The Bulletin

of The Royal College of Pathologists

Number 172 October 2015

The Royal College of Pathologists
Pathology: the science behind the cure

In this issue

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The College's quarterly membership journal, The *Bulletin*, is the main means of communications between the College and its members, and between the members themselves. It features topical articles on the latest development in pathology, news from the College, as well as key events and information related to pathology.

The *Bulletin* is delivered free of charge to all active College Members, retired Members who choose to receive mailings and Registered Trainees, and is published four times a year, in January, April, July and October.

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On the cover

From the Editor's garden: fasciation in *Veronicastrum* (see Editorial for details)

Photo credits: The Royal College of Pathologists, Department of Health, **John Goodman,** Warren Potter, Photos.com.

EDITORIAL

Professor Tim Helliwell

The Learning Issue

"Tell me and I forget, teach me and I may remember, involve me and I understand". This edition of the *Bulletin* is all about learning, from the front cover to the final pages. Please indulge and expect to emerge as a better informed pathologist.

This quotation is sometimes attributed to Benjamin Franklin but it is unlikely that he ever said or wrote it. The ideas probably derive from the Xunzi, Chinese philosophical writings of the 3rd century BC (www.wikiquotes.com). Franklin was a printer by trade, a scientist and inventor by inclination and one of the founders of the United States. Clearly an advocate of continuous personal and professional development, his comment that "people who are wrapped up in themselves make small packages" should be the stimulus for all members of the College to be outward looking and to educate themselves and others in the joys of pathology.

The Xunzi are attributed to Xun Kuang, who distinguishes between what is born in man and what must be learned through rigorous education. In translation, he affirms that "to distinguish between things that are the same and those that are different, one must use one's senses to understand a thing and then compare it to understandings of other things. From these observations, names can be given based on the sameness or difference between things." Xun Kuang would have appreciated the modern cellular pathologist with an interest in genomic medicine.

The cover illustration shows fasciation in *Veronicastrum* sp. Fasciation (*Latin fascia* – a strip) is the process in which the normally conical flower spikes are expanded, flattened and deformed. This is most probably through the interactions of mutation, viral infection and other environmental factors affecting microRNAs, signalling pathways, apoptosis and mitosis in the shoot apical meristem (*Russian J Plant Physiol* 2012;59:530).

The genetic theme of the *Bulletin* is continued as the philosophical strategy and impact of the establishment of genomics medicine centres becomes evident. Professor Sue Hill, the Chief Scientific Officer, describes the national strategy behind these centres. Following this, the lead scientists at two centres illustrate the challenges and successes of recruiting patients and obtaining samples for whole-genome sequencing for rare diseases and, more recently, for cancers.

For genomics medicine to be sustainable, we need doctors and scientists to be trained to do the detailed work, and for all healthcare professionals to be sufficiently informed that they can apply genomic information to patient management. The recent launch of the medical undergraduate curriculum is highlighted which, when implemented, should provide a good foundation for the education and practice of all doctors. Postgraduate curricula for histopathology and veterinary pathology support further professional developments in molecular and research skills. Debate is invited, through the letters pages, on the potential roles of clinical scientists in cellular and molecular pathology.

What can we learn from the dead? The technological advances that allow imaging-assisted autopsies are outlined by Dr David Bailey and the impact of this technology on a group of enthusiastic medical students at the Summer School is obvious from their articles. The topic will be revisited in future issues of The *Bulletin*.

The College is fortunate to have attracted several new directors this year and three of them introduce themselves in this issue. Philip Cachia and Andrew Day, Directors of Training and Examinations respectively, are driving the strategies that will support the learning agenda. Lorna Williamson, the Director of Publishing and Engagement, will help us to spread the messages on the importance of learning. All Fellows can take advantage of a range of meetings organised by the College; ideas for new meetings are always welcome. Writing this from the European Congress of Pathology in Belgrade, I wonder why so few UK-based pathologists are here; I hope to see more UK participants in Cologne in September 2016.

It has been an honour and a pleasure to edit this issue of The *Bulletin*. I hope that you enjoy it as much as I have done.

Professor Tim Helliwell
Vice President for Learning
Guest Editor

Dr Suzy Lishman

Engaging and building for the future

Welcome to the October issue of the *Bulletin*. I hope you managed to take some time off to relax over the summer, which feels like a long time ago after a busy September.

Annual Report

As a registered charity the College is required to publish a printed annual report; the 2014/15 report accompanies this issue and sets out some of the work the College has done in the last year. You will see that the format and content is rather different this year. We wanted to make the document more interesting for members to read, so have highlighted key facts rather than including reports from every committee. As well as being distributed to all members, the Annual Report is shared with politicians and policy makers to try to increase their understanding of the vital role the specialty plays in healthcare. We hope you like the new format and would welcome your feedback (publications@rcpath.org).

As well as the official summary of the year's achievements, we have also published a more detailed account of the College's activity over the last year. A few highlights from this Annual Summary of Activity are on page 242 and the full document is available on the College website. It sets out the diverse areas of work covered in the last year, from responding to consultations to assessing candidates in exams. I would encourage you to read this excellent overview of the activities funded by your subscriptions and would like to thank the College staff for their hard work.

Pathology Summer School

One of the highlights of the summer was the second annual pathology summer school, organised by the College, the British Division of the International Academy of Pathology and the Pathological Society. This year's two-day event was held at St Hilda's College, Oxford, a beautiful setting for the 70 students and 20 pathologists who attended. The programme included talks on generic topics, specialty-specific talks and 'find out about' sessions, which gave students the opportunity to meet pathologists in small groups.

Feedback from the students was very positive, with 98% saying that they were more likely to pursue a career in pathology after attending the summer school. Dinner on the Friday evening was followed by a pathology quiz, with prizes generously provided by the Association of Clinical Pathologists. Part of the prize for each member of the winning team was to write a short report for the *Bulletin* – please see page 237 for some of these.

Next year's summer school will be held in London but other venues outside the capital are being sought for future events. If resources allow we would like to hold more than one meeting each year and introduce additional specialty-specific study days for students who would like to learn more about a particular specialty. If you are interested in helping organise one of these events or would like to be involved in next year's summer school please do get in touch.

The front cover of the Annual Report 2014–2015

Junior doctors' contract

The Government announced recently that a new contract would be imposed on all new junior doctors from August 2016. The main gist of the changes to the contract include replacing banding by a basic salary that reflects scheduled working hours, extending routine working hours and reducing the number and frequency of pay increments. Time taken out of training for research, gaining experience in another specialty or for parental leave will not count towards seniority. Although the College is not a trade union and is not permitted to get involved in negotiating terms and conditions of employment, I feel very strongly that we should support junior colleagues when these changes are likely to affect their well-being, training and ability to provide the best care for their patients. I co-signed a

letter to the Secretary of State with several other College presidents, outlining our concerns and strongly urging further negotiation, and a letter highlighting my concern was published in *The Times*. By the time this is published I hope to have had further opportunities to raise these concerns, which are shared by College Council.

7 day working

There has been talk for some time about introducing seven day working across the NHS and, as I write, the BMA has just restarted negotiations with the government over the consultants' contract. In July the Secretary of State for Health gave a speech at the King's Fund, in which he outlined plans to impose a new contract if the BMA would not agree to proposals. I issued a response on behalf of the College, which is in the 'News and Press Releases' section of the website if you haven't seen it. The main point I make is that many pathology services are already delivered around the clock but that without significant sustained investment in training, workforce and organisation it will not be possible to develop a routine 7-day service across all specialties. Spreading the current workforce across 7 days will only dilute the service and is likely to introduce delays while fragmented teams try to communicate effectively.

Cancer Taskforce

In July, the Independent Cancer Taskforce, chaired by Dr Harpal Kumar, CEO of Cancer Research UK, published its report, '*Achieving World-Class Cancer outcomes; a strategy for England 2015-2020*'. The report identified the importance of diagnostics in cancer care and the significant workforce deficits in diagnostic services but focuses on radiology rather than pathology. The College issued a press release, a long response to the report and a joint statement with the ACB and IBMS, in which we call for investment in pathology staff, equipment and estate as well as better education for users of pathology services and the introduction of IT programmes such as the National Laboratory Medicine Catalogue. All these documents are available on the College website. I have been invited to contribute to some of the follow-up meetings and will continue to highlight the importance of investing in pathology. I was recently co-signatory on a letter to George Osborne drawing his attention to the recommendation of the Taskforce report and asking him to prioritise funding for the recommended actions in the upcoming spending review. In September Jeremy Hunt announced that several of the recommendations of the taskforce report would be implemented, including an investment of £300 million in diagnostics and national commissioning of molecular testing. He also announced a target of 95% of cancer patients receiving a diagnosis or the 'all clear' within 28 days of first visiting their GP by 2020. *The Sunday Times* printed a letter in which I highlight the need to invest in pathology to meet these targets.

Capacity and training

The three issues above have a common theme – decisions made by Government which will have significant implications for pathology. Many services are already at full stretch and there is insufficient capacity in the system now. Increasing the length of the working week and imposing new targets will not be possible unless capacity is increased rapidly and soon. As it takes over five years to train a pathologist there will be no quick fixes. I will take every opportunity to share these views in the national press, at meetings with politicians and through the Academy of Medical Royal Colleges. In the meantime we are working on finding solutions to the challenges.

Medical Examiners

We are not expecting any news about the introduction of Medical Examiners until after the Comprehensive Spending Review, the outcome of which will be announced on 25 November. In the meantime we have continued to campaign to keep the issue in the headlines. BBC *Inside Out*, a regional news programme (with this episode broadcast in the North East and North West) featured families who lost children at Morecambe Bay, Bill Kirkup, who chaired the report into what happened and College fellow Dr Alan Fletcher, who was one of the pilot scheme Medical Examiners. There was associated national print media coverage, in which the College position was quoted. The evidence and

Participants at the Summer School

Heidi Alexander, Shadow Secretary of State for Health and Dr Suzy Lishman

support for the introduction of Medical Examiners is overwhelming and I remain optimistic that this will be recognised in the spending review. You can read an interview with Professor Peter Furness, National Medical Examiner, on page 234.

Medical Innovation Bill

As I reported in the last issue, the Medical Innovation Bill, which the College helped to block before the last election, has re-emerged in a slightly different form. Chris Heaton-Harris MP is using a private members' bill to draft an Access to Medical Treatments (Innovation) Bill. The main purpose of the Bill is to promote access to innovative medical treatment by establishing a database of new medical treatments and encouraging responsible innovation. I attended a meeting with Mr Heaton-Harris at the Academy of Medical Royal Colleges to find out more about what was proposed. The first sticking point was the definition of innovation, which was described as any departure from standard practice but not including research. There was no appreciation that standard practice can differ in different circumstances or in different parts of the country or that there was a huge overlap between innovation and research. The additional burden on clinicians of recording 'innovative practice' on a central register would make it unworkable and there was no answer to the question of who would pay for innovative treatment if its use was not evidence-based or approved by any of the advisory bodies. There is no evidence that doctors avoid giving innovative treatments because of fear of litigation so I believe there is no need to change the law in this area. No thought had been given to what would happen if patients refused to allow information about them to be stored on a central database or how confidentiality would be assured, particularly for rare cancers. In summary, the College continues to oppose this Bill on the grounds that it is unnecessary and unworkable. The second reading is on 16 October, after which there will be further opportunities to try to influence its content. I will report back in January.

Political engagement

One of the key roles of the College is to represent its members' views to the parliamentarians and civil servants who are involved in making decisions about health policy, particularly about where scarce resources are invested. As well as working closely with Ed Davie, the College's Public Affairs Officer, and the rest of the communications team, I have found the Academy of Medical Royal Colleges very helpful in providing additional opportunities to raise concerns and promote the role of pathology. I was pleased to meet Heidi Alexander, Shadow Secretary of State for Health, shortly after she was appointed to bring her up to speed on some of the issues facing the specialty.

The Goodman Building

Those of you who have been following the blog on the College website will know how things are progressing with the redevelopment of our new premises, the Goodman Building on Alie Street. The architects, Bennetts Associates, have drawn up plans and refined them with feedback from College staff and members. Initial discussions with Tower Hamlets planning department have been encouraging and an open day for local residents and businesses was a success, with staff and architects answering questions and demonstrating the plans for the building. You can see some of the architects' drawings on page 241. It is exciting to see ideas starting to take shape. The planning application has been submitted to Tower Hamlets Council and we will begin demolition of the current building as soon as permission is received.

Subscriptions

College officers and staff work hard to minimise expenditure on College business but inevitably many of our costs increase each year. Although many members haven't received a pay rise for several years, the College's expenses have risen considerably. Attracting and retaining high quality staff in central London is not cheap and recent changes to pension and National Insurance regulations mean that the College is paying an additional 4.4% on its wage bill, even before any pay rises are taken into account. There have also been additional costs of not having our own premises, on top of the rent that we are paying for Prescot Street. Hiring external venues for meetings and ceremonies has added considerably to the costs. The cost of train tickets and hotel rooms continue to rise, making meetings more expensive to run. We were fortunate to pay only £2000 a year to lease 2 Carlton House Terrace; not surprisingly 21 Prescot Street costs considerably more than that. Other significant expenditure includes a completely new website and the appointment of additional staff to support the busiest areas of College work. Please see the summary of the Annual Review of Activity on page 242 to find out more about the breadth of work undertaken by the College.

While we have reduced activity in several areas to keep costs down, there is still a shortfall,

An artist's impression of the double height reception at The Goodman Building

which can only be made up by an increase in subscriptions. In addition to the usual 'cost of living' increase this year there is an additional charge of up to £30 (for fellows, less for other categories of membership). This is to cover the additional costs of our temporary accommodation and developing the new building. Although this charge will be consolidated into future subscriptions, it is not anticipated that there will be further increases above the cost of living increase. May I remind members that subscriptions can be offset against tax.

New appointments

I am delighted that we have made some excellent appointments to key College positions over the last few months (see page 239). Avril Wayte, who has chaired the Wales Regional Council for the last three years, was elected Assistant Registrar in June and took on the role immediately. I am delighted that Avril will continue to contribute to the work of the College and that Esther Youd has been appointed the new chair of the Wales Regional Council, to take up office from the AGM in November. Esther has been involved in College activities for many years, particularly leading public engagement in Wales.

In addition to the new Directors featured in this issue, Dr Bridget Wilkins has been appointed Director of Clinical Effectiveness, and will take up the role from this month. Professor Peter Furness has been appointed Director of Professional Standards, with effect from the AGM in November. They will reflect on the challenges of their new roles in the next issue.

I would like to thank all the fellows who put themselves forward for the Director positions that were advertised earlier this year. We had more than one applicant for all the posts and held competitive interviews to help us select some outstanding individuals who, I'm sure, will make a significant contribution to the College's work over the next three years.

Several committee chairs come to the end of their terms of office in November and their replacements are currently being appointed under a new, more transparent process. All fellows are eligible to apply and elections are held if there is more than one applicant. We expect all the posts to be filled by the time this goes to print and look forward to welcoming the new chairs in November.

It is heartening to find that fellows are still willing to get involved at the College, despite the pressures of the day job. I'd like to take this opportunity to thank everyone who put themselves forward for a role and thank those demitting office for all their hard work.

College medal

The College medal is awarded for distinguished service to the College and to pathology in general. It has been awarded 13 times since 1991. Past recipients include Patricia Wilkie and Charlotte Williamson for their work setting up and contributing to the Lay Advisory Committee and Tim Wreghitt for his many years of service to the College, particularly his award-winning Chelsea Flower Show exhibits. I am delighted to announce that the College medal has been awarded this year to Dr Peter Cowling and Dr Kevin West, who have recently come to the end of their College roles after decades of contributing to a wide range of College activities. Each has held several roles at the College and has introduced important improvements to the work of the College. The medals will be awarded at the New Fellows' Ceremony in March and citations will be published in a future issue of the *Bulletin*. Any fellow can nominate anyone for a College medal or honorary fellowship. Please contact me if you know of someone who deserves this recognition.

Coming up

The next few months will be busy ones for all of us. At the College we look forward to National Pathology Week (NPW), the highlight of our year-round public engagement programme. This year, we were fortunate to be successful in the ballot to hold a parliamentary exhibition from Monday 26 to Friday 30 October – we hope you'll pop in if you're in London. This previews the full week of NPW events from 2–8 November. We are also hosting the second International Pathology Day on 18 November.

The AGM on 12 November, which all fellows are welcome to attend, will see new directors and committee chairs taking up their posts. We will continue to lobby for investment in pathology and related projects and to speak out about proposals that are unworkable or will not benefit patients. I look forward to attending the first meeting of the Lay Governance Group and to welcoming two new lay trustees to the Trustee Board, ensuring that patients' views are central to the decision-making process. I wish you a rather early happy Christmas and look forward to reporting back on College activity in the January issue of the *Bulletin*.

Dr Suzy Lishman
President
president@rcpath.org

Professor Tim Helliwell

The Genomics Medicine (100,000 Genomes) Project

These three articles describe the ambitious project to build a national genomics infrastructure to support the use of whole genome sequencing in personalised medicine.

