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Official Publication of the Academy of Clinical Science and Laboratory Medicine



Volume 41 Issue 3

Autumn 2015



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contents

converse Autumn 2015



Page 18



Page 32



Page 40



Page 38

editorial	4
message from the president	6
news roundup	8-14
industry news	16
ACSLM news	17-19
service improvements	
MLP Collect	20
7-Day Routine Working in NHS	20
Uncertainty of Measurement in the Lab	21
Evaluation of Toxic Risk of Fluoropyrimidines and Determination of 5FU	22-23
Maternal and Newborn Clinical Management Systems Project	23
A New Era in High Sensitive Troponin - Asset or Headache	24-25
snippets	25-26
historical headlines	
My First Day in a Lab	27
My First Year in a Lab	28-29
meeting reports:	
ISBT Congress London	30-33
LABCON Clinical Chemistry Report	34-35
Dublin Pathology 2015	35
Review of ECA 2015	36
University Hospital Waterford Pathology Research Group	37
features	
World Health Innovation Summit	38-39
From Kevin St to Africa and Beyond	40-41
publications	
Rush Hour	41
Blood on my Hands	42-43
Report of the Investigation into the Regional Hospital Portlaoise	43
Staying Alive-How to Get the Best from the NHS	44
ACSLM shining lights	45
forthcoming events	
List of Forthcoming Events	46

It's a strange feeling but this is likely to be my penultimate editorial.

While lying around a swimming pool in Central France in July, sipping a glass of wine, I was thinking philosophically about the meaning of life and decided it was time to end my post with the Academy. I would like to spend more time around a swimming pool, visiting more cities, learning French and even cooking. I will be 71 in February and it is time for me to move on and for the Academy to select a younger and more active Executive Officer and Converse Editor. Ideally one who is at home with social media; I never "got" Facebook etc. I therefore told the Council that it was time to hang up my quill. However I will be here until a replacement is selected, probably until the end of the year.

When I retired from the Mater Laboratory 8 years ago the Academy asked me to take on a 2-day part-time post as Executive Officer for two years. This by default has grown to be a 2.5 day post embracing the Converse editorship and has lasted 8 years. It felt like a hobby instead of a job and I thoroughly enjoyed it.

I began my career in 1962, fifty three years ago, in the Pharmacology Department in UCD. And I look back on an enjoyable and fulfilling career. An article in the Historical Headlines section in this issue of Converse, originally published by the IBMS, My First Day in a Lab was so like my experience that I penned a companion piece My First Year in a Lab. Even a cursory glance will demonstrate how far the profession has come in 50 years. It will also be apparent how much we owe to those who went before us. Those who had the ambition and vision to aspire to more than the status quo and seek, for example, a degree- entry profession, an aspiration that seemed a step too far 50 years ago.



Those who founded and nurtured both the academic side and the trade union side. For many years the two organisations worked closely together. In the words of Francis Devine, the author of the MLSA history "the Academy fashioned the arrows and the union fired them". Those who joined the European medical laboratory societies and both learned from our fellow professionals but also contributed to advancing the profession at a European level. All organisations depend on a small cohort of committed activists. And this is as true today as it was 50 years ago. We continue to owe a debt to those who labour on the various committees that advance the aims of the Academy. It is not easy in these demanding times for people to find the time to participate. But it is essential. And I would urge younger readers in particular to consider getting involved. You have a valuable contribution to make and you will also learn a lot.

The picture is also enhanced by the memories of Dr Roberts in Blood on my

Hands, his experiences of over 50 years ago as a young Haematologist in Leeds reviewed in Publication Reviews in this issue.

These retrospective reviews also reveal the huge social changes that have taken place. I began my secondary education before the Free Education scheme was introduced. When I did my Leaving Certificate few went on to third level education. Now it is the norm. Until we joined the EU in the 70s women had to retire from their posts in the public service when they married. Yet we learn of an unusual attitude to working women in Dr Robert's laboratory where the Professor only employed young attractive women as the patients deserved to be cheered up! Similarly in the Blood Bank in that era the female Donor Attendants, and they were exclusively female and young, were only give a 3 year contract. Apparently one needed attractive young women to attract male donors. A Career Guidance booklet published by the Irish Independent listed one advantage of becoming an Aer Lingus Hostess as the good prospect of getting a husband. The initiation rites of new young staff would now be seen as bullying, if not sexual harassment. There was an almost complete lack of safety standards and in most labs SOPs were decades in the future.

A recent article in the Irish Times, "Working on is the new retirement" suggests I was ahead of the curve in that increasingly people work on after the traditional retirement age of 65, often in part time posts. Indeed for younger readers the official retirement age has already been increased beyond 65. Perhaps it is timely to start planning for this new reality, both at a personal and organisational level.

Tom Moloney



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Message from the President

'Be the Change that you Wish to See'

A year has passed since our name change to the Academy of Clinical Science and Laboratory Medicine. The change in name was a statement of intent that we are central to any changes that will occur in Laboratory Medicine in the years ahead and that we are prepared to develop, and have developed new roles and responsibilities to meet the modern demands of a dynamic healthcare environment. It is a statement that we wish to move forward, and that the health service needs to recognise the knowledge and resources that exist within it.

Our membership is at an all time high and our members are now more qualified than ever before. We are a large reservoir of knowledge and our expertise is growing. Participation in research and innovation continues to grow which could be said to be spurred on by the healthy participation in continuous professional development, and in the true spirit of enhancing that knowledge is in the interest of science and patient care. While the Academy will always encourage its members to enhance their ability to carry out their current roles it is also keen to produce a pathway for advancement outside of our current roles; this is more challenging but not impossible. The Minister for Health has welcomed this advancement and the ACSLM/MLSA joint position statement on Advanced Practice is now in its final consultative stage.

One of the recent key milestones that has the power to change the landscape of laboratory medicine is the recruitment of the National Project Implementation Manager for the Laboratory Modernisation Programme. Under the Laboratory Modernisation Programme (LMP), laboratory services will be reorganised to align with Hospital Groups into a clinically responsive 'Hub and Spoke' model. The key role of the National Project Implementation Manager for LMP is to ensure the effective implementation of the LMP. This role will involve effecting significant change in the way laboratory medicine services are organized and delivered in Ireland and demands working closely with existing operational/clinical and scientific management and staff, primary care contractors, suppliers and other relevant agencies. The LMP



Manager will be a member of and be guided by a LMP Steering Group and of course the ACSLM will have a key role. It is important to ensure that our laboratory services are fit for the needs of our patient populations and our Scientists working in those laboratories are adequately equipped to do so. While this is definitely a time of uncertainty for some of our Scientists there are also opportunities to expand or changes our roles.

I was delighted to be present at a very enlightening presentation on the laboratory's role in POCT in Primary Care given by the Midland General Hospital at the National Point of Care Testing Workshop. I would encourage all of our Scientists to participate in, at the very least CPD, or do additional courses, modules, post graduate education and embrace new challenges like the MRCPPath. Why you may well ask? Nothing stays static and when and if opportunity arises you have to be in a position

to respond. I urge you to be the change that you wish to see and recognise your own potential. The very successful CPD day run by Monica Fitzpatrick (ACSLM office) and the CPD Committee is a testament to the number of Scientists actively participating in high quality relevant CPD.

The second key milestone is the launch of the eagerly awaited Medical Laboratory Information System, MedLis. Many of our Scientists have worked tirelessly on this project and it is encouraging to see a pilot start- date finally announced.

As we often say, nothing stays static and we will see a major change in the ACSLM office in the near future as I am sorry to say that our colleague Tom Moloney, Executive Officer and Converse Editor has decided it is time to 'hang up his quill' and retire after a dedicated 8 years in the post. It is up to us in the ACSLM to manage that change and Tom, being always loyal to the Academy and thinking of its future has offered to make the transition for us as seamless as possible.

Irene Regan
President



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News Roundup

Retention and Storage of Records and Specimens

The Royal College of Pathologists and the IBMS have issued the 5th edition of The Retention and Storage of Pathological Records and specimens dated April 2015. Refer to appropriate websites for full text.

Beacon Becoming Paperless

The Beacon Hospital in Dublin has signed a contract with Slainte Healthcare that will see it become Ireland's first paperless hospital. Moving from paper to tablets will give caregivers access to patient's records from any location. Patients will also have access to their records.

Minister Says Health Needs Extra €1bn

The Minister for Health is reported in the Irish Times as saying that the health service needs an extra €1 billion of investment to simply meet existing demands. Even more is required to cope with a growing and aging population. Are we willing as a society to pay for an adequate health service and to embrace the major organisational changes that will be required he asks?

HSE Offers Incentives to Nurses to Return to Ireland

Facing a shortage of nurses the HSE is seeking to attract 500 nurses from overseas back to Ireland. Up to €1 500 tax free is offered to cover removal expenses and registration fees. Postgraduate education is also on the menu along with incremental credit for service overseas.

MLSA Backs Lansdowne Road Agreement

By a margin of 82% to 18% members of the MLSA voted to accept the proposals in the Lansdowne Road Agreement. Members will receive an increase in earnings of about €2 000 in 3 phases between January 2016 and September 2017.

Minister Backs Pharmacist Prescribing

The Minister for Health has told members of the Irish Pharmacy Union that he is keen to see pharmacists

prescribing medicines, perhaps starting with hospital pharmacists according to the Irish Medical Times. However he did not think this would be achievable within the lifetime of this Government.

Fianna Fail Proposes Greater Role for Pharmacists

Pharmacists have welcomed proposals in Fianna Fail's Health Policy 2015. It is argued Pharmacists could reduce pressure on GPs by offering a minor ailments service and expanded vaccination provision.

"Nighthawk" Radiology Services Expand to Hospital Pharmacies

Over the past 15 years in the US, Radiology has been disrupted by the "nighthawk" model of teleradiology. Nighthawk Radiology originally employed American radiologists living in Australia to provide after-hours services to US hospitals. Dark Daily reports. They employ staff in Hawaii and Australia. Services are provided to 27% of American hospitals. Now companies are offering Pharmacy services with Pharmacists sited remote from hospitals. Savings of 30% to 70% of labour costs are promised. Pathologists are wondering if laboratories are next to be faced with such initiatives.

RCSI Establishes Physician Associate (PA) Programme

The Royal College of Surgeons in Ireland in collaboration with Beaumont Hospital is setting up a pilot two-year Physician Associate programme commencing in summer 2015. There are over 100 000 PAs in the US and 200 in the UK. The profession is also established in Canada and the Netherlands. The programme is open to Health Science graduates. The cost is €12 000 per year. PAs work in hospitals and primary care settings performing a range of tasks usually done by interns. Videos on the RCSI web site include interviews with PAs, one of whom was a UK Medical Scientist.

Royal College of Physicians in UK Set Up Faculty for Physician Associates

The Royal College of Physicians in the UK has set up a Faculty for Physician Associates to oversee education standards for this newly established profession. They have

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the education and training to diagnose, treat, and refer autonomously within boundaries specified by their employers.

They will have to retake their national examinations every 6 years to ensure they remain trained to a high standard. There are currently 230 physician associates practising in the UK and 6 universities running courses for the profession.

IBMS- RCPATH Biomedical Scientist Histopathology Reporting Project

A pilot RCPATH biomedical scientist histopathology reporting project has now concluded successfully the Biomedical Scientist reports. A new conjoint board has been established and will oversee the training and assessment of biomedical scientists to undertake histopathology reporting of certain specimen types. This initiative follows 15 years of collaboration between the two organisations in developing professional examinations in areas such as cytology and in histopathology dissection.

NHS England Supports Prescribing Powers for Allied Health Professionals (AHPs)

Plans to give AHPs the ability to prescribe medicines without input from doctors will help the NHS develop new models of care a senior official said at a recent conference. The initiative is supported by NHS England, HSJ reports.

Hearings are scheduled with the Commission for Human Medicines which advises the Government. It is proposed to extend limited prescribing powers to radiographers, paramedics, dieticians and orthoptists. Physiotherapists and podiatrists already have such powers. Senior nurses and Pharmacists also prescribe medicines. Prescribers are formally trained and assessed and prescribe a limited range of drugs within protocols.

Payment to GPs for Phlebotomy Services to be Addressed

Appropriate arrangements in relation to phlebotomy services will be considered as part of talks on a new comprehensive GP contract the Irish Medical Times reports. There is a difference of opinion on this topic with many GPs arguing they are entitled to charge for this service while the Department of Health takes the view that it is a service that should be provided without charge under the current contract.

74 000 Sign Up for Health Insurance in Advance of New Restrictions

The introduction of life-time community rating was introduced to address rising premiums. Late entry loadings have been introduced for those buying health insurance for

the first time at age 35 or older. 74 000 subscribers took out insurance in April in advance of the May 1 deadline. A 6-year decline in insurance cover has now been reversed.

IBTS Cork Centre Approved

According to the Irish Medical Times the Department of Health has approved the building of a new IBTS centre in Cork, 18 years after it was first mooted.

UK Nurse Convicted of Murdering Patients

A nurse accused of murdering and poisoning patients at a Greater Manchester hospital was found guilty in May of murdering 2 patients in his care. He poisoned these two and injured 18 others by contaminating saline drips with insulin.

UK Pathology Joint Venture Boosts its Income

A London joint public- private pathology provider serving Guy's, St Thomas' and Kings Hospital in partnership with Serco has posted multi-million pound profits following initial losses in the early years according to HSJ. However changes in VAT rules reduced potential profits as they can no longer recover VAT on invoices to NHS trusts.

UK Dermatology Privatisation an "Unmitigated Disaster"

Arguments for and against NHS services being contracted out to private providers continue to rage in the UK and these resonate in Ireland. While some have been successful there have been high profile failures. The most recent one involved the outsourcing of dermatology services in Nottingham. An independent review published in June described the initiative as an "unmitigated disaster". The centre had an international reputation and was a major training centre.

The local Commissioners transferred the contract from the local Trust to well established private provider Circle Health. Medical consultants were required to transfer to the company. Almost all declined and given there is a national shortage of dermatologists easily found alternative posts in the NHS or elsewhere. The consultants had warned that this would happen but were ignored. Commissioners felt that consultants were being selfish and the initial reaction was a bereavement reaction which would pass. One Commissioner is quoted as saying they were not there to pander to the emotional needs of consultants. Circle did not anticipate problems in replacing staff who left. They were mistaken. Circle has had to recruit locums from abroad at great cost as they could not attract UK staff. They now fear the service is not financially sustainable. Some of the locums were not on the UK specialist register and were not qualified to teach in the UK. English language proficiency is also a problem. Other clinical staff are also believed to be leaving. The service has virtually collapsed with patients

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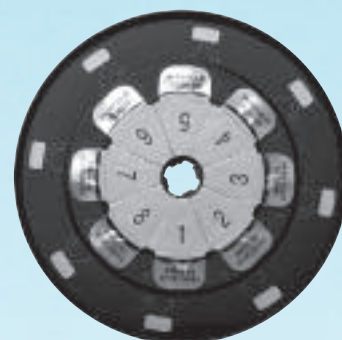
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referred to other hospitals up to 25 miles away.

One conclusion from the report is that the NHS must learn lessons from this debacle. There should be greater involvement with consultants. Bidders depending on retaining existing staff should assess the risk of staff not being willing to transfer and build this into their plans.

UK IT Contract for Supporting a Hub and Spoke Pathology Service Awarded

Outsourcing Company, Capita, has been awarded a contract to deliver a blood transfusion system as part of plans to create a centralised Pathology service across Nottinghamshire and Leicestershire. The company, along with IT firm Clinisys Group, secured the £1.6 million contract. The companies will build, design, and install a laboratory information system linking the existing institutions according to HSJ. The contract is part of a strategy to develop a hub and spoke model with one laboratory doing routine work alongside 5 specialist analysis sites.

Circle CEO Explains Why Contract to Manage Hospital Failed

In January Circle withdrew from the UK's only privately managed district general hospital contract just before a highly critical quality inspection report HSJ reports. The CEO has recently spoken at a conference. Among the factors that led to the failure to meet the demands of the contract was the way the NHS did not shift care from hospitals into the community thus reducing demand on AE as promised and anticipated by Circle. In addition the NHS began making extra payments to NHS hospitals that were failing to meet targets incentivising failure rather than success.

Fewer Pathologists Available to Perform PMs in UK

The number of Pathologists who are able and willing to perform post-mortems has dwindled in recent years in the UK HSJ reports. The discipline is no longer mandatory in training and the £95 fee per case is seen as too low. A breakdown in the post-mortem service has occurred in some regions and is imminent in others.

UK Trust Fined for Legionella Control Failings

Brighton and Sussex University Hospitals NHS Trust has been fined £50 000 for failing to control legionella. This followed the death of a patient. Although the Trust was monitoring at various sites and found many examples of positive tests for legionella and incorrect water temperature no appropriate action was taken. The UK

safety agency found staff did not have sufficient training and supervision.

Contract Placed to Embed Lean in UK Trusts

HSJ reports that Seattle based Virginia Mason has won a contract worth £12.5 million to take over the NHS Leadership Academy. The Virginia Mason hospital complex is a world leader in using Lean techniques in health care. Five Trusts will be supported initially in embedding Lean.

UK Study Links Nursing Staff Levels and Care Quality

A leaked study from NHS England shows a link between nurse numbers and patient outcomes HSJ reports. There were 40 outcomes examined including falls, trips, blood pressure, and respiratory rate. When qualified nurses made up more than 65-70% of staff, the number of slips, trips and falls on wards reduced by 70% and continued falling the more nurses were employed. The study comes at a time when NHS England halted work on safe staffing guidance being undertaken by the National Institute for Health and Care Excellence following the recommendations of the Francis Report and the scandal of patient deaths in Mid Staffordshire. Many nurses believe the project was ended because it was reaching the same conclusion as this study.

NICE Not to Publish AE Staffing Guidance Not Wanted by NHS England

The UK National Institute for Health and Care Excellence (NICE) was developing guidance on safe staffing in AE departments. NHS England asked NICE to halt this work. While NICE initially indicated they were going to publish their research they have now indicated they will delay the publication. Commentators have suggested that NHS England does not like the answers on what is safe staffing and the cost implications.

NHS Cancer Reform to Save 30,000 Lives a Year

Major reforms costing £2 billion are expected to save 30 000 lives each year in the NHS. There will be an increase of 80% in the number of tests carried out with 95% of patients getting a diagnosis within 4 weeks. Patients will be able to self-refer for tests and GPs will be able to order specialised tests such as CAT scans.

New Consumer Direct-Access Law in Arizona

Legislation introduced recently in Arizona eliminates "outdated regulation" according to the Dark Report.

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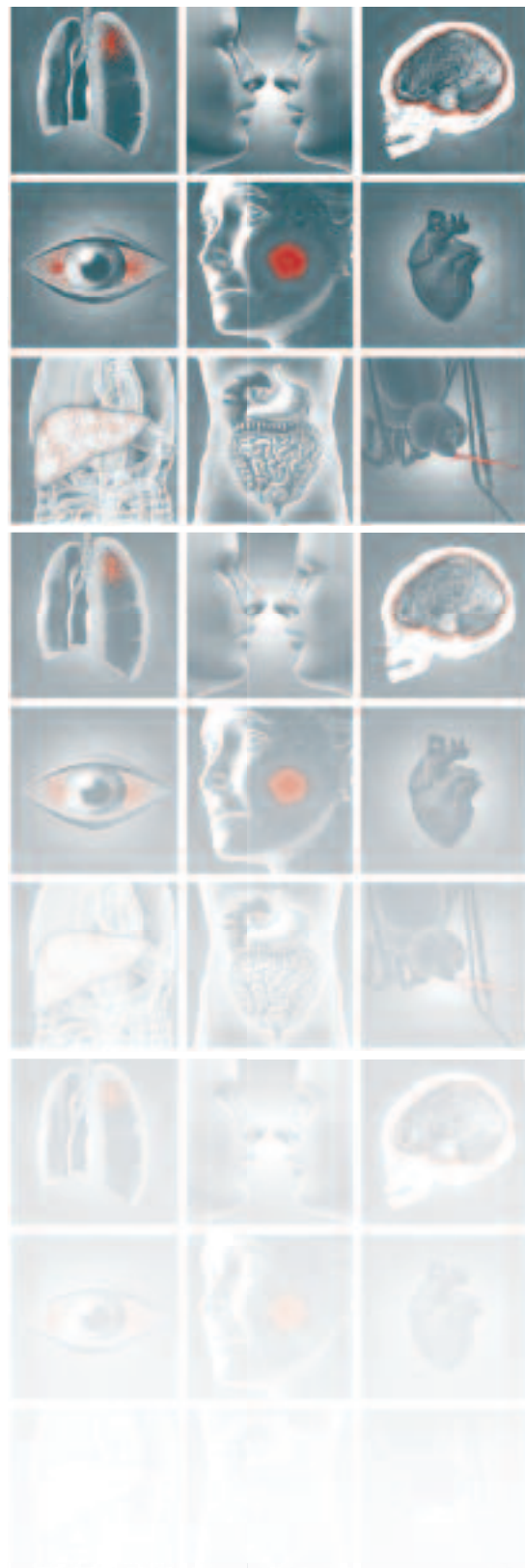
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Can Patients Use Test Results Effectively if they have Direct Access?

