Clinical Biochemistry News

ACBI

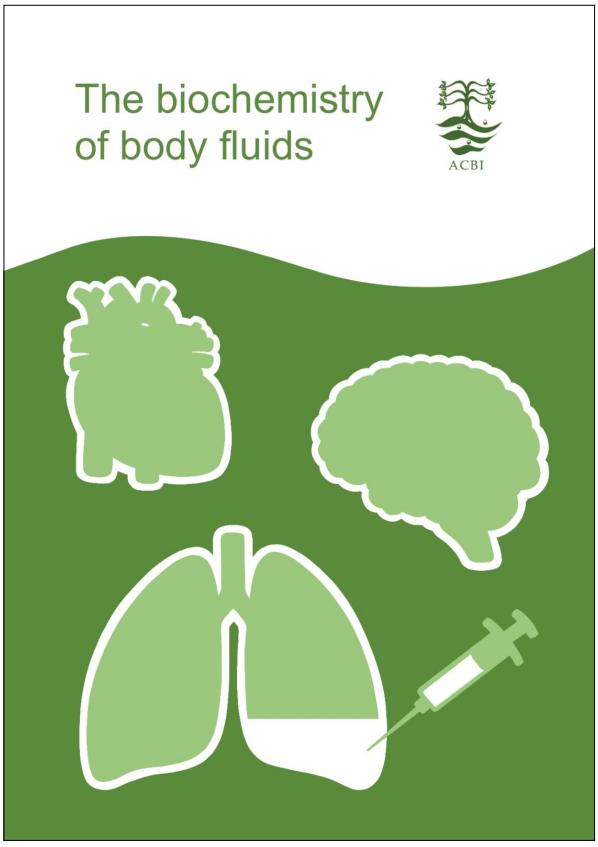
Association for Laboratory Medicine

LabMed

December 2025

Newsletter of the Association of Clinical Biochemists in Ireland

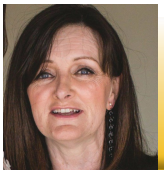
and the Association for Laboratory Medicine (Republic of Ireland Region)



The Biochemistry of Body Fluids (second edition) was launched at the 47th ACBI Annual Conference held in November 2025. Photos L-R clockwise: The front cover of the booklet, Dr. Paula O'Shea, President of the ACBI and Dr. Peadar McGing, Booklet Editor, Dr. Peadar McGing launching the booklet with a lecture at the conference. For more detail see article on pages 3 and 4.

Contents

Editors: Dr. Martin Healy; Dr. Peadar McGing



Message from the President of the Association of Clinical Biochemists in Ireland
Dr. Paula O'Shea

Wishing all ACBI members and your families a very happy Christmas and a peaceful holiday season, with health, happiness, and a fulfilling, productive New Year ahead.

As we reflect on the year, I want to sincerely thank you for your commitment to our profession and to the Association. We have much to be proud of - particularly the success of our Annual Conference, and the launch of our booklet on the Biochemistry of Body Fluids, which showcase the depth of expertise and collegial spirit across our membership.

I also want to offer a special word of thanks to our Council members, whose dedication, time, and steady work throughout the year underpin everything we do as an Association.

To those preparing for FRCPath, MSc, PhD milestones, and other professional examinations, please know that the Association is cheering you on. Likewise, to members publishing studies, building collaborations, and applying for grants and funding, I wish you every success - your work is shaping the future of clinical biochemistry and improving patient care.

With warmest seasonal wishes and thanks,

Dr Paula M. O'Shea
President, Association of Clinical Biochemists in Ireland (ACBI)

Upcoming Meetings

EFLM Strategic Conference 2026 24-25 April 2026, Prague, Czech Republic [Topics include: Harmonisation and Emerging Technologies including AI].

SfE BES 2026 (Society for Endocrinology & British Endocrine Society) 2-4 March 2026, Harrowgate, UK.

ECE 2026 (European Society of Endocrinology) 9-12 May 2026, Prague, Czech Republic.

Labquality Days 2026: International Congress on Quality in Laboratory Medicine and Health Technology 5-6 February 2026, Helsinki, Finland.

26th World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Disease April 16-19, Prague, Czech Republic.

All Ireland Forum on Cancer Data. From Data to Impact: Roadmap for Cancer Data January 26-27, Queen's University Belfast. Link to free registration.

Tumor Metabolism: New Frontiers in Diet, Microbiome and Beyond June 8-11, INEC Killarney Convention Centre, Kerry.

European Calcified Tissue Society Congress 2026 24-27 April 2026, Girona, Spain (clinical and laboratory aspects of bone disease diagnosis including bone markers and use of AI).

Launching the New Edition of *The Biochemistry of Body Fluids*.

Dr. Peadar McGing.

“Pleural Fluid is not just there to annoy respiratory physicians. It has a purpose – it allows us to breathe.”

These words were how a Consultant Respiratory Physician began a Medical Grand Rounds presentation on pleural fluid cases some years ago. I kept a note of his words as an insight into the difficulties atypical body fluids can cause for clinical staff, and the contribution we in laboratories can make.

When the ACBI launched the original guidelines *The Biochemistry of Body Fluids* in 2009, there were was very little published on this area. The printed booklet has been an important asset for all those having a copy, and the electronic version, available through acbi.ie, has found its way around the world. Five years ago, we received a request from the editors of Tietz to facilitate our guidelines being added to their recommended online sources. We happily agreed.

It had been clear for the past few years that the original booklet needed to be updated. After a period of procrastination on the part of the editor - mea culpa - the project moved into active mode early in 2025. In March, having co-authored the fluids chapter for the new (8th) edition of *Tietz Textbook of Laboratory Medicine*, I re-gathered our team of contributors. Happily, a few of the 2009 authors were willing to work on the new edition. These individuals were joined by a new group of contributors. In total, ten clinical biochemists set to work.

My thanks, and those of the many future users of our publication, go to my fellow authors Jennifer Brady, Eileen Byrne, Martin Healy, Karen Heverin, Mark Kilbane, Paula O’Shea, Janice Reeve, Micheál Ryan, and Carl Talbot.

The booklet has been extensively updated. As an indication, the word count of the new edition is almost four times that of the original. All fluids featured in the original have been retained but expanded – CSF, Pleural, Pericardial, Peritoneal / Ascitic, Sweat, Amniotic, Saliva, Seminal, and Synovial fluids. Additional short sections have been added covering Pancreatic Cyst Fluid, Drain Fluid, the Peritoneal Equilibration Test, and Faecal Water. In response to evolving clinical and laboratory requirements, two new important sections cover Test Validation and Safety.

As this has been a focus of mine over the past year, it would not constitute a very independent appraisal if I comment too much on the finished product. Instead, I will quote Dr Paula M. O'Shea, ACBI President, from her Preface at the start of the booklet.

‘In revising this edition, our contributors focused on what matters most at the bench and the bedside: clear specimen guidance, sound analytical practice, harmonised interpretation where possible, and concise recommendations for clinical action.