The architect of the project, Professor Sue Hill, provides a detailed overview of the project answering the inevitable "what are we doing and why?" Angela Douglas and Emily Shaw then provide their perspectives on how the Centres have risen to the challenges of organising local resources so that the recruitment of patients and the capture and analysis of their DNA could begin in 2015. All those involved so far have learnt a lot in getting this project moving; the patients who have generously agreed to share material and data should learn a lot more about themselves and their diseases in the future. Much more information and links to the eLearning packages associated with genomics medicine can be found through www.genomicsengland.co.uk.

Professor Tim Helliwell
Vice President for Learning
Guest Editor

Professor Sue Hill

Pathology takes centre stage to deliver the 100,000 Genomes Project

The 100,000 Genomes Project marks the start of a new era for the NHS and for our patients, for academia and industry. It cements the UK's position as a world leader in genomic medicine and ushers in a revolution in personalised medicine and precision diagnostics. It will transform the working lives of each and every individual working in pathology, no matter what their specialty or disease area is.

The specific aims of the Project are four-fold: to increase the discovery of pathogenic variants leading to new treatments, devices and diagnostics; to accelerate uptake with advanced genomic medicine practice integrated into the NHS; to increase public understanding and support for genomic medicine and, alongside these, to stimulate and advance the UK life sciences industry and commercial activity in genomics.

The Project itself will sequence 100,000 whole genomes from NHS patients by 2017, focusing on patients with a rare disease and their families and patients with cancer. It will link this sequence information with clinical and diagnostic data to provide a high fidelity clinical phenotype. This will involve approximately 75,000 individuals as cancer patients will have sequences from their own genome and that of the tumour.

At the centre of the Project is Genomics England, a new company set up and owned by the Government but with the independence to harness and drive through this cutting-edge technology and its utility in scientific and diagnostic discovery, and very importantly to inform training and new partnerships with industry.

Genomic medicine is a huge step ahead from the single gene and gene panel tests used in current genetic practice – with a 300-fold increase in the data produced for analysis and scrutiny. The 3.3 billion bases that will be sequenced include both exons and introns. They will reveal insights into gene translocations and novel non-coding variants, as well as the large-scale structural changes seen with other genomic testing. Currently whole exome sequencing – which is beginning to be used more routinely in clinical practice – only looks at around 10 million bases and exons. So this ambitious initiative is shining the spotlight on science and technology in its broadest sense across healthcare – not just genomic and clinical genetic services. It is also driving advances in informatics and data standards and integration, in molecular pathology and other clinical laboratory sciences and across the diagnostic services that are vital to the overall characterisation of disease and the assessment of its severity.

The reason the NHS is able to make this huge jump forward in genomic expertise, more than anywhere else in the world, is the unique ability of an integrated health service to combine genomic sequence data with the lifetime of phenotypic data contained in an individual's NHS medical records. It is the insight and learning from the analysis of genotype and phenotype side by side that will really drive the discoveries and advances from genomic medicine.

To ensure the recruitment of eligible patients at the scale and pace required to meet these ambitious timescales, NHS England has introduced a whole new infrastructure within England's Health Service: the NHS genomic medicine centres. Each genomic medicine centre (GMC) is based within a lead NHS organisation responsible for a specific geography covering a population of several million. In turn, the GMC works with other NHS organisations within their boundary as Local Delivery Partners to ensure that as many eligible patients as possible are able to take part in the Project.

Every step of the Project – from identification, recruitment, consent, sample collection and processing through to validation, feedback of information to individuals and the subsequent treatment and management – requires the consistency and academic rigour of a huge multi-site scientific research programme. The need for this consistency and rigour means we have adopted a completely new approach to the designation and accountability of the NHS genomic medicine centres. There is an open, competitive, two-step procurement process underpinned by a highly detailed service specification (right down to specifying the particular brand of labware that each centre must use and the standard protocols and/or outputs that need to be achieved). The eleven successful centres under the first wave of procurement (see Figure 1 and note that a second wave procurement is currently underway) are formally contracted and committed to deliver this detailed specification under a clear performance regime with NHS England (see Figure 2 for key functions). While this doesn't give the autonomy that some laboratories and NHS organisations are used to, it ensures that consistency and coherence across the NHS can be achieved under the best available evidence to ensure successful whole-genome sequencing.

The structure and specification of the NHS genomic medicine centres has been explicitly designed to drive integration between existing pathology and genetics services, other diagnostic services and broader clinical specialities. This focus on genomics is already beginning to drive improvements in standards, quality and practice across many areas of molecular pathology to deliver benefits in outcomes for all NHS patients and to become part of the routine diagnostic pathway.

Emerging scientific evidence from Fellows of the College is driving new protocols for handling and processing of tissues into genomic blocks from fresh frozen and FFPE samples, a quantitative approach to assessing tumour cellularity and more exacting DNA extraction conditions. These are absolutely central to the quality and fidelity of the resulting genome sequence from tumour samples. A similar focus on quality standards and building protocols from emerging scientific evidence is being applied in the collection of companion functional genomic samples in both rare disease and cancer inclusive of RNA and circulating cell-free DNA. This will be critical to the understanding of the expression of the genome in the individual and could provide further insights into new methods for detecting cancer reoccurrence.

The challenge will be to ensure that the knowledge, skills and expertise of the whole pathology workforce is developed in these new and emerging molecular techniques.

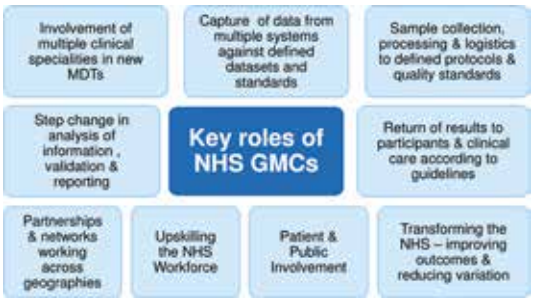
Figure 1: NHS Genomic Medicine Centres

Driving service transformation

NHS genomic medicine centres are driving forward demonstrable NHS transformation across their geographies. They have established new partnerships and governance arrangements with patients, the public and other organisations – working together in a network characterised by data and sample sharing and agreed handling and processing arrangements. Informatics platforms have been enhanced to provide the necessary interoperability and capture of phenotypic data from multiple systems across provider organisations and to populate defined datasets for individual participants. This includes new datasets for rare disease and to meet data standards for all relevant diagnostic tests.

Laboratory processes have been refined, using

Figure 2: Key roles of NHS GMCs



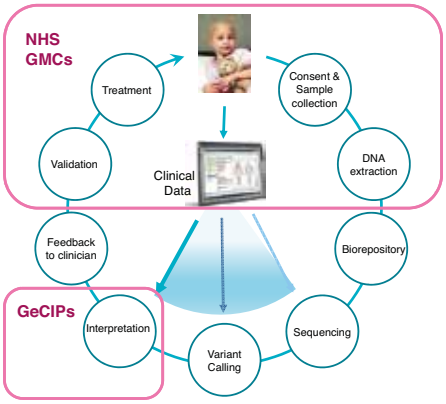
the most advanced scientific techniques available to extract DNA from blood and tumour tissue, underpinned by a new UKNEQAS external quality assurance scheme. All the GMCs have revised their cancer pathways to deliver true service transformation across the NHS. We have also seen the development of genomic MDTs breaking down silos to increase patient access to genetic and genomic services, while spreading genomic knowledge across the workforce.

The treatment cycle and Genomics England Clinical Interpretation Partnership

The 100,000 Genomes Project relies on a partnership between local NHS organisations, who perform the patient-facing aspect of the work (identification, recruitment and consent at the start of the treatment cycle, together with validation, feedback, treatment and management at the end) together with a number of national organisations responsible for the specialist functions. Samples are collected and stored at the new National Biorepository in Milton Keynes. Sequencing will be carried out by Illumina at the Welcome Trust Genome Campus in Cambridge. The sequence data are securely stored at a site in Wiltshire.

One of the most important developments within the Project is the Genomics England Clinical Interpretation Partnership (GeCIP). This brings together brings together researchers, clinicians and trainees from both academia and the NHS to analyse and refine the data from the Project. This work is organised across GeCIP domains – with each domain looking at a subset of data in a specific area such as neurological rare disease, prostate cancer or health economics. The aim is to bring a step change in delivering the advances from genomic learning to a handful of years, compared to the 17 years it currently takes to see research advances become common practice in the NHS.

Figure 3: The 100,000 Genomes Project Treatment Cycle



The future for the NHS

The 100,000 Genomes Project is designed to kick start the use of genomic medicine across the NHS, with a legacy long after the life of the Project itself. In the coming years we will move to a completely new taxonomy of medicine, stepping away from the traditional organ-based, symptom-based approach to one based on an understanding of the underlying processes driving disease. The cornerstone of this will be the functional genomics pathway (see Figure 3), which examines the genome code and all the steps of expression through RNA and proteins to metabolites, including the body's interaction with environmental factors and infectious agents.

While new genomic knowledge will drive the understanding in this area, it can only work when combined with the phenotypic knowledge from 'traditional' pathology services and the other diagnostic sciences and clinical specialities. Identification, management and treatment of disease will be driven by an integrated diagnostic picture of the patient bringing together the full range of diagnostic tests and measurements – including metabolic tests, genome sequence, imaging and measurements, and physiological data – captured as a data series over time.

For pathologists themselves, the development of genomic medicine has the potential to become an integral part of pathology, provided that they embrace this challenge. The integration within NHS genomic medicine centres of existing pathology services with genetics laboratory teams makes pathology much more multidisciplinary.

For the NHS, the advent of personalised medicine and precision diagnostics will be crucial for ensuring its sustainability in the medium to long term. These techniques will allow us to identify those subgroups where particular treatments will be most effective and similarly tailor our approaches to prevention. This will gather the knowledge to keep people healthier for longer and to identify and treat disease much earlier, with a greater level of precision such that individual outcomes can be improved in a more systematic and effective way.

It is absolutely clear that this pace of transformation must continue reaching across all pathology services. A genomic future will require more standardisation and consistency across all pathology processes, from sample handling and processing, protocols for testing and measurement through to reporting and recording of

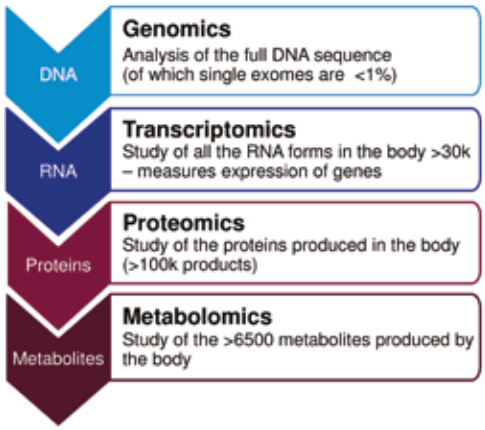


Figure 4: The functional genomics pathway

results. This will be a big cultural change, but is vital if we are to combine and compare results on a population level and harness the insights that techniques such as machine learning can bring to the huge integrated datasets that will be generated. The introduction and implementation of innovation is essential and it is important that pathology remains at the centre of personalised medicine and care for all.

Professor Sue Hill
Hon RCP Hon FRCPath
Chief Scientific Officer for England

Establishing a Genomic Medicine Centre – the Wessex experience

Dr Emily Shaw

Plans for the 100,000 genomes project have been developed by NHS England and Genomics England Limited following an announcement from the Prime Minister in December 2012. The aim of the programme is to keep the UK at the forefront of delivering genomic medicine for patient benefit. Wessex was one of eleven regional genomic medicine centres (GMCs) announced in December 2014 and since then intensive preparations have been underway to deliver this ambitious initiative.

Rare diseases

The first phase of the project to be launched involves sequencing whole genomes of patients and their first-degree relatives under investigation for rare genetic diseases from a prescribed list. These disorders span a wide range of clinical specialities and coordinating identification and consent of this group of patients has involved teams from multiple specialities as well as understanding and intercepting the diverse range of patient pathways that currently exist within the NHS Trust and wider region.

Just a few members of the Wessex GMC team at WGMC HQ

Cellular pathology

The cancer part of the initiative involves whole genome sequencing of matched tumour and blood samples from patients with breast, colorectal, lung, ovarian or prostate cancer. At the time of application, formalin-fixed paraffin-embedded tissue was the stipulated requirement but the results of initial pilot sequencing experiments has led to an additional request for acquisition of a fresh frozen tissue sample. This presents significant logistical challenges to cellular pathology departments, however in our experience can be built onto existing biobanking and intra-operative frozen section processes. Ongoing experimental work by Genomics England and collaborators will hopefully lead to refinement of protocols in order to provide optimal samples for sequencing. This may also help to harmonise the multitude of different approaches to tissue preparation that exist in the NHS. In addition to obtaining tumour samples, the pathologists' responsibilities include digital image capture and assessment of tumour content.

Molecular pathology laboratory

The responsibility for macrodissection of samples for tumour enrichment and extraction of nucleic acids from blood and tissue samples lies with the molecular pathology laboratory. In preparation for the main programme, all laboratories were invited to participate in a round of external quality assurance to compare quantification and extraction of nucleic acids from a standard set of samples. As a result of this process recommendations have been made on methods and techniques to be used going forward and protocols have been shared between sites, illustrating the collaborative spirit and es-

tablishment of a multidisciplinary expert network despite the endeavour still being in its early stages.

Education and training
In conjunction with the designation as a GMC and online training materials developed by Health Education England, the University of Southampton has been awarded the opportunity to host an MSc postgraduate qualification in Genomic Medicine, primarily aimed at developing the skills of existing NHS professionals working in various disciplines. The curriculum has been developed and the first intake of students have had places confirmed to start imminently.

Clinical Informatics
The samples submitted for sequencing require annotation with a clinical dataset drawn from information held in the patient's medical record, and also data about multiple aspects of the tissue handling and processing parameters. Demonstrating inter-operability between various information systems within the Trust - or manual workarounds where this is not possible - is crucial to delivering this aspect of the project. Staff in bioinformatics and clinical informatics are also anticipating the challenges that will be associated with the return of data in due course, particularly data protection, storage and reporting aspects.

Broadening the network
Although Southampton is the lead GMC for Wessex, plans are already in place to broaden the programme's reach to enable clinicians and patients treated at other regional Trusts to access the programme.

Patient and public involvement
Consultation with patients, the public and relevant organizations has been carried out throughout the set up of the initiative and this work is being continued at Southampton. As well as developing information resources aimed at patients, the hospital has a very popular annual open day which provides a further opportunity to inform and educate visitors about developments in genomic medicine as well as promoting opportunities to get involved.

Summary
It's early days for the 100,000 genomes project however there is palpable enthusiasm and willingness to adapt to the evolving requirements of this potentially transformational initiative amongst those involved at our site and in the wider network of collaborators.

Dr Emily Shaw
Southampton GMC team

Angela Douglas

North West Coasts Genomic Medicine Centre delivering the 100,000 Genome Project

In December 2012, the Prime Minister announced that the Government intended to achieve a paradigm shift in the way that genomics is used across the NHS. David Cameron committed the UK to sequencing 100,000 whole human genomes of patients with certain rare or inherited diseases and common cancers by the end of 2017. Genomics England, a company owned by the Department of Health, was set up to deliver the 100,000 Genome Project. This flagship project will sequence whole genomes from NHS patients and their families to further enhance our understanding of the genetic basis underlying their conditions, together with how the genetic changes are expressed within them (their phenotype).

The project aims to make the UK a world leader in genomics. The potential is huge, leading to more precise and earlier diagnosis, new medical devices, faster clinical trials, new drugs and treatments and potentially, in time, new cures. It will drive new diagnostic discovery and more targeted drug development. It also has the potential to uncover and drive new approaches to the prevention of disease. The project will transform the way we deliver genomic services in the NHS in the future.

A two-step 'invitation to tender' process was undertaken in 2014 by those organisations expressing an interest to become a genomic medicine centre (GMC). The process culminated in the designation of 11 geographically dispersed NHS GMCs (with multiple local delivery partners), who were appointed against a defined service specification (from consent through to clinical feedback and service transformation). Each NHS GMC signed a robust contract, which set out the expectations and activity and which also outlined payment for successfully sequenced samples (one of the NHS GMC incentives linked to project ob-

jectives). The GMCs have been set qualitative and quantitative key performance indicators against 'benchmarked' best in class performance (a platform to drive continuous improvement) and are supported by an NHS England Implementation Unit. (A further wave of procurement to seek possibly two or three additional NHS GMCs in areas of England currently not covered was announced this summer).

The North West Coast NHS Genomic Medicine Centre (NWC GMC), one of 11 designated centres, represents a number of NHS organisations across the north west coast of England working together, led by Liverpool Women's Hospital NHS Foundation Trust and supported by the Royal Liverpool and Broadgreen University Hospitals NHS Trust, The Walton Centre NHS Foundation Trust, Liverpool Heart and Chest Hospital NHS Foundation Trust, Alder Hey Children's Hospital NHS Foundation Trust, University Hospital Aintree, the Countess of Chester NHS Foundation Trust, Lancashire Teaching NHS Foundation Trust, Mersey Care, the North West Coast Academic Health Science Network and Liverpool Health Partners.

