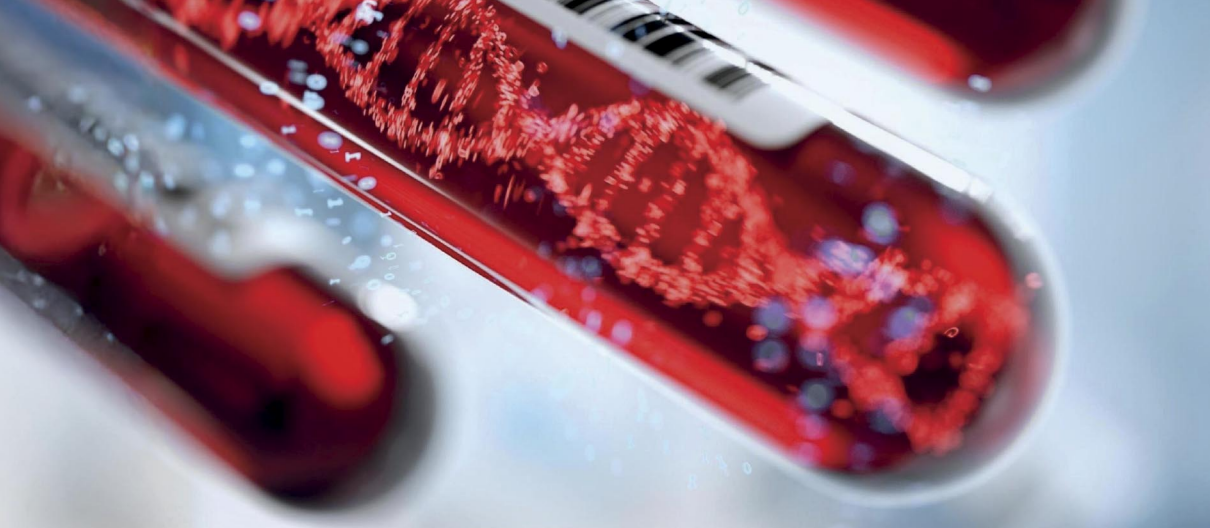
LabMedNews
Association for Laboratory Medicine

DECEMBER 2024

- The Benevolent Fund: your lifeline in hard times
- 2025 UNIVANTS of healthcare excellence awards
- Welcome to Snibe
- Greener healthcare and sustainability project
- Community and collaboration: friendship is magic
- Tips of the trade
- Antimicrobial resistance, sepsis and the changing microbiome
- Meet the Immunology Professional Committee



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Association for Laboratory Medicine

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MESSAGE FROM THE PRESIDENT AND THE CEO

Welcome to the final edition of *LabMed News* for 2024. It has been another year of change here at the association with the rebrand to the Association for Laboratory Medicine providing us with an opportunity to increase our visibility and influence with NHSE and the CSOs of the devolved nations and better reflect the breadth of our membership.

Highlights this year as always have been our excellent national and regional meetings. LabMedUK24 in Brighton included a fantastic scientific programme along with industry sponsored workshops. It was brilliant to meet so many members and delegates there, taking the opportunity to mix and interact with our sponsors and exhibitors. Our regional meetings have moved to both online and in-person meetings, with this format proving really popular and ensuring accessibility for members alongside that all important opportunity for networking. Our thanks to the RCPath for supporting the Trainees/Flynn Day in November, which enabled us to open this meeting up to all trainees. This was followed by the National Audit meeting, with an incredibly interesting programme of audits alongside the latest clinical developments.

LabMed has submitted a response to the NHSE 10 year Health Plan consultation highlighting why laboratory medicine is fundamental to any shifts or innovations in healthcare delivery and the role our members can play in leading change. In addition, we are currently finalising our next five year strategy for the association for 2025-29 and will be able to share this with members early in 2025.

We are looking forward to LabMedUK25 to be held in Manchester between 9-11 June, with another thought-provoking programme being planned, to include the usual opportunity for delegates to showcase their work through submission of abstracts for posters and oral presentations.

As the year comes to a close I'd like to thank our corporate members who have supported us during this year, including our strategic partner, Roche, and our LabMedUK24 sponsors BD, Beamtree, Binding Site, BIOHIT Healthcare, MAST group, Siemens and YourBio Health.

So from me and Victoria, and all the LabMed team, we hope that you enjoy the holiday season with your family and friends and wish you all a happy and healthy New Year!

VICTORIA LOGAN Chief Executive
KATH HAYDEN President

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WELCOME TO THE DECEMBER ISSUE

As we approach the end of the year, we have an abundance of interesting articles in store for you in this last instalment of *LabMed News* for 2024.

It has been a remarkably busy and productive year for the Association for Laboratory Medicine, which is reflected in the number of articles we have received this year. Thanks to all our members who have taken the time to submit those articles to us. You can read about some of the many meetings that have taken place this year in our section on meeting reports on pages **34-47**, including a report from the first Management and Leadership training course to take place since COVID-19.

In this last issue of 2024, both our president and CEO reflect on the highlights of the last 12 months, including the rebranding and a successful LabMedUK24 meeting, and they look ahead to what 2025 might bring for the association.

We are grateful to our regular columnists The Green Champions group, our Future Perspectives columnists Katy Heaney, Jessica Johnson and Rue Ball, for their insightful articles, and to all our more senior members, especially William Marshall, who contribute to our 'I Remember When' column with their endearing tales of lab life as it used to be.

Alison Jones's article for the Green Champions column on page **17** of this issue is really thought provoking and I would encourage you to read it and to really take on board the points being made, especially the Seven Acts. This article really drives home the crisis we are facing from climate change.

We have reports from both our microbiology and immunology colleagues, with a fascinating report from the Microbe 2024 meeting and an introduction to the members of the Immunology Professional Committee.

Finally, Ben Nicholson has written an especially useful article for our trainees section entitled 'Tips of the trade' in which he has summarised a top ten list of essential online resources which will not only be helpful to trainees but to all LabMed members.

There is plenty to look forward to in 2025 and you will find information in this issue on the upcoming meeting in Liverpool on Patient Centric Sampling as well as the LabMedUK25 meeting in June and the UNIVANTS of Healthcare Excellence Awards.

As I sign off on this issue, I would like to draw your attention to the article on the Benevolent Fund on pages **8-9** and the Future Perspectives article on pages **21-22** and hope this is something you take forward into 2025.

Wishing you all a very happy Christmas and a healthy and prosperous New Year.

Gina Frederick, Lead Editor

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THE BENEVOLENT FUND: YOUR LIFELINE IN HARD TIMES

The fund was established in 1967 to aid past and current LabMed members in times of real need and difficulty. It acts as a lifeline to past and current members who have experienced significant hardship in their lives due to health and other circumstances.

"You never know when you'll need help"

As a LabMed member, the benevolent fund is arguably the most valuable and crucial benefit you have access to. It can ensure a little security when life takes an unexpected turn.

Testimonial

LabMed member, Ed Wilkes, very kindly talked to us about his experience receiving support from the Benevolent Fund in 2022, after an accident left him with a spinal cord injury, rendering him a full-time wheelchair user.

Ed is a consultant clinical scientist who runs the gestational trophoblastic disease and oncology services at North West London Pathology. With a PhD in biochemistry – focusing on high-resolution mass spectrometry and computational methods – his current interests include improving the quality of statistics education in the profession.

"I think the fact is, that life-changing events can happen at any time to anyone, at any stage of your life, and having access to these funds can quite literally be life-changing. So, any small donation that goes towards affecting someone's life in a really positive way is worth its weight in gold. And that's the whole point of having the Association for Laboratory Medicine; to coalesce as a group and support one another."

"Over the years, many members and their families have benefitted from support from the association's Benevolent Fund at times when they are most at need, either through injury, bereavement or financial problems. Your donations to the Fund, however small, can make a huge difference to the support we are able to provide and the reassurance that the association is there to help our members in times of crisis."

Kath Hayden, President

"In times of struggle, our community has the power to make a difference. By donating to this fund, you provide critical support to fellow members who may be facing unexpected challenges, whether it's facing hardship due to illness, financial distress or other urgent needs."

Ben Nicholson, Director of Finance

A hidden source of help

Like many others, Ed wasn't aware of the Benevolent Fund until a colleague told him about it. After applying, he wasn't even sure if he'd receive anything: *"It's the same as any grant, really. You don't know whether they'll fund it, but at that point you've just got to go for it."*

Ed mentions how difficult it can be to access funding through other channels. *"There are lots of charities out there, but it's a fulltime job in itself, filling in all the forms and getting all the evidence."*

Luckily, he was able to access the Benevolent Fund relatively easily and quickly, enabling him to make the basic modifications to his house that he suddenly needed for daily life. *"It was by far the biggest lump sum I think we received from any kind of charity... it was immensely helpful."*

I'm sure I won't need it

How likely is someone to really need the fund anyway? It's easy to think we're invincible, especially while we're younger, or that the future is too far away to be a concern right now. But life is unpredictable and ensuring that we have support in all the various ways we need it shouldn't be overlooked. *"I think that's the common way of humans' brains protecting them from reality. This can happen to anyone at any time."*

Is the fund valuable for members?

"It's a no-brainer!" LabMed provides members with access to a range of funds and bursaries, but not everyone is aware of these. As for the Benevolent Fund, Ed suggests this benefit alone has been worth all his years of membership.

Help us to be there for you

A contribution of just £10 per member would augment the fund and enable us to make a major difference to your life and the lives of your colleagues should it ever be needed. **Click here to donate**.

We thank you for your kindness in considering this request.

2025 UNIVANTS OF HEALTHCARE EXCELLENCE AWARDS

We are delighted to announce that we are partnering with UNIVANTS and Abbott Diagnostics to host the winners of the 2025 UNIVANTS of Healthcare Excellence awards at LabMedUK25. The winners will be invited to an executive roundtable and will have the opportunity to present as part of a Winner Symposia.

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About UNIVANTS of Healthcare Excellence

The awards are an annual recognition programme designed to celebrate healthcare organisations that have demonstrated exceptional achievements in improving patient care, optimising healthcare delivery and advancing health outcomes. The awards programme is a collaborative initiative between several leading healthcare organisations.

The UNIVANTS awards focus on initiatives that bring together multidisciplinary teams within healthcare systems, emphasising the role of laboratory professionals in transforming healthcare processes. The goal is to highlight how laboratory teams, in partnership with other healthcare providers, can drive innovation, improve efficiencies and make a meaningful impact on patient care.

LabMedUK25
Manchester 9-11 June

CONDOLENCES

It is with regret that we must inform you of the sad news of the death of LabMed Emeritus Member Dr Howard Worth, former consultant at King's Mill Hospital.

Dr Worth joined the association in 1970 and was active throughout his membership on various committees. He was awarded Emeritus membership in 2004 when he retired from the profession.

PUBLICATION DATE

LabMed News is published on the 15th of the month. To guarantee publication, please submit your article by the 15th of the preceding month (i.e. 15th January for the February 2025 issue) to: editor.labmednews@labmed.org.uk

We aim to be as flexible as possible and will try to accept articles up to the 1st of the month 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.