This topic was debated in the BMJ in February 2015. In the US the Department of Health has mandated direct access to tests results by patients. NHS England has also stated that patients should have direct access to medical records held by GPs. On the one hand patients, particularly those with chronic diseases, welcome access to their records. There have been numerous cases where critical results were not conveyed to patients or not followed up. On the other hand it is argued that patients would find it difficult to understand results as they are issued now, anxiety could be increased and there would be extra workload created for doctors.

Shortage of Technical Staff in Canada

The Canadian Society for Medical Science visited the Parliament in Ottawa to brief lawmakers on a looming shortage of Medical Technologists in Canada according to the Dark Report.

Breathalyzer for Diagnosing Lung Cancer

Clinical trials are underway in the UK, funded by the NHS, of a Breathalyzer that identifies 12 lung cancer biomarkers in a sample of breath according to the Dark Report. An inexpensive chemical sensor on a silicon chip rapidly detects a range of chemicals. Initial studies demonstrated the device accurately identified the biomarkers. The engineer who developed the device was working on an instrument to detect explosives in airports. He switched his research when his wife was diagnosed with cancer. The research funding is to develop a small hand-held device that can be used at the bedside. The instrument has the potential to identify other chemicals in breath identified with diseases.

Wireless Devices Safe if Kept One Metre from Equipment

Research from a Canadian university found minimal risk with wireless electronic equipment if staff follow guidelines requiring them to keep such devices more than one metre from sensitive equipment the Nursing Times reports. This is reassuring as wireless devices are increasingly in use to access patient records. "The nature of the problem is that there can never be zero risk, but the risk can be reduced to a low enough value that it is very unlikely there will be interference".

Programming Bacteria to Detect Cancer and Maybe Treat It

This is the title of a TED Talk, May 2015, given by Tal Danino, and accessible on the internet. The concept is extraordinary as is the accompanying movie. Because tumours are areas shielded from the immune system bacteria can thrive inside the tumour. The researchers used probiotic bacteria administered orally to mice and demonstrated the bacteria could grow within tumours. The organisms were then programmed to enter cancer cells and produce a marker that changed the colour of the urine. This speaker claims that bacteria can be programmed just like computers. They were able to show they could sensitively and specifically detect liver cancer. As the bacteria specifically localise tumours they have been programming them to treat cancer by producing therapeutic molecules from within the tumour environment that shrinks existing tumours.

Smartphone Testing for Prostate Cancer

Loughborough University has developed a rapid test for detecting PSA according to the Biomedical Scientist. The POCT system uses a magnifying lens attached to a smartphone to capture an image generated when blood is added to a microfluidic test strip.

Blood Donors in Sweden Get Text When Blood Used

Some blood centres in Sweden send an automated text message to donors thanking them for donating and updating them when their blood is given to a patient. There has been a positive public response according to Science Alert and it motivates donors. In addition some centres are sharing their stock levels with donors in the hope it will encourage donations.

Reduced Inpatient Admissions Leads to Hospital Closures in the US

The widespread strategy of shifting patient treatment out of hospitals to outpatient and home settings is having a major impact on US hospitals according to the Dark Report. "Healthcare is in the midst of an unprecedented transformation". Between 2008 and 2013 nearly 130 community hospitals closed. Major academic centres are also closing beds.

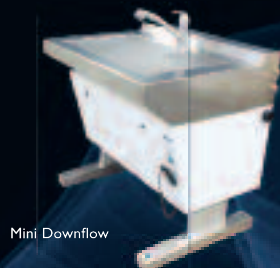
Telemedicine Kiosks Introduced in the USA

An American company, HealthSpot, has encouraged a wide range of organisations including schools, pharmacies and institutions such as the Mayo Clinic to install telemedicine kiosks according to Dark Daily. These 40 square-foot enclosures allow high-definition video conferencing for minor health issues with clinicians at the Mayo Clinic. No appointment is necessary, and fees are low.

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The majority of our customers prefer a bespoke solution for their chemical storage requirements. We are able to offer both ducted (exhausted to atmosphere) and re-circulating (activated carbon filtration) solutions.

Our customers are able to request specific cabinet dimensions, materials of construction, shelf configuration and door configuration, to optimise their design and available space.

In addition to the bespoke ducted storage cabinets we also offer turnkey ducting and fan packages, therefore providing a comprehensive installation for exhausted to atmosphere units.



1500mm wide, ducted, sliding glass door; stainless steel chemical storage cabinet with ramp and internal lighting.

DUCTED FUME CUPBOARDS

Cantel's range of Ducted Fume Cupboards comply with the requirements and recommendations of BS EN 14175 and are designed for use in Pharmaceutical, University, Hospital and Industrial Laboratories.

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We are able to undertake full turn-key installations, including the supply of all electrical equipment to control and operate the extract systems e.g. isolators, fans starters, interconnecting wiring etc.



External Ducting Systems and fans

AURA RE-CIRCULATING FUME CUPBOARDS



Filtrak™ Filter Change System

Our range of AURA Recirculating Fume Cupboards provide full fume and / or particulate containment for total operator protection, exceeding safety levels required in the British Standard (BS7989) and providing full compliance to COSHH regulations.



AURA 751

No ducting is required enabling simple installation, proving an environmentally friendly solution as all exhausted air is captured by the filters resulting in zero emissions to the environment and reduced energy costs.

We also manufacture
Micro biological safety cabinets
class 1/11, Laminar Flow, PCR
work stations and Ultra Sonic
Sample Processors

Industry News

ELF Test

The Enhanced Liver Fibrosis (ELF) Test is a NON-INVASIVE procedure for assessing liver damage caused by fibrosis in patients with a history of:

- Alcohol abuse
- Fatty liver disease
- HIV
- Hepatitis B and C

A quick and simple blood test can now put a patients' minds at rest – no biopsy means minimal pain and significantly reduced risk. The ELF Test can be performed within a standard GP Practice or Health Centre, avoiding the need to travel to a hospital.

How does the ELF Test work?

The ELF Test combines three serum markers which have been shown to correlate to the level of liver fibrosis assessed by liver biopsy (Rosenberg et al, Gastroenterology 2004, 127:1704-1713):

- Hyaluronic acid (HA)
- Procollagen III amino terminal peptide (PIIINP)
- Tissue inhibitor of metalloproteinase 1 (TIMP-1)

The algorithm measures each of these markers by immunoassay, to create an ELF score.

Order forms and further information are available from: MedLab Pathology

Tel: +353 1 2933690 Fax: +353 1 2933671

E-mail: sales@medlabpathology.ie

Website: www.medlabpathology.ie

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New Direction for MedLab Pathology

After 5 years establishing MedLab

Pathology (MLP) as a leading private clinical laboratory in Ireland Eamonn Madden is leaving his position as CEO. Eamonn is transitioning to a brand new corporate role for parent company Sonic Healthcare Ireland. As a result Niamh Cosgrave and



Brian Madden have been promoted, from their roles as Business Development Manager and Logistics Manager respectively, to the position of General Manager for MLP with specific business areas under each of their remit. This is an exciting time of change within MLP. Eamonn has been appointed Chairman of MLP and will remain a Director in partnership with David Byrne, CEO of The Doctor's Laboratory (TDL) UK, Colin Goldschmidt, CEO and Managing Director of Sonic Healthcare and Christopher Wilks, CFO and Finance Director of Sonic Healthcare.

"I have thoroughly enjoyed the challenge of creating MedLab Pathology from a green field site and building a great team of professionals who are fully focused on providing a reliable, cost-effective and patient centred service for all our clients. I look forward to my new role in Sonic Healthcare which will clearly demonstrate the advantages of partnering with Sonic on a national level. I am very pleased that Niamh and Brian have been chosen to lead MLP forward in the years ahead and continue to develop its potential".

ACSLM News

Cellular Pathology Advisory Body (CPAB)

The role of the CPAB is to organise a programme of meetings, seminars and workshops for members of the Academy of Clinical Science and Laboratory Medicine (ACSLM) supporting continual professional development and to promote the exchange of information between medical scientists in all areas of Pathology. The CPAB aims to keep abreast of all relevant research and emerging developments in Pathology and to keep ACSLM members informed of these emerging developments. This is achieved by regular updates on the website and by organising regular scientific meetings. The plan is to hold an 'Update in Cellular Pathology' meeting every autumn and to hold a Cellular Pathology 'User Group Meeting' in early spring each year. The venues will be varied to facilitate members outside Dublin.

Multiple Choice Questions on recent papers from Scientific Journals will be posted on the ACSLM website regularly to

enable ACSLM members gain 5 CPD points for each MCQ completed. There will also be a choice of essay titles where ACSLM members can submit their essay to gain 20 CPD points. There are 12 members of the CPAB. The chair is Marian Manning, retired Chief in Pathology, Cork University Hospital. There are two vice chairs, Naomi Cronin, Chief in Pathology, University Hospital Limerick, who will take over from Marian Manning in 2016, and Wil Robertson, Chief in Pathology, Mater Misericordiae University Hospital, who was the previous chair. The other members of the CPAB are listed on the (ACSLM) website.

Finally, the contact email addresses and phone numbers of all the CPAB members are available from the ACSLM office and we will be more than happy to advise ACSLM members if they have a particular scientific problem or to put them in touch with someone who will be able to help them.

Marian Manning,
Chairperson,
Cellular Pathology
Advisory Body



EUROBlotOne



The **EUROBlotOne** is a new, compact bench top instrument for the complete processing of immunoblots.

The system performs

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The system is

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Update in Cellular Pathology

Aisling Hotel, Saturday 3rd October 2015

10.00 - 10.30am	Coffee and Registration	Speaker
10.30 - 11.00am	Updates in Immunohistochemistry	Reiltin Werner, Senior medical Scientist, Pathology, CUH
11.00 - 11.30am	Perinatal Pathology – current practice in CUH	Susan Dineen, Senior Medical Scientist, Pathology, CUH
11.30 - 12.00pm	Advanced Practices in Diagnostic Cytology and the use of Cytology samples for Immunocytochemistry and Molecular Studies Cytopathologist, St. Vincents University Hospital.	Dr. Aurelie Fabre, Consultant
12.30 - 1.30pm	Lunch	
1.30 - 2.00pm	Molecular profiling of cancer to guide targeted therapy – Past, Present and Future	Tony O' Grady, Chief MS, RCSI Histology - Royal College of Surgeons in Ireland, RCSI Education & Research Centre, Beaumont Hospital.
2.00 - 2.30pm	Mohs Micrographic Surgery	Mark Collins, Senior Medical Scientist, MOH's Lab, BSH, Cork.
2.30pm - 3.00pm	Lean Initiatives in CUH- examples of Lean Projects undertaken recently in Pathology CUH	Helen Keeffe Pathology, CUH, Senior MS and Marian Manning retired Chief MS, Pathology, CUH
3.00 - 3.15pm	Update on Histodissection Course in DIT	Helen Lambkin, DIT
3.15 - 3.30pm	Closing remarks	Marian Manning

ACSLM members €15.00 • Non members €50.00

Clinical Chemistry Advisory Body

The Clinical Chemistry Advisory Body for the ACSLM is looking for new members to join their team.

If you are currently a member of the ACSLM and are a keen and enthusiastic individual who would like to be part of the Advisory Body Team (but were too afraid to ask), then please get in touch with me ASAP.

I am currently the chair of the AB and am actively seeking new members to join us, where our main aim is to support ALL our members in their continuous education and professional development.

You will be part of a panel of active scientists like yourself, who are enthusiastic and keen to promote their branch of Medical Science and make it accessible to all its members.

For information on the role of members in the AB and frequency of meetings please contact myself, Mick Amoruso at: michele.amoruso@cappagh.ie or on 0863070938 or through the Academy Office.

A New Hoist for Cuisle Holiday Centre - ACSLM Presentation of Funds



Front row, left to right: Joseph McQuaid, Sean Meehan, Noel Brennan, Irene Regan, Francis Hand, Patrick McKenna. Back row, left to right: Pauric Kelly, Paul McKenna, Sean Molloy, Enda Creedan, Eamon Sweeney, Mark McElroy.

Summary of Council Minutes

Members may view a summary of the Council minutes since January by scrolling down through the News section on the web page.

The Academy Website and CPD Programme

Current members of the Academy have full access to the website www.acslm.ie which includes participation in the Continuous Educational Programme (CPD).

To gain access to the website go to www.acslm.ie, on the top right hand side of the page you have three options (i) log in (ii) register. If you have previously registered online select (i) log in, if you are a new registrant select (ii) register, and follow instructions to fill in form and submit. This information will be forwarded to the office for verification of your status as a current member of the Academy. When verified you will receive an email with a link back to the website where you will choose your password. From now on you need only "log in" to the website using your user name or email address and chosen password.

To join the CPD programme: Log in to the website using your user name or email address, click on the CPD tab, select your disciplines plus Training and Education discipline and submit.

How to use the CPD Programme - 150 points over three years

GUIDELINE: one point per hour of scientific activity – 150 points over a three year period.

The CPD system is divided into two main sections each section has 4 categories

First Section: Activities we upload for you to gain points

1. MCQ's: Submitted by your Advisory Body - Expiry two years.
2. Events: Pre approved events, BioMedica, Labcon, and Society Talks. Expiry two/three months.
3. Journal Club: Uploaded by Journal Club Editors, covers lunchtime talks and more. Expiry two months.
4. Essays: Essay titles uploaded for you - or choose your own title. Expiry two years

Second Section: Self-Selective Activities you choose to gain points – submitted for approval:

Activities you have participated in and would like to submit for accreditation.

1. Continuing Education: Meetings, workshops, user group, chair, online, reflective practice
2. Lecturing & Teaching: Lectures-local, national, international level, mentoring, assessors

3. Professional Activities: ACSLM membership, journal editor, other memberships
4. Publications and Posters: Primary, Secondary, Subsequent authors, editor, New SOP

Example: to get points for attending a half day scientific lecture or 3 hour lecture; Select continuing education, click on half day meeting, click on 'get points' upload supporting documentation in PDF format only, and press submit.

Example: to get points for in lecture you presented in-house, select lecturing/Teaching, select in-house lecture (1st presentation), and click on 'get points' upload supporting documentation in PDF format only and press submit.

Example: to get points for academy membership, select professional activities, select Academy membership, click on 'get points' and submit.

These self-selective activities will show "pending approval" in your CPD profile. When approved you will receive notification via email.

As a training activity, go to MCQ's, select 'CPD MCQ June 2015' you could gain 2 points.

“MLP Collect” within the Saolta Hospital Group

Providing a full Electronic Audit Trail with Temperature Traceability throughout each Specimen's Journey

MedLab Pathology's Logistics department MedLab Logistics was awarded a tender for laboratory specimen transport for Galway University Hospital, Roscommon County Hospital and Portiuncula Hospital within the Saolta Hospital Group in December 2014. The requirement set out within this tender was to implement a complete temperature controlled laboratory specimen transport solution for the collection, transport and delivery of blood, fluid and tissue specimens in line with ADR and IATA regulations and complying with ISO 15189:2012 requirements.

The requirements are to provide routine, out of hours and emergency deliveries both nationally and internationally. It is a core requirement that collection, transport and distribution of specimens is carried out under conditions that maintain the integrity of the specimens at all times. Anne Mannion, Laboratory Manager, Galway & Roscommon Hospitals refers to the current services offered by MedLab Logistics “The service covers daily collection and deliveries between the three laboratories with onward deliveries to national and international destinations. MedLab Logistics service now provides us with full traceability and temperature control of specimens from point of collection to delivery. Galway University Hospital refers over 12,000 specimens annually to over 30 national and international destinations for specialised analysis and MedLab Logistics, MLP Collect, web based collection booking system allows us finally to have full tracking of all our specimens.”

“The change over to MedLab in December 2014 was seamless with the MedLab Logistics team on site for a two week period just prior to and following December 15th to ensure staff were fully trained in the new system and to

address any queries. MedLab drivers are very punctual, courteous and helpful. They together with the other members of the MedLab team are proactive in dealing with our queries and requests and have proved very willing to take on board suggestions we have made with regard to functionality of the MLP Collect web based system. The system is user friendly and while all daily collection are logged there is a feature that allows individual specimens in each individual package to be recorded thus allowing full traceability of package contents. We now have an electronic record of collection, record of dispatch from central depot and an electronic signed record of receipt in the receiving laboratory allowing us full confidence in that what is dispatched is received.”



Anne Mannion
Laboratory Manager
Galway and Roscommon
Hospitals

Brian Madden, MedLab Pathology's Logistics Manager, adds “MLP Collect revolutionises patient specimen transport. MLP Collect is the first system in Ireland to introduce a full electronic audit trail accompanied with real time temperature graphs for all pathology specimens sent through a logistics network”.

If you would like to find out more information on MedLab Pathology's “MLP Collect” System, please contact the Sales Team on 1800 303 349 or email sales@medlabpathology.ie.

Report on Seven-Day Routine Working in NHS Published

The most recent published report of the NHS pay review body, chaired by Jerry Cope, has focused on the feasibility of development of full seven-day services as part of the on-going NHS ‘agenda for change’ programme.

The key findings of the extensive report indicate that the two central barriers to a full seven-day working week are the impact on staff earnings (and its subsequent impact on morale and retention) following the removal of unsocial hours premiums and the necessity for ‘transitional-funding’ to offset the significant staff losses. The Review body consulted widely and with regard to pathology, the Federation of Clinical Scientists in its submission highlighted both the positive possibilities afforded by technology, in particular IT, while also pointing out the negative impact of delivering 24/7 services on and by an ageing workforce. Other unions and professional such as the Society of Radiographers and the Royal College of Nursing focused on capacity issues as well as the growing body of evidence of the potential negative impact of shift working on both physical and mental health and wellbeing, especially on a predominately female workforce.

Also interesting is the Reports comment on the need for fairness in the determination of reward packages for medical and non-medical grades, in particular the opt-out clause for non-emergency evening and weekend working in the current NHS consultant contract. In response to the Reports publication the President of the Royal College of Pathologists, Dr Suzy Lishman, stressed the need for significant investment in pathology before already overstretched pathology departments could safely operate routinely on a 24/7 basis. Notably Dr Lishman also highlighted the development of innovative working methods such as the development of Biomedical Scientists to take on roles traditionally undertaken by doctors which she believes will continue into the future but further added that it is not the solution to the delivery 7 day services in the medium term.

Evidently, industrial relations will play a significant role in any move to a full seven- day service in the NHS and no doubt Irish health care managers and policy makers will be monitoring developments across the pond with a keen and watchful eye.