As part of the 100,000 Genome Project, the NWC GMC partnership will aim to recruit up to 5000 patients who have been given a new diagnosis of a rare diseases or cancer. The initiative will then work to uncover biological patterns about their specific genetic conditions. In some cases it will lead to a precise treatment tailored to their genomic finding, in others it will help to understand the underlying biology of their disease and in the rest provide the knowledge to develop new targeted treatments.

In the NWC GMC we will be using the genomic data, returned from the sequencing of patients DNA, to provide each patient with an individualised and integrated diagnostic report informed by their clinical phenotype, most of this information having been captured within the NHS prior to and at the time of recruitment. This coordinated dataset provides huge opportunities for new insight, analysis, interventions and prognostic possibilities.

As an NHS GMC we are transforming the way we are delivering genomic services, working with our local networks, federations and partnerships to deliver patient benefit and improve health outcomes. We have already began the transformation journey across our organisational partnerships, working to deliver a mainstreamed genomic service for all medical specialties, through education, support and training, and have included our patient and public involvement forum at every step in our journey. We have in addition:

- developed strong clinical leadership and a 'clinical champions' network across our doctors, nurses and scientific workforce that will be critical to the multidisciplinary team working required for validation of genomic results, clinical interpretation and reporting results back to patients
- optimised and standardised our laboratory processes, ensuring the highest quality at every step in all our partner laboratories processing samples (Liverpool Clinical Laboratories, Regional Genetic Laboratories and Lancashire Teaching Pathology Laboratories). A failed or low-quality DNA extraction that does not pass the quality standard for whole genome sequencing (WGS) is a waste of valuable resources in time taken to recruit the patient, and delivers a poor experience to our patients
- integrated our partners onto one genomic informatics database and have a vision to create a regional 'clinical research informatics infrastructure', linking local academia and NHS colleagues to one genomics data repository
- developed an education and training programme for healthcare professionals, commissioners and the public across the GMC footprint, to further facilitate mainstreaming genomics into primary and secondary care
- provided robust communication, raising the profile of the NWC GMC and the 100,000 Genome Project across the NW coast, including developing a website, www.nwcgmc.org.

The NWC GMC has a vision and an aspiration to be a 'prime provider' of genomic services beyond the 100,000 Genome Project. To this end we are building on the strong foundation of the GMC, to create genomic pathways enabling an NHS transformation legacy.

We are also allowing local delivery partners and partner laboratories to retain expertise and grow a reputable genomic offering to:

- address inequalities of access to diagnostics and introduce theranostics
- deal with the communities that are hardest to reach and diseases that are hardest to diagnose
- provide economies of scale, via shared workforce, education and training, technologies and quality management, and integrated IT
- build centres of excellence
- improve public understanding
- advance NW Coast life science
- deliver better outcomes for patients.

We dared to believe we could be a Genomic Medicine Centre, and now that we are, we want to be the best, with a sustainable future.

Angela Douglas
Programme Director
NW Coast GMC

Dr David Bailey

Post-mortem imaging and Coroner's autopsies

The use of post-mortem imaging will be of great use to coroners, pathologists and families, as Dr David Bailey discusses here after a visit to one of the centres that currently offer this service as an adjunct to more traditional investigations. This broad overview is a prelude to more in depth discussions of the use of imaging in practice in the next issue of the *Bulletin*.

Background to post-mortem imaging

Section 14 of the Coroners and Justice Act 2009 suggests that a post-mortem examination of a body may include computed tomography (CT) or magnetic resonance imaging (MRI), and need not necessarily be achieved through a traditional autopsy. Sections 14(1) and (2) state that a senior coroner may "specify the kind of examination to be made" and may request "a suitable practitioner" to carry it out.

In October 2012, The Royal Colleges of Pathologists and Radiologists produced a *Joint statement on standards for medico-legal post-mortem cross-sectional imaging in adults.*[1] That document acknowledged that, at the time, there were only a limited number of causes of death for which imaging alone could be relied upon for an accurate diagnosis. These included "catastrophic haemorrhagic events" including intracerebral haemorrhage and ruptured aortic aneurysm. It also acknowledged that imaging could provide more accurate information regarding the nature and extent of skeletal injuries and the location of tumour deposits, than a conventional autopsy.

The document also recognised that CT was more useful than MRI in the majority of adult deaths, and that imaging alone could not reliably diagnose coronary heart disease, pulmonary embolism or pneumonia, the most common causes of death in non-forensic coronial autopsies. It described ongoing research to assess the use of post-mortem CT angiography as a means of addressing this shortcoming, and acknowledged that imaging could be used to plan a more restricted approach, should an invasive autopsy be necessary after imaging had been carried out.

The 2012 statement made two further important points:

Figure 1: The CT scanning unit at the iGene centre in Sheffield

- formulating a cause of death based on post-mortem imaging must occur in the context of a multidisciplinary team that investigates the death, with the pathologist retaining the central coordinating role
- a qualified radiologist holding the FRCR, or a medical practitioner with an equivalent qualification, should carry out interpretation of post-mortem cross sectional imaging. Additional training for radiologists is required, especially in the range of normal appearances to be found after death.

Several papers have been published before and since, describing the use of post-mortem CT angiography. The latest UK-based review[2] documents a 70% success rate of achieving a diagnosis based on imaging with the aid of angiography in selected cases.

The case for imaging-based autopsies was originally made on the basis of cultural and religious objections raised by families or relatives of deceased patients to the invasive nature of conventional autopsies. Increasingly, however, the debate has extended to include concerns about the quality of conventional autopsies and the contention that post-mortem imaging may be more accurate than traditional dissection techniques in certain circumstances.

There are an increasing number of centres in England where post-mortem imaging is used regularly. Some of these use NHS scanners, in many cases outside of normal working hours. Several centres, however, have entered into an agreement with a commercial organisation, iGene London Ltd, to provide a post-mortem imaging service.

Given the fact that it is nearly three years since the publication of the Colleges' joint statement, the author accepted an invitation from iGene to visit one of their centres. The publication of the Hutton Review[3] and the advent of problems with coronial autopsy service provision, as described in the July 2015 issue of the College *Bulletin*,[4] make this an appropriate time to review the College's guidance, and this visit was a useful start in gathering evidence to inform that review.

Visit to iGene

iGene has installed CT scanners in three coroner's

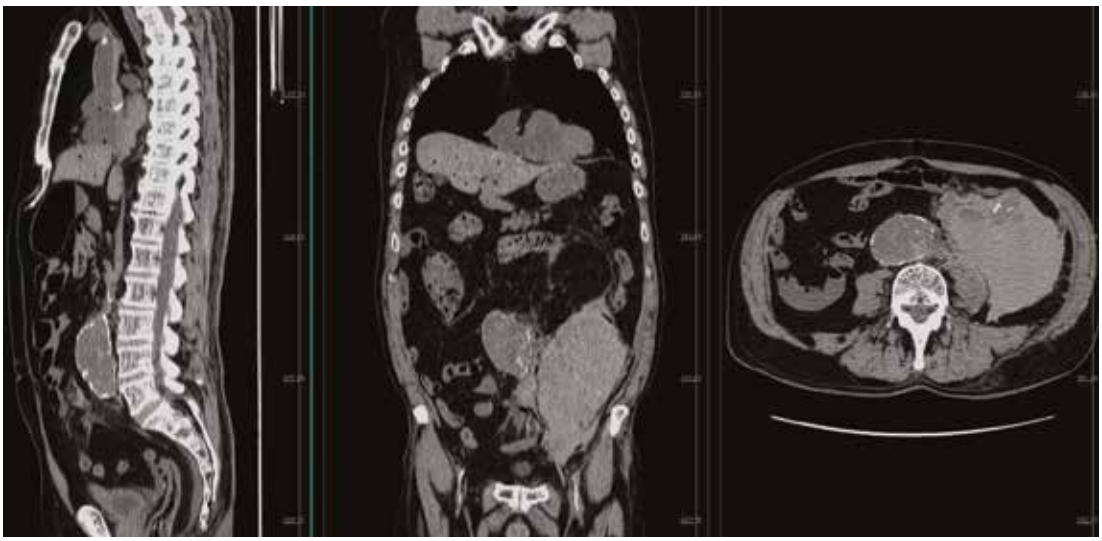


Figure 2: Post-mortem CT scans (axial, plus sagittal and coronal reformatted images) of a ruptured abdominal aortic aneurysm

jurisdictions: Sheffield, Bradford and Sandwell (West Midlands), as well as in several countries overseas. The local authority enters into a contract with iGene, which installs a CT scanner in or adjacent to the local mortuary. iGene then charges a fee for carrying out post-mortem imaging, currently £500 per case. The funding arrangements vary; in the Sheffield and Bradford centres, the Coroner pays only the standard coroner's post-mortem fee and the cost of the imaging is met by the family or, for some faith communities, by the religious organisation. In Sandwell, however, the local authority has agreed to pay the costs of imaging in all cases.

In the Sheffield centre, a radiologist or radiographer selects appropriate cases by assessing the clinical history and a CT scan is completed and reported remotely by a radiologist. The pathologist carries out an external examination and then uses the available information, including the radiology report, to decide whether or not a cause of death can be provided, or whether toxicology, other blood tests, a biopsy (e.g. of a lung lesion to distinguish between tumour or infection) or a conventional autopsy is required. The imaging report is often used to allow the pathologist to limit the extent of a conventional autopsy to specific organs or systems.

The premises in Sheffield are state-of-the-art, with a high-quality CT scanner and software to enable three-dimensional reconstruction of images.

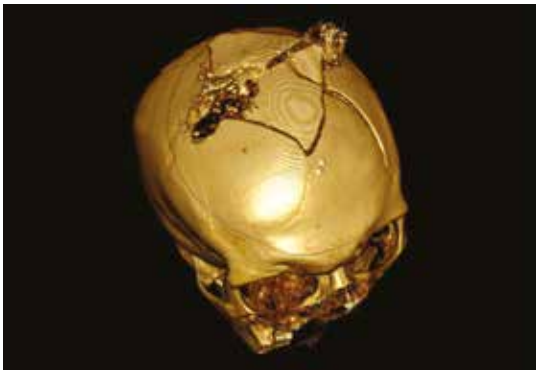


Figure 3: Post-mortem CT scan of a self-inflicted shot-gun wound to the head (3D reconstruction)

This allows better visualisation of pathology and is particularly helpful for traumatic deaths. CT angiography has just been added to their repertoire of investigations and the hope is to obtain a similar diagnosis rate to that already described in other centres with similar facilities. iGene's stated aim is the introduction of a national post-mortem imaging service, and they hope to open 20 centres in the UK by the end of 2018.

The future

The future provision of post-mortem imaging in the UK is uncertain, however the increasing quality and accuracy of the technique is, in the author's opinion, unquestionable. Post-mortem imaging should undoubtedly be an integral part of the pathologist's repertoire of methods by which a death can be investigated. The technique has the support of the Chief Coroner[5] and a recent High Court judgement has established a precedent that gives a family the legal right to demand post-mortem imaging where there are cultural and religious objections to a conventional autopsy[6]. This judgement does not deny the right of a coroner to order a conventional autopsy if imaging fails to provide a cause of death. However, whilst it states that the imaging-based autopsy should be done "without imposing an additional cost burden on the coroner", it does not address the funding or staffing issues inherent in such an order.

The next issue of the *Bulletin* will include further articles describing the provision of post-mortem imaging at different sites in the UK, a discussion of the Hutton Review and a commentary on the issues facing the Coronial autopsy service.

Dr David M Bailey FRCPath
Vice President (Communications)
Royal College of Pathologists

Acknowledgements
I would like to thank Dr Michael Osborn and Professor Ian Roberts for editorial input to this article and Professor Roberts for providing the images.

References

1. Maskell G, Wells M. *RCR/RCPath statement on standards for medico-legal post-mortem cross-sectional imaging in adults.* London, The Royal College of Pathologists, 2012.
2. Roberts I, Traill Z. Minimally invasive autopsy employing post-mortem CT and targeted coronary angiography: evaluation of its application to a routine Coronial service. *Histopathology* 2014;64:211–217.
3. Hutton P. *A review of forensic pathology in England and Wales.* Submitted to the Minister of State for Crime Prevention, March 2015.
4. Bailey D. The future of the coronial autopsy service. *RCPath Bulletin* 2015;171;181[66]–183.
5. Thornton P. *Chief Coroner Guidance No 1. The use of post-mortem imaging (adults).* 2013.
6. Charles Rotsztein v. HM Senior Coroner for Inner London, July 2015.

Dr Kevin West

Three-point turns, hill starts and other musings of a Director of Examinations

Kevin West has held almost every post the College has to offer, short of Vice President or President. Working with him was a real pleasure for all concerned. The College will be a poorer place without him.

I must start by stating that I have the utmost respect for the intellect, motivation and commitment of the young men and women who take The Royal College of Pathologists' examinations. Some complain about them and some of those complaints are entirely justified. To the small number of people whose complaints are unfounded, I harbour no grudges and wish them well for the future.

The College provides examinations in 19 disciplines and time and space do not permit comment on all of them, so I will discuss the driving test instead.

The driving test is intended to ensure that all drivers meet basic standards. This is required for safety and public reassurance. There are many similarities between the driving test and College examinations.

The driving test has a Part 1 – the theory test. This is a test of knowledge with a curriculum (Highway Code). The advantage of the driving test is, of course, a fixed set of questions. There is also testing on demand as it would not be practical to run driving tests twice a year. Perhaps the College could learn a lesson from this.

The theory test has a set pass mark and results are available immediately. There is no standard-setting based on the performance of a cohort of candidates in a specific examination. I think that the College can claim a more robust educational approach than the Driving Standards Agency.

The practical driving test (Part 2) is a standardised test. All candidates should be treated the same way and are asked to perform the same tasks, e.g. a three-point turn, a hill start and an emergency stop. There are, however, some uncontrolled factors, such as the weather and time of day, which may influence the outcome the driving test but, hopefully, not in College examinations. In the driving test, decisions are made by a single examiner and based on the number of minor or major errors identified:

- a dangerous fault: involves actual danger to you, the examiner, the public or property
- a serious fault: could potentially be dangerous
- a driving fault: not potentially dangerous, but if you make the same fault throughout your test it could become a serious fault.

The College examinations are very similar in terms of identifying faults, but never rely on the opinion of single examiner.

Driving through a red light and running over a pedestrian would inevitably result in failure. An analogous situation in a College examination would be regarded as an egregious error and would also be likely to result in failure. The driving test does, of course, have the advantage of unlimited attempts and no CPD or revalidation to follow.

It is possible to appeal against the outcome of the driving test. The appeal is time limited and the result cannot be changed, thus examiner judgement cannot be challenged. This is in keeping with the College appeals process.

There is a widely held view that the driving test is a 'performance', e.g. one should exaggerate head movements to demonstrate use of the rearview mirror. This is probably true of College examinations and, indeed, most examinations involving a practical task.

The outcome of the driving test is not always predictable. It is a test of competence and confidence. Driving too slowly may be regarded as an indicator of lack of confidence. Competence without confidence does not demonstrate readiness

for progression to independent driving. Rolling backwards on a hill start could demonstrate lack of competence. Confidence without competence in any endeavour is potentially disastrous. We all know people who we thought would pass the driving test first time but did not and *vice versa*. So it is with College examinations. Driving instructors and trainers should never tell a candidate that they will pass, but merely that they are ready to take the test.

Unsuccessful candidates in the driving test are given immediate feedback about their performance, which is limited to ticks on the sheet. This is perhaps as much as can be expected for a summative test. Immediate feedback is not something that can be readily achieved with College examinations as final marking is not necessarily completed on the same day and, unlike the driving test, moderation of marks also takes place. However, improving feedback remains a high priority for my successor as Director of Examinations.

Driving test examiners are well trained and subject to monitoring and assessment. In the past, this was not necessarily a priority for College examinations, but times are changing and this too is being addressed. Professional excellence does not automatically imply suitability to be an examiner. Just imagine Lewis Hamilton as a driving test examiner.

I am grateful to the College and its staff for keeping my vehicle in good order, making sure that I stayed safely on the road for 4½ years.

Happy driving!

Kevin West
Director of Examinations
November 2010 to May 2015

Using CDI rounds to teach medical students

The identification and prevention of *Clostridium difficile* infection is important for all hospitals. Susan Dawson and colleagues describe how the involvement in medical students in the practicalities of infection control has benefits for all the team.

Summary
Teaching microbiology to medical students in Swindon has mostly been delivered using lectures or case-based tutorials. We have now included *Clostridium difficile* infection ward rounds so that students can learn about the ward-based clinical management of these cases and see how a multidisciplinary team functions, as well as being taught practical aspects of infection control such as use of PPE (personal protective equipment) and hand hygiene.