The authors have highlighted when tests add value, identified common pitfalls, established critical thresholds, and described patterns that can change management. For laboratory scientists, the guidance emphasises pre-analytical essentials, method

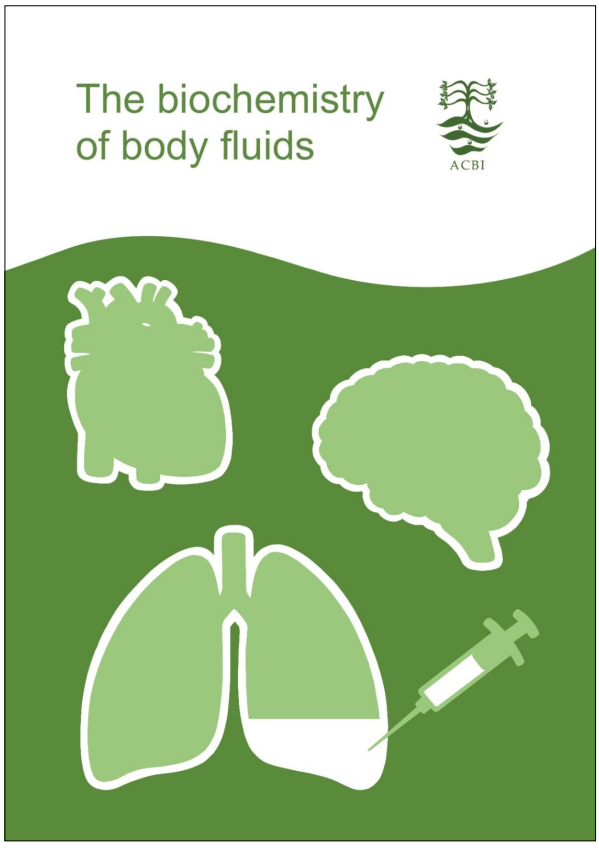
selection and validation, quality control, measurement uncertainty, and interpretive comments that elevate reports from results to recommendations. The booklet contains practical tables, checklists, and summaries designed for rapid use in busy settings.'

To seal our new edition my daughter Susan, a Creative Copywriter, designed a new cover and also managed layout and pre-print preparation, Printing was carried out by Eamon Nestor of Casimir Printing. I am very grateful to both Susan and Eamon for their patience and hard work in rushing through final processing, as a certain editor kept adding or changing text right to the last possible minute.

Others who deserve special thanks for their help are Teresa (my long-suffering wife), Lucille Kavanagh-Wright (Principal Clinical Biochemist), Angela Rice (Mater Medical and Nursing Librarian), and Darci Block (Mayo Clinic, author of many works on body fluids, and my co-author for the *Tietz* chapter).

All of the principal sections have been written by at least two authors, and all sections were critically read and tweaked accordingly by at least one of the authors of other sections. Of course, this still does not guarantee perfection, but we believe this booklet will be a very useful contribution to laboratory medicine and we hope you will find it so. Going forward, we welcome constructive feedback and proposals for future updates, so that this resource continues to serve patients, clinicians, and laboratories across Ireland and beyond.

Finally, the booklet was formally launched at the ACBI Annual Conference in November and it can be downloaded from the ACBI website: https://acbi.ie/wp-content/uploads/2025/11/ACBI-Digital-Booklet_Biochemistry-of-Body-Fluids.pdf



Front Cover

Dr. Peadar McGing at the lectern

Dr. Paula O'Shea (ACBI President) and Dr. Peadar McGing

Professionalism, Leadership & Innovation: ACBI Forum 2025

Report by Dr. Peadar McGing (morning session) and Wendy Groenendijk (afternoon session).

On Friday morning, September 12th, ACBI President Dr. Paula O'Shea welcomed delegates to the Ashling Hotel in Dublin for what promised to be a very interesting day of talks of relevance to Clinical Biochemists.

Professional Regulation

The opening lecture, on *Professional Regulation – Understanding CORU's Regulatory Model*, was delivered by Catherine Byrne, Head of Strategy and Policy in CORU. She gave an overview of how CORU works before discussing some specific points of interest to this audience.

Catherine told us that the CORU standards are outcome based. They don't care how you teach or train the person being registered; they only care that the individual is proficient in that practice. She also stated that the criteria required for entry into the profession apply to new members only, and are set by CORU when it sets up the register. The specific required criteria don't apply to existing practitioners, but the standards of practice will cover such individuals. In the Code of Professional Conduct, there are 26 general standards and one that can be bound to that specific profession.

Our long-standing grievance regarding the extremely slow process of starting the Clinical Biochemists register was addressed in the final part of her presentation, and in the following discussion. Catherine informed us that over the last few months our profession has been the subject of more active review and outlined a few of the administrative difficulties.

As one who has watched ACBI efforts on this topic through more than half of my career, and through five years of retirement, I feel it is opportune to thank all of our ACBI officers who have worked on this, and continue to do so.

PPI – Patient and Public Involvement

Next up to the podium was Niamh Dillon, Public Patient Involvement Manager in RCSI. She delivered a very interesting talk on *Patient and Public Involvement (PPI) in Healthcare and Research*. The aim of this work is to check that the priorities of patients and family / carers feed into the professionals' understanding. People give their data - results, samples, interviews - but they are not directly involved in the research. The PPI can be at any stage of the research cycle, but is most commonly when defining the research question or promoting the results communication.

PPI can help design the initial research process, but it can also bring an early focus on the implementation phase. Patient involvement can also help in 'plain English' for later publicity of the results.

Niamh's job includes helping investigators make their applications and then work through how to involve the public and what's needed. There is a challenge in relation to time for administration, including meeting with the patients. Researchers are becoming more aware of what is required for PPI. Niamh stressed her role helping individuals and organisations, and explained her availability to people seeking her help.

Health Research.

After a short break we resumed with Dr. Emily Vereker, Head of the National Office for Research Ethics Committees in Ireland. She took us from proposal to approval through her talk on *Insights into health research ethics in Ireland*. Following up the previous talk, Dr. Vereker advised that PPI should be embedded into all ethical applications.

In Ireland there is a mixed model ethics landscape. There are some national guidelines, for example for COVID biobanking, and some institutional, which would include individual hospitals. The question of what requires ethical approval is a concern for scientists in healthcare. To answer these concerns Dr.

Vereker outlined the scope of ethics research assessment. Out of scope are clinical audits, service evaluation, public health work, and analytics for service planning or quality improvement.
In scope are health and social care research projects covering such as basic and applied research, new technologies, clinical aspects of service, and population health. One important deficit in our Irish system is a lack of appropriate biobanking regulations.
Emily also discussed explicit and informed consent, which is an important safeguard, and she talked about some of the issues that may be involved here. Finally, she told us that sometimes ethics applications are badly worded and there is an implication of the wording in some applications being copied from American documents; in all of these scenarios there is a clear need for rewording the proposal.

Morning session Speakers and Chairs (L-R): Dr. Caroline Joyce, Muiriosa Ryan, Dr. Emily Vereker, Niamh Dillon, Catherine Byrne, Dr. Paula O'Shea.

Social Media.

