the novel technology of injecting normal and modified LDL revealed for the first time that the LDL receptor – newly discovered in cultured fibroblasts and the subject of a Nobel Prize – played an important role in the metabolism of LDL in humans. The consequent demonstration that cholestyramine increased receptor-mediated LDL clearance established the conceptual framework for how many LDL-lowering drugs, including statins, worked. In further kinetic studies, Jim, with the expanding research group in Glasgow and a wide network of international collaborators,

went on to explore the intricacies of HDL and VLDL metabolism.

Perhaps the work that Jim is most famous for is the West of Scotland Coronary Prevention Study (WOSCOPS). This trial of the use of novel agents – statins – in CVD prevention has now entered medical history books as the landmark evaluation of the benefits of cholesterol-lowering in primary prevention. Its results exceeded expectations in terms of the risk reduction seen from statin therapy and its first presentation at the American Heart Association meeting in November 1995 had an immediate and worldwide impact, as reported in the *New York Times* and even the *Glasgow Herald*! Due to the unique (at the time) electronic records system in Scotland it was possible to undertake a 15- and then 20-year follow up of the trial which helped establish the long-term efficacy and safety of statins.

After allowing a few years to pass to recover from the rigours of conducting WOSCOPS, Jim, alongside senior colleagues in Scotland, Ireland and The Netherlands, conceived and launched a trial of statin treatment in older people. PROSPER (the Prospective Study of Pravastatin in the Elderly at Risk) addressed the lack of evidence for LDL-lowering over the age of 70 years and showed that statin therapy was effective in preventing cardiovascular disease even in the later stages of life.

Professor Shepherd served as Head of the Department of Vascular Biochemistry at Glasgow University and then also took on the lead consultant position at the NHS Greater Glasgow Department of Clinical Chemistry, steering it through challenging times of reorganisation and expansion.

Jim's gift for diplomacy and his talent for 'herding cats' was the stuff of legend. He embarked on a number of international initiatives, serving as President of the European Atherosclerosis Society from 1993-6 and chairing EAS Congresses in Glasgow in 1994 and 2001. It was in hearing him lecture or attending one of the educational activities that he ran across the world that many will have personally interacted with Jim. His infectious enthusiasm for the topic and ability to connect with people helped promote the cause of cardiovascular disease prevention worldwide.

In terms of publications, Professor Shepherd authored over 600 scientific articles, frequently appearing in leading medical journals. He served as editor-in-chief of *Atherosclerosis* and oversaw an increase in the impact and reach of the journal. However, the main activity most people will remember is his (possibly unique) engaging and enthusiastic communication style. Presentations, he felt, should contain not only the appropriate high-level science but should also 'tell a story'. Professor Shepherd was at heart a clinician whose driving ambition was to improve patient's lives. When asked why he then chose to take on the role of clinician scientist, his response was that by 'standing back' he could help more people.

Jim passed away in April 2022 and is survived by his wife Jan and children Ewen and Fiona. His life and contribution to the local community was celebrated formally at his local church in Hamilton where he was a lifelong member. ■

Chris J Packard CBE FRSE

Industry Insights – What's happening with Regulation? An update on IVD regulations for the UK (GB)

Doris-Ann Williams, Chief Executive, BIVDA

From 1st July 2023, all IVDs on the market are supposed to comply with new medical device regulations for Great Britain and have a CA mark to show this. Since Brexit, any IVDs have had to be registered with MHRA and be CE-marked to the IVD Directive, and for now this will continue to be the case in Northern Ireland as it effectively remains in the EU for medical device regulation while the Northern Ireland protocol remains.

Last autumn, the MHRA ran a consultation on proposals for the new regulations and the response to this, from the Government, which had been expected since March, was finally published on Sunday 26th June. It is a fairly long read at 155 pages but certainly worthwhile, especially for any Trusts who use in-house manufactured tests. **Click here to read.**

The UK industry concern was that the regulations may vary widely from the new Regulation in the EU – this is proving costly and complicated to implement and the prospect of another regulatory regime, for a market which is less than 5% of all IVD products sold, could mean that some existing products would not be made compliant and that new tests and technologies may never be introduced into the UK, even if they were to be developed and manufactured here. For the most part, the response does look as if regulations will be closely aligned with the EU Regulation.

Industry is also relieved to see that existing products will be given a longer transition time to comply, mirroring the extensions given to compliance to the EU IVDR (which came into force on 26th May this year). The main reasons are very similar – there are not enough Notified Bodies yet authorised in the EU to manage the oversight required by the IVDR for all the IVDs on the market and the UK is having the same problem with only three equivalent organisations, which are called Approved Bodies here, being designated and two of these don't have the full scope of all products.