Introduction

Ward rounds have traditionally been one of the key methods of reviewing patients' clinical care and management and they can also provide an opportunity for delivering teaching. The Royal College of Physicians and The Royal College of Nursing have recently produced best-practice guidance for medical ward rounds and they consider that multidisciplinary rounds offer great opportunities for joint learning through active participation of all members of the team.[1] Since 2008 at Great Western Hospital (GWH) Swindon, we have had a weekly multidisciplinary ward round for all patients with *Clostridium difficile* infection (CDI), as recommended in national guidance.[2] The team consists of a microbiologist, infection prevention and control nurse (IPCN) and pharmacist/technician and, since 2011, a gastroenterologist and dietician. An evaluation of our rounds showed that, in the majority of visits, interventions were made that assisted with the quality of patient care and provided education opportunities for ward staff.[3] We have occasionally included other healthcare workers and trainees on the rounds and as a pilot this year we included medical students. We present details of the format of the rounds and feedback from the students.

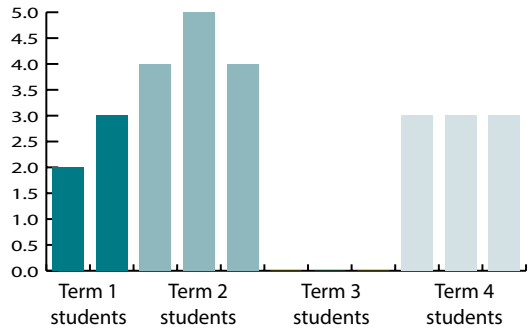
Hilary Munube,
Manish Hegde and
Susan Dawson

Method

As part of their third-year pathology training medical students come to Swindon Academy at GWH. For microbiology, they receive several case-based tutorials but this year (2014–2015) we have also included them on CDI rounds so they can experience clinical aspects of microbiology and infection control and see how a multidisciplinary team functions. As they are ward-based sessions, the groups are small and limited to a maximum of three students.

To help prepare them for the round, the microbiologist revises with the students the clinical

Table 1: Rating scores for CDI rounds from each medical student, split by term



presentation and treatment of CDI, as it is known that "learners make sense of new experiences by using their existing knowledge".[4] The team then reviews and discusses the patients, which gives the students the opportunity to ask questions before visiting the wards. Each member of the team assists with the ward-based training.

During each round we aim to cover clinical symptoms and treatment of the patients, as well as evaluating stool charts. When opportunities arise, the gastroenterologist explains the significance of abdominal x-rays and blood results, the microbiologist discusses CD tests and antibiotics, and the dietician explains the methods of nutrition assessment and nutrition supplements. On each round, the IPC nurse takes the student through the use of PPE and demonstrates and assesses their handwashing technique.

The importance of documentation and communication to staff is demonstrated by the team members to the students, with all key decisions and actions made on the ward round clearly documented in the patients' notes. However, due to staff shortages, the pharmacist and dietician have not been able to attend some of the rounds this year, which may have limited some of the learning for the students on these rounds.

Table 2: Comments of students attending the CDI rounds

New aspect learnt
Treatments – switching metronidazole to vancomycin
PPE
Isolation
Target and penalties
Liked
Good to see patients on ward
Looking at stool charts
Antibiotics review is interesting to think through
PPE training
Experiencing round and what happens

Results

During the year (four terms), 15 students have been allocated to attend the rounds and 13 have attended. Eight of these have provided feedback collected by the Swindon Academy for the pathology module. Teaching is rated on a scale of 0–5. Scores for the CDI round are shown in the Table 1. None of the students attending for term 3 provided feedback scores. Term 4 students also completed an evaluation comment form to help us assess what they learnt from the round and to develop it for future years. Their comments are listed in Table 2.

Conclusion

We think the round presents an opportunity for the students to gain from the wealth of knowledge and clinical expertise on the management of this infection from our multidisciplinary team. The students have appeared to enjoy rounds and have actively been encouraged to ask questions about patients and their management to assist with learning. The feedback received has been encouraging, with scores of average and above. Student comments have been positive and have shown they have valued the practical infection control part of the round using PPE and hand washing.

As well as learning about the clinical management of this infection in a ward-based setting, the round also enables the students to experience multidisciplinary learning. In the General Medical Council's *Tomorrow's Doctors*, which advises on curriculum content, it advises that medical schools must ensure that students work with and learn from other health and social care professionals and students, and so our round provides an opportunity for this type of learning.[5]

Although including teaching adds to the time that the round takes, the team and the students have all found it enjoyable and beneficial. We plan to continue in future years and develop the round to enhance learning for students and possibly other healthcare trainees.

Susan Dawson
Consultant Microbiologist

Hilary Munube
Infection Prevention and Control Specialist Nurse

Manish Hegde
Consultant Gastroenterologist
Great Western Hospital, Swindon

References

1. The Royal College of Physicians and The Royal College of Nursing. *Ward rounds in practice, principles for best practice.* London: RCP, 2012.
2. Department of Health. *Clostridium difficile infection: How to deal with the problem.* London: DH, 2008.
3. Dawson S, White G, Archibald J, Munube H, Hegde M. *Clostridium difficile* infection ward rounds. *J Hosp Infect* 2012;80:96–98.
4. Ker J, Cantillon P, Ambrose L. Teaching on a ward round. *BMJ* 2009;338:770–773.
5. General Medical Council. *Tomorrow's Doctors: Outcomes and standards for undergraduate medical education.* London: GMC, 2009.

Ed Davie

An interview with Professor Peter Furness, National Medical Examiner

National Medical Examiner, Professor Peter Furness, tells The *Bulletin* of his hopes that the Comprehensive Spending Review will fund a reform that is over 120 years overdue.

Professor Furness may be the first National Medical Examiner (NME), but he is far from the first person to try to get a national system of medical examiners implemented.

"In her report into the murders of Harold Shipman, Dame Janet Smith pointed out that the need for a national system of medical examiners had first been identified by a parliamentary committee report in 1894 and nothing had been done about it," Professor Furness laments.

Professor Peter Furness

Over 120 years on from that parliamentary report, a decade from Dame Janet's report and five years into a series of successful pilots, Professor Furness is still waiting. So what is the hold up?

"The question is, as usual, one of funding. The funding issue is, from my perspective, arguably a little surprising. Implementing the reforms would eliminate the current system of cremation forms. Most people, about 70%, are cremated and a cremation form fee adds up to about £178. It isn't noticed because it's rolled into the undertaker's fee, but if we had a medical examiner system a smaller fee would replace it and apply to all deaths, not just cremations. It would mean that a large majority of estates would actually pay less. Not only would the public pay less, they would also get a better service. The problem is that it would be different funding, with a different name and collected in a different way, which has caused some people a problem and all sorts of political discussions."

Apart from political fears about a new 'death tax', Professor Furness says that the start-up cost may also be worrying the Treasury.

"The whole reform is now in the melting pot as one of the items for the Treasury's Comprehensive Spending Review, due in November. There will be start-up costs from general taxation which is contingent on the spending review," he said.

The Treasury might be worried about cost but Professor Furness is convinced that the exhaustive pilot schemes have proved that the system is highly efficient in identifying and rectifying poor care, reducing litigation against the NHS and supporting other medical professionals and the bereaved.

"It works. Everyone thinks it is a good idea. It is just a question of finding the start-up costs, which would be recouped through a more efficient system.

"The pilots have now been running for more than five years and they have scrutinised more than 26,000 deaths. I suspect there has never been a better piloted reform than this. We know how it works, we have refined the process and in the pilots sites everyone thinks it is brilliant – including, to my surprise, the bereaved. The pilots have picked up quite a lot of suspected incidents and patterns of possible poor care. In terms of general clinical governance, they have picked up incidences of post-operative infections faster than the hospitals' microbiology audit procedures.

"The pilots have also identified at least one care home where different complaints had come from different relatives in quick succession. As an outcome of that, the Coroner is investigating deaths

Medical examiners
Independent doctors working in any medical specialty.
Undertake a thorough external examination of the deceased's body that could, for example, identify a high incidence of pressure sores at a particular hospital or care home, which might raise issues of quality of care.
Ensure that the right deaths are referred to a Coroner.
Improve the quality of certification by providing expert advice to doctors.
Avoid unnecessary distress for the bereaved that may result from unanswered questions about the certified cause of death.
Discuss the death with a relative to offer an opportunity for them to ask questions about the medical circumstances and cause of a death, and to raise any concerns they might have. This could result in the death being referred to the Coroner or local clinical governance leads.
Save money for two thirds of bereaved families, as the proposed fee is less than the current cost of cremation fees, which it would replace.

that had been put down as deaths of natural causes, so the system is definitely working in hospitals and crucially in care homes and the community," Professor Furness said.

Achievements of the ME pilot schemes
Detected many unexpected significant events that have then been brought to the immediate attention of the relevant authorities.
Provided reassurance to next of kin.
More appropriate referrals to the Coroner.
Improved the accuracy of death certification.
Fostered openness as health professionals raising concerns feel supported by the ME.
Reduced litigation against NHS trusts.

A national system of MEs
First recommended by *The Shipman Inquiry*, led by Dame Janet Smith in 2005.
Legislated for in *The Coroners and Justice Act 2009*.
Subsequently recommended by *The Francis Report* (2013), *The Report of the Morecambe Bay Investigation* (2015) and *The Review of Forensic Pathology* (2015).
Successfully piloted in six trials by the Department of Health.

He also believes that, if and when the system is implemented, it will enable the NME to collect invaluable data from the network of medical examiners.

"We would have a means of collating information about every death, which has never been done before. This will be a brilliant way of detecting outliers that would justify further investigation which, is why the Care Quality Commission (CQC) is very interested in getting these reforms implemented. Through that mechanism, we could provide the CQC with a steady feed of information about deaths in healthcare institutions that people may have also been complaining about. The advantage of medical examiners in this regard over the separate work looking at avoidable deaths in hospital, which some people have sought to say could be instead of bringing MEs, as this then covers care homes and care in the community."

With such conclusive evidence that the system works and would boost care and efficiency, Professor Furness and The Royal College of Pathologists, the lead college for medical examiners, hope that the Treasury soon puts an end to the 120-year wait.

Ed Davie
Public Affairs Officer
The Royal College of Pathologists

Professor Tim Helliwell

Launch of the medical undergraduate curriculum for pathology

'Education is the most powerful weapon that you can use to change the world'.
Nelson Mandela

'This is the best undergraduate curriculum I have yet seen.'
Tony Freemont

This symposium, held in St Bartholomew's Hospital, London, on 10 June, was organised to promote engagement in the development of teaching in pathology between the College, the leads of undergraduate medical schools and the coordinators of pathology teaching for undergraduate medicine. This was stimulated by the work of Nicki Cohen during 2013 and 2014, when she collated the views of pathology educators and revised the 2010 version of the undergraduate pathology curriculum. It is now online – see www.rcpath.org/training-education/latest-news-and-faqs

The meeting was opened by the President, Dr Suzy Lishman, who summarised the development of the curriculum between 2010 and 2014, emphasising the key role for education in the aims of the College and noting the relative lack of competition for places in the histopathology postgraduate training programmes. Stimulating the interest, enthusiasm and curiosity for pathology in undergraduate students was part of the solution to recruiting the most able students to consider a career in pathology. The Pathology Summer School, organised by the College, the Pathological Society and the British Division of the International Academy of Pathology, was part of this process of engagement.

Professor Tony Freemont, a consultant musculoskeletal pathologist, presented his unbiased view of undergraduate curricula from the perspective of being Head of the Medical School in the University of Manchester. He emphasised that heads of medical schools are focussed on students achieving the

competencies required to be successful foundation year doctors, including understanding the needs of patients and the wider NHS. Part of this is providing undergraduates with information to enable them to make informed decision on future careers and to prepare them for life-long learning. Heads of medical schools regularly receive specialist curricula, often developed by enthusiasts with little knowledge of medical education, which are largely unachievable. He complimented Nicki Cohen on her work and in particular how the pathology objectives are mapped to indicative learning outcomes for *Tomorrow's Doctors*. In particular he thought the pathology curriculum should provide students with a working knowledge of the molecular and cellular basis of disease, should attract medical graduates to pathology and should help to ensure that all doctors understand how to work with pathology laboratories to get the best results for patients.

NIcki Cohen described the three-stage, iterative Dephi process used to derive the consensus document and how the initial 500 indicative learning outcomes were reduced to a much more manageable and appropriate 208 outcomes. While many of these are based on basic scientific knowledge and its application to systems-based medicine, doctors as well as other healthcare professionals and patients should welcome the outcomes for the final years of the curriculum on clinical governance and patient safety and how doctors should work with laboratories and with Coroners and Procurators Fiscal. This has been summarised in a previous *Bulletin* article (*Bulletin RCPath* 2014;166:107–108).

Two presentations set the pathology curriculum in the context of the radiology undergraduate curriculum and training for general practice. Dr Fahmid Choudhury demonstrated the similarities in approach between radiologists and pathologists, each having a central role in patient management, supporting pre-clinical sciences (anatomy and histology), with teaching being personally and professionally rewarding and ultimately improving patient safety. He noted that the UK curricula were much more manageable documents compared with the exhaustive detail found in some European and North American undergraduate radiology curricula. Useful links can be found at www.radiology-masterclass.co.uk

From the perspective of general practice, Dr Mike Pringle welcomed the pathology curriculum which he believed clearly demonstrated the desire to support continuous professional development and personal improvement for better patient care. He emphasised how useful to GPs and commissioners would be the core knowledge in the curriculum of how to use effectively laboratory services, how to understand results and how to make cost-effective use of laboratories, to reduce costs elsewhere in the system.

Dr Philip Cachia, the College's Director of Training and Assessment (see article on page 240), placed the curriculum in the context of the current challenges to healthcare, including the integration of health and social care, the management of chronic diseases in the community, dementia, microbial resistance to antibiotics and global health. Pathology has a key role in responding to these challenges through antibiotic stewardship, ensuring accurate and timely clinical advice following laboratory investigation and providing insights into personalised (genomic) medicine. A curious and knowledgeable medical workforce was essential to the success of the NHS response and a strong foundation in the pathological basis of disease through an outcome-based curriculum was key to success.

Finally Vicky Osgood from the General Medical Council described how she saw our undergraduate curriculum matching the framework within which the GMC strives to ensure that proper standards of medical practice are met. The quality-improvement framework involves open debate between the GMC; medical schools; Medical royal colleges, faculties and the deaneries, and local education and training boards to ensure safe practice in the increasingly complex world of medicine. For pathologists used to accreditation, the GMC's current thinking will be no surprise, as they attempt to define broad standards for the outcome of medical training and define the evidence required to comply with those standards. The results from consultation on these proposals (www.gmc-uk.org/publications/26204.asp) are being evaluated with a view to publication in 2016. Fortunately, the College curriculum fits well into the scheme of generic professional competencies and should help us deliver appropriate undergraduate training for the 21st century.

Professor Tim Helliwell
Vice-President for Learning

GMC Generic Professional Capabilities

Summer School reviews

This year's Pathology Summer School has inspired and motivated these students. You know you are winning when pathology is more attractive than the Oxford nightlife.

A summer school to remember

What is a day like for a pathologist? Apart from lab work, what else do they get involved in? How often do they interact with patients? These are all questions that bothered me as I walked towards St Hilda's College, Oxford in August. As curious as a kid on his first day of school, I could not wait to find answers to these questions. When I look back there are three words that best describe my feelings about the Pathology Summer School: enlightening, inspiring and motivational.

It is truly amazing how much can be discovered in two days. I knew there was more to pathology than lab work and autopsies, but I must confess I knew nothing about the 19 different specialties. A brilliant and carefully thought out mix of lectures and breakout sessions allowed me to grasp the multitude of tasks undertaken by pathologists daily. I was impressed by the crucial role they play in clinical practice, teaching and research. This made me realise that through communication and teamwork, pathologists are at the core of healthcare.

The academics I met during the Summer School were not 'just' physicians, but rather passionate and inspiring individuals who love their job and have a burning desire to share their experience with the younger generation. They were the kind of people that amaze one with their stories; the kind of people that make one's jaw drop. 'Personalised pathology' and 'Virtual autopsy' are examples of inspiring talks that opened my mind and enabled me to visualise the future of pathology.

It felt like being part of a team. Everyone was friendly and approachable, with an answer given to even the silliest questions. During these two days, I felt motivated to make a change myself. The talk with the biggest impact on my thoughts was 'Public engagement', delivered by Dr Suzy Lishman. I was surprised by the existing lack of awareness about the role of pathologists among the general public.

The winning quiz team, the *Quiztopathologists* with Dr Suzy Lishman

So inspiring was the talk that I took out my to-do list and added "organise a pathology awareness day at Exeter University". It felt great to be able to share ideas with like-minded peers and academics. I was also fortunate enough to be part of the winning pathology quiz team.

It was a great pleasure to spend time with these often unseen heroes and it would have not been possible without a brilliant organising team. Thank you, I am truly grateful for this amazing opportunity – the role of a pathologist has never been clearer to me.

Bogdan Chiva Giurca
University of Exeter Medical School

A bird's eye view of medicine

As undergraduates, pathology is universally recognised as vitally important, but it can often feel more abstracted from our daily studies when compared with other medical specialties. It is small wonder, then, that in August around 80 undergraduate medical students descended upon St Hilda's College, Oxford to learn more at the Pathology Summer School.