WELCOME TO OUR NEW MEMBERS

The association is proud to introduce the following new members who have joined us since the last edition of *LabMed News*. Please extend a warm welcome to:

Victoria Stokes, SpR chemical pathology, Belfast Health & Social Care Trust, Belfast

Sofia Koussis, Trainee clinical scientist, The Pennine Acute Hospitals NHS Trust, Oldham

Ganaesh-Kumaar Ramanathan, Advanced biomedical scientist, Trace Metals and Metabolic Lab, Leeds

James Hubbard, Chemical pathology fellow, University Hospital Plymouth NHS Trust, Plymouth

Caroline Peters, Trainee clinical scientist – biochemistry, Lancashire Teaching Hospital NHS Foundation Trust, Preston

Alice Stephenson, Trainee healthcare scientist, Manchester University NHS Foundation Trust, Manchester

Erica Liu, Trainee clinical scientist, Royal Berkshire Hospital NHS Foundation Trust, Reading

Lindsay Coupland, Principal clinical scientist, Norfolk and Norwich University Hospital NHS Foundation Trust, Norwich

Bianca Baciu, Trainee clinical scientist, Birmingham Women's and Children's Foundation Trust, Birmingham

Eve Smith, Trainee clinical biochemist, Ninewells Hospital, Dundee

Danica Vitug, Trainee clinical scientist, Royal London Hospital Pathology and Pharmacy, London

Morganne Fields, Trainee healthcare scientist (clinical biochemistry), Royal Surrey County Hospital, Guildford

Jemma Gillett, Trainee clinical scienstist, Gloucestershire Hospitals NHS Foundation Trust, Gloucester

Isabella Hiley, Healthcare scientist trainee, Imperial College Healthcare NHS Trust, London

Reka Borbely, Trainee clinical scientist, University Hospital Southampton NHS Foundation Trust, Southampton

Rohini Karunakaran, Senior assoc professor and deputy dean academic & international affairs, AIMST University, Malaysia

Lily Olayinka, Clinical biochemist, Alberta Precision Labs, Canada

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HAPPY HOLIDAYS FROM *LABMED NEWS*

Thank you to everyone who has helped on *LabMed News* this year: Nikki Williams (for the design and layout of each edition), Sue Ojakowa of PRC Associates (our publisher), the associate editors and the LabMed staff at Tooley Street.

They all do a fantastic job of ensuring that we produce *LabMed News* on time every two months.

Thank you also to our members and everyone that has taken the time to send in articles, without you there would be no *LabMed News.*

Here's to a healthy and happy New Year!

Gina Frederick, Lead Editor

WELCOME TO SNIBE

by the

Snibe marketing team

Snibe is a leading global *in vitro* diagnostic biomedical enterprise focusing on the chemiluminescence immunoassay (CLIA) field for over 29 years. Snibe boasts a robust global presence with operations and service centres around the world. With over 35,000 CLIA analysers installed in more than 150 countries, including many top global chain labs, we demonstrate our dedication to delivering high-quality diagnostic solutions worldwide. Green operation matters, and we take this very seriously in noxious emissions and waste, greenhouse gas emissions management, resource saving, energy management and the green office.

Snibe has established four core R&D centres, including reagent, instrument, magnetic microbeads and raw material, laying a solid foundation for developing the widest range of CLIA analysers and test menus. We offer a variety of laboratory analysers suitable for different scales of laboratories. From small-size analysers to one of the fastest CLIA analysers in the world, you can always find one that can meet your needs. Snibe's business segments cover various sections of clinical laboratory diagnosis, including CLIA, biochemistry, molecular diagnostics and haemostasis, comprehensively meeting different diagnostic requirements. We have recently launched an advanced total laboratory automation solution system.

We are committed to advancing scientific research in the biomedical industry. Hundreds of papers included the evaluation of Snibe products, stating their advantages, which reflected our increasing product competitiveness and brand influence. We have gained access to a wide range of experts from all over the world, and we have established strong connections and close cooperation with authorities such as IFCC and EFLM. We are also in cooperation with renowned academic institutions, such as Ghent University.

Snibe organised and sponsored more than 330 academic exchange conferences worldwide with over 45,000 participants, including academic experts, laboratory terminals and agents all over the world. These conferences serve as a platform for IVD experts, scholars, users and peers to exchange different perspectives, display the latest research results and explore new ways of teaching. We attach importance to the clinical chemistry and laboratory medicine industry for emerging young scientists, and have been sponsoring the IFCC Young Investigator Award to recognise and encourage young scientists under the age of 40 with outstanding academic and professional development.

We embrace every opportunity with an open mind, hoping to cooperate and communicate with more experts, jointly promote academic development and dedicate ourselves to the endeavours of human health.

CONFERENCE REPORT

SUBMISSIONS NOW OPEN FOR LABMEDUK25 ABSTRACTS

This year LabMedUK25 is being held at Bridgewater Hall in Manchester between 9-11 June 2025. We have made some changes for 2025 including a new Poster of the day Prize and a Poster Showcase highlighting some of the conference themes.

Poster abstracts and prizes

Any professional, either in training or in work, can submit an abstract to be considered for a poster or a clinical case presentation.

Each applicant (who must be the first author, if submitting on behalf of a group) must certify that the work, or a substantial and clearly defined part of it, is their own work. Applicants should consider how their work contributes to EDI and sustainability values.

During the abstract submission process, authors can also indicate whether they would like their submission to be considered for one of the Conference Prizes, the Clinical Case Oral Presentation or the Medal Award, and/or for the opportunity to present the poster during the lunchtime Poster Showcase.

Please submit your abstract and select any prizes or awards you wish to enter by 9:00 am on 20 February 2025 (GMT).

For more details and how to submit please visit the website.

Poster of the day Prize

This year we are introducing a 'Poster of the day' that will be voted for by conference delegates during the conference. Prizes will be available for posters presented on each of the Tuesday and the Wednesday of the main conference.

The winner for the Poster of the day Prize receives £100 and the runner-up receives £50.

Clinical Case Prize

Clinical Case submissions are reviewed by the Clinical Science Review Committee and the Clinical Case Oral Presentation session chair. Those shortlisted will be invited to present their case during the interactive clinical case session within the conference programme.

The winner for the Clinical Case Oral Presentation receives £100 and the runner-up receives £50.

Medal Award

Submissions for the Medal Award will be reviewed and shortlisted by an Award Committee comprising the Association's President, Past President or President Elect, Director of Publications and Communications, Director of Education, Training and Workforce and the Director of Conferences and Events.

The winner of the Medal Award receives £300 and the runner up £150.

Poster Showcase

A Poster Showcase will be held during the lunchbreak on each day of the main conference. This session will highlight work completed by delegates on some of the topics and themes of the conference. Abstracts will be reviewed by the conference session chairs and selected for a five minute slot to present an electronic poster. In 2025 the topics include: point-of-care testing, immunology, neurology and inherited metabolic disease.

LABMEDUK25: KEY DATES

Whether you are submitting an abstract, applying for an award, booking as an exhibitor or just simply registering to attend LabMedUK25, here are some key dates for registration, poster abstract and award submissions for LabMedUK25:

The 2025 deadlines for poster abstracts and prizes are as follows:

The Foundation Award: **Friday 31 January**
Poster abstracts and prizes: **Thursday 20 February**
The Medal Award: **Thursday 20 February**
The Impact Award: **Friday 28 February**

For more information on each of these awards, please visit the website.

Booking information

Delegate bookings open **Monday 20 January 2025**. To make the most of early bird bookings, please book before the closing date - **Friday 11 April 2025**.

Exhibitors book now

Bookings are now open for exhibitors at LabMedUK25.

Please email tamsin@labmed.org.uk for availability and prices.

GREENER HEALTHCARE AND SUSTAINABILITY PROJECT – ANNUAL CONFERENCE

by
ALISON JONES
Consultant clinical biochemist, York & Scarborough Hospitals (SHYPS); LabMed national member (sustainability)

The Greener Healthcare And Sustainability Project (GHASP) hosted their annual conference in Leeds at the end of September, and I attended in person. Although there was no pathology on the agenda, I hoped the meeting would give me the opportunity to meet some like-minded healthcare professionals from other areas of the NHS and to learn about sustainability projects, successes and challenges across healthcare. It didn't disappoint.

GHASP was a new concept to me; a colleague who knows I have an interest in sustainability had forwarded me the link for the conference. The GHASP mission statement is to take immediate and collective action to reduce the environmental impact of healthcare, and the theme of the conference was collaboration. Speakers from a wide range of NHS backgrounds delivered their personal messages about how the NHS as an organisation, and every individual, can influence climate change. Coffee breaks were lengthy and designed to give us time to network and to read the posters outlining the environmental work currently being undertaken throughout the NHS.

Each speaker described both how healthcare is contributing to climate change and the changes needed to reduce this impact, in some very different areas. The theme that linked each of the presentations was the power of collaboration to affect meaningful change.

You can change the world

Jonny Groome, a paediatric anaesthetist, set the scene for us with his presentation "The clock is ticking…." Atmospheric CO_2 has increased rapidly since the 1800s and there is no doubt that climate change is being driven by humankind. November 2023 saw the 29th United Nations Climate Change Conference (COP29), yet global and sea surface temperatures continue to increase, and extreme weather events are occurring more frequently, and in places we wouldn't expect. It's clear that governments alone cannot solve this crisis. It needs the same

consumerism-driven values that have exploded since the industrial revolution to seek alternative means of harnessing and using clean energy, reducing waste and capturing carbon. Manufacturers and suppliers will only change what they do and how they do it when the consumer demands it of them. And the NHS is a big consumer.

But each one of us are consumers with buying power. Real Zero is a non-profit organisation that has partnered with the NHS and private healthcare providers to address carbon emissions with an approach combining education, action and collaboration to create meaningful change. They have come up with Seven Acts that you can do today to make a difference.

1. Move your money – to a bank that doesn't invest in fossil fuels
2. Move your power supplier – to a 100% renewable source
3. Eat more plant-based food – seasonal and local, where possible
4. More green travel – walking and cycling, more trains, fewer planes
5. More pre-loved – shop local and low-carbon brands
6. Measure your CO_2 footprint – and cut it where you can
7. Motivate your loved ones to perform their seven acts to save the world

We were each challenged to commit to making one change. Since the meeting, I have changed my current account to a bank with a much lower carbon footprint. It was easy, using the UKs Current Account Switch Service. What change can you make?

Collaborating with patients

This next talk was given by a local GP, Sally Franks, who is a founding member of the West Yorkshire Greener Practice Group. Greener Practice is a network of healthcare professionals working together to inspire sustainability in primary care and is made up of 30 regional groups across the UK. Membership includes GPs, pharmacists, practice managers and the Integrated Care Board (ICB) members. Dr Franks highlighted some of the projects undertaken by regional groups in collaboration with patients, to improve health and the environment. These included blister pack collection hubs, unreturned medical equipment amnesties, and an asthma toolkit (available at www.greenerpractice.co.uk, along with many other resources), which makes it easier for general practices in the UK to implement better and greener asthma care, safely and effectively.