Uncertainty of Measurement in the Laboratory and UK NEQAS (H)

Paul McTaggart¹, Ciaran Mooney², Barbara De la Salle¹ and Keith Hyde¹

¹UK NEQAS (H), PO Box 14, Watford WD18 0FJ, UK

²Department of Haematology, Rotunda Hospital, Dublin, Ireland

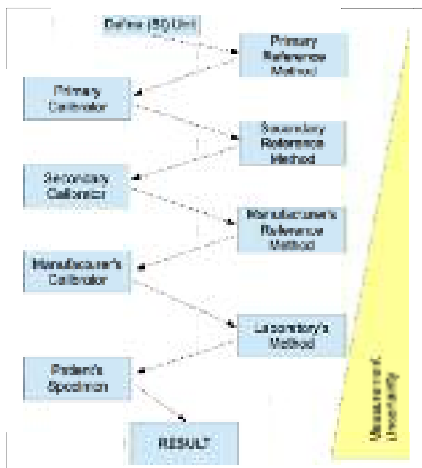
Introduction

Uncertainty of Measurement provides a quantitative estimate of the quality of a test result, and therefore is a core element of a quality system for laboratories¹. The same principle applies to External Quality Assessment (EQA) because the uncertainty of the assigned value is a measure of the quality of the EQA material.

ISO 15189, 5.6.2 requires that "The laboratory shall determine the uncertainty of results where relevant and possible."

Uncertainty of measurement is one of two inter-dependent metrological concepts, the other being traceability.

Healthcare scientists have for many years sought to achieve traceability by reference to primary standards which have international recognition, and to determine uncertainty of measurement by determining the various components of total analytical error.



The relationship between traceability of measurement and uncertainty of measurement.

Uncertainty of measurement increases as one moves down the traceability pathway from the definition of the SI unit to the result.

"A measurement result is complete only when accompanied by a quantitative statement of its uncertainty. The uncertainty is required in order to decide if the result is adequate for its intended purpose and to ascertain if it is consistent with other similar results"

National Institute of Standards and Technology, Background to Uncertainty of Measurement; www.physics.nist.gov

The challenges

ISO 15189, 5.6.2 states that "Sources that contribute to uncertainty may include sampling, sample preparation, sample portion selection, calibrators, reference materials, input quantities, equipment used, environmental conditions, condition of the sample and changes of operator."

Automated instruments are highly complex and to dissect out the individual contribution to total uncertainty of measurement by each variable would not be feasible in a routine medical laboratory. In addition, most of the automated instruments are closed systems in terms of reagents, calibrators and controls. Manufacturers seldom supply full information regarding traceability and uncertainty of measurement.

Therefore, the only uncertainty we can determine is the reproducibility of the final result produced by the instrument which is dependent on a combination of all of the above factors.

Uncertainty may be calculated using Internal QC data or by using commercial controls. For the accuracy component; the QC material chosen for reproducibility studies must be within the tolerance limits dictated by manufacturer and may not show any evidence of bias, proportional or systematic.

The within run uncertainty is calculated from the mean and standard deviation (SD) of repeated estimations (minimum 20) from a single sample in a single run.

The between run uncertainty is calculated from the mean and SD of the results from the daily IQC runs over a period of working days to obtain a minimum of 20 results

ISO 13528 9.2.1 states "If the standard uncertainty of the assigned value is large in comparison with the performance evaluation criterion, then there is a risk that some participants will receive action and warning signals because of inaccuracy in the determination of the assigned value, not because of any cause of the participant."

The standard uncertainty of the assigned value in EQA depends upon the method used to derive it, the number of laboratories (consensus values) and other factors including homogeneity and stability.

Worked examples

Estimation of Haemoglobin in the laboratory.

Haemoglobin was estimated 30 times, the mean was 135.6 g/L with an SD of 0.76 g/L.

The within run uncertainty (U_a) is calculated using the formula;

$$U_a = SD/\sqrt{n} = 0.76/\sqrt{30} = 0.14 \text{ g/L}$$

From the QC files over last 20 working days, the mean was 135.7 g/L with an SD of 0.86 g/L.

The between run uncertainty (U_b) is 0.19 g/L.

These uncertainties are combined to give the Combined Uncertainty (U_c) using the formula;

$$U_c = \sqrt{(U_a^2 + U_b^2)}$$

$$U_c = \sqrt{((0.14)^2 + (0.19)^2)} = 0.24 \text{ g/L}$$

To calculate the 95% confidence interval, this combined uncertainty must be multiplied by a "coverage factor" of 2. The result is known as the "expanded uncertainty".

Thus, the 95% confidence interval for Haemoglobin at a level of x g/L is x +/- 0.48 g/L.

Estimation of Haemoglobin in UK NEQAS (H)

In a recent Full Blood Count Survey, 529 participants returned data for Haemoglobin, the consensus mean value was 181.33 g/L with an SD of 1.013 g/L. The SD used to calculate the Deviation Index (DI) (SD_{pt}) was 1.012 g/L.

The standard uncertainty of the consensus mean ($u(x_{pt})$) is calculated using the formula;

$$u(x_{pt}) = 1.25 \times SD/\sqrt{n} = 1.25 \times 1.013/\sqrt{529}$$

$$u(x_{pt}) = 0.066 \text{ g/L}$$

How do we know if this uncertainty would have an effect on performance assessment? ISO 13528 9.2.1 requires that the standard uncertainty of the consensus mean be less than 0.3 times the SD_{pt} . In this case, $0.3 \times SD_{pt}$ was 0.304 which is greater than the uncertainty of the consensus mean ($u(x_{pt})$) of 0.066.

At this level the uncertainty of the consensus mean has negligible effect on the DI.

UK NEQAS (H) has been assessing uncertainty for FBC parameters and will be including the uncertainty value on reports in the near future.

Acknowledgements

Brendan Fitzpatrick for his help and guidance.

References

- White G H, Farrance I Uncertainty of Measurement in Quantitative Medical Testing – A Laboratory Implementation Guide. Clin Biochem Rev Vol 25 Suppl (ii) November 2004 S1-24

Evaluation of the Toxic Risk of Fluoropyrimidines and Determination of 5-fluorouracil (5-FU) at Biomnis Ireland

Fluoropyrimidines such as 5-FU, and also oral prodrugs (Capecitabine – Xeloda, Ftorafur – UFT, etc.) enter into the composition of almost 60% of chemotherapy protocols (in particular for digestive, ORL, breast and pancreas cancers). About 70% of colorectal cancer patients in the USA are treated with regimens including 5-FU.

Recent advances in pharmacology have shown the existence of significant metabolic variability between individuals, which can lead to drug toxicity in certain patients and lack of therapeutic efficacy in others. This variability between individuals is not always taken into account in current treatments, and its non-consideration exposes patients to the risks of toxicity or of therapeutic inefficacy.



Dr. Mike Louw

PATHOPHYSIOLOGY

Enzyme activity determines the manner in which a drug is tolerated by patients: the toxicity of a molecule is linked, not directly to the dose administered, but rather to the exposure of the organism to the drug. In this way, for the same dose prescribed to different patients, plasma concentrations can vary by a factor of 100, in particular for 5-fluorouracil (5-FU).

Cases of overexposure to anti-cancer drugs can have serious consequences. Fluoropyrimidines are at the origin of 20–25% of cases of grade III/IV toxicity, of which 3% are grade IV; these present principally at the level of the digestive tract and the bone marrow, or even in the central nervous system, with a risk of potentially fatal multi-organ involvement. These severe side effects appear from the first or second cycle, and carry a mortality rate of 0.3%.

The metabolism of molecules of the fluoropyrimidine family, which includes 5-FU, involves dihydropyrimidine dehydrogenase (DPD). Polymorphisms in the gene for the enzyme influence its metabolic activity. In the general population, 3–5% of persons carry mutations in the DPYD gene which influence DPD activity; a larger number have an abnormal activity of this enzyme which is not linked to a known genetic mutation. Genetic variations within the DPD gene (DPYD) can lead to reduced or absent DPD activity, and individuals who are heterozygous or homozygous for these variations may have partial or complete DPD deficiency; an estimated 0.2% of individuals have complete DPD deficiency. Those with partial or complete DPD deficiency have a significantly increased risk of severe or even fatal drug toxicities when treated with fluoropyrimidines; examples of toxicities include myelosuppression, neurotoxicity and hand-foot syndrome.

EVALUATION OF THE TOXIC RISK OF FLUOROPYRIMIDINES BY A MULTI-PARAMETRIC APPROACH (5FU ODPM TOX) (BEFORE TREATMENT)

This test enables the risk of fluoropyrimidine toxicity to be evaluated and the determination of the dose to be administered in the first cycle, thanks to its multi-parametric approach combining:

- screening for gene mutations that influence dihydropyrimidine dehydrogenase (DPYD);
- determination of uracil (U) and dihydrouracil (UH₂);
- consideration of the patient's pathophysiological parameters.

Sample Requirements:

- Dihydropyrimidine Dehydrogenase (DPYD) Genotyping: 1 tube of Lithium heparin whole blood (without separator gel) (green cap) (Refrigerated)
- DPD Phenotyping and Determination of Uracil and Dihydrouracil: 2 tubes of Lithium heparin plasma (without separator gel (green cap)); centrifuge, decant the plasma and freeze it within 30 minutes of blood draw. (FROZEN)

Methods

- Genotyping: PCR technique with allelic discrimination (Taqman probes)
- Phenotyping: UPLC / UV technique (Ultra Performance Liquid Chromatography with UV detector)

Interpretation

In the case of toxicity risk, therapeutic advice is given directly on the results report to help the physician to determine the dose to be administered for the first cycle:

- Partial DPD deficiency => Reduction of 5-FU dose, without drop in efficacy.
- Total DPD deficiency => Fluoropyrimidine treatment contra-indicated.
- Normal DPD activity => Administration of a standard dose for the first cycle.

DETERMINATION OF 5-FLUOROURACIL FOR DOSE ADJUSTMENT (5-FU ODPM PROTOCOL)

(DURING TREATMENT)

This test enables the dose to be calculated as a function of pharmacokinetic, physiological and pathophysiological parameters and of the characteristics of the chemotherapy protocol during the entire duration of treatment.

Sample Requirements (1 sample per cycle)

2 tubes of Lithium heparin plasma (without separator gel (green cap)), to be centrifuged. Centrifuge, decant the plasma and freeze it within 30 minutes of blood draw. (Frozen)

Method:

UPLC / UV technique (Ultra Performance Liquid Chromatography with UV detector)

Interpretation

In the case of under dosing or over dosing, the therapeutic advice that appears on the results report will enable the physician to adjust the dose to be administered for the next cycle:

- In the case of partial DPD deficiency and/or high plasma concentration of 5-FU: reduction of the 5-FU dose without loss of efficacy.
- In the case of normal or high DPD activity and/or plasma concentration of 5-FU in the therapeutic zone or below this zone: administration of the standard dose or increase.

In conclusion, a partial DPD deficiency appears to play an

important role in the etiology of 5FU-associated toxicity. Considering the common use of 5FU in the treatment of cancer patients, the severe 5FU-related toxicities in patients with a low activity of DPD, and the relatively high frequency of mutations in DPD-deficient patients, it would be preferable for the analysis of DPD activity to be routinely carried out before the start of treatment with 5FU.

If you would like further information regarding the above tests please contact your local hospital laboratory or Biomnis Ireland on (01) 295 8545 or sales@biomnis.ie.

Dr M.S. Louw

Consultant Chemical Pathologist/Medical Director/Biomnis

Maternal and Newborn Clinical Management System Project (MN-CMS)

The MN-CMS Project is the design and implementation of an electronic health record (EHR) for all women and babies in maternity services in Ireland. This record will allow all information to be shared with relevant providers of care as and when required.

The MN-CMS is required to address the immediate concern of hospitals providing maternity services whose current IT systems are at end-of-life and in other cases to provide IT systems for hospitals that don't have such systems and are using primarily paper-based record keeping systems.

The project has been running for a number of years and it has passed all required approval/review stages, including the external Peer Review process required by the Department of Public Expenditure and Reform. The MN-CMS project is in active mobilisation with commencement of the delivery of implementation services by the HSE National Project Team and the selected vendor – Cerner Ireland Limited in May 2014. Since the commencement of the project, the National Project Team and Cerner's project team have been working together on project planning and working towards the first set of deliverables contained within the contract.

This project will be implemented in all 19 public hospital facilities providing obstetric and neo-natal services. The project will involve real change to operational practices across all the relevant services, which will require leadership and drive by clinicians and managers, along with the assignment of clinical, nursing/midwifery and ICT resources at national and local levels. The project will require prioritisation at national and local level.

Rollout

The rollout period will be 3 years for all 19 sites. Rollout will be organised in four phases with the first phase comprising 4 hospitals and the next three comprising 5 sites each. There will be an initial period for configuration, build and testing of the national system. It will be late 2015 before this stage is completed after which the implementation in the first site – Cork University Maternity Hospital – will be undertaken. It is likely to be the first quarter 2016 before go-live at Cork is achieved.

The remaining hospitals in Phase 1 will be:

- The Rotunda Hospital
- National Maternity Hospital
- Kerry General Hospital

Each phase 1 site has put in place a local implementation group with a project lead. These project teams have been

working with the National Project Team and Cerner in the following areas:

- Workflow mapping
- Value Stream Mapping
- Data collection

This work is to help to build a picture of how maternity and newborn services are delivered at the various sites.

In addition, a number of work groups (work streams) have been set up to work on the design and configuration of the system.

Nominations were sought from each of the 19 hospitals for representatives to work across these work groups, with the aim of ensuring that the system is a national build, with input from all units.

Ordering work stream

This work stream focuses on all of the laboratory requests (Orders) which will be placed through the system. The work stream comprises representatives from various laboratory disciplines and those who will be placing requests in the system such as neonatal nursing, midwifery and medical staff (NCHDs / consultants). As MN-CMS order communications will subsequently interface with the Medical Laboratory Information System (MedLIS), this project is also represented on weekly conference calls. The National Lead for the work stream is Marie Culliton, Laboratory Manager in the National Maternity Hospital.

Challenges for the team surround agreeing the order catalogue, the order entry formats (essentially electronic order forms) and interfacing with existing LIMS and with blood track. Agreement is also required on the management of external referral results and point of care testing results. Pre analytical quality assurance will be improved through features of the system such as specimen tracking, with printing of blood collection labels at the bedside following a scan of the patient identification barcode. Implementation of the MN-CMS will allow hospitals providing maternity and neonatal services to avail of the many opportunities that 'Order Comms' provides.

Communications

If you require further information, please direct queries to Joan Malone, MN-CMS Business Implementation Manager at joan.malone1@hse.ie

A New Era in High Sensitive Cardiac Troponin – Diagnostic Asset or Heartache?

Coronary disease is a major cause of morbidity and mortality worldwide. Data from the Mater University Hospital, one of the largest regional cardiac catheterization centres, shows over 1,200 percutaneous coronary interventions (PCI) are performed annually, of which 350 were for acute AMI (STEMI), approximately one patient daily, and 850 non-STEMI cases during 2014.

Prompt recognition, diagnosis and appropriate cardiology intervention in acute events improves outcome. Acute myocardial infarction (AMI) is defined as myocardial cell death secondary to decreased blood flow and prolonged ischaemia.

Troponin (Tn) is a regulatory protein that controls the calcium-mediated interaction between actin and myosin. It is a complex of 3 integrated proteins, which play a fundamental role in the contraction and relaxation of both cardiac and skeletal muscles. The 3 different isoforms TnC, TnI and TnT have different physiological properties. TnC binds to calcium ions, which results in a structural change in TnI. TnI binds to actin, securing the troponin-tropomyosin complex and leads to muscle relaxation by interrupting the actin-myosin links and TnT binds the troponin group to tropomyosin, which is responsible for contraction. Skeletal forms of TnI and TnT are replaced by cardiac specific isoforms during fetal development and immunoassays using highly specific antibodies to cTnI and cTnT can detect levels of these proteins, which correlate with absolute specificity for myocyte damage. These cTnI and cTnT are the standard biomarker for myocyte necrosis and diagnosis of AMI and risk stratification of patients presenting with symptoms of acute myocardial ischaemia. The vast majority of these patients present to the emergency department. In an audit of 1,119 cTn requests at Mater University Hospital, 45% were generated in the Emergency Department with only 3% coming from cardiology. The clear cut case of the patient with acute unprovoked chest pain, described as weight on chest or pressure like pain, with or without radiation to the left arm, with or without sweating and lasting greater than 20 minutes with ECG changes indicative of ischaemia, does not need cTn measurements and evidence is strong for a rapid transfer to a cardiac catheterization laboratory.

Management and definitions of myocardial infarction have been directed by clinical guidelines, in particular, the expert consensus document and third universal definition of myocardial infarction published in 2012. This coincided with a new era of high sensitive cTn, (hs-cTnI and hs-cTnT), with more analytically robust assays with levels of detection as low as 1.1 ng/L and improved assay imprecision. The clinical classification of AMI was redefined, where a spontaneous atherosclerotic plaque rupture and thrombus formation leading to decreased blood flow with resultant myocyte necrosis is an MI Type 1. Where the pathophysiology of MI



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Type 1 is well defined, the classification of MI Type 2, which covers a group of patients who have elevations of cTn but do not meet the traditional criteria for AMI has led to some confusion. MI Type 2 is an MI secondary to ischaemia due to imbalance between oxygen supply and demand, where a condition other than coronary artery disease contributes to the ischaemia. Both MI Type 1 and Type 2 are forms of AMI and both are characterized by elevated cTn and increased delta changes in serial cTn measurements and should be assessed based on clinical history and symptoms, ECG and angiography. The now evident elevations in cTn in patients, which were undetectable in previous contemporary cTn assays have resulted in the MI Type 2 classification. This, together with the no evidence of plaque rupture and thrombus from angiography in some patients, despite elevated cTn has led to this concept of a

different type of supply-demand mismatch ischaemia, a type of secondary MI. There will undoubtedly be more debate on this topic.

All the benefits of a great assay, but not everyone is happy. When cTn is elevated we think heart, and referrals to cardiology are generated as a result of a raised cTn, rather than clinical symptoms suggesting AMI together with a raised biomarker. One cardiologist's view (R Jesse) published in Journal of the American College of Cardiology (JACC) in 2012 "when troponin was a lousy assay it was a great test, but now it is becoming a great assay, it is getting to be a lousy test". Two main reasons for the cardiologist's "lousy" test label, is indiscriminate ordering in patients with low pre-test probability of AMI and lack of specificity for acute treatable cardiac injury, with rises seen in renal impairment, heart failure and many other chronic conditions as well as many acute secondary ischaemia-related causes such as shock, sepsis and pulmonary oedema.

So what exactly does high sensitive mean in a biochemical world where there are assay to assay differences and assay-dependent 99th percentile decision cut-offs? The total imprecision of the assay at the 99th percentile should have a CV $\leq$ 10% and measurable values should be attained in a normal healthy reference population. The more detectable the levels in normal subjects, the higher the sensitivity classification. The Abbott STAT hs-cTnI assay has values below the 99th percentile detectable in 95% of a healthy population and is assigned a Level 4 score, whereas the Roche hs-cTnT with values detectable in up to 75% of normal subjects is assigned a Level 2 score. As this is becoming more achievable the future will be a reference interval rather than a 99th percentile cut-off but we are not there as yet.

So what is good about hs-Tn? Early rule-out is a significant advantage, with improved confidence in a negative result facilitating early discharge or earlier diagnosis of a non-cardiac cause of illness. Furthermore, the improved

functional sensitivity has the benefit in earlier identifying women at risk of acute myocardial necrosis. Gender specific 99th percentile values are applied in the use of the Abbott STAT hs-cTnI, 16 ng/L for females and 34 ng/L for males, with Roche hs-cTnT having a generally accepted consensus unisex 99th percentile of 14 ng/L. This sensitivity was not possible with the previous generations of contemporary assays that generally quoted in the region of 0.04 µg/L, equivalent to 40 ng/L.