For many of us, this was our first taste of medical conferences outside of our own establishments. It gave us an invaluable opportunity to meet like-minded students who shared an interest in pathology, while also connecting with leading experts in the field.

The conference was split into both lectures and small group teaching sessions, with lectures covering broad topics and breakout sessions providing more involved discussions. New associations made during the weekend were firmly cemented with a pleasant, informal drinks reception and dinner on the first evening.

For me, one of the key themes of the weekend was how pathology affects every other doctor, healthcare practitioner and patient in our care. This was fixed in my mind by Dr Elham Khatamzas' lecture discussing the UK's response to the ongoing West African Ebola outbreak. She underlined how pathologists were involved at each level of dealing with the crisis – performing their 'traditional' role of diagnosing new cases in the lab, as well as working to advise frontline healthcare staff on dealing with suspected cases through the Imported Fever Service. Pathologists also helped to simplify our existing algorithm for diagnosing viral haemorrhagic fevers in order to aid their

clinician colleagues in combatting the illness and fighting the panic accompanying a virus as deadly as Ebola. Even now, in the closing days of the outbreak, pathologists are engaged in research to develop new vaccines and treatments.

Although the UK Ebola response illustrated to me the breadth of modern pathology's role, the interrelation between pathology and other disciplines was highlighted in every lecture and talk. I was interested to discover that even ethics was a major consideration for pathologists by way of virtual autopsy. Technological developments mean that medical imaging can often replace a conventional autopsy; this comes as a relief to families who may object to autopsies on cultural, religious or simply personal grounds. However, virtual autopsy is not without its limitations and the ethical dilemma of weighing the need for an accurate exam against the beliefs of the deceased and their family is a choice which doctors must address with care. Real-life examples such as this helped me to understand the importance of ethics. Indeed, care was taken throughout the weekend to ensure that almost every topic was related back to medical practice, helping to contextualise the material being discussed.

Pathology incorporates many more aspects than I had previously imagined and offers an unparalleled bird's eye view of medicine as a whole. For me, the Summer School offered a unique window into the career of a pathologist, which blends patient care with the artistic and scientific underpinnings of medicine. I found the course to be enjoyable and informative and I urge any undergraduates considering a future in pathology to attend next year.

Ben Keatley
3rd Year Medical Undergraduate
University of St Andrews

Professor Philip Quirke at the Summer School

My experience

The Royal College of Pathologists held its second annual Pathology Summer School with much anticipation from many budding and inquisitive medical students. Besides the temptation of sunny Oxford skies, the Summer School offered an opportunity to explore specific interests and clarify pathways into different careers. It provided an opportunity to understand the specialties of pathology and explore new technological means of histopathology which are not available in many medical schools.

The Summer School provided workshops and opportunities to network with medical students and professional clinical educators. I attended workshops ranging from medical education to research to public engagement; all with an aim to mould and change our perspective on the future scope of pathology practice. I felt particularly excited by the workshop on public engagement – it highlighted the importance of educating the public about pathology outside of what is commonly portrayed in the media. It was awe-inspiring seeing pathology presented in a fun and attractive light, so much so that an event such as National Pathology Week has had an international impact. From plays to 'live autopsies', such an event is not only important for burgeoning doctors, but it also seeks to educates and provide more transparency in practice.

Having a keen interest in microbiology, it was the workshop on medical microbiology which captivated my attention. It provided an elaborate view into the daily workings and research prospects of a microbiology doctor. Alongside this was an enthralling presentation on the UK's response to the Ebola virus outbreak. It has been historically evident that microbiology is key in the response to a global outbreak. The presentation highlighted the management response of an outbreak in the UK. This involved assigning UK clinical staff to study and identify the virus in Sierra Leone to effectively understand and treat patients. It gave a glimpse into how important it is for teams to develop a clear and concise protocol, which can be executed swiftly and appropriately to prevent delay in patient treatment. With the emergence of new biological threats such as the MERS virus, it is ever evident that microbiology is central in patient care.

The Summer School certainly delivered and exceeded my expectations. Furthermore, it provided a chance to gain guidance as to the catalogue of experiences and qualifications needed for postgraduate training. I left more confident regarding my decision to pursue a career in medical microbiology and the excitement of tackling new biohazards.

Martine Altidor
Year 5 Medical Student
University of Keele

Our new Honorary Officer and Directors

We congratulate our new College Honorary Officer and Directors and welcome them to their roles. Below is some information about their careers and their thoughts about the key challenges they face.

Avril Wayte

Avril Wayte
Assistant Registrar

One of the first tasks that I was assigned as a newly elected Assistant Registrar was to attend the New Fellows' Dinner in the Autumn and take part in the ceremony. I cannot begin to tell you how happy this has made me – what an honour and a privilege to meet the pathologists and clinical scientists of the future. If you, the reader, are amongst these, I can't wait to meet you. I already had a taste of this as an examiner for the College in clinical biochemistry; during the oral examinations, my heart and soul are lifted when meeting the candidates. How wonderful to see young people at the cusp of their careers and able and willing to make the future their own.

But there is a downside to all this. What if there are not enough posts for them to go into, or what if we are not training enough people to fill existing posts? Sadly, at this current time, the latter situation certainly seems to be the case. I personally know of difficulties in recruitment for consultant chemical pathologists and consultant cellular pathologists in the UK, resulting in significant workforce gaps that affect the service provided for our patients.

I may be hugely happy and proud to be the new Assistant Registrar – the first clinical scientist and the first Welsh person for 20 years to undertake this role – but I have a big task on my hands, and that is to get all you UK consultants and consultant equivalents to complete your workforce details online at the College website. It is easy to do, it takes less than 5 minutes. I know – I checked when I did my own.

On visiting the College website www.rcpath.org, you just need to scroll down and select the 'News' item headed **'Workforce Planning – Please fill in the workforce census'**, which allows you to update your workforce details.

I can hear you all saying 'I'm too busy right now, I'll do it later'. But unless we do this, there is no point complaining when there are no jobs, or we cannot recruit. It lies in our own hands.

Thanks for reading this. Thanks also to the fantastic staff at the College who are already helping me in this new role, and to my equally fantastic colleagues in North Wales who enable me to escape periodically to attend my duties at the College.

Dr Andrew Day

Dr Andrew Day
Director of Examinations

I'm honoured and delighted to have been appointed as Director of Examinations from June 2015. Whilst the College has many important roles, from a trainee perspective one of the most important is as the provider of the FRCPath examinations. For me, and I expect for many others, my earliest formal contacts with the College were in connection with my examination entries and results, and I was impressed by the efficiency of the examinations 'machinery'.

I've since had other reasons to work more closely with the Training, Assessment and Examinations Departments, firstly as a trainer and regional specialty advisor, then as an examiner and, for five years, as Chair of the Panel of Examiners in Chemical Pathology. Latterly I have broadened my experience to encompass training in the wider range of pathology specialties as Head of School of Pathology, Health Education South West England. In my day job, I continue as consultant in clinical biochemistry at University Hospitals Bristol NHS Foundation Trust, with clinical interests in lipids, diabetes and nutrition.

For me, quality – and in particular quality assurance – are high on the examinations agenda. I have been fortunate to take over the directorship of a department that is in fine form, thanks to the work of Kevin West and a distinguished line of examinations managers. We work to the highest possible standards and I have already been impressed to find that, frequently, we exceed standards of practice under discussion between the medical royal colleges. However, the priority in the next few years will, I believe, be to continue to develop methods that demonstrate this quality, transparently and clearly, to the outside world. Quality assurance is vital to candidates, who deserve to know that we conduct examinations robustly and fairly. It is vital to all our examiners and the Fellowship in general, who need to be assured that standards are being maintained, and above all else it is vital that we assure the public at large (via the General Medical

Council) that passing the FRCPath examination indicates a high level of professional knowledge and competency.

The College's examinations system would be nothing without the sterling work done by Fellows as trainers, College examiners throughout the UK and now internationally, and above all the lead examiners and panel chairs. I will remain totally indebted to all these individuals (as well as to College staff) throughout my time as Director. I see my role as akin to that of a conductor of a highly skilled and professional orchestra, and am relishing the opportunity of taking up the baton.

Professor Philip Cachia

Professor Philip Cachia
Director of Training and Assessment

I am delighted to have joined the College's terrific Training and Education team as Director of Training and Assessment this year. I have had a life-long passion for education as an essential foundation for the art and science of medicine and this is the perfect opportunity me to continue contributing to postgraduate medical education and the work of the College generally.

I qualified in Edinburgh in 1980 and completed my postgraduate training in haematology in Edinburgh and then Cardiff. In between, I completed an MD at Edinburgh University on the immunology of B-cell lymphoproliferative disorders.

In 1991, I was appointed consultant in NHS Tayside and joined a great team. Over the next 12 years I introduced comprehensive haemophilia care in the region, was appointed clinical leader for the laboratory, and developed and introduced a community-based point-of-care anticoagulant service.

During this period, I developed my interest and activities in postgraduate medical education as Specialty Advisor for haematology, Regional Specialty Advisor for RCPath, Director of General Professional Training for The Royal College of Physicians of Edinburgh, and Postgraduate Tutor in the East of Scotland Deanery.

In 2004, I was appointed the East of Scotland Postgraduate Dean in NHS Education for Scotland (NES). It was not an easy decision to step down from clinical practice, but the last 12 years as Postgraduate Dean have been both challenging and rewarding, with opportunities to develop my educational portfolio as the NES Executive Lead for patient safety education and clinical skills and simulation-based training. One of the more innovative projects I have been involved in has been the development and implementation of a mobile skills unit to take simulation-based training to clinical teams in remote and rural settings.

It was really special to be able to work on this last project with my wife, Jean, who trained in general practice but also ended up with an educational leadership role as the Director of the Clinical Skills and Simulation Centre at Dundee University.

We have four wonderful children currently pursuing very different careers: Jamie is a hockey coach (and current Scotland goalie) based in Nottingham, Mike is a maths teacher in Australia (for the time being!), Robbie is in banking based in London and Elizabeth has just completed her degree in forensic anthropology at Dundee University.

My priorities as Director of Training and Assessment over the next three years are to support all our specialties in responding to Shape of Training policy decisions, help to develop and support improved educational support and assessment of performance in the workplace, support ongoing curriculum review and development, and work with specialties to consider and pilot simulation-based educational interventions.

Lorna Williamson

Lorna Williamson
Director of Publishing and Engagement

As I near the end of my career in transfusion medicine, I'm delighted to be taking on this new role for the College. Since it spans the breadth of pathology, I have happily come full circle. After my wonderful Honours year in pathology at Edinburgh in 1974, I was set to become a histopathologist, until I discovered patients – and liked them. Haematology was then the obvious choice, with general medicine and haematology jobs in Nottingham. Full-time research on neutrophils followed, including the effects of feverfew extract, possibly the only *Lancet* article to namecheck a food processor.

On a transfusion rotation in Sheffield, I was hooked. Here was a medical specialty linking altruistic donors, through bio-manufacturing, to patients all over the hospital, plus fascinating science (also, alas, some nasty viruses). For a while I benefitted from arrangements for nationally funded part-time working. This included a free transfer to Cambridge, where the first university division of transfusion medicine in England was being established. I was appointed as university lecturer/consultant while on my second maternity leave – a bold step for an appointments panel in 1990. On my first day back, I was presented with the Health Authority plan for casualties from the Gulf War – with no mention of transfusion. Some rapid rewriting followed.

My main academic activity is clinical studies, so we established a joint programme with the MRC Clinical Trials Unit. I also chaired the group which established UK Haemovigilance, the Serious Hazards of Transfusion scheme, affiliated to the College since its beginnings in 1996.

In 2007, I became Medical and Research Director for NHS Blood and Transplant (NHSBT), the best medical director job in the NHS. I have chaired the College's Transfusion Medicine Committee, and am delighted that we now have a Higher Specialist Scientific Training (HSST) programme. Transfusion/transplantation has been great training for my new role, spanning not only haematology, but immunology, histocompatibility and immunogenetics, virology/microbiology and now genomics and big data. We are constantly under the eye of politicians and the media too, so I interact daily with the NHSBT communications team.

In my College role, one important task will be to develop further our profile with Government and parliamentarians. We must make sure that, in the blizzard of initiatives coming from the Department of Health, they recognise the key role of pathologists in delivering front-line care. Other specific issues are the Hillsborough inquests and the Hutton review of forensic and Coronial pathology services.

For members, the new website will obviously be critical, and we will be undertaking heavy user assessment testing to make sure it's functions are robust. From January, I will be editing The *Bulletin*, so I will be surveying members to ask what you think of it and what you'd like to see more of (or indeed less). Despite the daily pressures, I hope to use it to keep alive the spark that makes us excited to be pathologists.

Dr Suzy Lishman

New premises update

Plans for the Goodman Building on Alie Street are progressing well, and the architects' proposals for the new building were submitted to the local authorities in September.

An artist's impression of the new premises (top) and the North Tenter Street elevation (bottom)

The plans are now available on the local Council website. You can find a link in my blog on the College website.

The proposed building will have seven floors, with public areas on the ground, first and second floors. These will be spacious and bright, with wide staircases and flexible meeting and catering space. There will be a 200-seat lecture theatre on the first floor, with state-of-the-art audio-visual facilities. The third and fourth floors will be office space for the College's staff and officers, with open-plan design and plenty of small meeting rooms. The fifth floor will be surplus to our requirements when we move into the building, but will provide expansion space when we need it in the future. In the meantime, the fifth floor will be leased, just as we're currently leasing the fourth floor at 21 Prescot Street. The sixth floor, which is set back from the main façade at front and back, will have roof terraces on both sides and will be used as a meeting and function room. The seventh floor will house much of the mechanical equipment for the building, as well as several study bedrooms for members to use when staying in London on College business.

This is a very exciting time for the College. Please visit the website for regular updates in the Alie Street blog and information about the history of the area and the site of the new building.

Dr Suzy Lishman
President

Dr Suzy Lishman

End-of-year review of College activity

The Annual Report, which members have received with this *Bulletin*, includes highlights of College achievements over the last year. But for the first time, a more detailed review has been produced by the Senior Management Team to record the huge amount of work done by the College staff on behalf of members. The full review is available on the College website, but a few examples are given here.

Staff recruitment

Members rarely have the opportunity to meet College staff but there are currently 56 people working at the College, supporting the officers and directors and implementing the decisions made by Trustee Board and Council. Several new posts have been created this year to support growing areas of College activity. They include the Head of Corporate Services to oversee governance of the College, a Regional Co-ordination Assistant to support the regional engagement of members, two Examinations Co-ordinators in histopathology and covering OSPEs, a Public Affairs Officer to increase the College's political profile and influence, and a Workforce Administrator to support workforce planning and development.

New website

Significant investment has been made in the development of the new College website, which will go live within the next few months. Current functions will be maintained, such as recording CPD activities and booking events, and new functions will be added. The new website will allow for easier navigation, a better search facility and will be easier to use on a mobile phone or tablet. Members have attended workshops during the development of the website and have given valuable feedback, which has helped shape the final version.

Membership and finance

Approximately 4,200 invoices and expense claims have been processed and 34,000 emails answered. Year-end statutory accounts have been produced and audited, and the budget for the 2015/2016 financial year developed and presented to the Trustee Board. The sale of the lease of 2 Carlton House Terrace and purchase of 6-8 Alie Street obviously needed significant financial scrutiny and involved the largest single transaction ever made by the College.

Infection project

Those who do not work in microbiology may not be aware of the recent changes to training in that specialty. Training for medical microbiology, virology, tropical medicine and infectious diseases has been combined with core medical and infection training for all trainees, followed by specialist training in one of the four areas. This was introduced this year in partnership with The Royal College of Physicians and required the development of completely new curricula and exams and the establishment of a new Specialty Advisory Committee and e-portfolio. Every stage has required approval from the General Medical Council, which is a lengthy process.

Examinations

1347 candidates sat 91 different College exams last year. A new e-management system has been procured and iPads were introduced for viewing images in some exams. The College's *Equality Policy* and *Examiner Code of Practice* have been revised and a full audit of all examiner panels undertaken.

International

The pilot of the Medical Training Initiative (MTI) has been launched and an MTI Clinical Lead appointed. As part of the LabSkills Africa project, 14 course mentors have visited labs in Kenya, Tanzania, Uganda, Zambia and Zimbabwe to deliver on-site training and assess progress. New advisors have been appointed to cover countries including Hungary, Canada, Qatar, India and Pakistan.

Training

800 trainees have been supported this year and 18 CCT applications have been processed. A revised histopathology curriculum has been submitted to the GMC and a new veterinary pathology curriculum developed.

Media

Representatives of the College have contributed to BBC Radio 4 *Woman's Hour*, the *Today* programme, Radio 5 Live and Radio 4's *The Report*. Television appearances have included BBC News, RT News, Newsnight and local news programmes. Topics covered include medical examiners, cancer diagnosis and the decline of hospital post mortems.