Everything, everywhere, all at once

The last speaker before lunch was Alexis Percival, the first ever sustainability manager for an ambulance service in England. Alexis inspired the audience with a whistle-stop tour of her indefatigable efforts over the previous 15 years. From planting almost 5,000 trees to installing solar panels, from upgrading toilets and hand-dryers to testing reusable facemasks in the middle of the pandemic, Alexis has not restricted her efforts to Scope 1 and 2 emissions produced by the ambulance service. However, the CO_2 impact of the ambulance service is huge. In the Yorkshire Ambulance Service, over 98% of the fleet are diesel, covering around 40 million miles each year. Alexis has worked collaboratively to improve the efficiency of the diesel fleet, but by 2030 all new ambulances must be zero emission, a challenge she cannot meet alone. But encouragingly, England now has its first two electric NHS ambulances, with a range of 120 miles, in the London Ambulance Service. Two further vehicles will join the Yorkshire fleet next year.

The devil and the deep blue sea

After a delicious plant-based lunch, we heard from Paul Southall, an environmental advisor to the Royal College of Anaesthetists and member of Healthcare Ocean. Dr Southall's

presentation focussed on the largely forgotten impact of the health of the ocean on climate change. The ocean covers 71% of the earth's surface and absorbs 90% of the planet's excess heat. It is responsible for up to 50% of all carbon capture and produces at least 50% of our atmospheric oxygen. However, our oceans are getting warmer, levels are rising, and they are more acidic than they have been for the past 300 million years, at a rate of change comparable to previous mass extinction events.

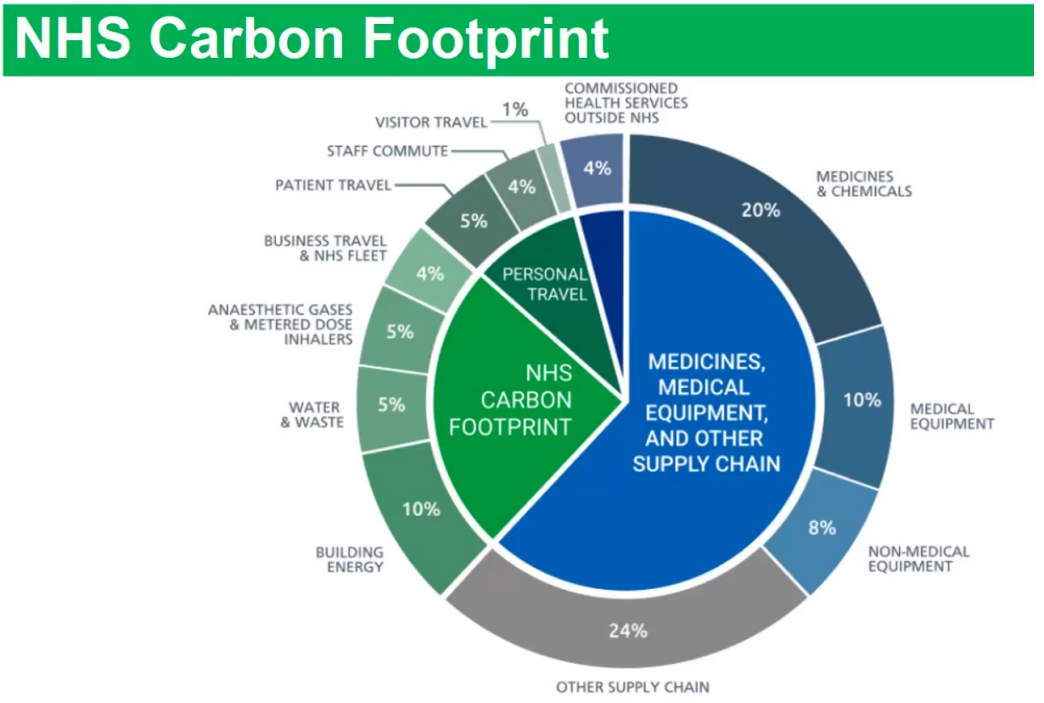
Multiple factors influence the health of the oceans, with shipping being a significant contributor. Global shipping produces 1 billion tonnes of CO_2 annually, and has other negative environmental impacts such as oil spills, movement of non-indigenous species, whale strikes and wastewater discharge from ships. Over 60% of the NHS carbon footprint arises from global supply chain emissions, with 80% of goods supplied to the NHS arriving by ship. The NHS has committed to reaching net

#	Bank	tCO2 per £10k in account
1	Barclays	2.376
2	HSBC	2.170
2=	First Direct	2.170
4	Chase	1.897
5	Santander	1.742
6	NatWest	1.295
6=	RBS	1.295
8	Monzo	1.088
9	Lloyds	0.704
9=	Halifax	0.704
11	Metro Bank	0.694
12	Starling	0.610
13	Virgin Money	0.517
14	Nationwide	0.432
15	The Cooperative Bank	0.328
16	Triodos	0.317

Carbon Emissions Bank League Table - updated June 2023 (mymothertree.com)

zero by 2045 for the emissions related to the goods and services we buy. We cannot get to net zero without net zero ships.
In order to achieve this, NHS England are working with the Aspen Institute to support the delivery of coZEV (Cargo Owners for Zero Emission Vessels), a platform through which NHS cargo owners can engage and amplify their voice in calling for the decarbonisation of a sector on which healthcare is dependent. By demanding net zero transport of NHS goods, we can influence bigger change across the global shipping sector.

I found the meeting both disheartening and inspiring. The scale of the global challenge we face, compared with the relatively minor influence the UK as a whole, the NHS as a sector, and that I as an individual can have, is sometimes enough to make me wonder why even bother. But I was inspired by each of the speakers' passion and belief that every one of us has the power to make a difference. Positive change will only be significant and sustained if we collaborate.



Greener NHS Delivering a Net Zero NHS

FUTURE PERSPECTIVES

COMMUNITY AND COLLABORATION: FRIENDSHIP IS MAGIC

by

ROSIE FORSTER

Principal EQA scientist, Birmingham Quality (UK NEQAS); and

JESSICA JOHNSON

Chemical pathology SpR, Sheffield Teaching Hospitals

For this issue's Future Perspectives column, we thought that we would write about the benefits of community and collaboration. The pandemic has led to a lot more online working, with hybrid and fully online conferences becoming more the norm. More people are also working from home. While the benefits of these developments are not to be ignored (including the ability to spend more time with one's own family, the decrease in the stresses of commuting and other travel, as well as the smaller carbon footprint), it leads to the risk that we are getting to know each other on a more personal basis a bit less – rather than going for a break together to grab a coffee with the natural conversations that ensue, we have our breaks individually and thus have less non-work related conversations with our colleagues. Does this make us more efficient? Perhaps, though it may also lead to less informal learning and sharing – we are not as likely to mention a semi-interesting case in passing - and less collaborative reflection and learning. Reflection is recognised to be an important part of learning, so much so that it is mandated in our portfolios and CPD; however informally reflecting with colleagues can be invaluable, and feels a lot more natural (and easier to do frequently) than remembering to write these things down in the portfolio.

The medical world is full of collaborative efforts. There are formal organisations such as the IFCC, LabMed and RCPath where learning can be shared, conferences are organised and guidelines are created. Many of these organisations rely on volunteers to create news content, training materials, and even write and mark examination papers. NEQAS and other EQA schemes are greatly improved by the sharing of abnormal patient samples for distributions as this demonstrates that method differences or interferences are replicated in patients and are not just seen in EQA specimens. Although EQA providers try to make specimens as similar to patient samples as possible, it isn't always feasible to achieve abnormal concentrations without manipulation such as spiking in the analyte of

interest or dilution. The timely processing and reporting of shared samples in EQA schemes is also paramount so that all can benefit from the data and feedback, and any issues can be identified as early as possible. Labtests Online UK relies on volunteer editors to ensure that patients can have up-to-date information on a wide variety of laboratory tests, especially important now that results are available on online portals, as well as from the increased demand due to the rise in direct-to-consumer testing.

There are less formal forums for discussion, such as the LabMed (ACB) mailbase. These are invaluable for allowing easy access to a hivemind who can answer questions, or also raise issues that may also have been seen in other laboratories which can help with troubleshooting. There are also smaller trainee groups online that are often used for exam preparation and learning. Given the small numbers of clinical biochemists per hospital, this is invaluable as it allows trainees to benefit from a wider wealth of experience that may not otherwise be accessible.

Possibly the least formal of these is the Clinical Biochemistry Trainees Discord server. The Discord serves the purpose of letting biochemists get to know each other in a more formal, chatty environment. It has led to collaborative efforts such as this column, and even a collaboration between a biochemist and an oncologist who heard about each other's work through friend-of-a-friend networks, who are now co-chief investigators in a study of PSA reference intervals in trans women.
As we get to know each other, and our more specific interests, we can help each other in more targeted ways (like getting people in touch with non-laboratorians at another site who might have a shared interest). As it is a bit less formal, it can also be a less intimidating environment in which to ask questions that one might not feel up to writing in a formal email to a senior colleague.

In conclusion, there are many different forms of community and collaborative effort forming a large spectrum, from formal to informal. These are all valuable and have different benefits for shared learning.
The clinical biochemistry world has clearly always benefited from being a small and relatively close-knit community; the LabMed mailbase itself has been a great avenue for communication, shared learning (and many members will often kindly collate responses to their questions and then distribute these for future reference), shared practices, and always quick to respond when needing help with an Uncertainty of Measurement calculation. Without it, we probably would not have sparked the idea of the Discord group, which has been invaluable for a new generation of clinical biochemists to get to know each other in our new, more online world.

PATIENT CENTRIC SAMPLING

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TIPS OF THE TRADE

by
BEN NICHOLSON
Director of finance

In the fast-evolving field of clinical biochemistry, access to high-quality online resources is crucial for professionals seeking to stay at the forefront of practice, research and patient care. Throughout the years I have been privy to the "tips of the trade" in terms of resources and rather than gatekeep them, I would like today to share them with you, in the hope that you may get something useful from it.

Here is my top 10 list of essential online platforms that offer valuable tools, up-to-date information and professional development opportunities tailored for clinical biochemists.

1. Association for Laboratory Medicine

I would be rightly shunned if I did not mention the LabMed website to begin with, and all its many resources available. Here are a few of my "go to" sections:

Science Knowledge Hub (SKH) – The SKH holds a variety of useful tools and guidelines for easy implementation within the lab. I will highlight a few of my favourites, but please do visit as there are many more. First, the section on audits encompasses both national and regional audits to help you recreate them in your own lab. Secondly, there is a section on Renal Resources, which provides a tool for implementing the newly recommended KFRE (Kidney Failure Risk Equation). Lastly (and my personal favourite), is the Analyte Monograph Section, which holds all the information you could need for specific analytes, including reasons for these analytes being 'high' or 'low', possible interferences, how to investigate abnormal results, and methodology. These serve as very useful FRCPath revision tools and are also a useful day-to-day resource for tricky phone calls to the duty biochemist.