The final presentation of the morning was by Muiriosa Ryan, Social Media and Digital Marketing Manager in the HSE's Communications Division. She gave her presentation *Social Media for Healthcare Professions* to a very engaged audience. Muiriosa covered many aspects of putting material up on social media and also answering queries that come through those channels.
Best practice on social media was covered over two slides. Among the points made were –
Plan and optimise your content for each social media channel utilised. For example, your LinkedIn content should not be identical to your Instagram content.
Content quality is more important than content quantity. All content should be spelled correctly, grammatically correct, and easy to read. Images should be of high quality.
Ninety percent of social media users access accounts on their mobile phones. It's best to optimize content to be viewed on a mobile.
Tone of voice on social media is very important for health professionals. Muiriosa emphasised maintaining a professional but friendly tone of voice on social media.
Useful guidance can be accessed in the HSE's *Social media and data protection staff use policy*, which is available at https://www.hse.ie/eng/about/who/communications/digital/social-media/social-media-and-digital-policy/
Muiriosa finished by telling us that hospital staff can also avail of special HSE training sessions on professional use of social media.

Close of Session.

The morning session concluded with a panel discussion of the morning's topics, following which we all adjourned to the restaurant for a very enjoyable lunch and chat.

Renal Stones.

The afternoon session kicked off with an in-depth presentation on renal stone analysis by Dr Lucille Kavanagh-Wright, Principal Biochemist at Mater Misericordiae University Hospital (MMUH). Dr Kavanagh-Wright began by discussing the epidemiology, causes, and risk factors associated with kidney stones, before moving on to stone composition, as well as management and treatment options for patients presenting with renal stones.
MMUH serves as the national service and referral laboratory for renal stone analysis. Stones are analysed here using infrared spectroscopy – one of the two methods recommended by the European Association of Urology (EAU) Guidelines on Urolithiasis, the other being X-ray diffraction. Dr Kavanagh-Wright emphasised the importance of these guidelines, which provide recommendations for laboratory investigations and stone

analysis.
Dr Kavanagh-Wright then walked us through what stone analysis involves, from stone preparation to what stone characteristics are included in the final report, such as weight, shape, composition and size. One particularly interesting aspect of Dr Kavanagh-Wright's talk touched upon drug stones, where certain drugs (e.g., sulfa drugs, atazanavir) or their metabolites can form or contribute to stone formation. The talk also highlighted that several rare genetic disorders, such as APRT Deficiency, are associated with increased risk of stone formation, making accurate stone classification essential for appropriate patient management. Dr Kavanagh-Wright concluded her presentation with three clinical cases that demonstrated the application of renal stone analysis in supporting patient management.

BAMBI

The highly anticipated presentation titled *'Biomarkers for Acute Mild Brain Injury: The BAMBI Study'* was the second lecture of the afternoon, jointly presented by Dr Paula O'Shea, Consultant Clinical Biochemist at MMUH, and Simon Barrett, Medical Student. This talk focussed on a commonly encountered presentation in the Emergency Department – traumatic brain injury (TBI).
Among the various severities of TBI, mild traumatic brain injury (mTBI), defined by a GCS score of 13–15, is the most common presentation. Diagnosing mTBI can be challenging, as symptoms are often vague and non-specific or delayed in onset. While head CT imaging remains the standard diagnostic tool to assess for intracranial injury, its routine use in all mTBI cases may be unnecessary, resource-intensive and costly. In light of this, there is growing interest in the use of blood-based biomarkers; the BAMBI study is investigating two such biomarkers - glial fibrillary acidic protein (GFAP) and ubiquitin C-terminal hydrolase-L1 (UCH-L1). In previous studies both GFAP and UCH-L1 have shown promising results in identifying adults with mTBI who are very unlikely to have a CT-detectable intracranial injury. The primary objective of the BAMBI study is to evaluate the sensitivity and negative predictive value of these combined biomarkers in ruling out positive CT findings in adults with mTBI presenting within 12 hours of injury.
Importantly, the presenters also touched upon the recruitment process for the study, with a strong focus on the significance of capacity to consent. This tied in well with one of the morning sessions, which looked at ethical considerations in health research. The BAMBI study certainly sounds promising, and I think it's fair to say we are all looking forward to seeing the results!

Communication.

The final talk of the afternoon was delivered by Dr Peadar McGing, retired Principal Biochemist at MMUH. Peadar's talk focused on the effective and accurate use of language in scientific writing and speaking.
As Clinical Biochemists, we are often involved in different forms of scientific communication, whether it's writing abstracts, posters, or publishing scientific papers. Regardless of the format, it is essential that we get our message across in a way that's clear and without confusion. Peadar also encouraged us to take every opportunity to share or 'advertise' our work, whether through presentations, posters, publications or informally.
Scientific writing requires careful attention to detail, ensuring that punctuation, grammar and abbreviations etc. are all used correctly. Peadar highlighted the importance of tailoring language to your audience, using a great example of the abbreviation "RTA". While we (and nephrologists) may understand it as "renal tubular acidosis," those working in ED understand it as "road traffic accident." This example clearly shows why knowing your audience and the clinical context is so important.
The talk concluded with some tips and advice on how to present effectively, with a key takeaway being the importance of preparation!

Peadar McGing - ACBI, 12 September 2025.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In The News - Draft UK Prostate Cancer Screening Recommendations

Dr. Martin Healy

The 28th of November 2025 saw the publication of the UK National Screening Committee (NSC) draft recommendations for prostate cancer screening using prostate specific antigen (PSA). It is safe to say that they were not met with universal acclamation. The announcement of the launch can be found here, and the rationale for the screening decisions made is here.

The use of PSA to detect the presence of prostate cancer has been a controversial issue for many years. The test has good sensitivity (>80%), detecting most active cancers if present, but poor specificity (as low as 30% depending on the assay cut-off used), indicating a high false positive rate. This has a number of consequences. Often, an elevated level may be the result of more benign reasons, such as inflammation, infection, or prostatic hyperplasia (swollen prostate gland). In addition, a raised PSA might indicate the presence of an indolent, slow-growing, asymptomatic prostate cancer. In both of these scenarios further actions, such as unnecessary biopsies or aggressive drug therapy, may result in serious side effects.

Early detection of active prostate cancer is obviously beneficial. To this end, some have advocated the use of mass screening for 45-70 year old men using PSA measurement. The enormous cost of this (there are an estimated 10 million men in the UK that fall into this age group) and the poor specificity of the test, resulting in unnecessary follow-up, mitigate against this. Others have suggested more targeted screening, e.g., in particularly high-risk groups such as Black men or those with a family history of prostate cancer. Another very high-risk group are those carrying BRCA1 or BRCA2 gene mutations. These genes, essential for repairing DNA damage from daily cellular activities, are present in approximately 0.5% of men in the general population. They have a 3–5 times higher risk of developing prostate cancer. It should be pointed out that women can also carry BRCA mutations with a significant risk of developing breast cancer.

The UK NSC, using current knowledge from international screening trials, found that the risks of PSA screening outweighed the benefits in all of the above cases except those carrying the BRCA mutations. The study has led to serious criticism from various charities and advocacy groups associated with prostate cancer. They say that the UK has one of the best follow-up procedures in the world for men presenting with raised PSA, and the findings represent an “injustice” to the high-risk groups excluded. In addition, the percentage of men who know they carry the BRCA mutations is very low, which begs the question of how they will be identified. The recommendations are in draft form currently, and feedback from interest groups and the public is invited. The final amended report will be available after March 2026.