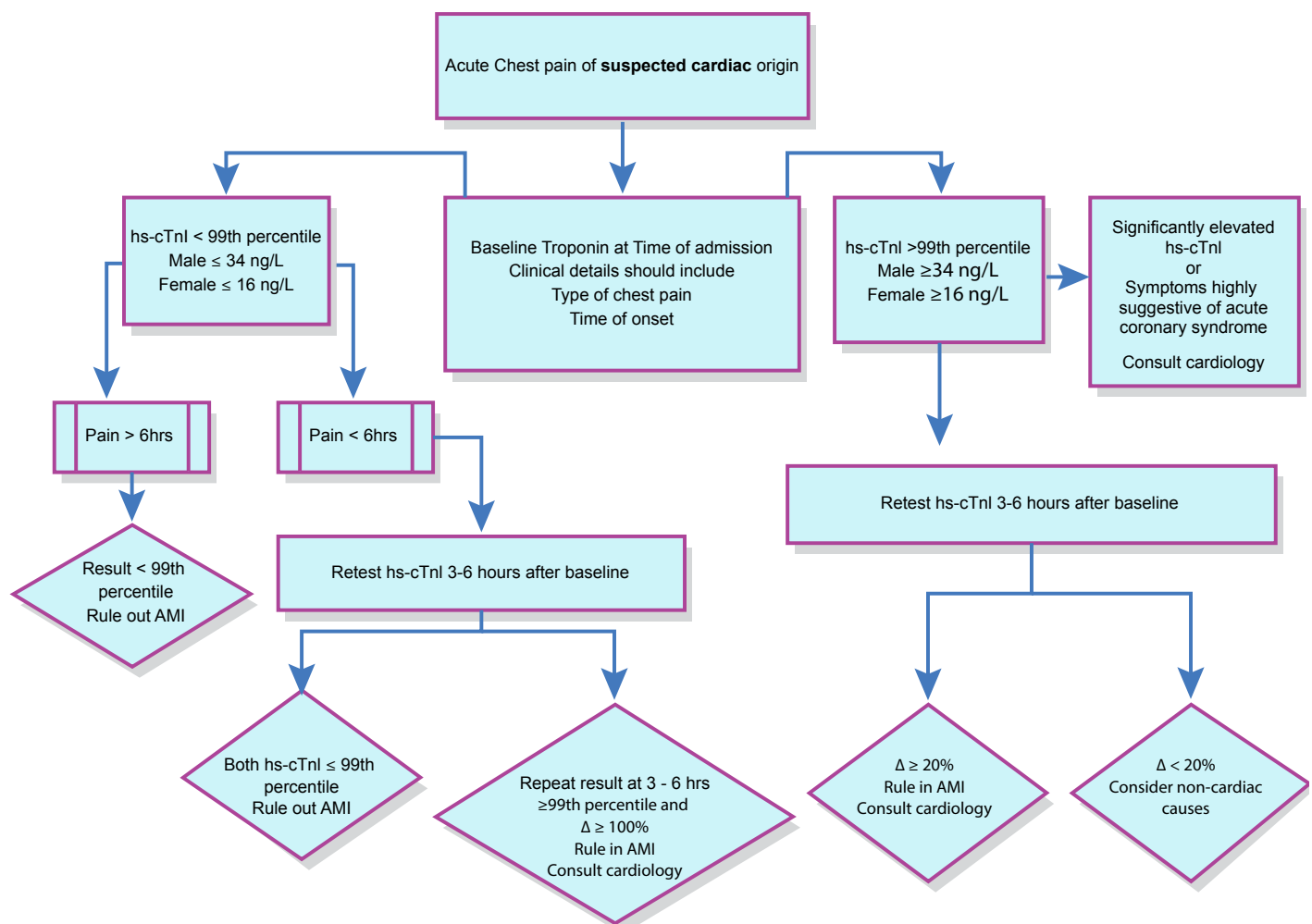
What can laboratories agree on to improve the diagnostic sensitivity of troponin analysis in its current use in MI Type 1 and Type 2? All laboratories should know their assay characteristics, level of quantitation and imprecision. High sensitive cTn should be reported in ng/L with assay appropriate 99th percentile decision cut-offs, ideally derived from normal reference populations locally. If this is not feasible, manufacturers and evidence from the literature should be used. Consider if age and, or gender differences are applicable to the 99th percentile criteria. There is less consensus for AMI for reference change values with serial cTn measurements. We quote a conservative change of 100% to cascade for cardiology opinion, although we know that a septic patient may have such changes in the absence of an acute myocardial event.

Patients with stable coronary and other system diseases commonly have raised background cTn levels, which

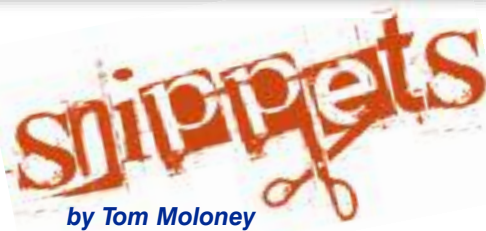
correlate with poor prognosis. In due course, as evidence builds we will be using cTn in chronic disease, to actively intervene in those patients with chronic elevations in cTn to improve their outcome. However, this lack of specificity for acute necrosis is a major confounder in the emergency setting. To overcome this a diagnostic algorithm designed by laboratory specialists, cardiologists and ED physicians helps optimize the clinical criteria in which we should measure cTn, with important emphasis on clinical features and symptoms. When ordering a diagnostic test like cTn, a clinician should have a pre-test probability that if the test is positive it will correlate with symptoms and confirm the pre-test index of suspicion for AMI.

Troponin remains highly topical, with almost 20,000 papers on the subject in PubMed. The degree of sensitivity of hs-Tn assays will change the landscape in evaluating risk and predicting prognosis in chronic illness involving the heart, including cardiomyopathies, transplant rejection, chemotherapy-induced cardiotoxicity and in other diseases where cardiac morbidity is high, including kidney disease, sepsis, stroke, with the literature populated with new evidence pointing to cTn use in predicting prognosis.

Algorithm designed by Dr Maria Fitzgibbon and Dr Niall Mahon, Consultant Cardiologist, Mater University and Mater Private Hospitals



A guideline biochemical diagnostic algorithm for use and interpretation of hs-cTnI in patients presenting with chest pain of suspected cardiac origin without new ECG changes (non-STEMI)



by Tom Moloney

The Mystery of the Microscope in the Mud

A rare brass microscope was discovered in mud dredged from canals in Delft, the Netherlands, in December 2014. The instrument is thought to have been made by Dutch pioneer microscopist Antony van Leeuwenhoek and it is an important find – if it is genuine according to an article in Nature. The last Leeuwenhoek microscope in public hands was a silver instrument that sold for more than US\$500,000 in 2009.

The ten microscopes attributed to Leeuwenhoek are diminutive, comprising a biconvex lens sandwiched between two riveted body plates. A positioning screw holds a stage block and a pin to secure the specimen. A smaller screw moves the stage block to focus the image.

The Delft microscope's design and dimensions are comparable to those of a Leeuwenhoek microscope in the Boerhaave Museum in Leiden. Although the lens is abraded, it would have given about 160 X magnification.

A Lamp Powered By Gravity

Around 1 billion people live without electricity and many use dangerous kerosene lamps. Sciencealert.com describes a \$10 lamp designed by UK engineers that generates electricity using gravity. A 12kg weight, such as a bag of sand, is attached to one end of a cord attached to a pulley; an LED is at the other end connected via gears. The weight is lifted high and allowed to drop slowly producing kinetic energy that is used to power the lamp. About 20 minutes light is produced before the weight is raised again.

Self-Drive Cars Involved in Accidents were Blameless

Google's self-drive cars have been involved in 11 accidents since the project began 6 years ago according to media reports. But "not once was the self-driving car the cause of the accident." On 7 occasions the car was hit from behind at traffic lights. On other occasions the car was side swiped by a driver-operated car or was being driven in manual mode by a Google staffer.

Robot Kills Worker in Car Plant

A 22-year old worker in a Volkswagen plant near Frankfurt was installing a robot designed to assemble car parts when it grabbed him and crushed him against a metal plate www.sciencealert reports. The company is attributing the incident to human error and says

the robot did not malfunction. US data indicates at least 33 humans were killed by industrial robots in the last 30 years.

Safety Documents Cause Accident

The president of the Royal College of Psychiatrists is recovering from a fractured metatarsal after slipping down stairs. According to HSJ he fell over a pile of documents left on the stairs. And whence the documents? The National Patient Safety agency, that's where!!

Eating Chocolate is Good for You

"Higher chocolate intake is associated with a lower rate of future cardiovascular events". That is the conclusion of a 12-year UK study that followed 25 000 people. The study confirms findings from previous investigations.

Higher levels of consumption were associated with factors such as lower BMI, hip ratio, systolic blood pressure and diabetes according to a report in Nursing Times.

First Leprosy Case in History is 4000 Years Old

Leprosy has been identified in remains at a site in India dated to 2 000 BC. Experts speculate that the disease came with the great migrations of humans out of Africa. (On-line journal PLoS ONE)

Why Did Leprosy Die Out in Europe?

At the beginning of the 16th Century leprosy changed from being a common disease to a rare one in Europe. A Study in Science reveals that DNA extracted from the graves of medieval victims is nearly identical to the modern bacterium. So the organism did not mutate and become less virulent. Researchers suggest humans developed resistance to the disease through intense natural selection with the isolation of the victims leading to low levels of procreation by victims and to improved nutrition.

The Health Outlook is Not Great for Those Born in October

A recent US study of 1.7 million patients confirmed previous investigations indicating that seasonally dependent early developmental mechanisms may play a role in increasing lifetime risk of disease (Journal of the American Medical Informatics Association). The month in which you are born can affect the risk of developing 55 different diseases, including asthma and heart disease. However the risk is minor compared with other risk factors. The authors note that astrology puts great weight on your month of birth. Seasonality is a proxy for variable environmental factors such as pollen count, dust mite exposure and temperature. In

the Northern Hemisphere, the healthiest month in which to be born is May and the worst is October.

You Age Faster on Top of a Tall Building

Einstein's prediction that gravitational time dilation exists has been confirmed using super-precise clocks. Time slows down near massive objects such as the Earth. According to Science Alert someone who works on the ground floor of a building will age slower than their co-workers who sit on the 10th floor; but only by around 10 nanoseconds a year.

Health Will Need 50% of Tax in 2062

Extrapolation of the trend over the past 50 years indicates the NHS will need 50% of the predicted tax income in 2062. This is clearly not realisable and there must be major reform HSJ reports.

Merger of IBMS and RCPATH Proposed in the 1990s

A "think tank" formed by the Institute of Biomedical Science and the Royal College of Pathologists in the late 1990s proposed that the two organisations merge to form a Royal College of Pathology. The idea was to merge medical, clinical scientists and medical scientists into one body. There was considerable resistance from members of all bodies and the idea was dropped. However they did form a general forum, a Pathology Alliance, which still meets regularly.

A Mini-Ice Age in 15 years?

A review of the Sun's activity predicts a 60% drop in solar activity between 2030 and 2040. The presentation was made at the National Astronomy Meeting in Wales according to www.sciencealert. Such low solar activity has not been seen since the last mini ice age between 1645 and 1715. Very cold winters in the Northern hemisphere led to the River Thames freezing over.

Effects of Statins on Aggression

Statins generally decreased aggression in men and increased aggression in women according to PLOS one.

FDA Approves First 3-D Printed Drug

In the US the FDA has approved the first 3-D printed drug, a high dose tablet that dissolves rapidly as reported in sciencealert.com. The tablet, used to control seizures, will be much easier to take than traditional formulations. As much as 1 000 mg of the drug will dissolve in one sip of water. Liquid droplets of an aqueous fluid are deposited on each thin layer of powdered medication in each tablet.

My First Day In a Lab

Alec Leete recalls his first day working in a laboratory. His essay, entitled 'My first day in the laboratory' won first prize in the IBMS Millennium Essay Competition. Published by permission of the IBMS, www.IBMS.org

"Good Morning Sir, you told me to report to you."

"Oh yes I remember, just sit over there, chuck the stuff off the chair on to the floor."

The Chief glanced at me through a cloud of cigarette smoke, and carried on sucking up some easily recognisable fluid into a glass pipette from one of an assortment of bottles on his bench. In a box nearby crouched a decidedly uncomfortable looking toad. Do it yourself blue spot pregnancy tests were a long way off.

"Here are two forms for you to fill in, this one is to join the Institute the other is to join the Union, let me have them back this afternoon. Here try this white coat on, sorry about the stains - the laundry is useless."

I was taken out of the lab for what appeared to be a country walk, ending up in a side room of a distant ward block. This was the temporary home of haematology while their room in the main lab was being decorated. After meeting the senior in charge I was given a breakneck tour of the department and a very concise description of what haematology was all about. I asked what was going on down the toilet, and was told that the two glass rods laid across the bowl were a staining rack where the Leishman's were done. The secrets of how this was done were imparted later by a young lady who appeared to have been doing it all her life. In fact I learned later she had done her first only the week before! "I am now going to do a white count", the young lady informed me as she skilfully drew up some fluid into a glass pipette and transferred it to a counting chamber, putting a cover glass on top. I was told not to interrupt as she picked up a counter and proceeded to click away furiously.

Fifteen thousand she announced - probably an infection she said but it might be a leukaemia! "Did they ask for a 'diff'?" she asked; "Find me slide number 16" she then told me. She cast an apparently expert eye over the slide under high power, exclaiming "there are

lots of polys and some cells I do not like the look of". The senior glanced down the mike and told her they were megakaryocytes.

Back now to the main lab as it was time for the morning break. Everyone congregated in the wash up room, which soon became full of tobacco smoke! Holding court in their room were Scottie and her assistant Min. They pulled the plug out of the sink where they had been washing blood bottles and helped the blood clots down the plug hole with their threadbare bottle brushes. The world was put right quickly, giving plenty of time to discuss Saturday's football results while coffee was drunk out of well-stained mugs. The lab porter made a noisy entrance, announcing that he had got work to do, even if no one else had! Clearing a space on the bench he proceeded to sharpen a box full of needles on a small stone. "No wonder the patients are always complaining when I do a venepuncture" said one of the techs, "just look at the hook on the end of that needle". Reggie retorted "Well if you think you can do it any better, you are welcome to try". It would be a long time before disposable needles were available.

Back in the haematology laboratory I was given a short course in how to load a white cell counting chamber, and how to do a count after the blood had been pipetted into a stoppered tube containing an amount of fluid. Inevitably the cover glass slipped off and I had to load the chamber afresh. When asked what the count was, I said about two hundred and fifty thousand I think. "Let me have a look at it", said the senior "it looks quite normal to me, have another go." I soon improved after I stopped counting the dust particles on top of the cover glass! "Now have a look down this microscope and tell me what you can see; if it's not quite in focus turn this knob a little". I did and there was an ominous click as the coverslip cracked! My mentor was forgiving, saying "Oh well I shall have to get another

pernicious anaemia for my collection".

Although there was a canteen, the lab seemed to be self-sufficient at lunch time, if the smell coming from the direction of bacteriology was anything to go by. I was asked if I would like to join the lunch club, and, as it was Monday would I like to go into town to help with the week's shopping? It appeared that after the plates were read in the morning and the new specimens dealt with, the real work of the day started; there was lunch to cook! The kitchen was the media room where the plates were poured for tomorrow's bugs to grow on.

After lunch I was told that I would be taken to the wards and shown how to do finger pricks. Armed with a bunch of forms, off we went to the ward to find the unsuspecting patients. The senior expertly sucked blood into his pipette and transferred it to tubes and slides. It was now my turn; with hand shaking like a leaf I approached a patient. Ten minutes later, after several assaults with the needle, I still had not got the required amount of blood without any bubbles into the correct tube! My colleagues came to the rescue, deftly sucking the blood into the pipette without a bubble in sight. My attempts to make a blood film were another disaster as I managed to drop the slide onto the floor and had to crawl under the patient's bed to recover it, much to the amusement of the rest of the ward.

On our return journey we passed two formidable looking gents talking with strong Irish accents. I was told that they were the histopathologist and the PM porter, Prendy and Puddy. We passed through the museum on the way back. It had many glass jars containing rather drab specimens, few of which I recognised. I didn't know then that I would choose to spend two years in that department, during which time I would mount many new specimens.

It was almost 5.30 - my first day in pathology was almost over. I was offered a lift on someone's Lambretta and was soon hurtling homewards with many tales to tell.

My First Year In the Laboratory

Prompted by the previous article on a First Day in the Lab, Tom Moloney, Converse Editor, starts to reminisce.

“Are you sure you have no interest in football?”. This question was put to me several times in various formats during an interview by a stunned interviewer in the summer of 1962. He could not believe it. The post was as a trainee accountant. I did not get the job.

I had just done the Leaving Cert, the first person in the area in Dublin where I lived, to have done so. There was no question of University as I was the eldest of three and my dad was a carpenter. My parents had already made great sacrifices to get me the education they believed was the door to a prosperous and secure future. The imperative now was to get a job, any job. I had written to several organisations in the science field where my interest lay but with no response.

Then I answered an ad for a Trainee Technician in the Department of Pharmacology in UCD in Foster's Avenue. I got the job at a salary of £5 a week. The professor, the eccentric Paul Cannon, encouraged me to enrol in Kevin Street College for an external BSc from London University. This would take 7 years attending 2 or 3 nights a week. Kevin Street was a building site as the new college building was being erected while classes continued. This meant that there was no running water in the

chemistry laboratory, dating from Victorian times, and we sourced our water from a tap on the landing.

I was charged with looking after the cats, dogs, frogs and rabbits that were used for experiments and I became proficient at despatching the rabbits; now I know where the term rabbit punch came from. Safety standards were different then. I burnt benzene in a fume cupboard to produce a black smoke to coat graph paper for a drum on which the movement of a needle attached to an animal (asleep) was recorded as the response to various drugs was tested. Setting up practicals for students was another role. I managed to set fire to a fume cupboard in the School of Pharmacy in Ballsbridge one memorable day.

In April 1963, an ad for a trainee post in the National Blood Transfusion Authority in Pelican House immediately attracted my attention offering a salary of £6 14s 7d a week, a considerable increase on my current £5. I was not encouraged as I sat with the other candidate outside the interview room. She told me she had played tennis with the Medical Director the previous week. I had never played tennis and certainly did not mingle in circles where the Director circulated. However, we both were offered posts.

On my first day I was handed over to



Tom Moloney

Joe Phelan, future Lab Manager of Jervis Street and Beaumont and a life-long friend, for what we would now call induction. I thought Joe was probably the head of the lab as he seemed to know everything and everybody. He was 3 years ahead of me in fact. At the end of the tour he handed me two forms to sign. Thus I joined the Medical Laboratory Technologists Association and the Institute of Laboratory Technology. Both organisations were to play a major role in my life and career but I did not exactly make an informed decision to join. Joe was the local agent for the union and a committee member of the IMLT and he seemed so powerful I would have signed anything.

My induction included ritual

humiliation. The past is truly a different country with a different culture. I was sent to get the key to the Pelican's cage to feed it. This did not seem unreasonable after my UCD experience and the building was festooned with images of a Pelican. The Medical Director suggested I go to the Chief Technician as he had passed on the key. In turn I was directed to several managers before someone took pity on me.

Next I was directed to the female Donor Attendants room to get a box of Fallopian Tubes. Biology had not figured on the curriculum in the Christian Brother's school in Drimnagh and I had never heard of such tubes. This provoked great amusement.

My first assignment was to the Basement where I was to oversee the "Basement Boys" who washed the used glass bottles into which the blood was collected. This was the era before single-use products. The needles were re-sharpened by the Donor Attendants who attached them to the type of rubber tubing I had only seen previously attached to Bunsen burners. These were then sterilised. But my major task was to prepare the ACD solution into which the blood was collected, test each batch and dispense 120 ml into bottles. These were then put into the autoclave by the boiler man at 15 lbs for 20 minutes. I was to check the sterilisation controls - Dick tape - which changed colour if the correct pressure had been reached. There was also a spore strip that was placed in a test tube inside a bottle in which there was a liquid culture medium. Post autoclaving, it was shaken out of the tube into the medium where it was cultured for 7 days. Growth of the test organism caused a colour change in the solution if sterilisation had failed. I was to store the batches in quarantine until all tests were finalised and the bottles could be released to the donor clinics. Before the final release the bottles were examined for extraneous material such as a hair or broken glass. The Chief was famous for his ability to walk in and pluck a single bottle from hundreds which failed a visual test. He would then literally jump up and down with rage as I was castigated.