Public engagement

25,000 members of the public visited the College's 'Blood and bugs' travelling roadshow, with over 200 pathologists volunteering in eight locations around the country. 229 events took place during National Pathology Week 2014, with many more throughout the year. Over 70 members attended four science communication training days and a medal-winning stand was supported at Chelsea Flower Show.

Publishing
This year's publications have included the Annual Report, four issues of The *Bulletin*, four tissue pathways, 10 cancer datasets and 13 guidance documents. The three Vice-Presidents each guest-edited an issue of The *Bulletin*, with the themes of quality, communication and learning.

CPD
The new online CPD portfolio was launched, a quality improvement category was added, review of the CPD scheme was brought in-house and 4183 annual returns were processed.

Clinical effectiveness
The Clinical Effectiveness Department oversaw the development of guidelines relating to autopsy, national minimum retesting intervals, the communication of critical results as well as tissue pathways and cancer datasets. The team has completed 23 NICE guideline consultations and coordinated responses to a further 54 consultations. A response to the Pathology Quality Assurance Review was published in January and governance was provided for the development of the National Laboratory Medicine Catalogue.

Workforce
Job description review has been centralised this year and over 300 job descriptions have been reviewed. College assessors have been found for over 200 appointments advisory committees. Evidence has been submitted to Health Education England to inform future workforce planning in the specialty.

Secretariat
Seventy committee, council and board meetings have been administered and 50 external consultations considered. A new process for electing committee chairs has been introduced and the process for supporting members' applications for Clinical Excellence Awards has been revised. Applications for Clinical Excellence Awards were scored and citations provided to support the full quota permitted.

Events
Events held during the year included a transfusion medicine conference, a workshop on whole-genome sequencing, a virology training day, a meeting on emerging zoonoses and antimicrobial resistance, and an event to launch the undergraduate curriculum.

The College staff have achieved all this at the same time as packing and moving from 2 Carlton House Terrace to Prescot Street, which was completed over a weekend with no down time. All College teams worked together for months to ensure that the move went smoothly and did not interrupt College business.

Dr Suzy Lishman
President

Diane Gaston

Redevelopment of the College website

The new College website has really taken shape over the last few months. Content is being finalised, links double checked and over 400 hundred photographs have been resized to help illustrate the work pathologists do.

The current phase is the most complex. Not only must the site be easy to navigate and work well across laptops, tablets and mobiles, it's vital that members can use the site for all of their essential activities. These range from booking exams and events to submitting CPD and updating workforce data.

All of these functions rely on integration with our membership database. As members enter information, this is 'pulled' into the database and automatically updated in the records. To make sure this works smoothly when we go live with the site, our data manager, John Fairfoul, has prepared scripts of all the areas that need to be tested across a range of membership types. There are 230 distinct requirements for the integration and each of these needs to be tested (and retested) against multiple scenarios. This will mean, for example, that with the members' handbook the amount of information displayed matches the preferences a member has selected, that these settings are successfully updated – both on the website and the database – when altered by a member online, and that only those with a right to view the information are able to see it. Any bugs and glitches that crop up during the testing period are being logged, fixed and retested.

Screenshot of one of the Clinical Effectiveness pages on the new RCPath website

Diane Gaston
Head of Communications

Dr David Cassidy

Daniel Ross

College subscription rates for 2016

The annual rates of subscriptions for 2016 are published in tables 1 and 2 below. You will shortly receive a letter from our membership and finance department regarding the new subscription rates which will be payable at the start of January 2016.

As you may be aware, earlier this year, the College moved from its former location at 2 Carlton House Terrace on The Mall to temporary accommodation at 21 Prescot Street near Aldgate and Tower Bridge.

To secure the College's future, the College is in the process of redeveloping The Goodman Building on Alie Street, London E1, which will serve as the College's permanent premises for many years to come.

The aim behind the new development is to provide a purpose built building that will contain lecture theatres, flexible meeting rooms, a modern, spacious members' room, a library, as well as office accommodation for our staff and College officers.

We will also be investing in technology to improve the way we interact and communicate with College members whether they are based in the UK or overseas. This includes the launch of a modern, redeveloped website which will have an improved search facility making it easier to find information. We will be improving the navigation of the website with a single sign-on across all system platforms as well as offering members the opportunity to tailor content to their needs.

Other work includes the implementation of an examinations e-management system and the piloting of an e-registration application process for registered trainees and examination candidates.

We are managing a suite of 19 different curricula and examinations for medical, scientific and veterinary pathologists. We will be launching and managing a new online CPD accreditation service, and in 2016 we will be conducting a membership survey to improve our understanding of the needs and expectations of our members and their opinions of the College and the services it provides.

In addition, we are developing a programme of policy and advocacy work, aimed at raising awareness and understanding about the role and contribution of pathology to healthcare and a plan for engagement of policy makers, influential thinkers, potential allies and opinion formers that maximises influence over key decisions affecting the provision of pathology.

This is an important time in the College's development and to ensure we continue to meet the College's mission statement to: "promote excellence in the practice of pathology and to be responsible for maintaining standards through training, assessments, examinations and professional development, to the benefit of the public.", the Trustee Board has recommended that the subscriptions increase by 3%, together with an additional amount to fund the work detailed above.

As in previous years, we encourage members to pay by annual direct debit, which allows one month's payment grace as the amounts are collected from individual bank accounts on 1 February. Alternatively a monthly payment option for subscriptions paid by direct debit is available. An additional amount of £10 will be due for payment this way and the subscriptions will be collected in ten equal instalments from 1 February to 1 November inclusive.

If you wish to change the way you pay your subscription to either annual or monthly direct debit, or have any other queries, please contact the College's Membership Department on 020 7451 6756 or membership@rcpath.org

Dr David Cassidy
Treasurer

Daniel Ross
Chief Executive

Table 1: UK subscription rates for 2016

Membership category	£
Fellows	522
Fellows with total income of less than £45,000 per annum	418
Fellows by examination with less than five years' Fellowship	418
Additional subscription for monthly direct debit option	10
Diplomates	210
Associates	191
Affiliates	164
Retired with mailing	65

Table 2: Overseas subscription rates for 2016

Membership category	Country band (see Table 3)	£
Fellows	A	203
	B	164
	C	120
	D	80
Fellows by examination with less than five years' Fellowship	A	170
	B	135
	C	103
	D	69
Diplomates	A	106
	B	94
	C	81
	D	70
Associates	A	93
	B	81
	C	70
	D	57
Affiliates	A	87
	B	74
	C	68
	D	57
Retired with mailing	A	65
	B	63
	C	60
	D	54

Table 3: Country bandings, based on the latest World Bank figures

GROUP A		GROUP B	GROUP C	GROUP D
Australia	Italy	Antigua & Barbuda	Albania	Bangladesh
Austria	Japan	Argentina	China	Cameroon
Bahrain	Kuwait	Botswana	Egypt	Ecuador
Belgium	Malta	Brazil	Iran	Gambia
Bermuda	Netherlands	Cayman Islands	Iraq	Ghana
Brunei	New Zealand	Chile	Jordan	India
Canada	Norway	Czech Republic	Libya	Kenya
Denmark	Oman	Grenada	Macedonia, FYR	Lao PDR
Finland	Portugal	Hungary	Peru	Malawi
France	Qatar	Kazakhstan	Sri Lanka	Myanmar
Germany	Singapore	Lebanon	Syria	Nigeria
Gibraltar	Spain	Lithuania	Thailand	Pakistan
Greece	Sweden	Malaysia		Papua New Guinea
Hong Kong	Switzerland	Mauritius		Sudan
Iceland	United Arab Emirates	Poland		Uganda
Ireland	United States	Saudi Arabia		West Bank and Gaza
Israel		Slovak Republic		Yemen
		South Africa		Zambia
		Trinidad & Tobago		Zimbabwe
		Turkey		
		West Indies		

Dr Nick West

Trainees' notes

Trainees comprise 8% of the College membership and, whilst traversing our way from registration to Fellowship, all 840 of us are shaping the very future of our profession. This feature is written by and for trainees to reflect on the journey, discuss training issues and optimise engagement with the College pan-specialty.

In this issue we focus on genetics and forensic pathology. First, Dr Louise Bourdon, principal clinical scientist at North West Thames Regional Genetics Service, describes the recent genetics laboratory reconfigurations and the 100,000 Genomes Project. Second, Dr Charlotte Randall, a forensic pathology trainee gives us an overview of the recent British Association in Forensic Medicine meeting in Bristol.

Dr Louise Bourdon

Traditionally, genetics laboratories were split into two separate fields: cytogenetics and molecular genetics. However, in recent years, there has been significant convergence of services and techniques, meaning that there is now huge overlap between the disciplines. As a result, many regional genetics laboratories have become integrated, providing more streamlined and comprehensive services to patients and clinicians.

Obviously, one of the main challenges with this has been training staff in areas that they are not familiar with, from junior members of staff right up to those who run the labs. In 2013, the lab in which I work was integrated. I was heavily involved in training the scientist and technical teams in the corresponding sections of the lab, with the initial emphasis placed on specimen reception. For myself, it meant quickly learning about disorders that were traditionally dealt with by the cytogeneticists, and teaching others about disorders tested for by molecular genetics labs. This was obviously a steep learning curve, but one which has gone relatively smoothly.

The other major development that has happened in genetics in the last couple of years is the 100,000 Genomes Project, which was announced by the Prime Minister in 2012. The aim of this project is to sequence 100,000 genomes from 70,000 individuals by 2017, with particular emphasis on cancer and rare diseases. The reasons for this are two-fold: the significant impact that these diseases have on hundreds of thousands of people, and the benefits that could be gained with the identification of causative genes or susceptibility factors, as these may point to treatments that have not yet been considered.

As part of this initiative, our lab is involved in a consortium involving scientists, clinicians, bioinformaticians and numerous technical teams. The aim is to collect samples from patients, prepare them for analysis, send them to the testing labs, then help with the interpretation of results as they are reported. Although this sounds like a mammoth undertaking, with the expertise that we have in both the NHS and the other groups involved, this is a project that should yield huge benefits for years to come.

Dr Charlotte Randall

The city of Bristol recently played host to the British Association in Forensic Medicine (BAFM) summer meeting. This small group of forensic pathologists holds twice-yearly meetings throughout the UK and occasionally further afield. Over time, the size of the meeting has grown and currently attracts not only fully qualified forensic pathologists but a number of trainees (both forensic and cellular pathology), medical students and a regular international cohort from countries as far away as Canada, Australia and Slovenia. This shift in members has given the BAFM a rather welcome burst of cosmopolitan colour.

The meeting starts on a Friday afternoon, with an update on current topics. This year we heard talks from two guest speakers on resuscitation fracture documentation and the pathophysiology of deaths after operations and interventions. The evening's activities were at

a lovely countryside pub. There was plenty of time to catch up with colleagues and to discuss the day's events.

The more formal day of lectures was on the Saturday. We were treated to two talks from guest speakers including findings associated with emergency trauma management (a guide for pathologists) and advice on critical analysis of the published literature. There were also updates on recent advances in designer drugs by a senior toxicologist, the results of the Home Office audit into 'missed homicides' and appraisal and revalidation for forensic pathologists. In the afternoon members gave us an insight into some of their interesting cases, including recent international travels.

Our hotel provided a splendid backdrop for all of our activities, as well as providing us with lavish accommodation, plentiful breakfasts and several bars to prop up!

The highlight of the Saturday was, as always, the formal dinner with guests turning out in their finery. Here we met up with our partners, who had spent the day on the accompanying persons tour, which included a guided tour of the Clifton Suspension Bridge and caves, a visit to the Camera Obscura, a cliff-top lunch and a short boat cruise – and as if that wasn't enough they had the added bonus of 'chancing' upon a naked charity cycle ride in the city centre, with photos to prove it!

Dinner was followed by a lively speech and delightful ditty from the President (even if he did forget my name!) and, of course, the Queen's toast and the obligatory passing round of the snuff.

Sunday was an anti-climax, with guests slowly departing and starting to think about what work lay ahead in the following week. However, for a few who hadn't yet had their fill or who had late travel arrangements, there was a Sunday lunch.

Once again it was a thoroughly enjoyable meeting held in lovely surroundings, catching up with colleagues, acquiring new friends and remembering those who were unable to make it.

See you all again soon for much of the same at the Winter meeting.

Would you like to contribute to this page? Why not write a reflective piece about a recent case, meeting, activity, etc. you have been involved with? We'd love to hear from you. What did you learn from it that would be useful for other trainees? Email us at tac@rcpath.org

How to secure an ST1 post in histopathology

The time of year is coming when enthusiastic proto-pathologists are contemplating how to write their applications for Histopathology Training School. Leila Ahmad offers advice on how best to capture the enthusiasm and impress the assessors.

I developed a keen interest in histopathology from medical school, and was lucky enough to get a foundation post with a rotation in laboratory medicine. Still, when it came to applying for the specialty training, there was very little practical information available to prepare me for the application and interview process for histopathology. Many of my colleagues who applied a year later were faced with a similar situation. Hence, with the assistance of one of my supervising consultants, Dr Salmons of New Cross Hospital, Wolverhampton, I have drafted a checklist that might help future candidates in their application and interview process.

1. Try to get a rotation (or a taster week) in histopathology as a Foundation Year 2 doctor.
2. Do some surgical cut ups and report the slides with your supervising consultant. Anonymise the reports and use a sample in your CV.
3. Keep a log book of surgical trims performed and observed and slides reported with consultants.
4. Observe at least 10 autopsies and read the reports. This will help you learn how to do the clinicopathological correlation in post mortems. This is one of the components tested at the interview.
5. Try to attend an inquest. It gives you an idea why post mortems are done.
6. Read about the pathogenesis of major system pathologies: heart failure, cancer, hypertension, chronic kidney disease, etc.
7. Do at least one audit. If you complete the audit loop, you can submit it to The Royal College of Pathologists for certification (www.rcpath.

org/clinical-effectiveness/clinical-audit). You can read recently published audits on www.rcpath.org/clinical-effectiveness/clinical-audit/examples-of-high-quality-audit

8. The College also publishes high-quality audits in The *Bulletin*. Such publications give you additional marks in your application form.
9. Try to submit an abstract of an audit or a rare case for a poster presentation at one of the pathological societies' meetings. This will also score you extra marks for the application form and at interview.
10. Further reading on skills required in pathology will help in filling out the application forms. This information can be obtained from the Pathological Society website, 'Conversations with Pathologists' (www.pathsoc.org/conversations).
11. Last but not least, showing genuine interest in pursuing a career in histopathology will definitely secure you a post.

Leila Ahmed
ST2 in Histopathology
Heartlands Hospital, Birmingham

Dr Nabeel Salmons
Consultant Histopathology
Wolverhampton

Awards open to trainees

Oliver Memorial Trainee Bursary

The College administers the Oliver Memorial Fund, set up in memory of Percy Lane Oliver, who in 1921 created the world's first voluntary blood donor service. A Percy Oliver Transfusion Medicine Trainee Travel Bursary is offered each spring and autumn to make up to £500 available towards travel and accommodation costs for trainee clinicians and clinical scientists, enrolled in a recognised UK training scheme and working in the field of transfusion medicine, to enable their participation in a national or international blood transfusion meeting.

Details are available on the webpages of the College's Transfusion Medicine Specialty Advisory Committee: www.rcpath.org/committees/specialty-advisory-committees/transfusion-medicine.htm

The Furness Prize for Science Communication 2015

We invite your nominations for The Furness Prize for Science Communication 2015. This award recognises a pathology trainee who has contributed significantly to the field of science communication over a sustained period of time, including some activity in 2015.

Generously funded by Professor Peter Furness, President of The Royal College of Pathologists from 2008 to 2011, the prize was created to:

- cultivate awareness amongst pathology trainees about the importance of public engagement
- reward and recognise trainees who have undertaken sustained high-quality science communication activities.

Candidates may nominate themselves or be nominated by a colleague who is familiar with their work (the candidate must give their explicit consent for the nomination). This person may have organised outreach events, developed resources for schools, worked with other organisations such as museums or charities, evaluated their activities and encouraged colleagues to take part in science communication events.

The winner will be awarded £200 for displaying excellence in their science communication activities. For more information and to download the nomination form, visit www.rcpath.org/the-college/awards-and-prizes/furness-prize

The deadline for nominations is **Sunday 6 December 2015**.

An audit of the cytological diagnosis of endoscopic ultrasound-guided FNA of pancreas at Manchester Cytology Centre

The College's Clinical Effectiveness Department wishes to encourage high-quality clinical audit. We therefore periodically publish interesting examples of audits that have been successfully evaluated through our clinical audit certification scheme.

Background

Endoscopic ultrasound guided fine needle aspiration (EUS FNA) is generally regarded as the diagnostic modality of choice for mass lesions in the pancreas. The Papanicolaou Society of Cytopathology recently issued guidelines on the use of standardised terminology and nomenclature for pancreaticobiliary cytology, which includes reporting categories from 1–6.[4] In our institution, a team of five consultant pathologists report these specimens, three of whom are monospecialist cytopathologists and of these, two participate in the pancreatobiliary multidisciplinary team (MDT) meeting, as lead and cross cover. The two other consultants also do histopathology subspecialist reporting, one of whom also reports pancreatic resection specimens. There is a need to audit our EUS FNA pancreas cytology reporting and compare this with published standards in order to confirm that our service is at least comparable to that of others.