Fundamentally, the lack of convincing published data on screening informed the NSC’s findings. Widespread screening based on current knowledge would do more harm than good, in their view. To address these issues, TRANSFORM (The Trial of Randomised Approaches for National Screening FOR Men) was established by Prostate Cancer UK. The NSC provided advice on the study design. Eventually the trial will involve up to 300,000 men. Recruitment started in November 2025. Its remit is to provide definitive evidence on the best approach and tests for detecting prostate cancer. The TRANSFORM trial is UK-centric, but its findings will have global implications.

In Ireland there is no national screening scheme for prostate cancer detection. However, it is currently involved in an EU-sponsored study called PRAISE-U (PRostate cancer Awareness and Initiative for Screening in the European Union). Its remit is to develop protocols for the ‘early detection and diagnosis of prostate cancer through customised and risk-based screening programmes'. Four countries are involved: Ireland, Spain, Lithuania and Poland. Ireland is the first country globally to adopt STRATCANS (STRATified CANcer Surveillance) into their health system. It was developed by the Urology Department at Cambridge University Hospitals. The protocol uses available evidence-based data to provide active surveillance of men with newly diagnosed prostate cancer. Depending on the risk level of disease progression, personalised monitoring and follow-up testing (PSA levels, MRI scans, or biopsies) tailored to the individual can be initiated. Ultimately, the aim of these approaches is to: (a) standardise detection procedures for prostate cancer, and (b) standardise follow-up procedures for individual patients depending on the cancer severity level.

Light Bites

Dr. Peadar Mcging

As we're coming up to Christmas, I thought a few bits and pieces from my archive might bring a smile to your face at this festive time of year.

First of all, some Irish medical history.

Qualifications. Sir Charles Cameron was appointed Public Analyst for the city of Dublin in 1862. A larger-than-life figure, he had a huge influence on public health in Ireland at the time, constantly battling to improve the terrible conditions the poor had to endure. However, it was with amusement that I read in Ronan Kelly's RCSI history a comment on Sir Cameron's qualifications.

Cameron had an uncanny knack for securing appointments ahead of parchments. From about 1857, he began to style himself 'Doctor Cameron', but the origin of this doctorate is unclear, and in all his many writings, Cameron never made it any clearer.

Now onto more recent history, from my own career.

Sample Timing? How should one interpret the following information received with a request for biochemistry tests on a cardiac patient?

Clinical Details: Pre-op CABG [Coronary Artery Bypass Graft].

Provisional Diagnosis: Post-op CABG.

Confused? I wondered who was confused.

Clinical Details: Patient has become acutely confused.

This sample was taken into the wrong bottle.

Informative? How often do we see this helpful comment?

Clinical Details: Blood test.

Poor Outlook? Endocrine patient for thyroid function tests.

Clinical Details: Grave.

I hope they meant Graves' Disease?

Heavy-handed Doctor? I won't be going to this Dublin GP for my check-up –

Clinical Details: bruising check up.

Stretching the Truth? This GP patient was getting their TFTs monitored and confessed to the GP that they had missed taking their tablets 'for a few days'.

Results: FT4=5.6 pmol/L (ref 8.0 – 20.0), TSH>100 mU/L (0.35 – 4.94).

On receipt of these results and further GP questioning, the patient admitted that they hadn't taken their tablets for many weeks.

Man Trouble? A request from the Endocrine Outpatients –

Clinical Details: MEN!

Turned out not to be a fed-up female doctor or patient, just the requester using the Shift button on the keyboard rather than the Caps Lock, without watching what they were doing. The actual diagnosis was MEN1, as per previous requests.

Flushing? This final clinical details scenario was sent to the ACB mailbase in 2006 by Mike Hallworth. Mike will be best known as the author of many books on Therapeutic Drug Monitoring, but is also a very witty writer and speaker.

We have just received a blood specimen for valproate levels with the clinical details "Flushing". On ringing the practice to ask what this was about, it turned out that the question was really "Is she taking them [tablets], *or is she flushing them down the toilet?"*

Mike finished with the words *Sometimes I despair; I really do.*

A Selection of Members' Recent Publications

Plebani M, Scott S, Simundic AM, Cornes M, Padoan A, Cadamuro J, Vermeersch P, Çubukçu HC, González Á, Nybo M, Salvagno GL, **Costelloe SJ**, Falbo R, von Meyer A, Iaccino E, Botrè F, Banfi G, Lippi G. *New insights in preanalytical quality.* Clinical Chemistry and Laboratory Medicine (CCLM), vol. 63, no. 9, 2025, pp. 1682-1692. doi:10.1515/cclm-2025-0478

Savinelli S, Heeney A, Tinago W, Garcia Leon AA, McGettrick P, Cotter AG, Walsh I, **Fitzgibbon M**, Sabin CA, Mallon PWG, Feeney ER on behalf of the HIV UPBEAT study group *People living with HIV on modern antiretrovirals do not display a pro-atherogenic lipid profile and have similar body composition compared to healthy controls.* HIV Med. 2025; 1-10. doi:10.1111/hiv.70118

Tio S, Zia F, **Joyce CM**, Halsall DJ, Ryan J. *Macrotroponin as a cause of falsely elevated cardiac troponin in systemic sclerosis.* BMJ Case Rep. 2025 Sep 17;18(9):e266536. doi: 10.1136/bcr-2025-266536

Narayana JK, Koo Wei Ling Y, **Mac Aogáin M**, Chotirmall SH. *Characterizing research trends in bronchiectasis through AI-powered analytics.* Eur Respir J. 2025 Aug 28:2500894. doi: 10.1183/13993003.00894-2025

Thng KX, Tiew PY, **Mac Aogáin M**, Narayana JK, Jaggi TK, Ivan FX, Shuttleworth M et al. *Sputum metagenomics in bronchiectasis reveals pan-European variation: an EMBARC-BRIDGE study.* Eur Respir J. 2025 Aug 22;66 (2):2500054. doi: 10.1183/13993003.00054-2025

Joyce C, O'Shea PM, Lynch R, **Costelloe SJ**, McCarthy TV, Coulter J, Hayes-Ryan D, O'Donoghue K. *Use of the Abbott i-STAT®1 point of care device for hCG quantification in early pregnancy.* Int J Gynaecol Obstet. 2025 Nov;171(2):736-742. doi: 10.1002/ijgo.70217

Joyce CM, Wakefield C, Chen-Maxwell D, Dineen S, Kenneally C, Downey P et al. *Appraisal of hydatidiform mole incidence and registration rates in Ireland following the establishment of a National Gestational Trophoblastic Disease Registry.* J Clin Pathol. 2025 Nov 19;78(12):822-829. doi: 10.1136/jcp-2023-209270

Waldron MG, O'Regan PW, Lane M, Shet S, Kakish E, Moloney F, Moore N, Murphy MJ, Plant BJ, Mullane D, Chroinin MN, McMahon A, Regan KO, Ryan DJ, Power SP, Maher MM. *Ultralow dose computed tomography as an alternative to conventional chest radiography for the evaluation of disease severity in paediatric cystic fibrosis. Sci Rep. 2025 Nov 6;15(1):38857.* doi: 10.1038/s41598-025-22616-9

Notable Historical Anniversary

Dr. Martin Healy

One thousand years ago (1025) the first publication of the 5-volume *Canon of Medicine* by Ibn Sina, a multi-talented polymath whose name was later latinised to Avicenna, took place in Bukhara, situated in what is now Uzbekistan. It was a compilation of all known medical knowledge at the time, incorporating Greco-Roman, Persian, Chinese and Indian findings, and it is regarded as one of the most consequential medical textbooks in history.