Release from the Basement was being allowed to go to the canteen on the top of the building. There was a lift

which I rarely used as I would have to travel with girls and I did not know what to say to them. In the first week I was astounded to see one of my student colleagues being debagged in the canteen by some male technicians and his trousers hung out the window on Eccles Street. One of the female colleagues shrugged and assured me "Fred must have annoyed the lads". I vowed not to annoy the lads, all of whom became prominent Lab Managers.

Care of rabbits also was part of our duties. Sterile water was injected into the rabbit's ears and the temperature monitored for a period to detect pyrogens in the water.

Pelican House undertook all the cross matching for the city hospitals and even for hospitals as far away as Galway. We were popular with taxi drivers who were asked to make the trip with blood to Galway in an emergency. Even as students we were on shift duty.

We attended night classes two or three nights a week preparing for the exams of the London Institute. Classes were held in the local labs; Biochemistry in Sir Patrick Dun's, Transfusion in Pelican House and other disciplines in UCD, Earlsfort Terrace. And it was here I met the Cyril Keogh and Sean Hanratty, the joint course co-ordinators. They became the major role models for my professional development. Cyril founded the union and Sean was a Council member of the Institute in London. Along with a few like-minded individuals they dared to imagine an all -graduate entry profession with appropriate salaries and recognition. It was a long journey to where we are today.

We all used public transport or bicycles. No one apart from the Medical Director had a car.

It is astounding now to remember that Sean Hanratty, the Deputy Chief, arranged a retreat to Manresa House in Dollymount in Dublin that year for the entire male staff with the exception of the Chief who was from the UK and not "one of us". He belonged to a "tribe" few of us had met - a Protestant. Clearly it was believed that the female staff did not need to be saved. The weekend comprised fasting, silence and prayer. Male bonding weekends have mutated a lot since then.

My first meal in a hotel also occurred

that year. The male staff, (where were the females?) went to the Old Sheiling in Raheny for dinner. A senior colleague advised me on protocol for using the cutlery; start from the outside and work inwards. Looking back he was not that sophisticated as the wine he ordered was a sweet dessert wine, a Sauterne. But for most of us that was our first wine. Indeed I bought a bottle of Blue Nun, a vintage well known to my generation, for our Christmas dinner that year. My father was not impressed. Men drank Guinness or whiskey, he said.

Early on in my first months Pelican Day arose. There was a dinner dance in the Shelbourne Hotel. I was approached by a senior student, Paddy Byrne, in the Basement, who having determined I was not going to the dance as I had no girlfriend told me he had arranged for me to go with another student, Carmel, and he had arranged a lift for me. I was to go and hire a dress suit and buy flowers. There did not seem to be any choice in the matter. The partner of the car driver, Maura, subsequently became my wife. To my amazement she agreed to go on a date with me. Dates then were very chaste, as following the tradition of her boarding school she went to Mass and Communion in Harrington Street, near her flat, on the way to work each day. This probably explains why we all married young. It might have been the 60s but, where we were, Dublin did not swing.

To an extent impossible today our social life revolved around Pelican House in Leeson Street. On their way home from town people would drop in to talk to the night shift, have a cup of tea and perhaps play table tennis. It was not unknown for a bottle of Guinness to be liberated from the stores. Guinness, "being good for you" supplied free drink to the donors. We were all young, working together all day, going to night class 3 nights a week and going to parties together. Not surprisingly, there were lots of romances and several weddings.

So at the end of that magical year I had acquired a career that has lasted 53 years, a passion for medical laboratory science, life-long friends, a girl friend, and the ability to drink a glass, literally, of wine. I had not yet mastered Guinness; a glass of shandy was all I could tolerate.

International Society for Blood Transfusion Congress, London

In June, I was fortunate to once again be able to attend the International Society for Blood Transfusion (ISBT) Regional Congress, on this occasion in the London Excel Arena Conference Centre. Having attended the equivalent Congress 2 years ago in Amsterdam, I had high expectations and I wasn't disappointed. The ISBT congresses, both Regional and Worldwide, are particularly suitable to those working day-to-day in the field of Blood Transfusion and the majority of talks are directly of interest to Blood Transfusion Laboratory staff. On this occasion there was the extra advantage that it was running together with the Annual Serious Hazards of Transfusion (SHOT) UK Symposium.

To give an idea of the scale of this congress, there were over 3,500 delegates from 104 countries. The congress is accompanied by a large trade exhibition of Transfusion Laboratory equipment and daily lunchtime symposia are organized by the major laboratory suppliers. This joint conference took place over 5 days, starting with the Annual SHOT report on Saturday June 27th and continuing until Wednesday 1st of July. Each day talks ran from 8.30am to 5pm and there was a very large poster session to visit. This is not for the faint hearted. However, it is a great way of getting fully up to date on all topics related to Transfusion Science. I will try to bring you a flavour of the talks so you can see the diversity and comprehensive nature of the congress topics.

The SHOT UK Symposium was first to take place on the Saturday. As one would expect blood and blood component transfusion in the UK is very safe with a small number of adverse incidents in relation to the number of components issued and transfused. In 2014 (January to December) the total number of reports made to SHOT was 3668 and 3017 were analysed for this Annual Report. The proportion of SHOT reports where errors were the underlying cause was, 77.8% (2346 reports). Acute transfusion reactions (allergic/febrile) were the most common pathological reactions. There were 10 ABO-incompatible red cell transfusions all due to clinical errors resulting in one patient requiring renal dialysis, but no deaths. However, 2 deaths were definitely related to transfusion, one

haemolytic transfusion reaction, and one case of transfusion-associated circulatory overload. Notably, delayed transfusion contributed to 3 deaths. In 2 of these cases communication errors lead to the delay.

Some of the key messages from this year's report were: Recommendations are not rules and should be interpreted according to the individual patient needs. The recommendation concerning transfusion at night has been updated. Some patients have been denied transfusion at night when it was essential, and there are some patient groups where regular transfusion is required and this can be scheduled to minimise time lost from education and employment.

As a result of a TRALI case caused by Cryoprecipitate from a female donor, it was recommended to avoid the use of female plasma for the production of Cryo.

Information Technology issues were highlighted in the report and there are 2 new guidelines recently published on IT. BCSH guidelines on IT in blood transfusion (BCSH Jones et al. 2015) and the UK Transfusion Laboratory Collaborative Standards (Chaffe et al. 2014). Particularly workarounds and over-rides as well as failure to fill out unit information and check patient history have all led to transfusion errors.

Paula Bolton Maggs highlighted the difference in reporting to the MHRA and SHOT with only 16.8% overlap and suggested a joint MHRA/SHOT system to capture all reports.

The full SHOT report is available online but one fascinating report I

thought I would draw to your attention is one that shows if something can go wrong it will. There was a mismatch with historical group where it was discovered that sample was taken from person in the house next door. A crossmatch sample was taken by the community team, but the group was determined to be different from the historical group. The investigation showed the sample had mistakenly been taken from the person living next door to the patient. The second individual had not questioned the nurse as he himself was awaiting a nurse to give him an injection.

Bill Chaffe gave a very entertaining talk highlighting the need for funding for continuous education and attendance to conferences and courses. This is becoming a greater issue in the UK as there is less money to spend and labs do not have a designated budget for education. He highlighted the loss of networking opportunities particularly for junior staff. In many cases only one person from a lab could attend and had to report back. I have to say this struck a cord with me. While there was great attendance in general at this congress and around 430 UK delegates, I noticed only 2 Irish hospitals and the IBTS had staff at this congress. Given the quality of this congress and the proximity to Ireland, it is very unfortunate that more laboratories in the Republic have insufficient funding to send someone to this type of event. With CORU and CPD coming to ever-greater significance, Bill Chaffe's call for funding for education of staff is one I am sure will be loudly echoed in this country.

Bill also highlighted the need for standardization in reporting to Haemovigilance as there are widely diverse figures in different countries in the EU. For example in UK/Spain 15% of Haemovigilance reports were relating to lab error whereas in France it is 2%. Finally Bill's talk covered the need for a certain level of competence in the English language among all staff involved in the blood transfusion chain.

Megan Rowley reported on the UK/ROI NEQAS questionnaire. It showed that 70% of laboratories have a zero tolerance when a sample is mislabeled and 2.99% of samples are mislabeled overall.

It is almost impossible to go through every talk but I would like to touch on some presentations which were either informative or entertaining or both.

On the Sunday there was the ISBT academy day and one session featured a series of talks on emerging threats to Blood Safety. One fascinating talk was by Hans Zaaijer from Sanquin in Amsterdam. He highlighted how changes in population movements are leading to outbreaks of virus spread by arthropods such as mosquitos. He gave 2 striking examples. West Nile virus WNV which can be asymptomatic or which can lead to encephalitis first arrived in the US in 1999. The arbovirus successfully invaded the Americas, spreading from New York towards Canada and Latin America within years. He pointed out that for decades the area in Europe where West Nile fever occurs is stable, with a straight northern boundary running from the Algarve via the Camargue and the Po-region to Hungary.

In a second example he highlighted that since 2005 chikungunya virus CHIKV causes large epidemics along the borders of the Indian Ocean. Surprisingly, in La Reunion the vector was found to be *Aedes albopictus* a different species of mosquito, not *Aedes aegypti* as in former outbreaks. There are several species of mosquito spread all over Europe but many of these do not act as host for the chikungunya virus, at least for the moment.

In 2007 an isolated outbreak of chikungunya occurred in the Emilia-Romagna region in Italy, with more than 200 confirmed cases. While, in December 2013 chikungunya virus crossed the Atlantic and arrived in the Caribbean island of Saint Martin. A rapid spread to Central and South America

followed, with 933,102 diagnosed cases in November 2014.

In an interesting anecdote, he noted that the Netherlands was one of the largest repositories of old car tyres from all over the world and that these tyres carry stagnant water, which provides the perfect environment for mosquitos to breed. Two other points from these talks were that we have our own tick borne encephalitis TBE strains in Europe, however as yet these have not been spread by transfusion but it highlights the need for pathogen inactivation technologies. The other interesting point is that while WNV and Dengue can be asymptomatic, CHIKV causes symptoms quickly and this offers a cheap alternative to expensive testing of blood donations for chikungunya virus-RNA in an endemic area during an outbreak: before releasing a unit of red blood cells, one may telephone the donor and ask whether he or she still is fine.

Earlier that morning there were a series of three talks by international speakers in Clinical Dilemmas with Red Cell Antibodies with the following titles

- **HANDLING THE PRE-TRANSFUSION REQUEST FOR BLOOD IN COMPLEX CASES**
- **MANAGING THE BLEEDING EMERGENCY IN A PATIENT WITH RED CELL ANTIBODIES**
- **MANAGING THE PATIENT WITH HAEMOGLOBINOPATHY AND MULTIPLE RED CELL ANTIBODIES**

I imagine these talks along with the UPDATE ON HUMAN BLOOD GROUPS from Jill Storry and a talk entitled POWERFUL TOOLS FOR RESOLVING ANTIBODY PROBLEMS from Janice Hamilton would have been of particular interest to those working in busy blood transfusion labs.

Sandra Nance mentioned in the first of these talks that males were at greater risk of severe haemolytic disease of the newborn than females, something I was not aware of previously.

The ISBT has working parties on a number of topics and they meet up at these congresses. The Red Cell Immunogenetics and Blood Group Terminology is one such group, which develops and maintains guidelines for blood group antigen and allele nomenclature for use in Transfusion Medicine and related sciences. This

group has just designated a new Blood Group System called AUG giving us 36 blood group systems. The last 2 blood group systems were accepted in 2014. These were the VEL and CD59 systems.

The Storage Lesion of stored red cells continues to be a hot topic and one interesting point was mentioned by Dana Devine. In her talk she noted that donor specific factors were a major influence on how affected the red cells were by storage lesion. Some of these factors are individual and unknown but some such as gender indicate that higher rates of haemolysis are seen when male blood is stored. At this stage, 3 major prospective randomized control studies have reported. These are the ABLE, ARIPI and RECESS studies. As of yet, there is still no definitive evidence that older blood carries a greater risk to patients, except in some well known situations such as cardiac and neonatal cases.

On the Monday morning the recently retired Belinda Kumpel gave a couple of great talks on the progress of developing a monoclonal anti-D. Worldwide there are shortages of human derived anti-D and in order to make it, individuals need to be immunized. A monoclonal alternative would mean that human anti-D would no longer be needed for prophylaxis, thus reducing the risk to recipients of this common blood product. In spite of many attempts, a suitable replacement has not been manufactured. The reason appears to be that the glycosylation of the monoclonals is different and this can affect the rate of clearance of D positive foetal cells when time is of the essence. The glycosylation studies used in this presentation were carried out in Dublin in Pauline Rudd's laboratory in the Conway institute at UCD.

Also on Monday a number of talks were given on the use of Frozen Plasma with Paul Bolton Maggs confirming yet again that there is widespread overuse and inappropriate use of this product while others spoke of the risks associated with FP transfusion. In fact the England Blood Service is phasing in the use of Platelets in reduced plasma where it is a 65%/35% additive solution/plasma storage medium.

Perhaps the talk of the Congress came not from a Transfusion scientist but from a psychologist on Blood Donation and Altruism. Eamonn Ferguson from University of Nottingham suggested that it was not simple



From left to right: Bernie Quirke, Barry Doyle, John Quigley (Chairperson) and Fabian McGrath. ACSLM Transfusion and Transplantation Science Advisory Body Members at the ISBT Congress in London.

altruism that was the main motivation to donate and that there were other surprising underlying motivations from a psychological point of view. Ferguson says that this is not just simple pure altruism (caring about the welfare of others at personal expense) that actually drives blood donor behaviour. In reviewing the literature, and using his own research incorporating behavioural economics, he shows that blood donors can be conceived of as warm-glow giving (finding the act of donation emotionally rewarding) reluctant altruists [when faced with free-riding they are motivated to cooperate because of (i) lack of trust that other will cooperate and (ii) the negative emotions that arise from both others free riding and lack of trust in others). This results in blood donors showing 'saintly sinning'. That is, the extra 'moral currency' that blood donation brings allows them to be less generous in other contexts. This was a fascinating talk, which will certainly cause blood banks to review how they attract donors. For example one suggestion was, while blood donors are not paid, a charitable contribution to a charity of their choice could be given. In the reluctant altruist model, this would be an attractive incentive to donate.

On the Tuesday morning there was an interesting talk called "Goodbye TRALI, Good morning TACO" by Phillip Renaudier from Nancy in France. Pulmonary adverse effects observed in Haemovigilance systems are now mostly Transfusion Associated Circulatory Overload TACO, some of

which are serious and sometimes fatal. The pathophysiology of TACO has to be better understood at this point. He highlighted two points should be noted: (i) the distribution volume of a blood product is the intravascular space, unlike a crystalloid; (ii) most patients do not experience TACO after transfusion. Haemovigilance data show that TACO is mainly observed in the newborn, in the elderly and when the patient has a chronic anemia. To bring together these two groups of arguments, and by analogy with Transfusion Related Acute Lung Injury TRALI, he propose a two-hit model: the second is the transfusion of a blood product remaining intravascular, the first is the inability to cardiac adaptation to the rapid increase in the circulating volume. Therefore he was saying cardiac insufficiency appears to be the major factor in TACO. However, more surprisingly he goes on to talk about haemoglobinopathy patients and thalassemia patients who have iron build up from repeated transfusion. Iron overload gradually leads to diastolic heart failure and arrhythmias, and systolic heart failure. According to this model, the transfusion itself may be the first hit in these patients where diastolic heart failure can be very difficult to detect.

In fact Iron featured a lot at the congress whether too much, as seen in regularly transfused patients, or too little, as seen in some regular donors. The risks associated with high iron and the difficulties associated with iron chelation were covered in several talks as was the

issue of female donors, in particular having reduced iron storage pool as a result of repeated donation.

On Tuesday afternoon there was another great plenary session where a fascinating talk was given by Arturo Zychlinsky on Neutrophil Extracellular Traps (NETs). It turns out when neutrophils die, they turn into NETs and have a whole other function in fighting infection. These NETs look like amorphous sheets of adhesive material akin to a spider's web to which bacteria can stick and become trapped and which can wrap around larger pathogens such as fungi. NETs are made of chromatin and specific neutrophil proteins and are released after a unique cell death program that requires the production of radical oxygen species (ROS) and the relocation of neutrophil elastase to the nucleus. NETs help limit and control infection and also can activate the acquired immune system. Thus, formation of NETs appears to be necessary for an efficient clearing of microbes, particularly fungi, but can also initiate and exacerbate autoimmune responses.

On the Tuesday night there was welcome respite from 4 days of talks when the congress party was held in the London Museum of the Docklands in Canary Wharf. On a balmy London evening there was great food, wine and entertainment provided and a chance to catch up with old friends and acquaintances. This is a great networking event that almost everyone attends and where everyone is approachable.

It was an early start the next and final day to see Dr William Murphy from the IBTS present a paper at 8.30am on work done by a final year student of mine last year. Yvonne Murray had performed a detailed comparison of the non-invasive

Haemospect device, measuring at the base of the distal phalanx, with capillary blood haemoglobin measurements from the lateral finger pulp on Hemocue, and on venous blood samples. Mean Hemocue haemoglobin levels in healthy blood donors were 0.94 g/dl lower than the corresponding venous level for Hemocue levels within 1 g/dl of the cut-off for men and women, while the corresponding Haemospect levels were 0.28 g/dl lower than the venous haemoglobin level. The false pass rate for Haemospect in routine donor screening was 2.4%, lower than the best

published results for Hemocue capillary blood testing. Countrywide rollout of the Hemospect device took place in July and August in 2014.

Donor deferral rates for low haemoglobin have fallen from over 8% to under 3% in the winter and a seasonal effect is still apparent. Between the savings in disposables and the increase in donations procured the nett cost of the change was positive – i.e. the cost of the devices is offset by the savings accrued. Donor and staff satisfaction is high.

The conference ended on the Wednesday afternoon with another great

Plenary talk entitled 'The Air We Breed' by Walter Dzik. It was a fascination trip through species and haemoglobins and red cells. He tells a tale of how at the top of Everest, O₂ saturation is 30% and moving is extremely tiring. Then he said "if you collapse, you may look up above you and see a bird flying above your head, who has the same haemoglobin as you". How can that be? The highest flying bird is an eagle which flies at 37,000 feet. That's higher than commercial planes. Well it turns out birds have a different lung system with 4 chambers which results in fresh air entering the main lungs as old air is

expelled. This effectively means the bird never breaths out and has fresh air in its lungs for longer. The things you learn at Transfusion conferences!!

The 34th Worldwide ISBT congress will take place in Dubai. We were lucky to have it so nearby this time. There were many posters from Irish labs, I have listed as many as I could find below. These conferences give inspiration, allow opportunities to meet fellow transfusion scientists and remind us that Transfusion Science is an active area of research in which we can all be involved.

Fabian McGrath, DIT

Posters from Ireland at

ISBT
LONDON
2015

A2B OR NOT A2B: ADVANCED AUTOMATION IN BLOOD GROUP SEROLOGY: VALIDATION RESULTS OF THE BIORAD IH-1000

Quigley J, McGarry P, Carrol L, Culliton M, Segurado R, Niland B and Fitzgerald J

The National Maternity Hospital, Dublin 2, Ireland

NON-INVASIVE HAEMOGLOBIN TESTING AT A NATIONAL LEVEL

Murphy WG, Selby T, Darragh E, Murray Y and McSweeney E

Irish Blood Transfusion Service, Dublin, Ireland

RISK-BASED DECISION-MAKING FOR BLOOD SAFETY

Ward SW and Kelly AKmr

Canadian Blood Services, Ottawa, Canada and The Irish Blood Transfusion Service, Dublin, Ireland

POST DONATION INFORMATION: IS IT USEFUL, IS IT TIMELY?