However, new products and in-house tests will need to comply as soon as the UK regulations come into force. At this stage we don't know if the original date of 1st July next year will be possible. The MHRA are also setting up a series of meetings to discuss aspects of the proposed new regulations from September which will include a group

for the NHS, UKHSA and other service providers so this will be something the ACB can join to represent its members' views.

The MHRA itself has changed a lot and is now 'one agency', bringing staff together to regulate drugs and all medical devices, while developing ideas for faster adoption of innovation and have recruited Dr Penny Wilson from Innovate UK to bring her knowledge of innovation in the industry to the agency. However, BIVDA has some concerns with the loss of so many staff with IVD regulatory experience and knowledge, since the majority of tests will remain IVDs despite the increasing number of companion diagnostics and diagnostics with digital technology. So, the next few years remain uncertain for everyone concerned with putting IVDs onto the market.

Rather a specialised topic for this month and not light summer reading I'm afraid but this will affect everyone using IVDs in some way. Very happy to answer any queries too – **doris-ann@bivda.org.uk**

ACB News Crossword

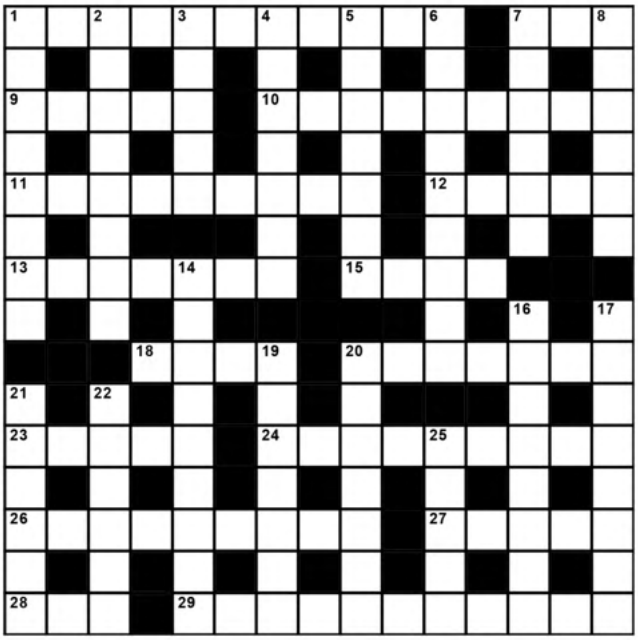
Set by Rugosa

Across

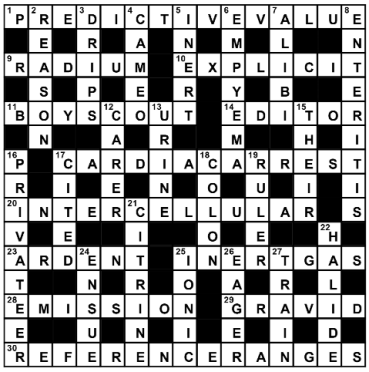
1 For this medical emergency usual therapy, in my honest opinion, needs to be modified (11)
7 Appropriate seizure (3)
9 Describes terminal part of Cyrano de Bergerac's life (5)
10 Inborn error diagnosis with no IT? Make pH priority (9)
11 Sequences of notes translated as sliding (9)
12 Rational religion readmits absentee tar in error (5)
13 Solvent first class, sound quality (7)
15 Metal press (4)
18 Ion-free liquid conduit (4)
20 Beat a hasty retreat when sailor's scam came to a bad end (7)
23 Odd asteroidal chambers (5)
24 Hormone store gone, used (9)
26 My richest source of subjects (9)
27 Flowers from microscopist relieved of imposts (5)
28 Achieved a just, even treaty – hence the beam! (3)
29 Phone endlessly – problem with new therapy for renal condition (11)

Down

1 Hear about aged model showing top clothing? (8)
2 Giver must avoid neurosis when effecting supervision order (8)
3 Uncertain, tense time of life (5)
4 Cost cut: trim from among complex experiments (7)
5 Distracted romanticist ignores cost of cocktail (7)
6 Dry? Order our shandy! (9)
7 Some who suffer rickets will get a form of 15 (6)
8 Breaking metatarsus sets off emotional shock (6)
14 Time for conception, from written account, can fly (9)
16 Not shy by a long shot about displaying biggest vessel on board (8)
17 Recognise as definitively weird but not evil (8)
19 Country-western dance – wets opt out (3-4)
20 One making quantitative analyses involving, say, sera (7)
21 Improper rascal of a sailor from India (6)
22 Did veterinary operation excise vein instead? (6)
25 Wear 1 down cover again briefly? (5)



Solution for June Crossword



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To find out more about the benefits and eligibility for membership please contact Mike Lester: mike@acb.org.uk or +44(0)20 4542 6044

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