After its printing on the Gutenberg press in 1472, it became widely available in Europe and influenced medical training and practice until the end of the 17th century. The Canon was the first to treat medicine as a science, examining the principles of physiology, symptoms and disease causes, descriptions of specific diseases, the treatment of common maladies and a formulary of known medicines and their administration. Avicenna died in 1037, aged 57. Some sources claim that he died shortly after an attempted robbery by a slave who had laced his food with opium.

Dun's Library in the Royal College of Physicians of Ireland (Frederick Street, Dublin) contains a 16th century edition of the Canon published in 1556.

Reviews / Articles of Interest

Next level clinical biochemistry. Integration of new assay technologies, bioinformatics, machine learning and AI into the labs of the future.
Advancing clinical biochemistry: addressing gaps and driving future innovations. Cao H, Oghenemaro EF, Latypova A, Abosaoda MK, Zaman GS, Devi A. Front Med (Lausanne). 2025 Apr 8;12:1521126. doi: 10.3389/fmed.2025.1521126.

EFLM statement on the regulation of automated laboratory instruments incorporating AI software. Çubukçu HC, Boursier G, Linko S, Bernabeu-Andreu FA, Meško Brguljan P, Tosheska-Trajkovska K, Brugnoni D, Milinkovic N, Padoan A, Thelen M; European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) Division: Quality, Standards and Regulations, Committee on Accreditation and ISO/CEN standards (C: A/ISO). Regulating the future of laboratory medicine: European regulatory landscape of AI-driven medical device software in laboratory medicine. Clin Chem Lab Med. 2025 May 28;63(10):1891-1914. doi: 10.1515/cclm-2025-0482.

A survey highlighting extent of engagement of European labs with AI developments. No standard approach evident and lack of AI training and skills highlighted. Cadamuro J, Carobene A, Cabitza F, Debeljak Z, De Bruyne S, van Doorn W, Johannes E, Frans G, Özdemir H, Martin Perez S, Rajdl D, Tolios A, Padoan A; European Federation of Clinical Chemistry and Laboratory Medicine Working Group on Artificial Intelligence. A comprehensive survey of artificial intelligence adoption in European laboratory medicine: current utilization and prospects. Clin Chem Lab Med. 2024 Oct 24;63(4):692-703. doi: 10.1515/cclm-2024-1016.

The good and the bad of fasting as an aid to health improvement.
Fazeli PK, Steinhauser ML. A Critical Assessment of Fasting to Promote Metabolic Health and Longevity. Endocr Rev. 2025 Nov 24;46(6):856-876. doi: 10.1210/endrev/bnaf021.

The following three papers highlight the role of lipoprotein(a) (LP(a)) as an independent risk factor for cardiovascular disease and its incorporation into screening protocols for risk assessment.

Call for making LP(a) an integral component of CVD risk assessment from the first LP(a) Global Summit. Kronenberg F, Bedlington N, Ademi Z, Geantă M, Silberzahn T et al. The Brussels International Declaration on Lipoprotein(a) Testing and Management. Atherosclerosis. 2025 Jul;406:119218. doi: 10.1016/j.atherosclerosis.2025.119218.

Broad overview of LP(a) and its underutilisation as a laboratory test in CVD risk profiling. Razavi AC, Bhatia HS, Blumenthal RS, Shapiro MD, Mehta A. Why, how and in whom should we measure levels of lipoprotein(a): A review of the latest evidence and clinical implications. Diabetes Obes Metab. 2025 Sep;27 Suppl 8(Suppl 8):34-46. doi: 10.1111/dom.16469.

Traditional lipid lowering drugs such as statins have little or no affect on lp(a) levels. Several new drugs that target lp(a) directly are in trial.
Katsiki N, Vrablik M, Banach M, Gouni-Berthold I. Lp(a)-Lowering Agents in Development: A New Era in Tackling the Burden of Cardiovascular Risk? Pharmaceuticals (Basel). 2025 May 19;18(5):753. doi: 10.3390/ph18050753.

Federation / Journal Links

EuroLabNews: The current edition of the EFLM Newsletter, EuroLabNews (November/December 2025).

CCLM: The latest issue of Clinical Chemistry and Laboratory Medicine (CCLM 63 (12) 2025. ACBI 2024 Conference poster abstracts included.

IFCC eNews: November 2025.

eJIFCC: Latest IFCC journal issue, eJIFCC 36(3) October 2025.

For a list of on-demand EFLM webinars click here.

Podcast: Medical Journal of Australia (1/12/25): *Diagnosis of Alzheimer's and treatment of dementia and how nutrition can help*.

Can personalised nutrition advice benefit health? This article looks at the available evidence and how clinical chemistry results can play a role in designing personalised nutrition protocols.

IEQAS Annual Conference – October 2nd, 2025

Micheál Mac Aogáin.

Senior Clinical Biochemist, Dept. Biochemistry, St. James's Hospital

Clinical Senior Lecturer, Trinity College Dublin.

The 2025 IEQAS Annual Conference, held at the Ashling Hotel, Dublin, delivered a rich programme of plenaries and workshops that reflected both the technical rigour and the human stories at the heart of laboratory medicine. With a strong emphasis on external quality assessment, education, and professional development, the conference offered delegates the opportunity to engage with regulatory updates, evolving professional roles, and advances in clinical laboratory practice across a rich programme of plenary and workshop sessions spanning clinical biochemistry, haematology, blood transfusion and microbiology.

Plenary Sessions:

In her opening remarks, IEQAS Vice-Chair Cara Ward welcomed delegates and new members to the organisation. She highlighted ongoing developments, including a redesigned website, IT infrastructure improvements, and preparatory steps towards ISO 17043 accreditation. Cara underscored IEQAS's commitment to supporting laboratories not just in technical quality assurance but also in research and education, announcing the launch of a €1000 bursary scheme for members to support projects in external quality assessment. [Editor's note: Information on this bursary, open to Clinical Biochemists and Medical Scientists in IEQAS-registered laboratories, is carried elsewhere in this newsletter.]

Cara Ward

IVDR implications for clinical laboratories.

The first plenary session began with a detailed overview of the In Vitro Diagnostic Medical Devices Regulation (IVDR) presented by Dr Philip Kelly, HPRA. Dr. Kelly explained the implications of the regulation, drawing particular attention to Article 5.5, which outlines requirements for in-house developed tests—a subject of acute relevance for genetics laboratories. He noted the December 2030 deadline for justification under Article 5.5, stressing that laboratories must be prepared for evolving requirements and targeted evaluations.