Barnes SM and Carroll J

NHS Blood and Transplant, Leeds, United Kingdom and University of Limerick, Limerick, Ireland

AN IN VITRO ASSESSMENT OF THE HAEMOSTATIC POTENTIAL OF STORED WHOLE BLOOD FROM THE IRISH DONOR POPULATION

Maguire C, O'Brien P and Fitzgerald J

St. Vincent's University Hospital, Dublin, Ireland

IN VITRO COMPARISON OF OCTAPLAS-LG, STANDARD OCTAPLAS AND FRESH FROZEN PLASMA IN THE TREATMENT OF COAGULOPATHY DUE TO LIVER DISEASE

Connaughton MA, Chin JL, O'Brien P and Fitzgerald JF

St. Vincent's University Hospital, Dublin, Ireland

RED CELL ANTIBODY INHIBITION USING UNPURIFIED CELL CULTURE SUPERNATANT CONTAINING SOLUBLE RECOMBINANT BLOOD GROUP PROTEINS

Doyle B, Ridgwell K, Lambert M, Green F, Crumlish J, Keenan M and NiLoingsigh S

Irish Blood Transfusion Service, Dublin, Ireland and Bristol Institute for Transfusion Sciences, Bristol, United Kingdom

THE SECOND EXAMPLE OF ALLOANTI-D IN A WEAK D TYPE 33 INDIVIDUAL

Lambert MD, Grimsley S, O'Donghaile D and Thornton N

Irish Blood Transfusion Service, Dublin, Ireland and The International Blood Group Reference Laboratory, Bristol, United Kingdom

RECOMBINANT SOLUBLE BLOOD GROUP PROTEINS: ONE CENTRE'S EXPERIENCE

Lambert MD, Farrelly A and Seltsam A

Irish Blood Transfusion Service, Dublin, Ireland and German Red Cross Blood Service NSTOB, Springe, Germany

'IRISH' BOMBAY PHENOTYPE: COMPOUND HETEROZYGOSITY FOR NOVEL FUT1 ALLELES

Lambert MD, Tilley L, Ni Loingsigh S, Power J, Fitzgerald J and Thornton N

Irish Blood Transfusion Service, Dublin, Ireland and The International Blood Group Reference Laboratory, Bristol, United Kingdom



Clinical Chemistry Report

Factitious?.... We need the Facts!

Dr Graham Lee, FRCPath, Principal Clinical Biochemist, Department of Clinical Biochemistry and Endocrinology, Mater Misericordiae University Hospital, Dublin

Dr Lee presented a case history concerning a 26 year old female presenting with lethargy, night sweats, palpitations, weight loss, abdominal pain, vomiting, urinary frequency and neck pain. Vital signs included temperature of 36.9°C, blood pressure: 119/74 and heart rate: 136. Routine Laboratory investigations were unremarkable except for a FT4 = 7.4 (9-20) and a TSH <0.01 (0.35- 4.94) suggesting secondary Hypothyroidism. An ECG demonstrated tachycardia with other radiological investigations unremarkable. The patient's history, observed heat intolerance and slight tremor were clinically suggestive of a Thyrotoxicosis. Additional investigations confirmed the TFT results and included anti - TPO < 1.0 (<5.6), TRAbs = negative and FT3 = 11.2 (2.6 – 6.2). The Hypothalamic, Pituitary, Thyroid axis was discussed with underlying causes of a Thyrotoxicosis. The patient did not exhibit a goitre, ophthalmic features or change in voice, was not post partum and reported no prescribed medications. The further investigation of a suspected thyrotoxicosis was outlined including the value of using both Radioiodine uptake imaging to differentiate Hyperthyroidism due to endogenous secretion or exogenous sources e.g. T4/ T3 ingestion and thyroglobulin (Tg) and anti thyroglobulin measurements. Patient's Tg = 9.0 (Immulite RR: 1.6-59.9 ng/ml) and anti Tg = negative. Conclusion: results suggestive of exogenous T3 ingestion (possibly sourced via the internet) in the absence of further radiological follow up.

(Diagnosis and management of thyrotoxicosis, Vaida B and Pearce SHS, BMJ 2014; 349; pg 5128) (Thyrotoxicosis factitia masquerading as recurrent Graves's disease: endogenous antibody immunoassay interference, a pitfall for the unwary. Jahagirdar VR., Strouhal P., Holder G., Gama R., Singh BM., Ann Clin Biochem (2008) Vol:45 No.3 pp 256 - 9

The Introduction, Assessment and Review of a Laboratory Report E-alert System for Early Detection of Acute Kidney Injury in Hospitalised Patients.

Paul Walsh, Medical Scientist, Clinical Chemistry Department, Tallaght Hospital, Dublin

This MSc dissertation outlined Acute Kidney Injury (AKI) as a sudden decline in kidney function over hours or days, occurring in 13-18 % of hospitalised patients, more common in the elderly and typically monitored by the measurement of plasma creatinine with or without urine output. Early detection can reverse AKI and prevent AKI leading to Chronic Kidney Disease (CKD) and End Stage Renal Failure (ESRD) with significant cost implications. Kidney Disease Improving Global Outcomes (KDIGO) stage AKI in four levels: Level 1 a creatinine (SCr) rise $\geq 26 \mu\text{mol/L}$ within 48hrs or rise ≥ 1.5 to $1.9 \times$ baseline SCr or Urine output $<0.5 \text{ mL/kg/hr}$ for > 6 consecutive hrs, Level 2: rise ≥ 2 to $2.9 \times$ baseline SCr or Urine Output $<0.5 \text{ mL/kg/hr}$ for > 12 hrs, Level 3: rise $\geq 3 \times$ baseline SCR or rise $354 \mu\text{mol/L}$ or commenced on renal

replacement therapy (RRT) irrespective of stage $<0.3 \text{ mL/kg/hr}$ for > 24 hrs or anuria for 12 hrs. Causes of AKI include Sepsis, Toxicity to drugs, Obstruction, Parenchymal disease, Poor blood flow due to dehydration, haemorrhage, cardiac failure (STOPP). The presentation outlined the assessment of the prevalence of AKI in adult patients not on dialysis over a one month period applying the KDIGO guidance to data extracted from the LIS – WinPath. Prevalence of AKI was 13% with a prevalence of 75% in persons > 60 years correlating with International data. 71 % of patients did not have AKI noted in their chart. A newly established education bundle for both clinical staff and laboratory staff for the Risk, Prevention and Recognition of AKI was presented. The limitations of the Jaffe creatinine method were also discussed when compared to the enzymatic method.

Sweat Testing- Current (Best) Practice

Mr Colm Carolan, Chief Medical Scientist, Department of Paediatric Laboratory Medicine, Temple St. Children's University Hospital.

Cystic Fibrosis (CF) is an autosomal recessive inherited disease with a frequency in Ireland of 1:1950. The most common mutation is p.PHE508del (76.6%) with a defect in the CF transmembrane conductance regulator protein (CFTRP), with the CFTR gene located on the long arm of Chromosome 7. An improperly functioning Chloride channel impairs the transport of Chloride ions and water transport in and out of cells, leading to abnormally thick and sticky mucous production obstructing lungs, pancreas and other organs. Sweat testing is performed on infants identified through the National Newborn Screening Programme with elevated Immuno- reactive trypsinogen (IRT), siblings and referral from respiratory clinicians and failure to thrive infants.

Sweat Testing involves three stages: sweat gland stimulation using Pilocarpine, sweat collection onto filter paper or gauze or into a dedicated sweat collection system - Macroduct @collection coil and sweat electrolytes analysis using Chloride and /or

Conductivity measurement. The majority of laboratories in UKNEQAS analyse Chloride using Coulometry and the Gibson and Cooke method is regarded as the gold standard. Performance of the test requires considerable staff training to achieve competency. The Wescor method was also outlined with the advantage of measuring both conductivity (total ionic content of sweat) and Chloride. A review of failure rates in Ireland (Mayne et al. 2015) indicate a higher failure with the Wescor method 31% (25-35) compared to the Gibson and Cooke method 19% (18-20) with UK guidelines for CF in less than 6 months at $< 20\%$. The measurement of conductivity alone is not recommended although on UKNEQAS it demonstrates superior analytical performance. Chloride values less than 6 months $< 30 \text{ mmol/L}$ and greater than 6 months $< 40 \text{ mmol/L}$ suggest CF unlikely with genetic and

clinical evaluation. Chloride > 60 mmol/L supports a CF diagnosis. Intermediate values require further follow up. Conductivity <50 mmol/L CF unlikely and > 90 mmol/L support a CF diagnosis.

"Newborn Screening for CF in Ireland- the outcome of Sweat Testing" Mayne P et al (2015) Poster Display LabCon.

The Molecular Investigation of Borderline Sweat Tests in Cystic Fibrosis

Dr Catriona King, Department of Clinical Genetics, Our Lady's Children's Hospital Crumlin

Outcomes for CF patients are dependent on early therapeutic interventions and sweat testing and genetic analysis are critical to diagnosis. There are 1,800 CFTR mutations with uncertainty as to the effect of rare mutations on the phenotype of the disease. Borderline sweat tests are obtained in approximately 4% of cases and 17- 23 % will have two CFTR mutations. The incidence is 1/2300 (Irish New Born Screening, 2011-2013) with a carrier frequency of 1/19. Screening for 39 mutations is carried out (23 ACMG-ACOG panel + 16 most common) with a 93.5% detection rate Irish population.

There are six classes of CFTR mutation with classification linked

to impact on CFTR function. Classes 1 – 3 result in complete loss and are considered severe, while classes IV to VI are considered mild with variable phenotypes. CF related disorder (CFRD) describes the presence of 1-2 CFTR mutations (one usually mild) with a phenotype of mild lung disease, pancreatic sufficiency and normal or borderline sweat Chloride.

The two step testing strategy was outlined using Allele-specific oligonucleotide hybridisation Luminex xTAG, Cystic Fibrosis 39 kit & Luminex™ Liquid Bead Array Platform with a subsequent comprehensive mutation screen in cases where none or one mutation is detected on the initial screening. A review of referral 1995 to 2014 for sweat Chloride 30 - 60 mmol/L indicated for normal sweat chloride 77% had no mutation and 23% had one mutation. In borderline sweat Chlorides, 72% had no mutation, 15% had one mutation and 13% had two mutations. In positive sweat chlorides 45.5 % had no mutation, 9% had one mutation and 45.5% had two mutations. In conclusion sweat test results should be included with CF genetic referrals and ultimately the final diagnosis is based on clinical evidence with laboratory tests acting as useful diagnostic aids.

Bernadette Jackson,
POC Manager Naas General Hospital

Dublin Pathology 2015

June 23-25th saw Dublin Pathology 2015 in the revamped site of the old Burlington Hotel. This conference was the 8th Joint Meeting of the British Division of the International Academy of Pathology and the Pathological Society of Great Britain & Ireland, and produced a varied program for clinicians and scientists working in histopathology. Amongst the nearly 30 symposia and sessions, there was a heavy influence of cutting-edge technologies and approaches to pathology, especially in the fields of EQA, digital pathology and the rapid advancements of molecular techniques within histopathology laboratories. Numerous trainee sessions also took place and again the place of molecular pathology and how pathologists will evolve with this in the age of liquid biopsies, bioinformatics and next-generation sequencing (NGS) was addressed. The main conference was also supplemented by three breakoff sessions, hosted by UKNEQAS ICC & ISH, the Association of Clinical Electron Microscopists and the AIDPATH project. And indeed all of these including the molecular and digital pathology focus were the highlights of the conference from a laboratory science perspective.

The main molecular pathology symposium, titled "Molecular Pathology – How We Use it Today" was chaired by Prof Adrienne Flanagan from UCL, and broached the topic of NGS in routine histopathology practice. Dr Christopher Corless from Oregon Health and Science University started with an excellent introduction to the technologies available, their applications, and the extreme rapidity of how molecular pathology has made advancements, especially in areas like lung cancer and rounded it off with the potential pitfalls of NGS when used in isolation. This was followed by presentations on the application of NGS in hereditary muscle diseases by Dr Reghan Foley from Temple Street Children's Hospital and solid organ malignancies by Prof Steven Finn, in St. James Hospital.

The digital pathology symposium started with the Swedish perspective and how routine implementation in that country enhanced workflow, specialisation and service provision. In the UK, one of the first laboratories to start the process of using digital pathology as a routine tool rather than a fancy toy at the



UCL Cancer Institute

back of the lab was University Hospitals of Coventry and Warwickshire in Coventry. Their perspective was outlined by Dr David Snead, who detailed the process of the extensive validation procedure they implemented with the GE Omnyx system, very interesting as it's a system we're currently trialling in UCL. This was followed by Dr Stephen Hewitt from the National Cancer Institute, Bethesda, US. Dr Hewitt is a research pathologist, with extensive expertise in digital pathology and he brought the perspective from the US, from a funding and regulatory viewpoint and the difficulties surrounding immediate implementation into routine use there. Other sessions of particular personal interest were those dedicated to Breast and Lung pathologies and again much of the focus was on changes to diagnostic and treatment pathways and the challenges surrounding the routine implementation of these.

The UKNEQAS ICC & ISH breakaway session, was focused on difficulties and challenges of EQA in the predicative biomarker setting. Dr Merdol Ibrahim, UKNEQAS ICC & ISH scheme manager, outlined the challenges and variation of ER testing in laboratories. In a single EQA run, across all of the participating laboratories (who fully completed their laboratory methods) there were at least 22 different protocol variations from 29 laboratories



David Allen pictured with the team at University College London-Advanced Diagnostics (UCL-AD)

using the 6F11 ER clone on the Leica Bond system. Antibody dilutions ranged from 1/20 to 1/500, antigen retrieval from 10 to 40 minutes and antibody incubation from 15 to 60 minutes. This represented a 76% variation in protocols used for a single IHC marker and 68% of labs did not follow manufacturer's guidelines. Following this, Dr Erik Thunnissen described the process involved and pilot data from the pan-European ALK and ROS1 EQA scheme developed by the ESP and UKNEQAS ICC & ISH. The scheme has now gone out of pilot phase and provides an excellent and challenging EQA for these emerging predictive biomarkers. The remainder of this interesting session was devoted to advances in slide based staining in colorectal cancer and multiplexing of stains leading to improved interpretative reproducibility in prostate cancer.

There were three keynote lectures, the BDIAP's Kristin Henry Lecture: Pearls and Perils in Pathology from Prof Mary Leader from Beaumont Hospital, a public lecture in the Royal College of Physicians in Kildare Street from Prof Frank Murray, President of the RCP and Consultant Gastroenterologist/Hepatologist in

Beaumont Hospital, entitled: Dying for a Drink – The Problem with Alcohol (and Some Solutions) and The Pathological Society's Doniach Lecture – Molecular Pathology: The Future?, by Prof Simon Herrington from the Western General Hospital in Edinburgh. All available online and provide real insight into their respective areas. A large number of all other conference presentations (including most mentioned in this article) are also available to download from The Pathological Society website, <http://www.pathsoc.org/index.php/meetings/dublin-pathology-2015-presentations>.

**David Allen,
Clinical Services Manager/Lead BMS
University College London-Advanced Diagnostics
(UCL-AD), London**

Review of ECA 2015

Lori Ekstrom, Clinical Scientist

The European Cytogeneticists Conference is a biennial event, which takes place usually in July, in different cities in Europe. This year the conference was in the Convention Centre in Strasbourg, and took place between July 4th and 7th. Despite the organisation being European, there were a diverse range of speakers and delegates from other parts of the world such as USA, Chile and New Zealand.

The conference itself was divided into:

- 5 plenary sessions, an opening and closing lecture, 4 concurrent sessions of about 90 mins duration each, 8 industry symposia and 3 poster sessions over the 3 days
- 7 poster themes which were
 1. Clinical Cytogenetics (79 abstracts)
 2. Tumour Cytogenetics (62 abstracts)
 3. Prenatal Diagnosis (33 abstracts)
 4. Animal and plant cytogenetics (17 abstracts)
 5. Molecular mechanisms of chromosome rearrangements (10 abstracts)
 6. Impact of Next Generation Sequencing on Clinical Diagnosis (3 abstracts)
 7. Other (6 abstracts)

Many of the posters consisted of audits of various abnormalities, or case reports of more rare findings.

The opening and closing lectures reported on where we are and where we're going with such things as 22q11 and aneuploidy and the impact of new technologies on patient outcomes.

It is 150 years since Mendel's laws were discovered and one of the plenary sessions dealt with what he was trying to do, why he had been ignored for 30 years, and how his laws relate, or do not relate, to human and plant disorders.

The industrial symposia were really sales pitches by the companies for their latest Next Generation Sequencing, array or bioinformatics product, by having a customer give a talk on how they used it in their lab. Sadly the symposia were the only venue at which food could be obtained. The only alternative was to go to a nearby hotel for food. The symposia were useful however in finding out how platforms were devised in the light of new information gleaned from the discovery of genes involved in

various clinical phenotypes, especially developmental delay.

The two rooms used for the plenary and concurrent sessions both had large screens for showing the slides, and the audio-visual equipment worked well. The lack of surfaces to write on in the main hall was an issue as it was difficult to take notes and photography during talks was not allowed according to the website. This rule wasn't enforced however.

The range of topics covered was vast with a very strong emphasis on molecular cytogenetics techniques such as microarray and next generation sequencing. Some of the talks had a wider appeal and thought provoking titles such as 'Can Down Syndrome be treated?' and 'Prenatal technologies and sex ratio'. In the case of the former, the answer was 'no' in that the extra chromosome can't be removed, but clinical trials are ongoing for ways of improving cognitive ability, with the hope that in the future, these conceptions will be able to be treated prenatally, giving parents a 3rd option when they hear the news that their foetus has Down syndrome (trisomy 21). In the case of the latter, the talk highlighted our responsibilities as professionals, when dealing with different cultures in a prenatal testing situation as many female foetuses are aborted, simply because they are female. This has the potential to distort the sex ratio to such an extent that by 2050, there may not be enough women available of marriageable age so there will be an increase in the number of child brides, in some cultures.

Other talks were more scientific, with information on results gleaned from the use of microarray technology to ascertain the cause of developmental delay or to refine the predicted prognosis for patients diagnosed with leukaemia or solid tumours. Next Generation Sequencing was also discussed as a method to provide information for those cases yet to have an established cause. Some posters and talks discussed DNA structure and how this impacted on aberrations believed to cause a clinical phenotype. There was also a session dedicated to accreditation and quality control with particular emphasis on ISO15189.

Overall it was a very varied, intensive conference, quite specific to geneticists, but with some topics relevant to all. I would recommend that people seriously consider attending ECA 2017, when the venue is announced.

University Hospital Waterford Pathology Research Group

30th March 2015



The University Hospital Waterford (UHW) Pathology Research Group held their Spring Meeting in the Elva Theatre, RCSI Building, on March 30th 2015.

They welcomed two speakers from TSSG, Waterford Institute of Technology, who gave a lecture on the application of Statistics in the Clinical Laboratory. TSSG stands for "Telecommunications Software & Systems Group" and was formed as part of the Waterford Institute of Technology in 1996.

TSSG is funded through Irish Higher Education Authority, Science Foundation Ireland (SFI), European Union Framework Programme FP6 & FP7 funding, and Enterprise Ireland (EI) commercialisation funds, along with direct funding from Industry.



Waterford Institute of Technology
WATERFORD TECHNOLOGICAL INSTITUTE



Eric Robson, Research Unit Manager, introduced the lecture and gave us an overview of the work carried out by TSSG. The unit is involved in projects worldwide and is ranked as one of the top 10 research organisations shaping 'Future Internet' research by the European Commission. They are currently the only Irish academic leading a large FP7 ICT project. The unit is involved in data mining which involves researching the full data analysis life cycle, data gathering, data cleaning and warehousing through to modelling and presentation of results.