Laboratory Medicine Learning Academy – Aimed at trainee clinical scientists, this resource provides digital learning modules, cases for thought, self-guided learning, and lectures and webinars that are useful for FRCPath preparation, or for keeping up-to-date with practice.

Mailbase discussion list –If you are not already a part of this, I would recommend joining the discussion group – acb-clin-chem-gen@jiscmail.ac.uk. This group provides daily discussion and insight into the current areas affecting pathology services, and is also a useful tool to reach out to the LabMed community if you have an issue that could do with an outsider's perspective or shared experience.

2. Gifford Batstone Clinical Cases

For those who are unaware, a kind group of like-minded clinical scientists and chemical pathologists have provided two sets of resources. First, there is the "Cases for Thought" resource. Clinical cases are mailed out every two weeks, consisting of a clinical data set and questions first, and the comments (or answers) two weeks later. This makes for a great monthly "lunch and learn" session where everyone can have a go, and then you can go through the answers together. Secondly, the "Topics in Clinical Chemistry" that are based more on lab processes. These are distributed when one has been completed; there is no set schedule for distribution. If you are interested in receiving either of these, please contact giffordbatstone@gmail.com

3. GeekyMedics.com

Geeky Medics is a widely respected online platform offering a range of free, high-quality resources for healthcare students and professionals. It is particularly useful in clinical biochemistry and related fields for its comprehensive guides, video tutorials and interactive quizzes that cover essential clinical skills and examination techniques. Struggling on how to interpret Acid/Base? Want to learn about Light's Criteria? This website provides easy reading and memorable revision.

4. Vademecum Metabolicum

An online resource for the diagnosis and treatment of inborn errors of metabolism. This resource strikes a balance between text-heavy content and visual structure, keeping it professional yet approachable. Each section is clearly labelled, with tables, diagrams and icons breaking up the information and preventing a 'wall of text' feel.

5. MetBio.Net

This Network is a group of specialist laboratories providing tests for the diagnosis and management of patients with inherited metabolic disorders across the UK. The group comprises 19 stakeholder laboratories and five associate laboratories.

6. Toxbase

The primary toxicology database of the National Poisons Information Service.

7. ChatGPT

If you struggle with finding questions to test yourself, ask ChatGPT. I have found this tool very useful when practicing statistics or calculation-based questions. Ask ChatGPT to ask you the question "Please test me on sensitivity, specificity, positive predictive value and negative predictive value?" and test yourself on working out the answers. Easy practice!

8. Osmosis.org

A powerful learning and teaching platform for medical, nursing and health professional programmes, faculty members use Osmosis to support flipped classrooms, increase collaboration and promote adaptive, self-guided study to improve learning outcomes.

9. YouTube

While there are many content creators, my personal favourite is Armando Hasudungan, a rheumatology specialist with a passion for medical education and illustration. Armando creates YouTube videos of his art, which explains anatomy and biological processes. The YouTube videos are all free to view.

10. National Institute for Health and Care Excellence (NICE) Guidelines –

While probably the most well-known resource on this list, I would recommend trainees check for new updates to guidelines. These can be found in a list format, from most recent updates within specified dates. I try to check for new updates in the last 30 days at least once a month (this is a section in our monthly intra-departmental clinical meeting) to see if there are any updates that impact my lab.

Thank you for reading and I hope this helps you in your training/ professional life.

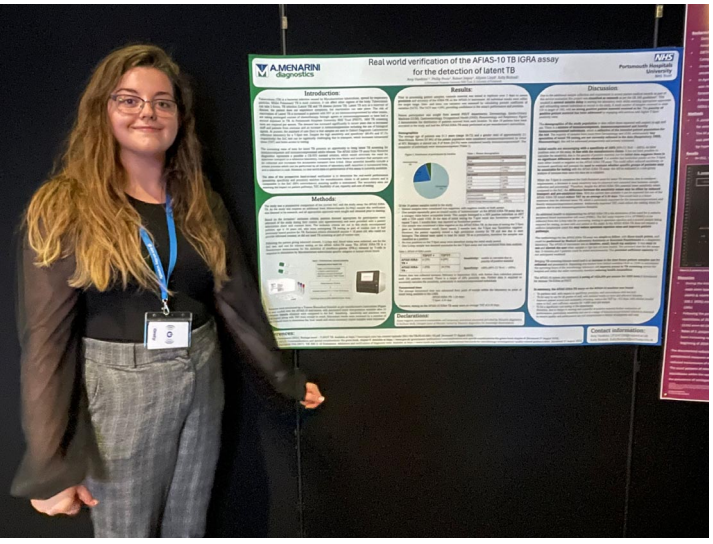
ANTIMICROBIAL RESISTANCE, SEPSIS AND THE CHANGING MICROBIOME

by
GARETH ASHWORTH
Trainee clinical scientist, Portsmouth Hospitals University NHS Trust
AND KELLY BICKNELL
Consultant clinical scientist - virology, Portsmouth Hospitals University NHS Trust

Never, as a healthcare scientist, had I expected to hear an apology from nursing for the pre-analytical mishandling of blood cultures, nor plunder the exotic depths of the microbiomes of birds of prey or return to my Trust with not one, but two camels. We embarked upon this journey to support our trainee BMS Amy Hawkins who was presenting her first poster, but came away with so much more, following a weekend at Microbe 2024.

Sepsis

Ron Daniels of the UK Sepsis Trust set the tone by outlining the incredible UK sepsis burden resulting in 48,000 deaths per annum and the urgent need to raise sepsis awareness. Claire Burnett, lead sepsis nurse at Berkshire Hospital, offered a hilariously light-hearted "apology"* on behalf of nurses for making the BMS's lives harder, only to follow through with an innovative strategy that raised blood culture compliance from 42% to 88-96%. Mike Weinbren rounded out the topic with data to support the pre-analytical KPIs for blood



Biomedical science student Amy from the University of Portsmouth expounding upon the AFIAS-10 TB IGRA assay in the diagnosis of latent TB

The team of Clinical and Biomedical Scientists and trainees from Portsmouth Hospitals University NHS Trust arriving at Microbe, Sheffield. Left to right: Kelly Bicknell, Gareth Ashworth, Amy Hawkins and Charlotte Humphries

cultures and working across pathology to facilitate 24-hour loading and how this significantly improved patient outcomes.

Antimicrobial Resistance

With AMR on the rise, the Microbe speakers sought out reasons why, how to stop it, and how to treat it. Mark Fielder spoke out about unexpectedly high levels of AMR in the UK wild, as determined by tracking the microbiomes of predatory birds. Anthony Buckley described a new high-throughput setup for studying how food and environment can alter the microbiome. And finally, Martha Clokie also offered a potential solution in discussing steps closer to passing the scientific, commercial and regulatory hurdles of Phage Therapy for treating resistant infections.

What else?

While those may have been the thematic highlights, there was a great abundance of truly excellent speakers throughout the event, covering topics ranging from whether your pet will cause the next pandemic (probably not), case studies of unexpected infections, and the patient journey of a BMS battling an ill-tempered cat. The quality of speakers was well above and beyond our expectations as first time Microbe delegates, as were the trade shows who arrived bedecked in nationally themed fancy dress, games, goodies and products.

We would like to thank LabMed for generously funding the project lead for the AFIAS-10 TB IGRA assay verification, so they could support trainee BMS, Amy, with her first poster presentation at Microbe 2024. This was a fantastic meeting for networking and educational content with a focus on sepsis and AMR. The friendly organisers and audience made first time presenting less nerve-racking.
We plan to return in 2026.

I REMEMBER WHEN . . .

EPONYMS

WILLIAM MARSHALL
Emeritus reader in clinical biochemistry, King's College London

One of my more nerdy pleasures as a medical student was reading about uncommon or even rare conditions or physical signs bearing the name of the person first describing them. Traube's pistol shot sign is a feature of severe aortic incompetence and Durozieze's intermittent crural souffle is another. Neurology was particularly rich in these. My favourite – though never encountered outside the lecture theatre – was Marchiafava-Bigmani disease. Endocrinological eponyms include Graves, Cushing, Addison and Gull. But who were these people? For fellow nerds, the web site whonamedit.com/eponyms is an encyclopaedic source of information, but in this article I will consider some particularly related to endocrinology and metabolic disease.

Robert James Graves (1796-1853) was born of a well-to-do Irish family. He received his medical education in Dublin, following this with extensive travelling in Europe to study the practice of medicine in other countries. At one stage on his journeys, the boat in which he was travelling developed a leak and was in danger of sinking; the crew wanted to abandon ship but Graves had other ideas: he smashed a hole in the lifeboat so that the mutinous crew could not use it to escape, and then repaired the hole in the vessel with leather from his own shoes, allowing it to reach land and safety.

Graves described exophthalmic goitre in 1835. Another physician, Caleb Parry of Bath (1755-1822), had recognised the condition some 50 years before, but his description was not published until after his death and, though still 10 years before Graves's description, seems to have been forgotten. An effort by no less than Sir William Osler to link the condition with Parry's name was unsuccessful. Today, Parry is remembered more (if at all) for his work on ischaemic heart disease but his name is rarely heard. Medicine was advancing rapidly during the nineteenth century and the most eminent practitioners had multiple interests, unlike super-specialised medicine today.

Graves disease is an autoimmune condition. Plummer syndrome – hyperthyroidism caused by a multinodular toxic goitre – is named after Henry S. Plummer (1847-1936), the founding father of endocrinology at the now world-renowned Mayo Clinic,

but his name is rarely heard today, at least in the UK.

Two rare phenomena involving thyroid function are always referred to by the names of their discoverers. The Jod-Basedow phenomenon is hyperthyroidism due to excessive administration of iodine to hypothyroid patients. Karl Basedow (1799-1854) was a Canadian-American physiologist and biochemist; Jod is the German for iodine: I don't know why the English word was not used.
The Wolff-Chaikoff effect – iodine-induced hypothyroidism – was described by Lyon Chaikoff (1902-1956) and Jan Wolff (1924-?), physicians at Berkeley University, California.

Hypothyroidism is also linked to the physician who described it, but while Graves' disease and autoimmune hyperthyroidism are effectively synonyms, Gull's disease is rarely used as a synonym for hypothyroidism. William Whithey Gull (1816-1890) was an English physician of the nineteenth century. He received his medical education at Guy's Hospital, where he was to spend all his professional life. He so impressed the Treasurer that he was awarded an apprenticeship (what we would now call a clinical studentship) for two years, two rooms and a stipend of £50 per year. The fact that Gull and the Treasurer came from the same village may have contributed to this. He was an outstanding student but on one occasion he considered walking out of an examination having decided that he was doing too badly to continue. However, he was persuaded to finish the paper and won a Gold Medal. He graduated MB in 1841 with honours in several subjects and MD in 1846. His skill as a teacher was recognised by his stipend being increased to £100. He established a lucrative private practice, became a physician to Queen Victoria, was elected Fellow of The Royal Society and made a baronet.

Gull recognised that the clinical features of an underactive thyroid were due to destruction of the gland when he learned that removal of a dog's thyroid gland produced the same features and, ultimately, the death of the dog. He also made important observations about the spinal cord, described what we now know as anorexia and hypochondria, described the pathological lesions in syphilis, is remembered in Bland-Gull syndrome (haematuria in renal disease) and worked on a treatment for tapeworms.