This talk emphasised the importance of risk classification and ensuring devices carry appropriate CE marking, supported by clear technical documentation. Dr. Kelly also discussed the role of HPRA as competent authority in Ireland and the responsibilities of, suppliers, and laboratories in maintaining post-market surveillance. This presents an interesting mechanism whereby the laboratory QMS should feed back to the HPRA in not alone nonconformance but indeed issues regarding compliance. Laboratories using in-house assays or modifying commercial assays must comply with ISO 15189 and maintain a documented QMS to ensure traceability and justification for use. Amendments to the regulation designed to mitigate shortages and discontinuations were also covered, with practical advice on how laboratories should react in the event of shortages.

First Plenary Session (L-R): Dipika Shah, Philip Kelly, Dermot McBrierty

Questions from the floor included issues around derogation requests, compassionate use, and balancing regulatory compliance with clinical need. Dr. Kelly acknowledged that while HPRA had not yet inspected health institutions for in-house devices, they reserved the right to do so, and laboratories should act now to align practices with the spirit of the regulations.

A Patient's Story.

The plenary then shifted to the human dimension with a remarkable presentation by Dipika (Dee) Shah, Senior EQA Scientist with UK NEQAS, who shared her personal story of living with thalassaemia major. Dee, who has received more than 1800 transfusions over her lifetime, described the profound impact of her condition with honesty, humour and resilience.

Beginning transfusions at just six months old, she grew up negotiating not only the physical toll of four-weekly treatments but also the social stigma attached to an invisible illness. She recounted childhood restrictions on play, the secrecy around her condition, and the burden of self-administering desferrioxamine infusions as a teenager. While advances in oral chelation therapy eventually stabilised her ferritin levels, the complications of chronic transfusion including osteoporosis, diabetes, and repeated infections, remain ongoing challenges in the roller coaster of her clinical journey.

Dee's account was both a moving personal history and a reflection on the peaks and troughs of therapeutic innovation, capturing the promise, demands and risks associated with advances in therapeutic delivery of care; an area where diagnostics remains pivotal. Every test, every sample, she emphasised, represents a patient living with these realities. She also reflected on the extraordinary resilience required to live a full life despite such constraints, highlighting her active lifestyle and determination to spread awareness through public speaking and media.

At age 18 Dee moved from her paediatric hospital to an adult service. Soon after that she took her interest in the laboratory onto a professional level, qualifying as a Biomedical scientist. Adding a poignant dimension, Dee noted that her husband has himself endured major medical trials. Their combined experiences underlined the interdependence of laboratory science and lived patient pathway.

Advanced Practice

The second plenary focused on advanced practice and the professional landscape within laboratory medicine and beyond. Dr Irene Regan, Consultant Clinical Scientist at the Lancashire Haematology Centre, drew on her

experience running a diagnostic clinic for haematology patients. She illustrated how advanced scientific roles can reduce waiting times and improve patient pathways, citing her clinic's ability to achieve a seven-to-fourteen-day turnaround compared to the national forty-day target. She argued that advanced practice must mirror the patient pathway, matching skills to needs, and that properly trained Clinical Scientists could help alleviate the burden on overstretched medical colleagues. Parallels to the Irish system were clear, sparking debate from the floor about the extent to which such models could be adopted locally.

Following Dr. Regan, Dr Marie Ó Mír, CEO of the Irish Society of Chartered Physiotherapists, broadened the perspective by discussing advanced practice across Health and Social Care Professions (HSCPs). She highlighted new roles being created within radiography, physiotherapy, speech and language therapy, and occupational therapy, emphasising both opportunities and challenges. Workforce shortages, the need for masters-level qualifications, and debates around credentialing pathways versus traditional routes were all discussed. Dr. Ó Mír underlined the importance of patient understanding - knowing who they are speaking to - and encouraged professions to take ownership of their advanced practice development rather than waiting for permission. The spirited Q&A session demonstrated both enthusiasm and caution, as delegates questioned whether the UK model should be replicated in Ireland and whether advanced roles might challenge traditional training pathways.

Marie Ó Mír

Second Plenary Session (L-R): Catherine Byrne, Marie Ó Mír, Irene Regan

Clinical Chemistry Workshops:

After lunch, delegates split into four groups for workshops on Clinical Chemistry, Haematology, Microbiology, and Transfusion Science. I attended the Clinical Chemistry Workshop which provided delegates with a detailed and data-rich session.

Fib-4

MacDara Hickey, a UCD medical student working with the SVUH Biochemistry Lab, presented findings on the impact of analytical variability in AST and ALT assays on the calculation of the FIB-4 index. Fib-4 (Fibrosis-4) is one of a variety of serologic markers used to predict the degree of fibrosis in a patient's liver. It combines three laboratory tests (ALT, AST, and platelet count) with age.

MacDara's work underscored that calculated indices like Fib-4 are not just simple plug-and-play tools but represent a "three-body problem" in clinical chemistry. Variability in the measurement of individual components — in this case AST, ALT, and platelet count — can interact in complex ways, particularly through the denominator term in the Fib-4 equation, to produce disproportionate shifts in the calculated score. This highlights the need for precise and harmonized measurement of core analytes if composite metrics are to support reliable clinical decision-making.

Highlighted in this work was the challenge of calculating composite scores across siloed departmental systems and data. Ensuring accurate integration of data from different sources necessitated bespoke middleware solutions developed to support harmonization and reliable implementation in routine care. Using shared serum pools tested across Abbott and Roche platforms, he demonstrated how proportional bias could lead to reclassification of patients and potentially alter referral patterns for liver fibrosis. With MASLD/NAFLD becoming increasingly common, and liver biopsy remaining an invasive option, the need for reliable non-invasive markers is pressing.

Mac Dara Hickey's work highlighted both the challenges of applying calculated scores across laboratories without full awareness of analytical differences and also the benefits of the score in stratifying patients for further investigation and reducing unnecessary referrals.

EQA Insights into AST Assays.

Building on this theme, Anne Kane (IEQAS) presented data from the national EQA scheme on AST assays. Most labs in Ireland are still using the AST without Pyridoxil-5-phosphate assay, although IEQAS is seeing a slow but steady rise in the number of labs using the IFCC recommended assay, i.e. AST with Pyridoxil-5-phosphate. In the without Pyridoxil-5-phosphate assays, there has been a divergence of results between Roche and "other platforms" (Abbott, Beckman and Siemens) in recent months with the Roche assay showing lower results. IEQAS has separated these into 2 groups (both without Pyridoxil-5-phosphate), for EQA analysis. The with Pyridoxil-5-phosphate assays (currently Abbott and Roche), generally give the highest results, and will be assessed as a third separate group. All groups will be monitored carefully as numbers increase.

Anne highlighted the importance of having clear information in manufacturers' package inserts so that all lab staff can understand which assay is in use. It was also suggested that it is time for the standardization of enzymatic assays in Ireland. The difference in results will have direct implications for clinical decision-making, especially in hepatology where small shifts in cut-offs determine referral and management.

Faecal Calprotectin

The workshop then turned to faecal calprotectin, with Mariah Kelly (UCH Galway) presenting her verification study of the BioSystems A15s analyser. Against the backdrop of rising demand for inflammatory bowel disease testing, Galway's laboratory had seen a steep rise in referrals since 2019, with turnaround times reaching ten days. Mariah's verification confirmed acceptable precision, functional sensitivity, and good correlation with the Diasorin Liaison XL method. Bland–Altman analysis showed some systematic bias at higher concentrations, but overall correlation was strong (rho 0.886). Most compellingly, the adoption of the BioSystems analyser promised to reduce turnaround times from more than two weeks (using external services) to just two to three days, with projected cost savings of up to €4 million over five years. Her data illustrated the dual benefits of improved patient care and system efficiency.