Aim and objectives

- To identify all EUS FNA pancreas specimens received by the Cytopathology department between January 2013 and June 2014.
- To compare the cytology diagnosis with the histology diagnosis, where available.
- To determine the inadequate rate for all EUS FNA pancreas specimens, including both solid and cystic lesions.
- To determine the sensitivity, specificity, false negative rate and false positive rate for solid and cystic lesions.

Standards

The following standards (Table 1) have been derived from published sources, as referenced.

Method

The Laboratory Information Management System (LIMS) database was searched for EUS FNA pancreas cytology samples received by the department during the 18-month period between 1 January 2013 and 30 June 2014. Diagnostic codes to cover the proposed reporting categories from the Papanicolaou Society of Cytopathology, designated as Panc 1 – Panc 6, were retrospectively assigned to each case (Table 2). Cytology results were correlated with subsequent histology (where available), clinical follow-up from MDT meeting minutes, electronic clinic letters and radiological follow up obtained from electronic radiology databases.

For calculation purposes, Panc 2 cases were included in sensitivity and specificity calculations even if no follow up information was available as cases of chronic pancreatitis and pseudocyst would not routinely be followed up and the patients would most likely have presented again if a malignancy was actually present. For the other categories, only cases with histology or MDT follow up

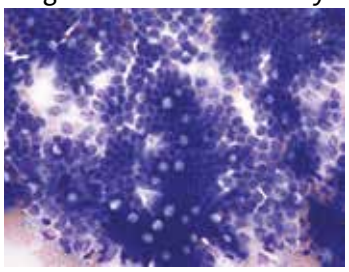
Table 1 (left): Audit standards
Table 2 (right): Cytological diagnostic codes

Parameter	Solid lesions (%)	Cystic lesions (%)
Inadequate rate	<5.5 [1]	<25 [2]
Sensitivity	>83.2 [1]	>60 [3]
Specificity	>90 [4]	>40 [5]
False-positive rate	<1.1 [6]	
False-negative rate	<15 [2]	<60 [4]

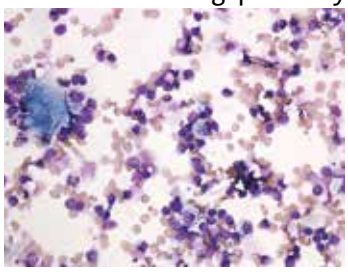
EUS FNA pancreas diagnostic code	Interpretation
Panc 1	Non diagnostic
Panc 2	Negative for malignancy
Panc 3	Atypical
Panc 4B	Neoplastic benign
Panc 4O	Neoplastic other
Panc 5	Suspicious for malignancy
Panc 6	Positive/malignant

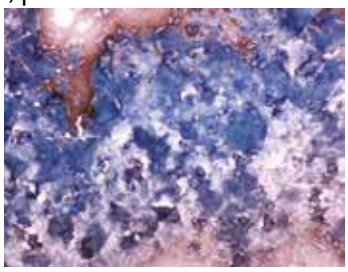
Table 3: Cytological diagnostic codes with examples for each category

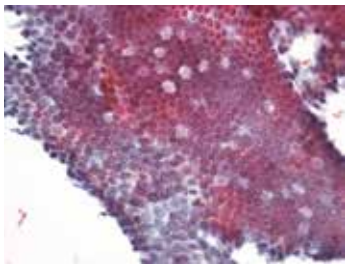
Panc 1
Non-diagnostic
e.g. GI contamination only

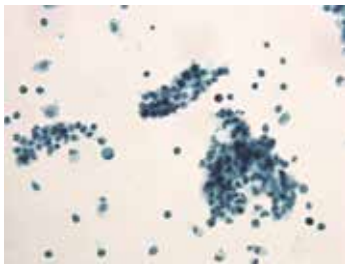


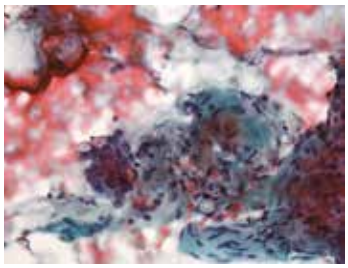
Panc 2
Negative for malignancy
e.g. pseudocyst, pancreatitis



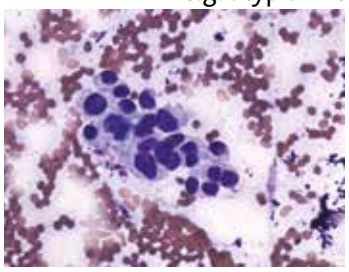


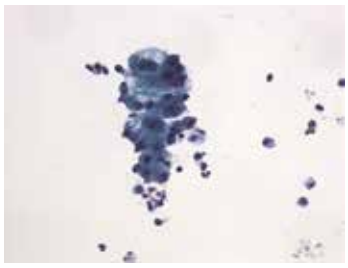




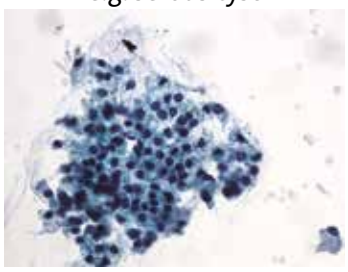


Panc 3
Atypical
e.g. atypia with inflammation

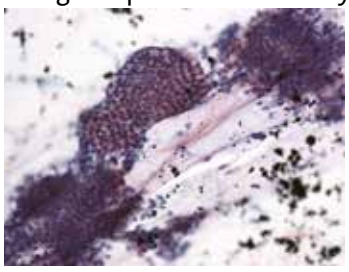


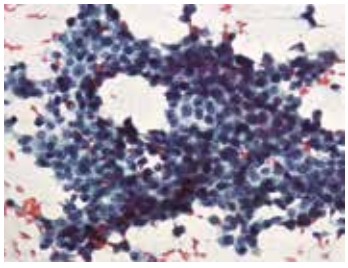


Panc 4B
Neoplastic benign
e.g. serous cyst

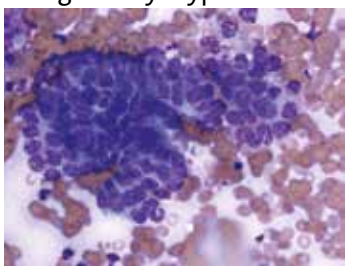


Panc 40
Neoplastic other
e.g. neoplastic mucinous cysts, neuroendocrine tumour

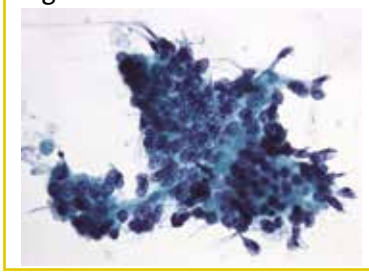




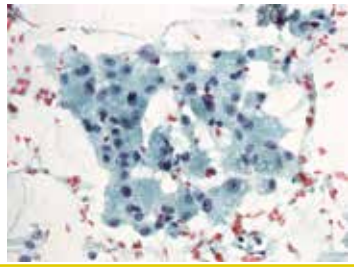
Panc 5
Suspicious for malignancy
e.g. scanty atypical cells



Panc 6
Malignant
e.g. ductal adenocarcinoma



metastatic carcinoma



non-Hodgkin's lymphoma

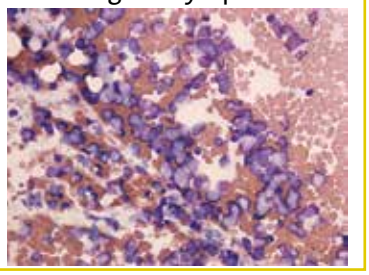


Table 4: Stratification of solid and cystic lesions by cytological diagnostic category

EUS FNA pancreas diagnostic code	Solid lesions		Cystic lesions	
Panc 1	3	(4.2%)	11	(20%)
Panc 2	22	(31%)	27	(49.1%)
Panc 3	1	(1.4%)	3	(5.5%)
Panc 4B	0	(0%)	4	(7.3%)
Panc 4O	10	(14.1%)	8	(14.5%)
Panc 5	3	(4.2%)	0	(0%)
Panc 6	32	(45.1%)	2	(3.6%)
Total	**71**		**55**	

Table 5 (left) and Table 6 (right): Cytological diagnoses

Diagnosis solid lesions	No. of cases
Inadequate	3
Normal	1
Acute/chronic pancreatitis	19
Granulomatous inflammation	1
Groove pancreatitis	1
Atypical cells (Panc 3)	1
Neuroendocrine tumour	9
Spindle cell neoplasm (sarcoma)	1
Suspicious for malignancy	3
Pancreatic ductal adenocarcinoma/adenoca NOS	26
B-cell non-Hodgkin lymphoma	1
Metastatic colorectal carcinoma	2
Metastatic renal cell carcinoma	1
Carcinoma with squamous differentiation	2
Total	**71**

Diagnosis cystic lesions	No. of cases
Inadequate	11
Pseudocyst	24
Chronic pancreatitis	1
Enteric duplication cyst	2
Atypical mucinous cells	3
IPMN	1
Serous cystic neoplasm	4
Neoplastic mucinous cyst	7
Adenocarcinoma	2
Total	**55**

Table 7: Nine false-negative cytology samples

Cytology	Histology	MDT
Solid lesions		
Chronic pancreatitis		Panc 6
Chronic pancreatitis		Panc 6
No malignant cells		Panc 6
Cystic lesions		
Enteric duplication cyst	Mucinous adenocarcinoma	Panc 6
Pseudocyst		IPMN (Panc 4O)
Atypical mucinous cells		IPMN (Panc 4O)
Atypical mucinous cells	NET (Panc 4O)	
Atypical mucinous cells	NET (Panc 4O)	
Serous cystic neoplasm		Panc 6

All of the calculated parameters were within the published ranges used as standards in this audit

Standard	Target from literature (%)		Compliance (%)	
Standard 1: Inadequate rate	Solid <5.5 [1]	Cystic <25 [2]	4.2 (3/71)	20 (11/55)
Standard 2: Sensitivity	Solid >83.2 [1]	Cystic >60 [3]	93	63
Standard 3: Inadequate rate	Solid >90 [4]	Cystic >40 [5]	100	100
Standard 4: Specificity	Solid <1.1 [6]		0	
Standard 5: False-positive rate	Solid <15 [2]	Cystic <60 [4]	13.6 (3/71)	20% (6/55)

Action plan			
Key action	Coordinator for action	Timescale	
Disseminate audit findings at departmental audit meeting	Dr D Rana	August 2015	
Disseminate audit findings via CARM fair poster	Dr D Shelton and Dr D Rana	April 2015	
What was the main matter(s) of concern this audit identified?			
Reporting of EUS FNA pancreas cytology samples at CMFT is within the published figures relating to inadequate rate, sensitivity, specificity, false-positive and false-negative rates.			
Please identify the main benefit(s) to our patient, or to hospital process that are expected to result from the action plan of this audit			
Continued provision of a high quality EUS FNA pancreas cytology diagnostic service. The high sensitivity and specificity with no false-positive cases demonstrated in this audit facilitates accurate diagnosis for our patients and this enables major surgical resections to be undertaken based on cytology diagnoses alone.			
Will there be a re-audit?	Yes	**When will the re-audit take place?**	February 2017

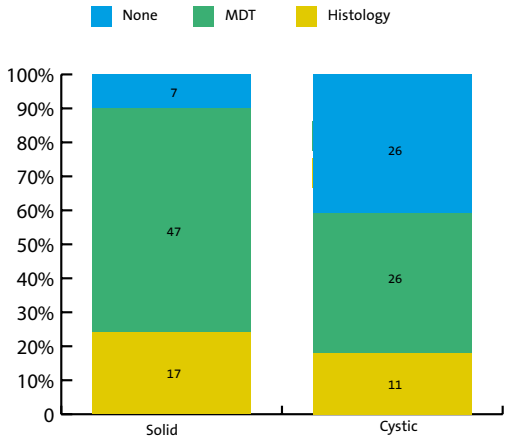


Figure 1: Follow up of 71 solid and 55 cystic pancreatic lesions

were included. Panc 2, 3 and 4B were designated as 'negative' and Panc 4O, 5 and 6 as 'positive'.

Results

During the audit period 126 EUS FNA pancreas samples were received from 70 male (55.6%) and 56 female (44.4%) patients, mean age 61 years (range 31 – 86 years). There were 71 (56.3%) solid lesions and 55 (43.7%) cystic lesions, the cytological diagnoses of which are outlined in Table 3, with the number of specimens assigned to each diagnostic category illustrated in Table 4. The follow up available for each specimen is indicated in Figure 1.

All of the calculated parameters were within the published ranges used as standards in this audit.

The false negative cases are outlined in table 7. Sampling error is one of the possible reasons for a false negative EUS FNA pancreas sample.

Conclusions

The EUS FNA pancreas diagnostic cytology service provided by the Cytopathology department is of high quality and comparable to published practice, relating to inadequate rate, sensitivity, specificity, false positive and false negative rates. The high sensitivity and specificity with no false postive cases demonstrated in this audit facilitates accurate diagnosis for our patients and this enables major surgical resections to be undertaken based on cytology diagnoses alone. This quality will need to be maintained in the presence of an increasing workload due to regional reconfiguration of the hepatopancreatobiliary service. Consideration will be given to the inclusion of Panc categories in cytology reports issued for these specimens, however, this will be dependant on discussion with and acceptance of this system by the clinicians receiving the reports. Establishment of a regional database to include both clinical and pathological data will allow prospective service monitoring and is to be undertaken in conjunction with clinical teams.

Dr Miles Holbrook
Dr Durgesh Rana
Dr David Shelton
Consultant cytopathologists

Ms Nadira Narine
Lead biomedical scientist in non-gynaecological cytology

Mr David Slater
Specialist biomedical scientist

Dr Paul Wright
Dr Sakinah A Thiryayi
Consultant cyto-/histopathologists
Manchester Cytology Centre and Department of Histopathology
Manchester Royal Infirmary

References

1. Bergeron JP1, Perry KD, Houser PM, Yang J. Endoscopic ultrasound-guided pancreatic fine-needle aspiration: Potential pitfalls in one institution's experience of 1212 procedures. *Cancer Cytopathol* 2015;123:98–107.
2. Chebib I, Yaeger K, Mino-Kenudson M, Pitman MB. The role of cytopathology and cyst fluid analysis in the preoperative diagnosis and management of pancreatic cysts >3 cm. *Cancer Cytopathol* 2014;122:804–809.
3. Chhieng DC, Stelow EB. *Pancreatic Cytopathology.* New York: Springer, 2007.
4. Pitman MB, Centeno BA, Ali SZ, Genevay M, Stelow E *et al.* Standardized terminology and nomenclature for pancreaticobiliary cytology: The Papanicolaou Society of Cytopathology Guidelines. *Diagn Cytopathol* 2014;42:338–350.
5. Frossard JL, AmouyalP, Amouyal G, Palazzo L, Amaris J *et al.* Performance of endosonography-guided fine needle aspiration and biopsy in the diagnosis of pancreatic cystic lesions. *Am J Gastroenterol* 2003;98:1516–1524.
6. Siddiqui AA, Kowalski TE, Shahid H, O'Donnell S, Tolin J *et al.* False-positive EUS-guided FNA cytology for solid pancreatic lesions. *Gastrointest Endosc* 2011;74:535–540.

Dr Paul Cane

A3 Project – Improving the Lung Cancer Diagnostic Pathway

A3 problem solving is a method of analysing problems in a thorough and systematic way. A3 refers to the size of paper sheet that is used to report the analysis and the actions arising from that analysis. The A3 allows a standardised approach to problem solving which, if done correctly, can lead to robust and sustainable solutions to problems rather than the empirical and more risky solutions derived from a 'knee jerk' or superficial solution-generating methodology.

The lung cancer service at Guy's and St Thomas' (GST) Hospital receives patients for diagnosis from a number of different sources. While a proportion are referred by GPs on the cancer wait pathway, the majority present with unrelated conditions and, when CT scanned, show incidental abnormalities, suggestive of lung cancer. Patients referred by GPs via the two-week-wait cancer pathway are cared for by a specialist lung cancer team and subject to the 62-day target for diagnosis and treatment. However, patients from other sources are usually cared for by non-specialists initially and are not subject to the same degree of oversight until later in their pathway, usually at the point their tumours are diagnosed. As chair of the lung cancer MDT, I was aware of different pathways. I had noted cases where there seemed to be delays in the care of some patients and was unhappy with the potential inequality of care.

I decided to make the lung cancer diagnostic pathways the subject of my A3 project, which was part of the excellent 'Leading Transformational Cultural Change' course. At the start of 2014, we surveyed the care of all patients diagnosed with lung cancer in the previous year and found that patients referred by GPs were diagnosed and treated significantly faster than those presenting from other sources. The two root causes were, first, there may be delays on acting on the initial abnormal CT scan and, second, investigations may be started by clinicians who are not lung cancer specialists and therefore may not order the most appropriate investigations with the required degree of urgency. There was also no equivalent monitoring of the progress of the non-GP patients, so it was possible for some patients to be 'lost'.