In his later life, there was a suggestion (possibly arising from royal/masonic sources) that he was, or knew who was, the notorious serial murderer Jack the Ripper, whom it was thought must have had medical training because of the patterns of wounds in his victims. This seems unlikely as Gull was in poor health when the Ripper murders took place and this idea was abandoned – though not without Gull featuring in several popular books about the Ripper murders.

What titans of medicine these men were, and in considering their huge contributions to medicine, we should remember that all this work was achieved purely on the basis of clinical observations without the benefit of thyroid hormone measurements. Thyroxine was not even discovered until 1914 and triiodothyronine until 1952.

MEET THE IMMUNOLOGY PROFESSIONAL COMMITTEE

The Immunology Professional Committee (IPC) is a committee of the Association for Laboratory Medicine (LabMed) and represents members of LabMed working in the field of immunology. The committee meets quarterly, with three meetings via MS Teams and one face-to-face, most recently on 3 September 2024 in the LabMed offices in Tooley Street – a stone's throw from London Bridge station. With a number of new members, this article provides a re-introduction to the committee and its work.

The IPC is chaired by Alison Whitelegg (consultant clinical scientist, University Hospital Southampton). Alison organises and chairs the IPC meetings and co-ordinates the work of the IPC. She also represents the interests of the immunology professional group at Council and Executive meetings, as well as to other external organisations. At the last meeting of the IPC, Alison reported on the development of the new LabMed strategy for the next five years. The strategy is still under development but will focus on three key areas: digital readiness, visibility and workforce. Watch this space for more news in these areas, and how immunology will work to implement this strategy.

ALISON WHITELEGG

Karen Smith (consultant clinical scientist, University Hospital Southampton) is the lead station writer. Karen oversees the end-point assessment for the Scientific Training Program (STP) for immunology and acts as a liaison between the IPC and the National School of Healthcare Science (NSHCS). At the last meeting, Karen reported on the 2024 Independent Assessment of Clinical Competence (IACC), and the plans from the NSHCS for the end-point assessment for the STP programme going forward.

KAREN SMITH

Elizabeth Ralph (Liz) (principal clinical scientist, Great Ormond St Hospital, London) is the IPC communications lead. Liz facilitates effective communication between immunology clinical scientists both within the association and in the wider immunology community and is responsible for coordinating immunology content for both the bi-monthly *LabMed News* and the website, as well as addressing any issues that relate to the communication of

immunology. As reported at the last committee meeting, a refresh of the immunology content on the LabMed website is the next project. If you have any suggestions for what you would like to see included, please email Liz on e.ralph@nhs.net. In addition, if you would like to contribute to an article in a future edition of *LabMed News* please also get in touch – this publication is for members and by members, so we want to write about what you want to read.

Consultant clinical scientists Emma Callery (Royal Preston Hospital) and Daniel Payne (James Cook University Hospital Middlesborough) are joint IPC education and workforce leads. Emma and Dan work on all aspects of education for immunology members, from equivalence, STP, Higher Specialist Scientist Training (HSST), FRCPath, continual education and CPD and they work closely with the NSHCS lead station writer and the RCPath representative for the SAC. They also organise the yearly review meeting of STP trainees, a day that the trainees find very valuable – see the last issue of *LabMed News* for a report on this year's meeting from Steph Laba. At the last IPC meeting there was discussion of the most recent FRCPath sitting and what we, as a community, can do to support trainees sitting their Part 1 exams.

Emma has also recently become the British Society for Immunology - Clinical Immunology Professional Network (BSI-CIPN) representative for healthcare scientists. At the last IPC meeting, Emma reported back that following an initial meeting in advance of the next BSI-CIPN committee meeting, the BSI are keen to support key areas relating to healthcare scientists in immunology, including increasing visibility, education and training, research and funding for meetings. If you are interested in finding out more, we would encourage you to take a look at the BSI website and consider joining the BSI-CIPN here.

Ashleigh Rainey (principal clinical scientist, Royal Victoria Infirmary, Newcastle) has also recently joined as scientific and clinical practice lead. This role investigates and reports on relevant scientific and clinical matters of relevance to the practice of clinical immunology. Ashleigh also facilitates communication of scientific and clinical matters of relevance to the practice of clinical immunology between the IPC and the Scientific Affairs and Clinical Practice committee. Discussion at the previous IPC meeting highlighted work

ELIZABETH RALPH

EMMA CALLERY

DANIEL PAYNE

on an RCPath guideline on best practice for specialist laboratories which the IPC aims to contribute to.

Rachel Dale (senior clinical scientist, Addenbrooke's Hospital, Cambridge) is the post-registration trainees' representative. This role represents the interests of the clinical scientists in training for the FRCPath at the IPC meetings and feeds back on issues between the trainees undertaking FRCPath/HSST training and the IPC. Rachel has been working hard to build up a database of all post-registration clinical scientists who are still 'in training' i.e. not yet in consultant posts. This has been a challenge when not all in this category are on the formal Higher Specialist Scientist Training (HSST) training scheme. In order to best support post-registration trainees working towards FRCPath as a community, if you fall into this category, we encourage you to join the mailing list Rachel has set up to let people know about training days, funding for courses and so on. If you have not already done so, then please do get in touch with Rachel by email: racheldale@nhs.net

Stephanie Laba (James Cook University Hospital) and Helen James (University Hospital Sussex) are the joint pre-registration trainees' representatives. They represent the interests of trainee clinical scientists (STPs) at IPC meetings and feedback on issues between the trainees, IPC and NSHCS trainees committee. They also sit on the LabMed trainees committee. Most recently, Steph and Helen circulated a survey to all trainees to gather feedback on how they were finding training, the most recent STP networking meeting and any other issues they wanted to raise. The committee discussed the feedback and is now considering how some of the feedback can be progressed.

Adrian Heaps (consultant clinical scientist, Bristol Royal Infirmary) is the SAC representative. The role acts as a liaison between the IPC and the RCPath SAC for immunology and encompasses issues relating to the FRCPath exams and has a representative role at the Joint Royal Colleges of Physicians Training Board (JRCPTB) for immunology. Adrian discussed a request from the medical trainees for the immunology clinical scientist community to facilitate a laboratory induction day for medical (and scientist) trainees intending to sit FRCPath exams and we hope to support the event next year.

ASHLEIGH RAINEY

RACHEL DALE

STEPHANIE LABA

HELEN JAMES

ADRIAN HEAPS

ELIN DAVIES

KRISTEN LILLY

Finally, Elin Davies (Ysbyty Gwynedd Hospital) and Kristen Lilly (Northern General Hospital, Sheffield) have very recently joined as ordinary members of the committee and, in this role, support the committee where needed. It is always good to have interested members come on board and see what the committee does (and is a good way to recruit our replacements when our terms come to an end!)

The IPC is here to represent all LabMed members working in immunology – if there is something you want to discuss, want us to act on or anything else relating to immunology, then please do get in touch here.

(NI) REGIONAL SCIENTIFIC MEETING 2024

by
VICTORIA STOKES
Specialist registrar,
Belfast Health and Social Care Trust
AND JAMES REID
Trainee clinical scientist,
Belfast Health and Social Care Trust

The regional meeting for the Association for Laboratory Medicine was held at the Europa Hotel, Belfast on 27 September 2024. This represented the first in-person meeting for the organisation since 2019 as well as the first meeting since the organisation adopted its new moniker, having previously been called the Association for Clinical Biochemistry. The in-person nature of the meeting allowed colleagues to meet and talk without fear of being judged for their choice of Microsoft Teams background (and also without accidentally leaving themselves on mute). It also allowed some of the newer members of the association to meet and network with more experienced colleagues who they may have only previously met virtually.

Morning session

The meeting was opened by Kathryn Ryan, consultant chemical pathologist in the South Eastern Health and Social Care Trust (SEHSCT) who highlighted the importance of having a regional organisation to support the delivery of healthcare in the region. Special thanks were given to Kirsty Spence, principal clinical scientist in the Belfast Health and Social Care Trust (BHSCT) and Paul Hamilton, consultant chemical pathologist of the same, for their efforts in organising the meeting and bringing such a wide variety of expertise and experience under the same roof.

The first speaker was Paul Hamilton who guided the audience through several interactive clinical cases that had been seen in the clinic. Several of the diagnoses, including homozygous familial hypercholesterolemia, sitosterolaemia, acute intermittent porphyria and renal tubular acidosis, had actually been secured by members of the audience. The treatment and management of each of these patients was discussed and was useful learning for all members of the audience. Trainees in particular benefited from the discussion of these conditions as they may not have been exposed to them before.

The meeting continued with trainees presentations. Three trainee clinical scientists, Stacey McNutt, David McClelland and James Reid, all from the BHSCT, presented clinical cases and work they had performed.
The presentations commenced with Stacey who presented work she had performed on amitriptyline interference on the Roche Cobas analytical platform and how this can lead to falsely underestimated paracetamol results. The impact of this interference was discussed in the context of amitriptyline prescribing and the clinical risk that accompanies the underestimation of paracetamol values, particularly in the "mixed overdose" scenario.
The presentations continued with James presenting a case of Alagille syndrome, a rare inherited disorder that results in bile duct paucity. The biochemical investigations that were performed in the lead up to this diagnosis were examined, as were some of the abnormal biochemistry results that such a disorder can cause. These include elevated cholesterol results caused by accumulation of lipoprotein X and subsequent pseudohyponatraemia.
The presentations were concluded by David who discussed a case of post-transplant lymphoproliferative disorder (PTLD) in a 16 year-old patient. This patient presented with uncontrolled lymphocyte proliferation, propagated by intense immunosuppressive drug treatment following a kidney transplant. The role of the toxicology lab in providing analysis to support the delivery of care of such patients was highlighted and this patient is currently doing very well. Each of the trainee presentations was scored by independent members of the audience and Stacey was awarded first place with David and James claiming joint second place.

The next speaker was Alison Watt, consultant clinical scientist at the

Morning speakers.
From left to right:
Joe Kane, David McClelland, Kathryn Ryan (back, morning chairperson), Stacey McNutt (front), David Mongan, James Reid, Alison Watt

Northern Ireland Regional Virology laboratory. Alison guided the audience through some of the ongoing work to eliminate hepatitis C in Northern Ireland. Hepatitis C is a blood borne RNA virus that represents a significant burden of disease with an estimated 50 million people infected worldwide. It is also estimated that there are one million new infections per year with 240,000 related deaths in 2022 (World Health Organisation). However, hepatitis C can be tested for, treated and cured if identified by taking oral tablets once a day for two to three months. Ongoing work within the Belfast Health and Social Care Trust aims to streamline testing pathways and increase access to testing, especially in at risk populations. There have been pilots for capillary blood testing for hepatitis C that have been used with some success in England but these have not been without their issues.