Outcome Studies in Laboratory Medicine

The final presentation of the Clinical Chemistry parallel session came from Prof. Zhen Zhao (Weill Cornell Medicine, New York), speaking via Zoom on the value and practical application of outcome studies in laboratory medicine. Prof. Zhao noted that while advances in diagnostic technology have greatly enhanced analytical performance, too few studies demonstrate whether or not new assays genuinely improve patient outcomes.

Drawing on work from the IFCC Task Force on Outcome Studies in Laboratory Medicine (TF-OSLM), she outlined the need to move beyond analytical and clinical validation toward evidence of real-world benefit. Prof. Zhao described how inadequate reporting of analytical characteristics undermines reproducibility and translation of biomarker research. In support of this she outlined key research from her group (Sun *et al.*, 2019), She also referenced recent TF-OSLM exemplars, including studies showing improved workflow efficiency following the introduction of high-sensitivity troponin I (Warren *et al.*, 2024) and reduced turnaround to clinical action through automated critical-result reporting (Aponte et al., 2025). Details of these papers are referenced at the end of this report.

Prof. Zhao framed outcome research around five key questions:

- Can we trust the test? (analytical performance)
- Is it clinically meaningful?
- Is it feasible to implement?
- Does it improve outcomes?
- Is it worth the cost? (cost-effectiveness)

She contrasted association studies (correlative in nature) with model-based outcome studies capable of estimating deaths prevented, costs saved, or improvements in resource allocation. The presentation closed with a call for laboratories to embed real-world data (RWD) and real-world evidence (RWE) into evaluation pipelines, fostering collaboration across disciplines and reinforcing that outcome-focused evidence is now essential for shaping both clinical policy and laboratory practice.

As the day closed, delegates reflected on a programme that had balanced regulation, patient voice, clinical applications, analytical science, and international perspectives. The conference impressively captured both the complexity and the humanity of laboratory medicine. The IEQAS organising committee was warmly commended for curating a well-attended event that reinforced the role of external quality assessment, not just as a technical exercise, but as a platform for shared learning and advancement.

References (Prof. Zhao's workshop):

Sun Q, Welsh KJ, Bruns DE, Sacks DB, Zhao Z. Inadequate reporting of analytical characteristics of biomarkers used in clinical research: a threat to interpretation and replication of study findings. *Clinical chemistry. 2019 Dec 1;65(12):1554-62.*

Warren L, Fischer BG, Shemesh A, Scofi J, Pandya N, Kim RJ, Andy C, Rand S, Yee J, Semple S, Chadburn A. Improved Utilization of Serial Testing Without Increased Admissions after Implementation of High-Sensitivity Troponin I: a Controlled Retrospective Cohort Study. *Journal of General Internal Medicine. 2024 Apr;39(5):739-46.*

Aponte EM, Shemesh AJ, Kalomeris T, Oral B, Diaz S, Li Y, Yang HS, Cushing MM, Zhao Z. Accelerating time from result to clinical action: impact of an automated critical results reporting system. *Clinical Chemistry and Laboratory Medicine (CCLM). 2025 Jul 29(0).*

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Something to Read

Dr. Martin Healy

For those of you with an urge to read Plato's work, a new translation of his entire writings has just been published. Called *The Dialogues of Plato,* it runs to 1320 pages and was completed by Dr. David Horan based in the Trinity Plato Centre, Dublin. The project took about 15 years to finish. It is freely available here.

In his Dialogue titled Timaeus, Plato through the voice of Timaeus, discusses the origin of the cosmos and everything in it, including humans. He also deals extensively with the origin of disease in which 'bile' plays a prominent role.

Book Review – Dr. Adam Kay's Humerous View of Hospital Life.

Dr. Peadar McGing.

Adam Kay

For our December issue I thought that I would write about some books that give a lighter view of life in hospitals. I'm focusing on Adam Kay's books, starting with his Christmas one *Twas the Nightshift Before Christmas* (2019), then his initial and best-known book *This Is Going to Hurt* (2017), and finishing with one of his children's books *Amy Gets Eaten* (2023).

For those not familiar with Adam Kay he trained in medicine and worked from 2004 to 2010 as a 'junior doctor' in obstetrics and gynaecology. During that time he kept diaries which formed the basis of the two books mentioned. Since leaving medicine he has developed a very successful career as a writer of adult and children's non-fiction books as well as an award-winning career as a screenwriter and script editor. *This Is Going to Hurt* won the UK's Book of the Year award and the screen adaptation won him a BAFTA. I must admit that I thought, and still think, the book was brilliant, but I wasn't terribly enamoured with the TV adaptation. Readers might also be interested to know that his script editor credits include *Mrs. Brown's Boys.*

All the books mentioned are easily available to buy and can also be borrowed from the Irish public library system. Mater Hospital staff may borrow my copies of the diary books.

Twas the Nightshift Before Christmas.

As it's December, I'll start with the Christmas book. This is a collection of stories from his diaries over the various Christmases he was on duty. Those of us who have worked plenty of Christmases in our own hospitals would appreciate a lot of what he writes, even if we're not quite on the frontline in terms of meeting the patients that he is. Here is a short selection of extracts to give a flavour of his writing, and hopefully engage you.

Friday, 28th December 2007.

'Insufficient sample' - the bane of a junior doctor's life. I get this weird dread when I look up a patient's blood result - like watching someone undress for the first time, or being in a McDonald's queue at 10:28 a.m. and praying you make it to the counter before the breakfast menu finishes.

It's always an urgent blood test - one that came from a patient with atom-thin veins, that took you fifteen attempts and left the patient looking like they've just given a porcupine a a hand-job. You cradle the precious test tube of blood like a white gloved museum curator handling a first edition of the Old Testament, and with a quiet prayer, you send it on its journey to the lab. And then it comes back as 'insufficient sample'. You can't shake the feeling that the lab technicians are gaslighting you. You know the hallowed ampoule was full to the brim. And even if it wasn't, murderers can be convicted on DNA evidence from a decades-old micro-fleck of spittle; can't the lab just live dangerously and have a bash at telling me a patient's clotting from 2.9 ml of blood rather than 3. All you can do is bitch and moan at whoever's standing next to you, then go back to the patient for round two. A few more minutes' work for me. Yet more track marks for the patient, but ultimately no real harm done.

He follows that with an issue of 'insufficient sample' for semen analysis in the case of a couple undergoing investigations for infertility. This had more serious consequences in terms of delays to the patients' treatment. I won't go into the details of the case, not in this forum anyway, but suffice to say that the pre-analytical problem identified was not included in the seminal fluid section of our ACBI guidelines!

Monday, 25th December 2006.

On the face of it, this is not a Christmas dinner that will be troubling the Michelin Guide anytime soon - nuked roast potatoes, desiccated turkey and coagulated gravy wolfed down in a thirty-minute lunch break in a room that probably should be condemned.