Dr. Stepan Ivanov, Postdoctoral Researcher, spoke to the group about methods of statistical analysis and their practical use when analysing data in the laboratory. He provided us with in-depth but easy to understand information on the types of statistics to use when validating a new laboratory method. Dr. Ivanov explained the common problems experienced by researchers when analysing data and how to overcome them.

The lecture was well attended and was applicable to staff using statistics on a day-to-day basis to validate laboratory test methods and also to staff embarking on a Masters Course and project. The research group hopes to build on these links with academic institutions with a view to collaborating with them on future projects.

By Lorraine McCrann

Specialist Medical Scientist,
University Hospital Waterford

WORLD HEALTH INNOVATION SUMMIT

“Together, We Inspire”

Carlisle, Cumbria - 10th & 11th March 2016
200 delegates, 20 national & international speakers

Bringing innovation and inspiration to health & social care

Opportunity Knocks! It's time to inspire innovation in health and social care around the world. Patients, clinicians, managers, voluntary sector, education, technology and businesses have the opportunity to work together to make a positive impact on our communities. Healthcare always has room for improvement - innovation will be a key part of the future of healthcare, and this summit provides that platform. We must all work together to improve health and social care. Funds and resources in healthcare are tight, and it was this knowledge that led to the concept of the World Health Innovation Summit 2016; the first of which will be held in Carlisle, Cumbria.

The idea came from Gareth Presch a native of Dublin and former Chief Officer of the National Haemophilia Council. Living now in Cumbria he decided one evening to send out an exploratory tweet to see if there would be interest in the idea of colleagues coming to Carlisle to share and generate ideas that would lead to innovation to improve health and social care. Needless to say the idea took off and soon went from a one day event to two days and now has grown to further summits and events scheduled for next year. It really does show us how social media can drive innovation.

The World Health Innovation Summit aims to bring people together to share knowledge and life experiences so the community can benefit, in the areas of disability, children, adolescents and beyond. How we use

I.T and social media will become important support tools, and it is hoped this is an area that can also be developed at the summit. If successful, it will not only change things for today, but for tomorrow and generations to come.

The first summit is in Carlisle and registration is now full at 200 attendees. Everyone invited to the World Health Innovation Summit 2016 has an interest in improving quality patient care through innovation and working together - including patients, clinicians, managers, businesses and the public.

We've also recently held our first joint seminar with Anthony McCann (Hummingbird Culture Change) at the Imperial College London and plan to host similar events in Dublin, Belfast and the UK.

We have future summits planned next year on Women's Health in Africa to take place in London in June 2016; and Leadership/Culture to take place in Austria in October 2016. There will also be a Q&A seminar on innovation in health and social care to be held with Cumbria University in November 2015, and tickets for these events will be available soon.

The support has been incredible and it is a credit to everyone who has shown an interest in these events - this gives us hope as it shows people pulling together, using their own time and resources for the common good. We will bring together a group of people determined to make positive changes. This is something



we're passionate about – we know, together, we can deliver.

The World Health Innovation Summit 2016 will offer an environment that encourages questions in order to make moves towards changing things for the greater good. Over twenty nationally and internationally recognised speakers from the UK (Roy Lilley, The Kings Funds), Ireland (Olive O'Connor, Brian O'Mahony) and as far afield as Austria will speak at the event. We have fantastic people who have invaluable life experiences that have delivered throughout their career willing to come and share their knowledge with others, and we hope they too can learn from those attending. Our uniqueness is in the fact we will be very patient led and patient focused - the patients' experience of healthcare is of vital importance to help us learn and improve.

The innovative ideas discussed at the World Health Innovation Summit will be officially consolidated in order

to share the information with health and social care around the world - so real changes and improvements can be made to how we deliver healthcare

in our own community and beyond.

Our aspiration is that we can bring innovation to Cumbria and beyond to help improve health and social care.

Follow us on Twitter @HIC2016

Email: cumbriawhis@gmail.com

Web: www.worldhealthinnovationsummit.com

Twitter: @HIC2016 @garethpresch #worldhealthinnovationsummit

Facebook: <https://m.facebook.com/pages/World-Health-Innovation-Summit/1446882448942013?ref=bookmarks>

Wordpress:

<https://worldhealthinnovationsummit.wordpress.com/2015/05/31/world-health-innovation-summit-together-we-inspire-cumbria-11th-12th-march-2016/>

Youtube:

<https://www.youtube.com/watch?v=532KsTE1dbU&feature=youtu.be>
Newsletter - <http://pub.lucidpress.com/24ba24e8-7a37-4b34-ac37-9e5a85ecaff2/>

For partnerships please contact our Partnerships Director Mrs Krista Whelpdale on kristawhis@gmail.com

Gareth Presch

Founder

World Health Innovation Summit

March 10th & 11th 2016 Carlisle, Cumbria

Old Fire Station

Speakers include:

Roy Lilley – Health analyst, broadcaster

Vijaya Nath – Director, Leadership Development Directorate, The King's Fund

Prof Alison Marshall – Cumbria University/Cumbria Rural Health Forum

Norh Cumbria University Hospitals

University Hospitals Morecombe Bay

Dr Umesh Prabhu – Wrightington Wigan and Leigh NHS Foundation Trust

Olive O'Connor – Medistori – Patient Innovator

Dr Amir Hannan – GP & HSJ Clinical Leader

Ingrid Brindle – Patient Champion

David Gilbert – Patient Director, Sussex MSK Partnership and Director, InHealth Association

Dr Ollie Hart – Community Engagement, Sheffield – National speaker and advocate for community inclusion

Brian O'Mahony – CEO, Irish Haemophilia Society and former CEO of World Federation of Haemophilia

Carol Read – Innovation Lead at Salisbury NHS FT, HSJ Top 50 Innovator

St Mary's Hospice, Ulverston, Cumbria

Deirdre Munroe – Irish Midwife – founder of tweeting Global Villages. Internationally recognised as a healthcare innovator.

Carrie Jackson – Director England Centre for Practice Development

Jenny Clarke – Blackwood Teaching Hospitals NHS Foundation Trust

Dr Nawaid Ahmad – Shrewsbury and Telford Hospitals NHS Trust

Dr Ferdinand Rudolf Waldenberger – Hospital Director Austria

Dr Amin Farhan – Patient Members, HJS Top 50 Innovator

Anthony McCann, Ph.D. – Founder and Director, Hummingbird Culture Change, and Hummingbird Actors Studio

Joao Bocas – Co-Founder & Chief Wellness Officer at The SelfCare People, International Speaker, Digital Health Entrepreneur

General Medical Council

And More



#worldhealthinnovationsummit

From Kevin Street to Africa and Beyond

On completion of the Certificate in Med Lab Sciences, I began my career at the Coombe Hospital in 1973, moving to St Vincent's in 1979 and the BTSB in 1981. I was privileged to be appointed Chief Medical Technologist in Blood Transfusion in 1985 at the Mater Hospital and though I loved the work, the great team and enjoyed the challenge, my affinity for overseas development continued to grow. Recognising the need for some relevant qualification, I undertook a full time Masters in Community Health in Trinity.

Sounding a little like Sir Hubert Appleby in Yes Minister, the term "that's a very courageous decision" is embedded in my memory going back to 1992. It related to uprooting the family and us all moving to The Gambia, one of the world's poorest countries (also called "white man's grave") for a two year APSO assignment. In truth the appeal of working in developing countries had been fermenting for many years from my time working as a part-time volunteer with GOAL, (Christmas fundraiser, Trinity Tennis Tournament organiser and later, with Mater Lab colleagues on a support visit to Khartoum Teaching Hospital). The Queen Elizabeth hospital in Banjul had minimal pathology services apart from a Belfast trained Pathologist and a Medical Laboratory technician. However, the Gambia was at the forefront of global research into both Malaria epidemiology and Trypanosome transmission by the Tsetse fly. The Medical Research Centre and the International Trypanotolerance Centre were heavily funded by the UK, with well trained staff. The clinics and wards were under constant pressure responding to the country's enormous health demands. I must say that during those two years, witnessing extreme poverty, together with preventable child and maternal morbidity and mortality at breath-taking levels shaped and guided my future career decisions and those of my sons. I upskilled with a PhD in Public Health and deciding to undertake a full career change. I resigned my post in the Mater in 1995 joining the Department of Foreign Affairs as Chief Analyst on the Irish Aid Programme.

This 8 country bilateral programme focussing on poverty alleviation and humanitarian emergencies (with a budget of €32 Million) was at an early stage in its development and during my 5 years with DFA, the programme grew significantly to over €100 million. The experience gained working in a specialist area of Planning, Monitoring and Evaluation with a Government "Donor" was considerable but I also felt my career would benefit from an international humanitarian exposure.

By Brian Wall



In 2001 I joined the International Red Cross in Geneva as a Monitoring and Evaluation specialist. The Red Cross movement founded at the battle of Solferino is the largest Humanitarian organisation in the World. During my time with the Red Cross, my work included on the ground missions reviewing humanitarian support to earthquakes in Bam and Gujarat, Hurricanes in Central America, post Chernobyl health care, Droughts in Southern Africa, and the St Stephen's day Tsunami. Alas, the only thing that's certain, is, that nothing is certain and in 2006 I was among many staff (including 5 Irish) to be "let go" because of a downturn in funding. It was, and remains, the only time in my working life that I've lost my job. After a while licking my wounds, I found the reserves to embark on a job search and joined UNAIDS in Uganda a large country with the third highest prevalence of HIV in the world. I worked closely with the Government on monitoring and researching appropriate prevention and protection programmes. I say "appropriate", as there were many views about prevention strategies. Kampala was an interesting duty together with equally as many faith based organisations. My work included evaluating and reporting on anti-retroviral use, male and female condom use, safe-sex strategies with sex workers and guiding an orderly response to the benefits of male circumcision! After 3 years avoiding the dangers of infamous Kampala Marabou Storks I joined UNICEF with a first assignment in Geneva. UNICEF is one of the large UN agencies and the global agency addressing the rights of Children. My roles included Planning, Monitoring and Evaluation of Immunisation, Country Health programmes and malnutrition programmes. My assignments included 2 years in each of the world's most beautiful, but difficult and dangerous duty stations, Freetown in Sierra Leone and Sanaa in Yemen. Sierra Leone is one of the poorest countries I've worked in. Moreover, endemic corruption, absence of functional health infrastructure, only 37

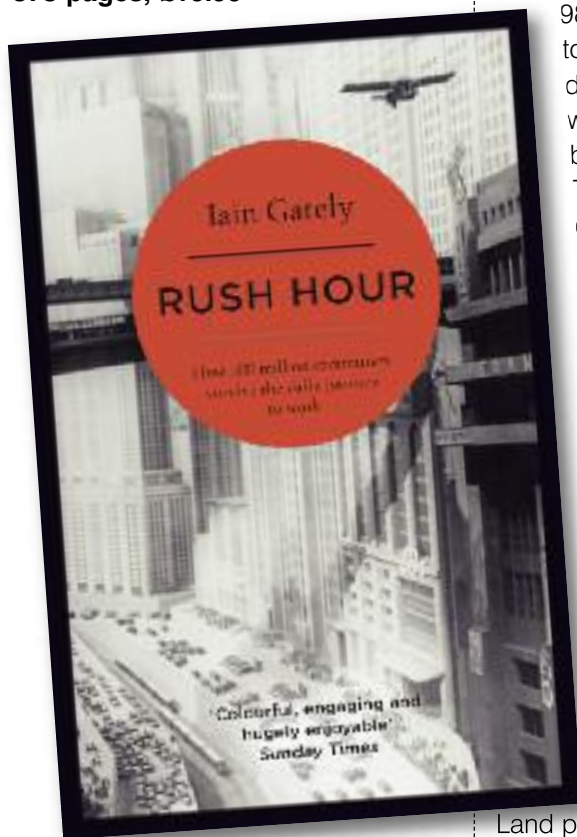
doctors in the whole country contribute to the appalling morbidity and mortality statistics suffered by women and children while also making for a very challenging work environment. My time there was a fantastic personal work experience and the hard work with UNICEF certainly achieved results. My memories also include seeing mould growing on mould (Freetown has the second highest rainfall in the world), and meeting some wonderful families like Thomas the Muslim whose brother was Ibrahim the Catholic...!

My final Duty station was again with UNICEF in Sana'a, Yemen. Yemen is a status "E" (there are 5 grades A-E depending on levels of danger/insecurity...5 is the highest). The population needs in Yemen are enormous and Yemen is the poorest country in the Middle East. Malnutrition is endemic and prevalence of Stunting and Wasting in children is second highest in the world. Inequalities relating to women and accompanying Gender Based Violence are widespread. The country had been in a state of political and social insecurity for some time prior to my arrival. However even though I received a thorough briefing, there was very little that prepared me for my experience. I held the post of Chief of Monitoring and Evaluation of all the programmes, with a 2013 value of US\$120 million. Work and life was very difficult, with a constant curfew, explosions, assassinations, kidnappings. Travel between home with its reinforced defences, and the office was in an armoured vehicle accompanied by armed guards. Sadly, the limitations with travelling within the country had the most detrimental effect on our health programme delivery. Yemen is a beautiful country of magnificent mountains and coastline from the Red Sea to the Indian Ocean. However, politically and socially it is a deeply tribal country awash with arms and in late 2013, an international colleague of mine was kidnapped by an Al-Qaeda affiliate. He was released unharmed 13 months later. In 2014 the country faced a more serious threat from both Al Houthi tribesmen and an escalation in the assassination of Europeans. One such incident triggered another evacuation of all International Staff. I returned to Ireland and following a very brief discussion with my family, I resigned from UNICEF.

Having a career abroad certainly inspired long periods of reflection about family, friends and of course choices.... Alhamdulillah, I have indeed been privileged to have enjoyed a portfolio of adventurous careers, with good memories....but I never forget my first day in room 208! Shukran jazeelan!

Rush Hour by Iain Gately

Published by Head of Zeus, 2014,
378 pages, £16.99



Readers of this book will be one of the 500 million people who commute to work every day throughout the world. It is a compendium of facts that prompt the response "I didn't know that". It illustrates how difficult it is to predict the future. We accept commuting as normal but for most of history people worked where they lived. It was the spread of the railways that initially facilitated people living far from where they worked.

London, like many cities in the nineteenth century was overcrowded, and disease ridden. Life expectancy in the slums in the time of Dickens was only 35. The coming of the railway in the 1830s allowed the better off to move out of town. Originally the rail companies expected to make money from transporting goods but soon they realised the population wanted to travel in large numbers and they facilitated this demand. But travel

was dangerous and ticket offices sold life insurance. Official time varied from village to village but the railways forced a uniform time, Greenwich Mean Time, on the nation. By 1852, 98% of Britain had conformed to "railway time". This created a demand for cheap pocket watches. Time keeping had become important in society. Things were even more complicated in Europe where some countries followed different calendars. Russia only moved from the Julian calendar to the Gregorian one in 1918. There was a surge in literacy as commuters bought newspapers and books from shops, established by the likes of W.H. Smith, at the stations to pass the time travelling. WCs were not provided on trains until the 1890s and prior to that one could buy a device consisting of a tube and a bag inside one's trousers.

Land prices rose near the rail line as commuters bought their dream houses in the new suburbs where a good lawn became a prized asset.

Commuting spread around the world with the railways. The term commute originated from a rail company in the USA that allowed travellers to "commute" their fares, i.e. buy a season ticket. Americans moved out of the insanitary cities for the same reasons as in Britain but also to avoid the high taxes in cities.

The automobile also facilitated commuting. However the impact was slow in Britain as legislation in 1865 decreed that a mechanical vehicle was limited to 4 mph in the country and 2 mph in town and had to be proceeded by a man walking ahead waving a red flag. This was repealed in 1898 and the speed limit raised to 14 mph. On the other hand America embraced the car and Henry Ford launched the Model T. Cars were welcomed as an alternative to problems caused by horse drawn

vehicles. An 1898 conference estimated that by 1930 the streets of New York would be filled to the level of third-storey windows with dung. A similar estimation in 1894 calculated that London would be nine feet deep in manure by 1930. Garages were originally built behind houses like stables but integral garages soon became the norm. The first car radios were introduced in the 1930s. Early ones were the size of a suitcase and cost a third of the price of a new car. Traffic problems in cities are nothing new. Julius Caesar banned horse-drawn conveyances from Rome during daylight hours. The first "traffic light" was installed in London in 1868.

Rail commuters are used to overcrowding at peak hours. The space allocated to UK rail travellers is less than that ordained by the EU for the humane transport of animals.

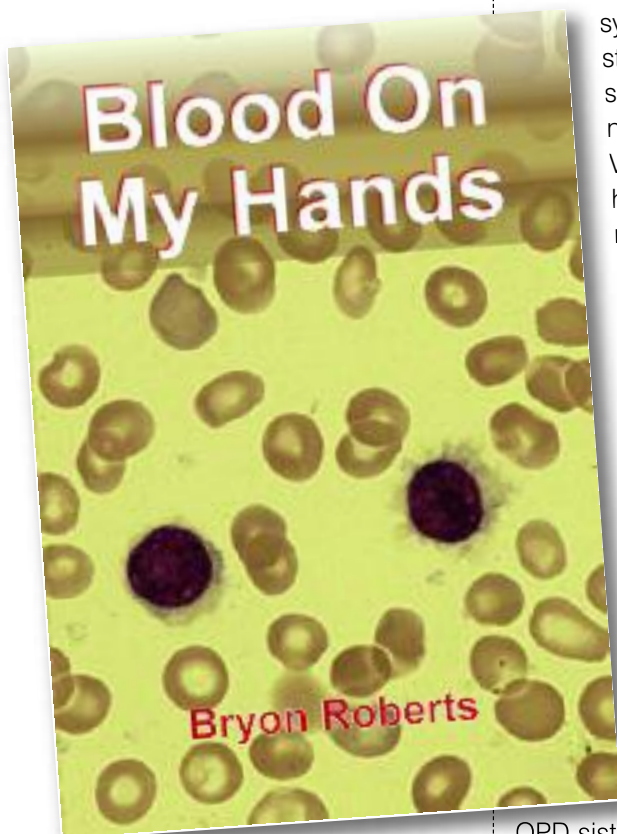
The author considers topics as diverse as the experience of commuters in various countries, the reluctance of communist countries to facilitate free movement of their citizens, the adverse effect of the petrol additive tetraethyl lead on the population, road rage, "pushers" employed on Japanese railways to pack travellers into already overcrowded carriages, sex and railways (statistically there is no better place to meet a mate than on the Tube), the incidence of viral infection among tube travellers (90% vs 50% among walkers and cyclists), the growth of working from home aided by technology (not a green development as the IT sector now uses 10% of the world's electricity, that is 50% more than aviation) and the development of "driverless cars" controlled by computer. Google's ten driverless cars have clocked up 300 000 miles with only 3 minor accidents; the most serious occurred when the car was driven by a human.

Who would have expected such diverse topics from a book titled Rush Hour. It indeed is an ideal read when commuting during rush hour.

Tom Moloney

Blood on my Hands, A Haematological Odyssey **By Dr Byron Roberts**

**Publish Nation, 2014, 225 pages,
€12.99**



Young members of the profession will be familiar with the established speciality of Haematology and with the essential role of Consultant Haematologists in medicine. But it was not always so. This is the story of a young doctor who decided to specialise in a discipline which did not exist at that time in the UK NHS. Dr Byron describes the difficulties he had in establishing the discipline in Leeds against a myriad of social and political changes over 50 years. He describes hospital life as it changed over that period and the momentous developments in the biological and medical sciences that made Haematology one of the most exciting specialities in the whole of medicine. Social attitudes towards women were very different to now and health and safety seems not to

have been heard of.

When Byron started his medical career in 1951 the UK was a drab country. Clothes and food rationing had just finished post World War 2. He recalls in his early years undertaking phlebotomy as a student. He would rinse out his

syringe and boil it in water to sterilise it. He waited until the syringe was cool before the next phlebotomy.