After the most important part of the morning (the coffee break!), the talks continued with an informative talk by David Mongan on potential biomarkers that could be useful in psychiatric disorders such as schizophrenia, depression and bipolar affective disorder. David presented evidence that inflammatory biomarkers such as IL-1B, IL-6, IL-8, IL-10 and CRP are raised in those living with schizophrenia and/or depression and those experiencing a first episode of psychosis have a raised level of IL-6. Additionally, levels of inflammatory markers tend to normalise with antidepressant treatment and higher baselines of CRP tend to predict a better response to said treatment. However, more work is needed to build upon these findings as there are currently no routine biomarkers used for the diagnosis and monitoring of psychiatric disorders. David finished by explaining the concept of "precision psychiatry" i.e. treatment tailored to the individual, and the role that the biochemistry laboratory can play in supporting this in the future.

Building on the previous talk, Joe Kane examined the role of biomarkers in the diagnosis of neurodegenerative disorders such as Alzheimer's disease. Joe described the difficultly in aligning the clinical presentation of patients with an underlying disease process and the role that biomarkers can play in narrowing this gap. One of the hallmarks of Alzheimer's disease is the presence of amyloid plaques and misfolded tau protein in the brain but these tend to increase with age and therefore lack specificity as a marker of the disease. The measurement of these analytes in cerebrospinal fluid (CSF) also presents significant technical challenges due to the skill required to perform a successful lumbar puncture. Blood based markers such as glial fibrillary acidic protein (GFAP) are showing increasing promise with regards to diagnosis of early stage Alzheimer's disease. Joe finished by highlighting that the role of biomarkers in this field is ever expanding and becoming too great for psychiatrists to ignore. He also emphasised the relative low accuracy of clinical diagnosis of neurodegenerative disorders and highlighted the need for strict inclusion criteria for any study evaluating potential biomarkers. This is to ensure that any findings from such studies are relevant to the underlying disease process. Both talks delivered by David and Joe highlighted how the role of the laboratory may develop in the future and once again emphasised the importance of laboratory medicine in the delivery of healthcare.

Afternoon session

After a short break for lunch, we heard from Mayra Gomez from Roche on the new Cobas i601 Mass Spec assay which serves to consolidate a full assay menu onto one platform. Mayra explained how one of the key challenges for mass spec testing today is the lack of a total solution provider. A survey carried out by Roche found 66% of users felt mass spec to be unsuitable for routine testing. The idea behind the

Cobas i601 is to allow for a fully automated, seamless integration system with an extensive assay menu organised into 14 multi-analyte ready to use cassettes which will include Vitamin D, steroids, therapeutic drug monitoring and drugs of abuse testing. The aim is for a high throughput of samples at 100 per hour, with all the assays being fully validated and IVDR compliant. The plan is for two stages of roll-out and the team at Roche are dedicated to taking on board feedback regarding the needs from UK based laboratories to ensure a tailor made solution is available.

After this, we had Graham Lee, consultant clinical biochemist based in the Mater Hospital Dublin who focused his talk on B12 (and of course you can't have this without talking about folate!). Graham provided us with an overview of this topical subject given the recent updated NICE guidelines published earlier this year and the upward trend in nitric oxide (NO) abuse, a subject relevant to both scientists and clinicians alike. Graham brought us back to basics, first by focusing on folate. Graham spoke about the concept of folate trapping where one can have intracellular folate depletion but a normal serum folate level on testing. In this situation, the 5-methyltetrahydrofolate is not able to enter the cells and thus ends up in circulation. In such circumstances, there is a role for red cell folate (RCF) measurement, however, this is not currently offered in Northern Ireland. Graham suggested there was little indication for RCF testing when serum folate is >8 µg/L; and ideally, to avoid a raised homocysteine (Hcy) – serum folate needs to be in the range of 7-8 µg/L.

Moving on to B12, Graham gave us a recap on the biochemistry of this complex structure which has a ring of cobalt at the centre and how, in the context of NO abuse, the cobalt molecule becomes oxidised, thus rendering the molecule inactive. Unfortunately, this means that total B12 may still be normal and thus, homocysteine (Hcy) and methylmalonic acid (MMA) should be tested. The widely used B12 assays measure total B12 which includes both holohaptocorin (holoHC) and holotranscobalamin (holoTC). HoloTC indicates the intracellular vitamin and metabolically active fraction. Testing for holoTC is often used second line and is more suitable for patients who are pregnant, breastfeeding or on the oral contraceptive pill (OCP) (OCP will reduce cobalamin levels). One to beware of is the situation where a very high total B12 can mask a deficient active B12 level. Overall, it was felt that if B12 is >280 ng/L there would be little benefit gained by testing active B12. Graham completed his presentation with some interesting cases. The first one was of a rare AR disorder of transcobalamin II deficiency. In this case, they had both normal total and active B12, however, Hcy and MMA were elevated.

We next welcomed Peadar McGing to the podium. Peadar, who is not long retired from the Mater Misericordiae University Hospital in Dublin as a clinical biochemist, was well known amongst the audience. He gave an overview of biochemical testing of atypical fluids including pleural (most common), peritoneal and synovial fluid. Peadar reminded us that reference ranges are not commonly reported for fluid biochemistry and the importance of interpretation within the clinical context of the patient. He also highlighted that plasma reference ranges must not be automatically applied to such fluid results. Fluid validation was covered and in the absence of a locally provided service, how easy it is to go about testing if the need arises. He summarised his presentation with some interesting cases including ascitic (peritoneal) fluid and the use of the SAAG score to differentiate the cause. A SAAG ≥11 g/L implies a diagnosis of portal hypertension with 97% accuracy. One case involved the testing of pleural fluid and the use of Light's criteria to

differentiate between a transudate and exudate. He finished up with a case involving the analysis of synovial fluid, the analyte constituents of which should be similar to that of plasma. In the absence of an alternative option, Peadar himself got hold of a microscope and was able to report the presence of negative birefringent crystals under polarised light to give a diagnosis of gout and the patient was successfully commenced on colchicine. As a final note, he reminded us that if in doubt – beta trace protein can be used to check if a fluid is that of CSF origin. Peadar also has a range of tutorials including one on atypical fluids on the EFLM academy for further interest and learning.

Our next presenter, Emma Crossley, who is just starting into her second year of a PhD gave us an overview of her studies on the role of PCSK9 in acute respiratory distress syndrome (ARDS) which is a widespread uncontrolled respiratory failure associated with poor gas exchange. This is a difficult process to manage clinically and there continues to be a lack of understanding of the underlying pathophysiology. Whilst many of us in the room were familiar with the use of PCSK9 inhibitors for managing hypercholesterolaemia, Emma's focus was on the role of the PCSK9 protein in inflammation. Two phenotypes have recently been identified in ARDS patients – hyper and hypo inflammatory phenotypes – and each one has a different response to therapies. Emma discussed how systemic inflammation has been shown to increase PCSK9 expression. Her studies have shown how PCSK9 levels were higher in those with ARDS compared to healthy controls, especially in those with the hyper-inflammatory phenotype. She also showed how PCSK9 has been linked with improved survival and attenuated inflammatory responses to sepsis. This is certainly a subject worthy of further research and we look forward to hearing how it evolves.

Afternoon speakers.
From left to right: Roy Harper, Michelle Hookham (afternoon chair), Kirsty Spence, Emma Crossley, Paedar McGing, Graham Lee

The meeting was concluded with a presentation from Roy Harper, consultant endocrinologist at Ulster Hospital, Dundonald. Dr Harper spoke about the partnership between the SEHSCT and Kiwoko Hospital, a community hospital based in the central region of Uganda. This, now thriving, hospital was initially born following its set up by Ian Clarke, a Bangor based GP back in 1987. The support with the SEHSCT began in 2006 and has continued to grow over this time with teams travelling out yearly to volunteer in the hospital as well as ongoing fundraising to help with the supply of much needed medical equipment. The majority of financial support for Kiwoko Hospital continues to come from Northern Ireland. Dr Harper gave us a virtual tour of the hospital and explained how 50% of the population is less than 16 years of age with the average income coming from subsistence farming. The hospital houses approximately 200 beds and has a staff of 325. Although it is underpinned by a Christian ethos, all patients are treated without discrimination. There is a busy emergency department which is akin to a small outpatients and an unsurprisingly busy antenatal clinic. In addition, as the hospital has grown, it now boasts a community education team, vaccination team and the Kiwoko Health Training Institute.

In conclusion, this was a day full of exemplary presentations of such a high standard and a fantastic learning resource. A sincere thanks to the LabMed NI committee without whose time and dedication this day could not have happened. From the initial email notification and easy booking right down to the delicious food served, it was a most successful day and provided more than ample time to chat to colleagues, both new and those we already work alongside. There was a great mix of disciplines including those who work outside of the laboratory. Audience engagement with each presentation was impressive with many an interesting question raised as well as the collaborative attitude expressed among the laboratory medicine specialists. A definite date to keep in the diary for 2025!

(TNY) REGIONAL MEETING 2024

by
RACHEL NORMAN
Clinical scientist,
Newcastle upon Tyne Hospitals
NHS Trust

It was a cold and sunny day on the quayside where Newcastle hosted the Trent, Northern and Yorkshire (TNY) regional meeting on Friday 13 September 2024. The programme was organised with an endocrinology theme and comprised of a good mixture of talks from both clinical scientists and endocrinologists.

Chris Boot chaired the morning session, which began with Rachel Marrington discussing whether testosterone assays are fit for purpose. Birmingham Quality have amassed a large amount of data comparing immunoassays with mass spectrometry methods, and comparing the various immunoassay manufacturers. Rachel presented some of this data and highlighted the key limitations of the assays and what to be aware of when updating methods and interpreting results, such as changes in specificity and concentration-dependent bias.

The next talk was by Stephen Gibbons on the use of testosterone therapy for hypoactive sexual desire disorder (HSDD). He discussed the British Menopause Society guidelines for therapy and monitoring, and highlighted concerns about the lack of follow-up testing and poor compliance with the guidelines. Testosterone replacement is increasingly being used off-license in females and there is a risk of irreversible virilisation with supraphysiological doses. Whilst the majority of patients in a clinical audit had a baseline testosterone measurement, only a third received a follow-up measurement within three months, contrary to the guidelines. Another concern is contamination of

Chris Boot welcoming delegates to the meeting

serum samples with testosterone gel, which appears to be a common cause of elevated testosterone results in these patients. A local guideline Stephen and colleagues have worked on suggests that on the day of phlebotomy, testosterone gel should not be applied until after serum samples have been taken to avoid contamination. Incorrect use of SHBG measurement is also a common issue, which tied in with Rachel's data on the lack of standardisation of testosterone and free androgen index reporting.

Consultant endocrinologist, Richard Quinton, talked about the diagnosis of male hypogonadism, how to distinguish between primary and secondary male hypogonadism and when to treat it. Primary hypogonadism can be diagnosed and treated based on a single random sample if testosterone is low and LH is high. Secondary hypogonadism is more complex to diagnose and usually requires a fasting, early morning sample, and the results must be interpreted within the clinical context. In the majority of cases, hypogonadism is due to other co-morbidities so testosterone replacement therapy would be inappropriate. Richard highlighted the need for correlation of clinical features with biochemistry results, appropriate use of reference ranges/decision limits, and improvements in standardisation of testosterone assays if the diagnosis of male hypogonadism is to be improved.