That humorous description is followed in the next part of the day's entry by a footnote that includes very apt comment on listening to patients.

Mums know when there's something wrong with their unborn children. They're connected by more than just an umbilical cord, it's an almost psychic bond, and it's a negligent obstetrician who disregards a mother's hunch. This is, of course, in stark contrast to almost every other branch of medicine, where the mad shit that's resulted from a patient's frantic googling carries a roughly zero per cent chance of tallying up with their actual diagnosis.

This Is Going to Hurt.

All my family have read this book, and all have enthused about it.

Monday, 25 September 2006.

How the other half live. In antenatal clinic, an extremely posh patient attends for a routine appointment. All is well with her extremely posh fetus. Her extremely posh eight-year-old asks her a question about the economy (!), and before she answers, she asks her extremely posh five-year-old, 'Do you know what the economy is, darling?'

'Yes, Mummy. It's the part of the plane that's terrible.'

You can see how revolutions start.

In my presentation to the ACBI's CPD Day I warned of the dangers of misinterpretation of dictated clinical letters where what is typed sounds like the correct word, but is very much not. The following extract gives Dr. Kay's view of one such experience.

Thursday, 2 February 2006.

Signing letters to GPs in the gynae office.

Dear Doctor. I saw XA in clinic with her husband Sam, Esther Sugar and their two children...

A moment when I try to remember the appointment. Who of these three were the children's parents? I feel I should know who Esther is. Is she famous? Turns out Esther wasn't there at all.

Two months ago, the trust laid off almost all the hospital's secretaries, replacing them with a new computer system. The first difference is that rather than giving your Dictaphone tapes to the secretaries, you now dictate straight onto your clinic computer. It chooses to either upload your audio and send it abroad to the secretary equivalent of a sweatshop or to instantly delete it without trace. The second key difference is that the quality of the transcription would suggest the back end of the system involves two tin cans, a length of string and a lemur who's been trained to type. We're not to worry about that though. The main thing is all the money the trust is saving by sacking so many long serving, hard-working members of staff who adore the hospital. The one advantage of this system is that you can listen back to your original audio when reviewing documents. I press play.

Dear Doctor, I saw XA in clinic with her husband Sam (S for Sugar) and their two children.

I'm confident this takes me to the top of the leaderboard in departmental dictation fuckups, unseating 'The patient has known analogies' (no known allergies).

Have you ever talked about work over a meal somewhere and suddenly realised others are not as used to some things as we are?

Monday, 25 September 2006.

Referral from an A&E SHO - patient has some kind of warty vulval growth. I ask him if he can describe it a bit more.'Like cauliflower florets, mate. Actually, what with the discharge, it's more like broccoli.'

H [his partner] *did not enjoy this story over dinner.*

Finally from this book, an experience of explaining what you do and why you do it.

I accepted an invitation to represent medicine at my old school's careers fair.

After a morning talking to students about his work -

I felt uplifted as I left the school hall, actively looking forward to hitting the labour ward on Monday. What an honour it is to do this job - even if it is significantly worse than the sum of its parts. I stole a Deloitte doughnut and headed home.

And the next time someone asked me, 'Seriously, how do you do it?' I truly knew what the answer was. Although the answer I generally gave was, 'I like operating on strangers' vaginas', which at least ended the conversation quickly.

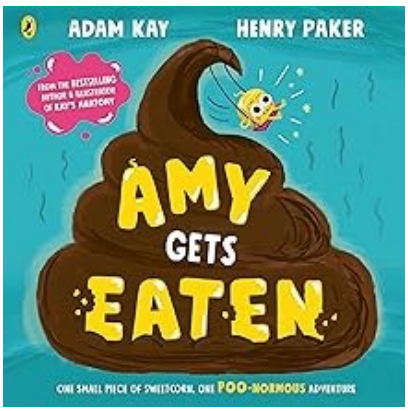
Amy Gets Eaten.

A completely different book is *Amy Gets Eaten*. This book is obviously aimed at young children so will primarily be of interest to those of you with young children or grandchildren (about age 3+). I don't have either, but I borrowed the book for myself (I'm definitely on the + side of 3+).

On a serious note, being able to discuss clinical / biochemical matters with lay people is important for clinical biochemists, especially trainees (in my FRCPath final viva I was asked how I would respond to a 16-year-old girl's inquiry about CA125 screening for her mother).

I borrowed this book to see how Dr. Kay explained the topic of digestion to young children. Sweetcorn kernel is largely indigestible and so he uses the story of how Amy, a sweetcorn, gets eaten by a young boy named Noah. Amy, protected by her kernel exterior – luckily Noah didn't bite her and break her protection – travels all the way through the digestive tract. A simple story, great illustrations by Henry Paker, and anatomical accuracy combine to make this an award-winning book.

As Amy makes her way from being eaten to finally emerging in Noah's faeces (the book uses the technical term 'poo') the whole of the digestive system is pictured and the processes at each section of the journey are described. Of course, if Amy had been a chocolate sweet, the book would have been much shorter and the outcome a grisly one. The fate of Amy's fellow travellers through the GI system was subtly set aside. It only took me a few minutes to read the book, but the transformation of biological facts to children's story was really interesting. If you have children or grandchildren, they will enjoy this, and you probably will too.



IRISH EXTERNAL QUALITY ASSESSMENT SCHEME CLG

IEQAS are currently offering a bursary of €1000 to support research in laboratory medicine, specifically in the area of external quality assurance (EQA) and quality.

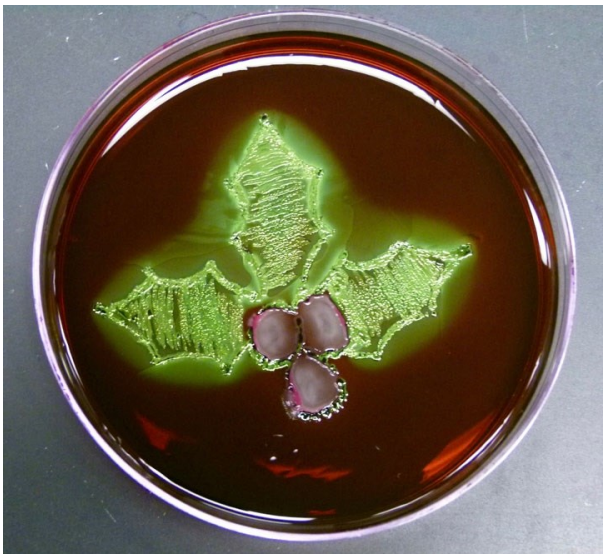
The research must contribute to the knowledge and practice of EQA in Ireland.

Those interested in applying will find the application form here.

Agar Art

Agar art is made by streaking an agar plate with pigmented bacteria using designs sketched on paper and placed under the plates. The clear agar allows the image to be traced onto the surface. The plates are incubated for several days with colony growth revealing the lines of the sketch. Some examples:

Gina Lee, Glendale College, California:
Klebsiella pneumoniae trunk and Bacillus subtilis star
Wikimedia Commons / CC BY-SA 4.0



Jennifer Pitt, Glendale College, California:
Pseudomonas aeruginosa berries and Escherichia coli leaves
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Ajay Kumar Chaurasiya Wikimedia Commons / CC BY-SA 4.0