Venesection with a wet and hot syringe did not produce reliable results. They performed many side room tests. Washing sheets after delivering a baby was one of their tasks. Surgeons wore frock coats in theatre and they became so soaked in blood that they became rigid and could be leaned against the wall. Consultants were god-like. Some had chauffeur driven Rolls Royce's. It was a time before political correctness. One consultant called the

OPD sister to replace some nurses as they were not pretty enough for him. Another requisitioned the Matron's bedroom while she was on holidays to accommodate a private patient for whom there was no bed. Very little Haematology was performed. The professor of Pathology believed that technicians ought to be attractive young girls to cheer the patients up and did not wish to employ males.

Byron had decided he wanted a career in scientific medicine. Leeds had had a chair in Pathology since 1904. His introduction to his first post in Pathology was to see the centre of Histopathology occupied by bits of the motorbike belonging to the Chief Technician. The staff were united in one thing, their hatred of the Professor, who "reigned with a degree of absolutism not seen since the Court of the French King Louis

XIV."

He recalled performing tests on a finger stick blood sample obtained by stabbing the patient with a blade mounted in a cork stored in spirits between patients. 100 days after stabbing a hepatitis patient he noted 3 more jaundiced patients in the ward. In the 1960s EDTA was introduced and plastic containers. And then there was the introduction of automated counters in the form of the Coulter Counter model D. The later developments in the science of Haematology are described but it is the historical stories that will remain in the memory.

The Chief Technician and his wife were both IBMS qualified. As the 1960s advanced there were many complaints about the short skirts of the girls and the Chief had to insist on the wearing of tights. Blood was delivered around the hospital in a wheel barrow and stored in general domestic fridges.

Dr Roberts eventually was accepted for a post in one of the few centres of excellence in Haematology, that of Professor Dacie in the Hammersmith. The first thing he noticed in his new hospital was the absence of Royal Royce or Bentley cars in the car park. This turned out to be the most formative and exciting year of his career.

He then returned to Leeds to what he thought was a Lecturer in Haematology post. But the Professor saw him as a threat and determined to keep him under control. He was very unhappy here. His duties included removing pituitary glands which were used to recover growth hormone and attending an abattoir to collect ox blood.

Eventually he got a Consultant post but had to battle to have Haematology recognised as a separate discipline. He mentions a number of the technical staff, such as Roger Hall, who wrote a well-received text book. Others went on

to secure PhDs and Fellowship of the RCPATH.

He recalled a period when the staff brewed beer with kits from Boots. However the empty Isoton containers burst and the whole department stank like a brewery. Other stories of eccentric doctors are recounted in detail such as the alcoholic who brought a cadaver in rigor mortis to the lecture theatre to demonstrate. There are even rumours of sex orgies on transfusion clinics.

Dr Roberts eventually retired in 1998 after 47 years in the Leeds Infirmary. Laboratory workers will enjoy the history, the anecdotes and the story of the evolution of Haematology.

Tom Moloney

Report of the Investigation into the Safety, Quality and Standards of Service Provided by the Health Service Executive to Patients in the Midland Regional Hospital, Portlaoise.

Health Information and Quality Authority, 8 May, 2015

"The care fell well below the standard expected in a modern acute hospital" according to the HIQA's CEO. There have been a number of reports following failures in service delivery in the Irish health service in recent years but none have been as blunt and damning as this one. And none have provoked the HSE to threaten legal action to prevent the publication of the report. An Irish Times editorial described the report as "sobering and disturbing" and "emblematic of widespread lapses in patient safety

at a local and national level." There are echoes of similar failings in the Mid Staffordshire NHS Trust in the UK where an emphasis on cost savings and meeting financial targets trumped patient care. What is surprising in both situations is the lack of basic humanity shown by some staff to patients. Underlying these issues were political pressures to respond to local pressures to maintain a range of services locally that were not resourced. The hospital was officially operating as a model-3 hospital providing the full range of complex services when it was funded as a less intensive model-2 hospital. Indeed at one stage the HSE proposed to reduce the hospital's status to a model-2 hospital but were inhibited by, presumably, political considerations.

The report was commissioned by

misdiagnosis cases in the hospital should have provided incentives to reform management practices. Had these reports and the findings of 6 recent investigations into hospital care in Ireland been implemented HIQA believed risks to patients would have been vastly reduced.

In 2014 "it appeared that senior HSE managers were predominately focused on controlling healthcare expenditure". Seven years prior to 2014 the State Claims Agency knew of risks in the maternity service in the hospital.

The hospital did not have a safety culture, nor the IT structures necessary to support audit. Deficiencies in midwife staffing were identified as long ago as 2004. In relation to ultrasound scanning there were deficiencies in capacity, staff competencies and clinical oversight. The report also concluded that it was not just in the Maternity Service there were deficiencies but that there were major problems in ED, ICU, Diagnostic Imaging, and surgical and medical services. HIQA is unable to conclude that services at the hospital are now safe despite some remedial actions.

The experiences of parents of the deceased babies were harrowing. There was sub-optimal care leading to death of their babies. But they were also treated in a grossly inappropriate and traumatising manner when dealing with the deaths of their children and found it very difficult to get information.

Tom Moloney



the Minister of Health following an RTE programme in January 2014 about the tragic deaths of up to 8 newborn babies in Portlaoise and a preliminary review by the Chief Medical Officer. He said that 2 previous reports into breast cancer

Staying Alive-How to Get the Best from the NHS

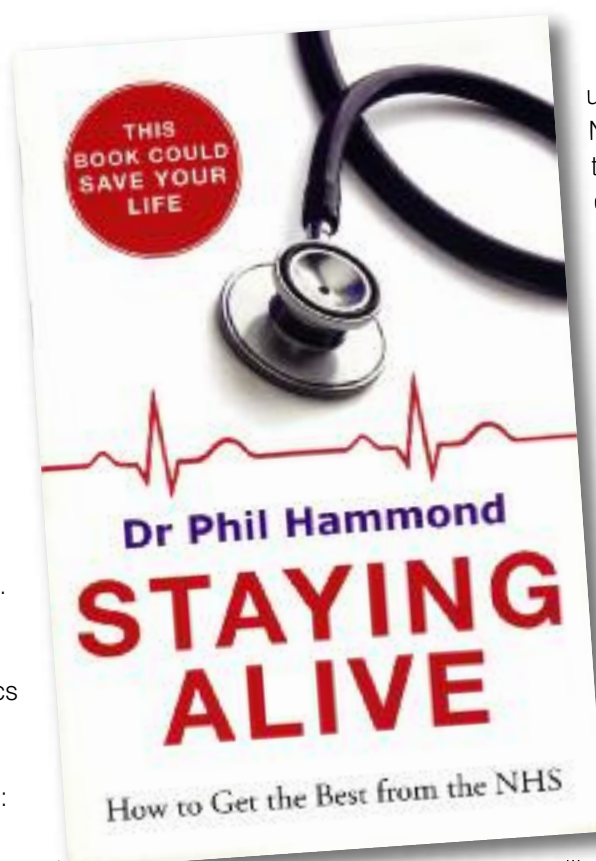
Dr Phil Hammond

Published by Quercus, 2015, 304 pages, £14.99

Dr Phil shares his experiences of working in and investigating the NHS, and combines it with the input of inspirational patients. Many of the topics are equally relevant to the Irish health service. He is Private Eye's medical correspondent and broke the story of the Bristol heart scandal in 1992. He has also presented the BBC programme, Trust me I'm a Doctor.

He concludes, and these statistics may surprise some readers who think hospital care is the most important part of the health service:

- Healthy living is often more powerful at preventing illness than anything the NHS can offer.
- 90% of symptoms never reach the NHS.
- 90% of symptoms that do reach the NHS are treated outside hospital.
- 90% of symptoms are self-treated.
- 52 million GP visits each year are for conditions that would get better with time.
- The average age of patients using the NHS is over 80.
- Perhaps 20% of mainstream clinical practice brings no benefit to patients.
- The wastage of prescribed medicine amounts to £300 million every year.
- For most patients we simply do not know whether NHS care has any effect good or bad.
- Each day there are over one million NHS consultations and 10 million decisions are made in these consultations.



- Chronic diseases now account for 70% of the NHS budget.
- Perhaps 50% of symptoms are medically unexplained and don't lead to a diagnosis or treatment.
- "For about 90% of symptoms you're better off with a dog than a doctor."
- The NHS was founded in 1948 and despite all the criticisms the outcome has been staggering. In that year half the population died before the age of 65; now life expectancy is over 80.
- Health and Social Care need to be integrated. "NHS staff spend too much time diving into the river of illness, pulling people out and putting them back together that no one has the time to wander upstream and look at who's pushing you in."
- On healthy eating he advises that if you want to know what a portion size should be, turn your plate over and eat off the base. If you're a bloke and you can't see your penis it is time for a diet.

He cites the story of the unhealthy life style of the former NHS CEO who ruefully admitted to giving evidence to a committee on diabetes a few months before he himself was diagnosed with Type 2 Diabetes having ignored all his symptoms for a long time.

The NHS Chief Medical Officer commenting on looking at patient safety incidents said "You can often see that all the ingredients were in place for a disaster to happen. It was almost as if the person who died was a dead man walking as they stepped through the entrance of the hospital."

Dr Hammond strongly urges us to listen to patients and their family and illustrates many case histories where these people tried unsuccessfully to tell doctors that something was wrong.

He also argues that we have a moral obligation to whistle blow if necessary when we see failures in the system. Noting that the system in the past has not been kind to such people he welcomes new safeguards that protect the whistle blower.

Tom Moloney

Academy Shining Lights

Many Congratulations to the following who completed their CPD Programme during May, June, July and August 2015

August 2015

Carol Wilson,
Biomnis Ireland, Dublin

Stephen Ahern,
University Hospital Waterford

Nicola O'Sullivan,
Children's University Hospital, Temple Street, Dublin

Deborah Tracey Watters,
Dublin

Kathleen Brosnan,
St. James's Hospital, Dublin

Olga Meade,
Mater Misericordiae University Hospital, Dublin

Helen Gildea,
IBTS, National Blood Centre, Dublin

Lisa Langabeer,
Our Lady's Children's Hospital, Crumlin, Dublin

Kieran Healy,
National Maternity Hospital, Holles Street, Dublin

Sabrina Cahill,
Children's University Hospital, Temple Street, Dublin

July 2015

Michael Maher,
IBTS, National Blood Centre, Dublin

Sara Louise McNamara,
Co. Kildare

Catriona Ferguson,
Mater Misericordiae University Hospital, Dublin

Naomi Fynes,
Hermitage Medical Clinic, Dublin

Cathal O'Brien,
St James's Hospital, Dublin

Lisa Burke,
IBTS, National Blood Centre, Dublin

Una Reidy,
Bon Secours Hospital, Cork

Aine Fitzpatrick,
IBTS National Blood Centre, Dublin

Theresa Cunningham,
Bon Secours Hospital, Cork

Michelle Burns,
Co. Kildare

Fiona Kearney,
IBTS, National Blood Centre, Dublin

Noel Jereza,
Hermitage Medical Clinic, Dublin

Carmel McCarthy,
Cork

Mark Grennan,
University Hospital, Waterford

June 2015

Catriona Logan,
Co. Kildare

Michele Amoruso,
Cappagh National Orthopaedic Hospital, Dublin

Suzanne Traynor,
St. Vincent's University Hospital, Dublin

Paul Walsh,
AMNCH, Tallaght, Dublin

Martina Williams,
Our Lady's Children's Hospital, Dublin

Aileen Sheridan,
Co. Dublin

Elizabeth Jordan,
Co. Carlow

Sarah Grace,
Beaumont Hospital, Dublin

Anne Browne,
Co. Dublin

Joanna Kakolewska,
Dublin

June Bowens,
Dublin

Cathal Harmon,
Dublin

Orla Lucey,
University Hospital, Waterford

Tracey Steede Neylon,
Galway

Carol O'Connor,
Co. Wexford

Cheryl Pierce,
Beacon Hospital, Dublin

Aileen Farrelly,
Dublin

Imelda Keane,
Mater Misericordiae University Hospital, Dublin

Noelle Gallagher,
Galway

May 2015

Juanita Grogan,
Our Lady of Lourdes Drogheda

Anne Maclellan,
Connolly Hospital, Dublin

Sarah Lalor,
St James's Hospital, Dublin

Enda Cadden,
IBTS National Blood Centre, Dublin

Beverley Kristiansen,
Cappagh National Orthopaedic Hospital, Dublin

Edel Mulry,
University College Hospital Galway

Annette Neill,
St John's Hospital, Limerick

Geraldine Tierney,
St James's Hospital, Dublin

Keith Corcoran,
IBTS National Blood Centre, Dublin



forthcoming events

Date	Venue	Event	Website
Transfusion + Transplantation Science			
1st – 3rd October 2015	Split, Croatia	24th Congress of European Association of Tissue Banks, EATB 2015 Deadline for abstract submission: July 1st 2015	www.eatb2015.eu
24th – 27th October 2015	Anaheim, California, USA	American Association of Blood Banks (AABB) Annual meeting	www.aabb.org
30th October 2015	NHSBT Filton, Bristol, UK	Red Cell Special Interest Group. Deadline for poster submissions 28th August 2015 Deadline for registration 18th October 2015	www.bbts.org.uk
10th November 2015	Birmingham, UK	Joint UK NEQAS (BTLP) and the BBTS Blood Bank Technology SIG Annual Meeting	www.ukneqas.org.uk
11th November 2015	Croke Park, Dublin	National Haemovigilance Office Annual Conference 2015	haemovigilance@ibts.ie
11th November 2015	Birmingham, UK	Spotlight on Platelets. BBTS Combined Special Interest Group Autumn Meeting	www.bbts.org.uk
14th – 16th November 2015	Bali, Indonesia	26th Regional Congress of The International Society of Blood Transfusion	www.isbtweb.org/indonesia
20th November 2015	Ulster Hospital	NITC Symposium: Transfusion Practice in Obstetrics and Paediatrics Anaemia in pregnancy and Intravenous Iron, Prevention and Management of Postpartum Haemorrhage, Cell salvage in Obstetrics, Haemolytic disease of the Newborn – prophylaxis, Adverse events associated with use of Anti-D, Report on NITC Regional audit of appropriate use of Anti-D, Intra-uterine transfusion, Management of Thromboembolism in Pregnancy, Blood sampling and Transfusion in Paediatrics.	susan.atkinson@belfasttrust.hscni.net
TBC 2015	Dublin	Blood Group Serology and Immunohaematology Workshop. This is a new venture for TTSAB. Further details to follow. Find us on Facebook: ACSLM Transfusion and Transplantation Science Advisory Body.	Johnquigley26@hotmail.com
TBC 2015	Dublin	Anti-D Laboratory & Clinical Education Seminar. Further details to follow.	Johnquigley26@hotmail.com
12th – 15th April 2016	Reading, UK	Blood Group Serology (BGS) Reading	www.bgsreading.org
7th July 2016	Manchester, UK	SHOT symposium 2016	www.shotuk.org
21st – 23rd September 2016	Harrogate, UK	BBTS Annual Conference	www.bbts.org.uk

Haematology

13th October 2015	York, UK	UK NEQAS (H) 18th Annual Participants' Meeting	www.ukneqas.org.uk
16th – 17th October 2015	Salthill, Galway	HAI Conference (with Laboratory, Nursing & AHPS Programme)	www.haematologyireland.org
22nd – 24th October 2015	Varese, Italy	5th International Symposium on Childhood, Adolescent and Young Adult Non-Hodgkin Lymphoma – Abstract Deadline June 7th	www.pcrf-kids.org
6th November 2015	London, UK	UK NEQAS Parasitology Participants' Meeting. Venue - Royal College of Physicians, London.	www.ukneqas.org.uk
12th – 13th November 2015	London, UK	Joint Conference with BSHT and UK NEQAS Blood Coagulation Haemostasis & Thrombosis 2015	www.ukneqas.org.uk

Clinical Chemistry

2nd – 3rd December 2015	Cardiff, UK	Weqas User Group Meeting and Scientific Seminar	www.weqas.com
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Microbiology

2nd – 3rd October 2015	Imperial Hotel, Cork	Irish Society of Clinical Microbiology Autumn Meeting Please e-mail completed abstract forms to Lisa McDowell at info@iscm.ie by Friday 11th September	www.iscm.ie
11th – 14th October 2015	Heidelberg, Germany	EMBO EMBL Microbiology Symposium 2015	www.embo-embl-symposia.org/symposia
28th – 30th October 2015	Barcelona, Spain	VI International Conference on Environmental, Industrial and Applied Microbiology - BioMicroWorld2015	www.biomicroworld2015.org
November 2015	St James Hospital	Microbiology Advisory Body Autumn Evening Scientific Meeting	Eddie.McCullagh@amncn.ie
4th December 2015	London, UK	UK NEQAS Microbiology Division Annual Scientific Meeting	www.ukneqas.org.uk

Cellular Pathology / Cancer + Molecular Diagnostics

3rd October 2015	Aisling Hotel	Updates in Cellular Pathology	Marian.Manning@hse.ie
20th October 2015	Manchester	UK NEQAS Cellular Pathology Techniques Participants' Meeting	www.ukneqas.org.uk
9th October 2015	Radisson Blu Dublin 8	Irish Molecular Diagnostics Network Meeting	patrickbuckley@beaumont.ie
5th – 9th November 2015	Boston, USA	AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics	www.aacr.org
1st – 2nd December 2015	Brussels, Belgium	Markers in Cancer Diagnostic Development Tutorial (Bursaries normally available)	www.eortc.org

Other Conferences

28th – 30th September 2015	Birmingham, UK	IBMS Biomedical Science Congress	www.ibms.org
4th – 7th October 2015	Doha, Qatar	The International Society for Quality in Health Care 32nd International Conference (ISQua)	www.isqua.org
8th October	Dublin	2nd National Pharmacy Summit	www.pharmacysummit.ie
10th – 11th March 2016	Carlisle, Cumbria, UK	World Health Innovation Summit	www.worldhealthinnovationsummit.wordpress.com
26th – 27th April 2016	RDS, Dublin	BioMedica	www.acslm.ie



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Evaluation of the Toxic Risk of Fluoropyrimidines & Determination of 5-fluorouracil (5-FU) in Patients with Cancer

5-fluorouracil (5-FU) and orally available 5-FU prodrugs are central to almost 60% of chemotherapy protocols (in particular for digestive, oropharyngeal, breast and pancreas cancers). The use of these drugs can produce severe and unpredictable side effects which have been mainly attributed to a deficiency of the enzyme dihydropyrimidine dehydrogenase (DPD). It is estimated that 3–5% of patients carry mutations in the *DPYD* gene which influence DPD activity. Pretherapeutic detection of this metabolic dysfunction reduces the patient's risk of toxicity or of therapeutic inefficacy. Biomnis Ireland is delighted to announce that the following tests are now available through our laboratories:

EVALUATION OF THE TOXIC RISK OF FLUOROPYRIMIDINES BY A MULTI-PARAMETRIC APPROACH (5FU^{ODPM} TOX) (BEFORE TREATMENT)

This test enables the risk of fluoropyrimidine toxicity to be evaluated and the determination of the dose to be administered

in the first cycle, thanks to its multi-parametric approach combining:

- screening for gene mutations that influence dihydropyrimidine dehydrogenase (*DPYD*);
- determination of uracil (U) and dihydrouracil (UH₂);
- consideration of the patient's pathophysiological parameters.

DETERMINATION OF 5-FLUOROURACIL FOR DOSE ADJUSTMENT (5-FU^{ODPM} PROTOCOL) (DURING TREATMENT)

This test enables the dose to be calculated as a function of pharmacokinetic, physiological and pathophysiological parameters and of the characteristics of the chemotherapy protocol during the entire duration of treatment.

If you would like further information regarding the above tests please contact your local hospital laboratory or Biomnis Ireland on (01) 295 8545 or sales@biomnis.ie

A microscopic view of several red blood cells against a dark background. One cell in the center is significantly larger and more detailed than the others, showing a textured, bumpy surface.

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