After lunch, there were two presentations on phaeochromocytoma/paraganglioma. Chris Boot discussed laboratory investigation of these diseases followed by consultant endocrinologist, Anna Mitchell, who covered the clinical aspects of diagnosis and management. Chris talked about the impact of medications and diet on metanephrine results and the benefits of using plasma over urine metanephrines. Both presentations discussed seated versus supine sampling, and how pre-test probability such as endocrine tumour predisposition syndromes, age and symptoms will influence interpretation of abnormal results. This emphasises the importance of providing good clinical details on request forms.

The final session focussed on urine steroid profiles and inherited steroid disorders. David Taylor talked about the clinical indications for urine steroid profiles (USP) including the investigation of inherited disorders of steroid hormone metabolism and adrenocortical carcinoma, and how sample timing requirements can vary depending on the condition being screened. He also discussed some of the complexities of the USP, such as more complex profiles in

Chris Boot outlining laboratory investigation of phaeochromocytoma and paraganglioma

The Oxford BioSystems stand

the first three months of life, and discussed several illustrative cases.

To end the day, consultant paediatric endocrinologist Tim Cheetham, presented a series of clinical cases involving inherited steroid disorders, such as congenital adrenal hyperplasia and 5-alpha reductase deficiency. Tim also discussed the psychological and social issues faced by families whose babies have uncertain sex at birth. The cases demonstrated the importance of using a holistic approach to diagnosis, including clinical assessment, imaging, genetics and laboratory investigations, to help obtain an accurate diagnosis as soon as possible, providing the best outcome for both the patients and their families.

Thanks to all of the speakers for their interesting and engaging talks, which were very well-received! It was good to hear both the laboratory and clinical perspectives on a range of endocrinology topics. Thanks are also due to present and former colleagues who organised the meeting and put together such a great programme.

All photos by Clare Jeffray, clinical scientist, Newcastle upon Tyne Hospitals

Tim Cheetham talking about investigation of inherited steroid disorders from a clinical perspective

LABMED MANAGEMENT AND LEADERSHIP COURSE

THOMAS MORRIS

Clinical scientist, Croydon University Hospital (part of South West London Pathology)

The LabMed management and leadership course returned for the first time since the COVID-19 pandemic in the idyllic setting of Canterbury Christ Church University, Kent, from the 19-23 August 2024. The course was organised and chaired by Emma Walker, consultant clinical scientist at North West London Pathology, and was jam-packed full of practical hands-on learning facilitated by experts in our field. Topics were delivered through engaging short lectures and interactive workshops, making participation by all delegates mandatory. The ethos of the course was on team work and pooling knowledge to gain a better understanding of our profession and the challenges it faces.

After the arrival and check-in of delegates, we were given a historical perspective of the NHS by Katharine Hayden, current president of LabMed and consultant clinical scientist at Manchester University NHS Foundation Trust. We were taken on a journey from the establishment of the NHS in 1948 by Aneurin Bevan up to the not too distant memory of the COVID-19 pandemic. After this fitting and scene setting talk we were divided into four groups and given an assignment to work on during the week, more on this later. The day concluded with a practical negotiation exercise organised by Geoff Lester, Federation of Clinical Scientists. Delegates were split into two groups and each had to decide which charity and how much money should be donated by all. The only catch was that only one charity

Kath Hayden giving her presentation on the historical perspective of the NHS

Delegates taking part in the negotiating exercise organised by Geoff Lester

and a fixed amount per-person could be donated. This led to amicable negotiations to ensure a solution was reached, acceptable to all. A satisfying outcome was reached and all delegates not only gained experience of negotiation, but also made a combined difference to a charitable organisation.

The learning objective for the morning of day two was understanding the relationship between NHS England, hospital trusts, general practice and pathology.
The session was chaired by Helen Johnstone, consultant clinical scientist at South West London Pathology,
who provided a bigger picture view of the NHS and highlighted recent important documents that we should all be aware of including: the Pathology GIRFT report 2021, the NHS People plan for 2020/21 and the NHS long-term workforce plan 2023. Next up was Helen Hughes, regional director of diagnostics at NHS England - London, who gave an insight into how NHS England operates and interacts with the Government and ICSs. Simon Brewer, managing director of South West London Pathology, built on this information and gave an overview of clinical commissioning of pathology services. The morning concluded with a workshop, where three of the four groups of delegates had to bid for a pathology contract, with the fourth group assessing the bids and identifying a preferred bidder. The session as a whole provided an excellent overview of clinical commissioning and how pathology engages in this process.

The afternoon session was chaired by Geoff Lester and was on the topic of understanding and gaining insight and skills to help address practical employment problems. First up was feedback from the negotiating exercise that took place the previous evening and how we should have guiding principles and a mandate before entering into any such process. We were taught about the ‘dos and don’ts’ of negotiations and how this fits into game theory. An overview of human resources within the NHS was presented next and delegates were reminded to always contact your local department early when confronted with employment issues. This was followed by an interactive workshop where delegates were given more and more pieces of information relating to an employment dispute. After each additional piece of information was revealed, groups had to say what they would do next and the complications that this could bring to the workplace. The day was rounded out with a lovely three-course meal at the local Cote Brasserie restaurant.

Day three began with a session on finance chaired by Sally Stock, consultant clinical

scientist at East Kent Hospitals.
Stuart Wayment, head of Finance Academy South East, gave a factual overview of NHS finance. Flows of finance were then elaborated on and it was explained how money moves from NHS England to the seven regional teams and down to the individual ICSs for commissioning local health services. Sue Alexander, former pathology services manager and lead scientist at the Royal Marsden Hospital, took over next and gave a presentation on understanding and managing a pathology budget. Various forms of jargon were explained and busted including tangible assets, residual value and variable costs. The pathology budget planning cycle, cost improvement programmes and business cases were also discussed in detail and how important it is for pathology to always work with colleagues in finance. After this foundation, delegates were ready to take on case studies from pathology with finance integral to them. My group had to work on a business case to justify how replacing failing lab equipment would increase A&E turnaround times during the overnight period.

Wendy Armstrong, consultant clinical scientist at Croydon University Hospital, chaired the afternoon session which was designed to provide an understanding of managed serviced contracts (MSCs) and the procurement process. Chris Georgiou of Roche Diagnostics gave an industry overview of the subject and how The Procurement Act 2023, which will come into effect on the 28 October this year, will reform how public sector organisations buy goods and services. Kaye Walton and James Cheek, who work for the British In Vitro Diagnostics Association (BIVDA), built on the previous presentation and went over the many risks that are associated with MSCs and whether these are retained by the host Trust, transferred to the supplier or shared between the two. This was thought-provoking and different groups of delegates had different ideas, highlighting how complex this can be. The session concluded with group work with delegates having to come up with key performance indicators they would want included in their MSC. This sounded simple enough, but turned out to be difficult to present them in a way that is both measurable and enforceable. Other workshop questions were on business continuity plans and flexibility during the course of a MSC.

Day three finished with a Question Time style debate hosted by Stuart Jones (consultant clinical scientist, King George's Hospital) and chaired by Jonathan Kay (honorary consultant chemical pathologist at Oxford University Hospitals). All delegates were given the opportunity to submit questions to the expert panel which

Helen Hughes informing delegates of the functions of NHS England

Simon Brewer providing an overview of clinical comissioning for pathology

consisted of Bernie Croal (president of the Royal College of Pathologists), Ruth Thomsen (scientific director, NHS England London Region), Matthew Trainer (CEO Barking, Havering and Redbridge NHS Trust) and Francesca Trundle (managing director, Kent and Medway Pathology). Pertinent topics covered included Pathology Network vulnerability, dropping the research project from the FRCPath examinations and whether there is a place for clinical scientists as independent prescribers within clinic settings. Both audience and panel participation made this an entertaining, engaging and insightful event.

The morning topic of day four was clinical leadership and this was chaired by Emma Walker with input from Gareth Jones, who previously worked as a clinical scientist and is now associate director and head of professional development at McKinsey & Company. We started by exploring what is leadership and what is management and the different characteristics that are required for each, i.e. vision vs planning and motivation vs control. The importance of emotional intelligence was taught next and we were made aware of the work of Daniel Goleman on amygdala hijack. An overview of leadership styles was worked on next and each delegate had to select which they have now and what they will need in the future; the six styles were: commanding, coaching, visionary, democratic, affiliative and pacesetting. The morning was wrapped up by determining our Myers-Briggs type indicator. To get to our type, we worked through a series of exercises. This was interesting, as we then compared the type we reached on the day with a questionnaire we all had to complete before attending the course. Some delegates had perfect matches, but others had differences in one or two of the letters.

After a break for lunch we started the next session on pathology networks, chaired by Annette Armstrong, clinical scientist at Berkshire and Surrey Pathology Services. We were given an update on the 27 pathology networks across England by Suchita Joshi (national head of pathology, NHS England) and how based on the recent 2024 maturity assessment, three networks are thriving, nine are maturing with the rest developing. The managing director and director of operations of North West London Pathology, Saghar Missaghian-Cully and Angela Jean-Francois, respectively, next presented the journey that their network has been on to reach a thriving status and the transformational change that has been required to reach this point. We moved on to group workshops and my group had to decide how we would combine and move the various sections of pathology to form a new hub and spoke model with a plan of action and associated timelines.

The day finished with a gastropub meal at The Parrott, which was first established in 1370.

The final day of the course was organised by Katy Heaney, consultant clinical scientist at Berkshire and Surrey Pathology Services, and was the culmination of the group project that had been worked on by all delegates during periods of free-time. The different groups had to pitch their presentation to the panel, which had been prescribed various roles appropriate for each project. The panel consisted of Katy Heaney, Giles Walsh (senior transformation director, South East London Pathology), Natasha Walton (deputy director of digital transformation and diagnostics, NHS England), Avril Butler (patient representative, NHS Sussex community ambassador), Supriya Joshi (consultant chemical pathologist and clinical director, Kent and Medway Pathology Network) and Shane Costigan (regional head of pharmacy workforce, training and education – NHS England). My group's project was based on the benefits that UKAS accreditation brings to pathology and how saving money by opting out of the scheme would be harmful to the laboratory in almost all areas. We had to make a pitch to the panel, who were acting as our hospital board of directors. As there were patient representatives, finance experts and union representative on our panel, we had to make sure our presentation was suitable to a broad audience and not be too focused on the smaller details of accreditation. As with all of the groups, we were given a reality check of what is required when presenting to a hospital board and a harsh reminder of how focused you need to be in this situation.

In summary, the LabMed management and leadership course was intensive and demanding, but rewarding and insightful at the same time. The high calibre of experts gave all delegates a first-hand experience of what it means to be a leader and manager in the ever changing world of laboratory medicine. The mixture of lectures, workshops and group work kept everyone engaged and ensured that everyone had the opportunity to network and pass on knowledge from their practise. I would recommend future versions of this course to anyone who is working towards FRCPath part 2 exams or considering future positions with management and leadership central to them. I now feel that I have a deeper understanding of not only the finer details of pathology, such as local financial decisions, but also the bigger picture of how pathology fits in with NHS England. I would finally like to thank Emma Walker for all the hard work and organisation that must have gone into the course to make it such a smooth running and professional event. I hope that this course will continue to run in the future to give the next wave of scientists an excellent foundation in all things management and leadership.

Group photo of delegates at the end of the five-day programme

THE DIGGLE MICROBIOLOGY CHALLENGE

These questions, set by Mathew Diggle, are designed with trainees in mind and will help with preparation for the microbiology part 1 FRCPath exam.

Question 45

True or false:
an exotoxin is produced by:

A) *Neisseria meningitidis*
B) *Clostridium perfringens*
C) *Staphylococcus aureus*
D) *Corynebacterium diphtheria*
E) *Neisseria gonorrhoeae*

The answer to this question will appear in the next issue of *LabMed News*.

Question 44 from the October issue

True or false. Viruses may contain one of the following:

A) DNA
B) RNA
C) Glycoprotein
D) Enzymes
E) Cell wall

Answers

The following are true:

A) The genome of a virus may contain DNA which may be single stranded (ss) or double stranded (ds). Examples of ssDNA viruses include *Parvoviridae* and *Anelloviridae* and examples of dsDNA viruses include *Polyomaviridae* and *Herpesviridae*.
B) The genome of a virus may contain RNA which may be single stranded (ss) or double stranded (ds). Examples of ssRNA viruses include SARS-CoV-2 and *Picornaviridae* and examples of dsRNA viruses include rotaviruses and Bluetongue virus.
C) Many viruses have protein and carbohydrate chains called glycoproteins that are involved in numerous physiological functions, examples include the haemagglutinin and neuraminidase of the influenza virus.
D) Although viruses are non-living and enzymes cannot be formed in viruses, some viral capsids do contain enzymes, for example the HIV contains various enzymes including reverse transcriptase, integrase and protease.

The following is false:

E) Viruses do possess a protective protein layer around them called a capsid, however this is not considered a cell wall.

DEACON'S CHALLENGE REVISITED

NO 34. ANSWER

It is suspected that the glucose results obtained with a POCT device on the ward are positively biased. One of the investigations into the problem involves analysing a series of blood specimens on both the POCT device (A) and an analyser in the laboratory which measures whole blood glucose (B), with the following results:

	A	B
Specimen	**Blood glucose (mmol/L)**	
1	4.5	4.2
2	6.8	7.0
3	3.2	2.8
4	5.8	5.6
5	8.9	8.7
6	9.5	9.7
7	4.8	4.9
8	7.3	6.8
9	5.1	4.6
10	7.8	7.7

Do these results support the suspicion of bias?

The variability of the results in groups A and B are due to differing glucose concentrations in the specimens **and** to the analytical variation between the instruments. Therefore, a standard t-test comparing the means of both sets of results would be inappropriate for comparing the analytical performance of method B with method A. As the data are paired, i.e. both instruments tested the same samples, a paired t-test can be used.

Calculate the difference (x) between each pair of results: $x = A - B$

A	B	x	x^2
4.5	4.2	0.3	0.09
6.8	7.0	-0.2	0.04
3.2	2.8	0.4	0.16
5.8	5.6	0.2	0.04
8.9	8.7	0.2	0.04
9.5	9.7	-0.2	0.04
4.8	4.9	-0.1	0.01
7.3	6.8	0.5	0.25
5.1	4.6	0.5	0.25
7.8	7.7	0.1	0.01
		$\Sigma x = 1.70$	$\Sigma x^2 = 0.93$

If there is no bias then the differences between each pair of results (x) would be very small and on average would be very close to zero. A paired t-test is used to compare the mean difference (i.e. the mean of x) with a hypothetical value of zero taking into account the standard error of the values of x. The mean and standard error of the difference (between values of x) is calculated in the usual way:

$$\text{Mean} = \frac{\Sigma x}{n} = \frac{1.70}{10} = 0.17$$

$$\text{Variance} = \frac{\Sigma (x - \text{mean})^2}{n-1} = \frac{\Sigma x^2 - (\Sigma x)^2 / n}{n-1}$$

$$= \frac{0.93 - 1.7^2/10}{9} = \frac{0.93 - 0.289}{9} = 0.0712$$

i.e. assuming a normal Gaussian distribution the differences in results between the two instruments (x) belong to a distribution in which the mean is 0.17 and the variance is 0.135.

$$\text{Standard deviation of } x = \sqrt{\text{Variance}} = \sqrt{0.0712} = 0.267$$

$$\text{Standard deviation of the mean (standard error)} = \frac{\text{Standard deviation}}{\sqrt{n}}$$

$$= \frac{0.267}{\sqrt{10}} = \frac{0.267}{3.16} = 0.0845$$

$$\text{Paired } t = \frac{\text{Mean} - 0}{\text{Standard error}} = \frac{0.17 - 0}{0.0845} = 2.01$$

From a table of t, the probability of obtaining a value for t of 2.01 for 9 degrees of freedom (i.e. n - 1) by chance if there is no significant difference between the methods is greater than 0.05 (since for 9 degrees of freedom tables give a P value of 0.05 when t = 2.262). Therefore, the data shows **no significant** difference in the results obtained with the two instruments and does **not support the suspicion of bias**.

Exam tip: Most modern pocket calculators allow the direct calculation of mean and standard deviation upon entering a series of individual values. Make sure you know how to use this!

Question 35

A plasma sample contains 140 mmol/L of sodium and 95% water by volume. Neglecting sodium binding by plasma proteins, calculate the apparent plasma sodium concentration determined from measurements with an electrode system which responds to water sodium (a) in undiluted plasma and (b) in plasma diluted 1 in 20 with water.

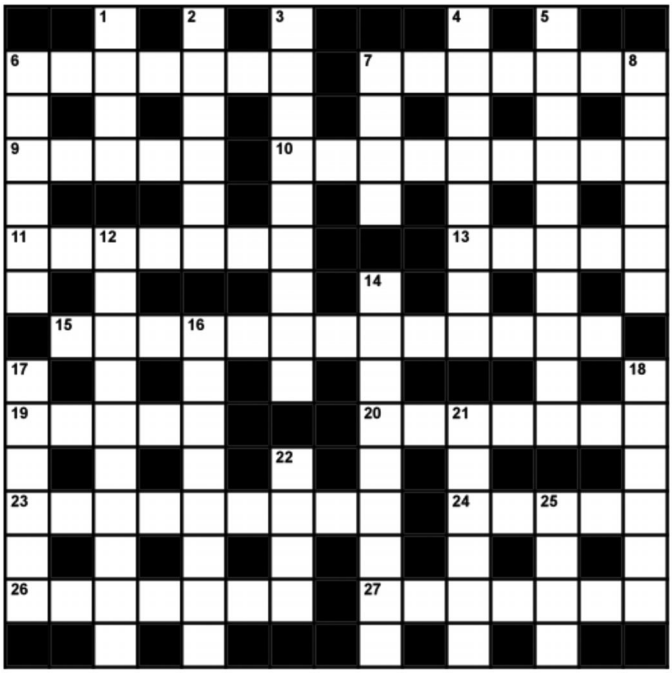
THE CROSSWORD BY RUGOSA

Across

6 Endangers course about carbohydrate (7)
7 Contaminates fresh French fish (7)
9 Independent examination of fraud items (5)
10 Haematological problem, fractures a weak ilium, loses weight (9)
11 Eater unhappy with normal limits of the intestine (7)
13 Boredom from dealing with insurance (not cars) (5)
15 Problem with food: abysmal portion, badly presented with no end of gravy (13)
19 Sense and sensibility (5)
20 For example, I never tell the truth (7)
23 Introduce new chemical reaction (9)
24 How Judy's trolley went (5)
26 For repletion, no second thought distributing tasty pies (7)
27 Phone doctor about right direction for kidney unit (7)

Down

1 Sarcastic tart (4)
2 Fudge treat (6)
3 Unit and unit leader are deprived of carbohydrate (9)
4 Offend with revolting ailment thread (8)
5 Caught when park parky? (6,4)
6 Reports conditions (6)
7 First-class fruit (4)
8 Drug to be taken straight away at home (6)
12 Run dataset about low protein effusion (10)
14 Regulatory proteins print soon out (9)
16 Service departments order casein, for example (8)
17 Prepare suture for organ (6)
18 Gas circle coordinates information (6)
21 Prescription recipients get rid of nits (6)
22 Bristly tough (4)
25 Two elements give warning of attack (4)



SOLUTION FOR OCTOBER'S CROSSWORD

SUDOKU ... THIS MONTH'S PUZZLE

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

SOLUTION FOR OCTOBER

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

OBITUARY

DAVID MALCOM ROBERTSHAW

23 MARCH 1944 – 28 SEPTEMBER 2024

David's influence on my career, especially in my early days, and that of many biomedical scientists and his contribution to clinical biochemistry and pathology at Bradford Royal Infirmary (BRI), St Luke's Hospital and in hospitals across the then West Riding was immense. Later in his career, his contribution to training and education extended to clinical scientists and other healthcare workers, such as nurses and medics, whilst his commitment to service delivery, especially in Bradford, remained as strong as ever.

David is perhaps unusual, well one could say that of him in many ways, all of which would be good, in that he spent the whole of his 40+ years career in Bradford. He started as a junior MLSO in 1962 and rose through the MLSO ranks to become Chief MLSO in 1975 and it was whilst he was a Chief MLSO, or laboratory manager in clinical biochemistry, that I first met him in his capacity as a lecturer on the HNC course at Leeds Polytechnic, now Leeds Beckett University. I was immediately impressed by his depth of knowledge and perhaps even more importantly from my perspective, his enthusiasm for clinical biochemistry and the way in which it could enhance patient care. At that time he was managing an innovative, service orientated, clinical biochemistry department that was providing a technical service that was second to none, at a large District General Hospital, lecturing at Leeds Polytechnic and bringing up his family, whilst studying part-time for higher qualifications himself. No mean feat.

In 1980, he was awarded a PhD and appointed senior biochemist. His enthusiasm and commitment to innovation continued unabated. For example, he successfully developed the service for detecting thyroid disease in newborn babies, making BRI one of the first laboratories in the UK to provide such a service.

David joined the association in 1981 and held many roles over the years, including secretary of the region (1990-1992) and regional tutor (2009-2010).
His contributions towards education and training in particular led to his much deserved award of fellow of the association in 2015. In retirement, he was an active member of the retired members section.

David became a member of the Royal College of Pathologists in 1987 and a fellow in 1997. He rose to be deputy head of department and whilst he found the merger with Leeds Teaching Hospitals Pathology Service challenging, his enthusiasm and commitment to clinical biochemistry and training and education never diminished.

Space does not allow me to go through the whole of David's career, nor does it allow me to show his strong family commitments and service to the wider community. However, I hope that I have demonstrated the admiration and high regard that I and many others have for him, which is born out of his commitment to clinical biochemistry, BRI , the West Yorkshire region and most importantly, patient care. And yes, he was partial to the odd pint!

M.B.

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