Our proposed solutions were to change the alert system within radiology so a referral to the specialist lung cancer team happens whenever a CT scan was suspicious of lung cancer, and for the cancer waits team to be informed so the patient's progress could be tracked. The implementation of the solution is at present incomplete, as we encountered resistance from the wider radiology department to changing the alert system and also problems with IT support for new alerts. We are now making progress with the required changes and hope the new pathway will be working before the end of the year. We can then repeat the survey next year to measure any differences.

Dr Paul Cane
Consultant Histopathologist
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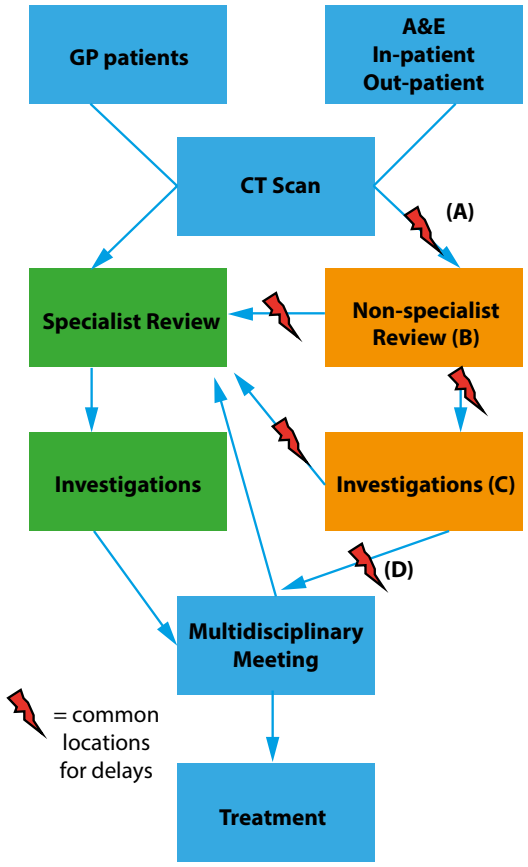
Improving the Lung Cancer Diagnostic Pathway



Team Members: PC (Lead), GS = RB = BL (Chest medicine), AN = RP (Radiology), MJ (Cancer Waits Office)

Date: Feb-Nov 2014

Define the problem (what problem are you trying to solve?)

The care a lung cancer patient receives depends on how they present introducing inequality

Current state (what happens now? A simple, visual summary)

There are multiple pathways for lung cancer patients (figure 1). Patients referred by GPs were treated 46 days after their CT scan on average while patients referred by other routes waited 76 days on average (Figure 2).

Goal (Specific, Measurable, Achievable, Realistic, Timely)

All lung cancer patients receive the same standard of care by December 2014

Waste identified

Abnormal scans not always acted upon immediately (A), specialist team under utilised (B), inappropriate investigations being done in some cases (C), patients referred to the lung MDM before they are fully worked up (D) - see figure 1 for location of waste in the pathway

Root cause analysis (what is the root cause of the problem?)

Only patients from GPs are tracked along their pathway. Not all patients are being assessed by the lung cancer specialists in the first instance.

Figure 1

Existing lung cancer pathway

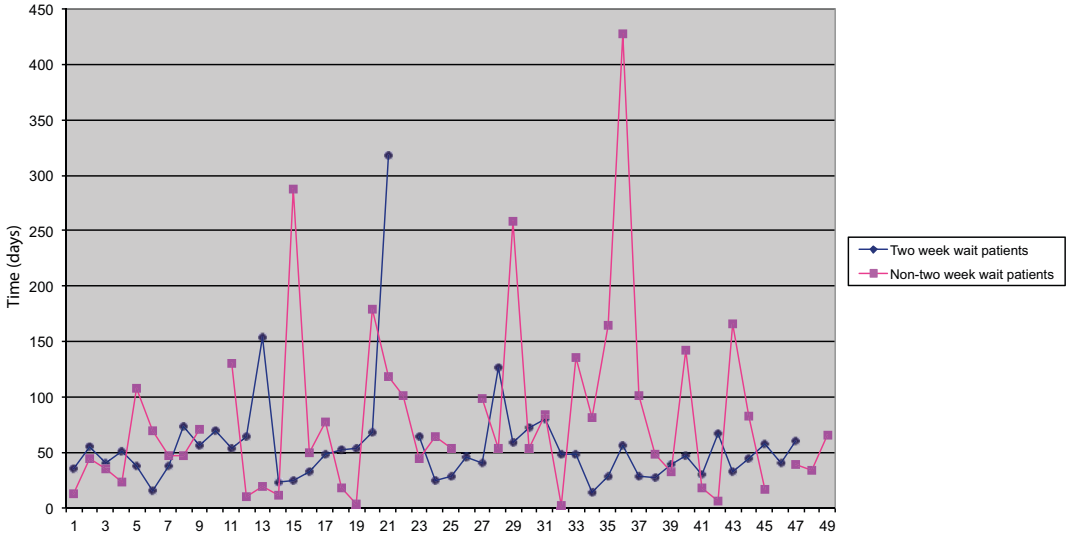


Figure 2

Statistical Process Control (SPC) Chart

Paul Cane, Consultant Histopathologist and Clinical Lead for Lung Cancer, Guy's and St Thomas' Hospital

Future state/countermeasures			
A single effective lung cancer pathway utilising the specialist lung cancer team with oversight by the cancer waits team (figure 3). A consultant upgrade will be triggered by an abnormal scan result, all patients will be tracked by the cancer waits office and referred immediately to the specialist lung cancer team.			
Action plan			
Action - what, when, why, how?	**Who?**	**When?**	**Progress status**
Design unified pathway	ALL	Sept	Complete
Modify radiology alert	AN,RP	Nov	Complete
Cancer waits team approve new pathway	MJ	Nov	Complete
New pathway to be adopted	ALL	Dec	
Results and measures (what was your PDSA cycle, how long did you run it for, what data did you collect before and after the change, what did you find? Be visual!			
We will compare the average length of pathways before and after the changes, divided according to route of presentation. Any pathways longer than 62 days will be examined in depth to find the causes of the delays.			
Next steps (any remaining issues/problems - any further follow up required?			
Monitor the workload of the lung specialist team to determine any need for extra resource, set up a quarterly meeting to highlight and learn from examples of good and bad practice, review the policy of following up indeterminate scans that do not require immediate investigation.			

Figure 3
New lung cancer pathway

Leadership Journey

- There was little engagement from the project team at first
- Whilst acknowledging the pathway could be better the initial consensus was that it was fine as it was.
- Team members had other priorities and preferred to use email instead of physically meeting.
- A break-through came after data was collected and shared, finding several case studies where care had been far from optimal.
- The need for improvement was then acknowledged, the team became engaged and efficiently agreed solutions

Important learning points included

- It is difficult to engage a team in problem solving until everyone accepts a significant problem exists
- Looking at individual patient experiences can be a more effective motivator than average statistics
- Team members may be motivated for different reasons and knowing the motivating factors is key to success

Changing requirements of laboratory information systems to meet new standards

Dr Brian Rous

Dr Jem Rashbass

Avid readers of the monthly College e-newsletter will have noticed the short paragraphs relating to significant changes to the delivery of structured data and the changes in coding which are rapidly required. Here, Brian Rous provides more background information to these standards. All cellular pathology laboratories need to have plans to deliver these changes in 2016–2017.

Data collection and returns to local and national bodies are part of life for many pathologists, their labs and Trusts. This article explains some of the changes in information standards that will affect many of us, but particularly those in histopathology, over the coming year. Much of this should already be known to the technical teams in your laboratories and local cancer service managers, but we want to ensure that all our pathology colleagues are aware of the key changes.

1. Cancer Outcomes and Services Dataset (COSD): although COSD has been collected through multidisciplinary teams (MDTs) for some time, the returns have focused largely on the clinical data items. From 1 January 2016, Trusts are required to include pathology data.
2. National NHS-wide licence for older versions of SNOMED expires in 2017. Significant modifications to many existing laboratory information management systems (LIMS) or the use of additional supplementary data collection systems may be required to meet these new requirements.

COSD

The Cancer Services and Outcomes Dataset (COSD) was issued as an Information Standard (ISB 1521, ROCR/OR/2142/FT6/001MAND) in July 2012 and was implemented by NHS Trusts from January 2013. The COSD replaced the previous National Cancer Dataset and was designed following extensive consultation with clinical and pathology experts, to provide a much richer source of data on patients with cancer.

The collection of the data in COSD will allow a more rigorous assessment of cancer service performance and individual provider practice, and enable targeted improvements to both prevention and treatment of cancers. The collection of data through COSD will be essential for research and audit. It is also a key part of the strategy outlined in the recent Independent Cancer Taskforce report to improve patient outcomes for cancer patients. The data items in COSD have been agreed following extensive consultation with professional colleagues. Many College members and those on the cancer working groups provided input through the National Cancer Intelligence Network (NCIN) and their Site-Specific Clinical Reference Groups to ensure that data items already recognised as part of the RCPath cancer datasets were included in the COSD.

As a recognised NHS data standard, COSD data are already collected by all NHS Trusts in England and submitted monthly to the National Cancer Registration Service. To reduce the impact on local providers, the implementation of COSD has been phased; the final phase is due to begin in January 2016. It is this last phase that requires the submission of the detailed pathological data items that are specified in the RCPath cancer datasets (and which meet the requirements of ISB professional standards).

Most of the data items are already routinely collected by pathologists in the UK, using existing proforma-based systems or free text within reports. The challenge has been how to translate this data into discrete, machine-readable data items that can be easily shared and analysed. In recognition of the complexity of this task for histopathological data, the collection of pathology data items was deferred by a year to allow NHS Trusts and LIMS suppliers to develop and deploy appropriate systems to allow data collection and submission.

Within COSD, the pathology data items are separated in to 'core' and 'site-specific' data items. The core elements include a number of data items that are felt to be applicable to most cancers; these include (where applicable) tumour size, grade of differentiation, margin status and TNM stage. There are then specific sections of the dataset for site-specific data items for breast; central nervous system; colorectal; child, teenagers and young adults (CTYA); gynaecology; haematol-

ogy; head and neck; lung; sarcoma; skin; upper gastrointestinal and urology. Each site-specific section includes data items that were considered by national experts to be of prognostic value for tumours at those sites.

There is extensive overlap between the pathology data items included in COSD and the RCPath cancer datasets. Largely, the data items in COSD represent a subset of the data items included in the RCPath datasets and the intention is that collection of data through electronic implementation of RCPath datasets should allow data to be submitted for COSD. For some COSD data items, the format of the data item differs from the format used in the RCPath datasets and manipulation of the data are required. For example, some of the margin status data items required categorisation of distance to margin in discrete groups (e.g. <1 mm, >1 mm and <5 mm; >5 mm, etc.) whereas the equivalent data item in the RCPath dataset is collected as a specified measurement rather than a category. In these circumstances, COSD has provided a guide of how the relevant COSD data item can be obtained from the RCPath cancer dataset. For further information see www.ncin.org.uk/collecting_and_using_data/data_collection/cancer_outcomes_and_services_dataset_cosd_latest_downloads.

COSD data are intended to be collected from MDT systems that collect all the relevant information about the patient and tumour together before submission. However, it is recognised that transferring large quantities of pathology data into the MDT systems may had additional complications to the data collection, so a separate technical data standard has been created for COSD pathology that allows direct submission of pathology data from LIMS, rather than exporting the data to the MDT system first.

SNOMED CT: a history

The *Systemised Nomenclature of Medicine* (SNOMED) was originally developed by the College of American Pathologists in the 1970s as a systematic, hierarchical way of capturing medical terms on a computer that related to anatomy, disease, findings, procedures, etc. Early versions of SNOMED (pre-2001) had a series of separate classification systems (or axes) for each type of information. Each entry or code in these axes was given a prefix: e.g. T for a topographical term; M for morphology; C for chemicals, usually medication. Related codes were then grouped closely together where possible, as shown in Figure 1.

Figure 1: Example of group of related SNOMED codes

- M40000 – Inflammation, NOS
  - M41000 – Acute inflammation, NOS
    - M41700 – Acute necrotizing inflammation, NOS
  - M4200-0 – Chronic inflammation, NOS

The aim of this grouping was to allow cases to be retrieved by using more or less specific codes. For example, M40000 for 'Inflammation, not otherwise specified' (NOS) could include all cases with acute and chronic inflammation and their own subgroups. Ideally the relationships between the codes in the hierarchy would reflect the pathological or clinical associations of conditions. In the example given, 'Acute necrotizing inflammation' is a subset of acute inflammation, which is itself a form of inflammation.

Multiple versions of SNOMED have been published, including SNOMED II (1979), SNOMED 3.0 (1993) and SNOMED RT (2000). The RT version was a fusion of SNOMED vocabulary with the read terms or codes used in GP systems in England.

One of the advantages of the morphological structure with SNOMED was that the structure was similar to that adopted by the World Health Organization (WHO) in the International Diseases for Oncology (ICD-O). As such, morphological codes for neoplasms we included in the range M8XXXX and M9XXXX and code easily be incorporated within SNOMED when new entities were defined by the WHO.

A new SNOMED CT structure

In 2002, a new version of SNOMED was released called SNOMED Clinical Terms (SNOMED CT). SNOMED CT was formed by a three-year project under the ownership of CAP (but with involvement from other organisations including the NHS), which aimed to merge the Clinical Terms Version 3 (which in itself had evolved from Read codes) and SNOMED RT to form much larger vocabulary.

SNOMED CT has a completely different structure to previous versions of SNOMED. Although the structure remains hierarchical, these relationships are not obvious from looking at the individual codes (as was the case with older versions of SNOMED). Instead, the relationships between the codes is defined and stored separately within the coding definitions – see Figure 2.

Whilst older versions of SNOMED were predominantly used within pathology, the intention is that SNOMED CT is a whole clinical healthcare terminology.

Older versions of SNOMED will no longer be licensed from 2017

In October 2009, IHTSDO (the body that took over responsibility for SNOMED) announced that they would cease licensing versions of SNOMED prior to SNOMED CT from 26 April 2017.

In November 2014, the coalition Government published *Personalised Health and Care 2020: A framework for action*, which stated that the entire health system should adopt SNOMED CT by April

Figure 2: Example of SNOMED CT structure

Concept ID	Fully specified name
23583003	Inflammation (morphologic abnormality)
43532008	Acute inflammation (morphologic abnormality)
71877001	Acute necrotizing inflammation (morphologic abnormality)
84499006	Chronic inflammation (morphologic abnormality)
Relationships state within SNOMED CT that 23583003 (Inflammation) is a parent of both 43532008 (Acute inflammation) and 84499006 (Chronic inflammation) and that 4353208 (Acute inflammation) is parent of 71877001 (Acute necrotizing inflammation).	

2020. However, given the removal of licensing for older versions of SNOMED in 2017, it is likely to be necessary for pathology users to migrate to the new terminology sooner. Guidance from the Health and Social Care Information Centre has suggested that continued use of older versions of SNOMED after 26 April 2017 (with the exception of historical data) could have legal implications.

How will SNOMED CT work in practice for pathology?

SNOMED CT, while representing a replacement of older versions of SNOMED, presents challenges in its implementation. Some LIMS have relied on pathologists using a memorable small list of SNOMED codes that are manually entered or have used simple look-ups for codes based on free-text data entry. SNOMED CT is a much larger a vocabulary and the format of the digits is not amenable to memory by most pathologists, so different strategies will be needed to incorporate into LIMS.

Summary

- COSD pathology data collection commences January 2016.
- COSD pathology data are based on data items with the RCPath cancer datasets and is only a small subset of the data items in the RCPath cancer datasets.
- Older versions of SNOMED (including SNOMED II, SNOMED 3.0, SNOMED 3.5 and SNOMED RT) will cease to be licensed from 26 April 2017.
- Commissioners and developers of new LIMS need to be aware of these upcoming requirements.
- Many LIMS suppliers are currently in the process of updating their systems to ensure compliance ahead of the required dates.

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Alice in Wonderland Influencing the Future: Leadership in Action

Part 1 of Alice's journey was published in the July 2015 issue of The *Bulletin*. In part 2, Alice concludes her reflections on the challenges of leadership, the pleasures of research and of succeeding in implementing change.

Alice sat down at her microscope. She was lost in the darkness, both of the room and of her own thoughts. It had been four long years since she had first fallen down that rabbit hole and her adventures in that enlightened world of Wonderland. She remembered the excitement and enthusiasm from her leadership journey, and the new friends she had gained during her adventures – the White Rabbit, the Mad Hatter, Chesh and the very, very wise Absolem – but now in the darkness Alice felt lost and alone.

You may ask what happened to Alice to leave her feeling this way. When Alice emerged from Wonderland and returned to her laboratory, she was empowered and filled with enthusiasm to make changes for the better. Everything seemed to be going so well: business cases were being prepared, plans for a new laboratory with state-of-the-art facilities were in preparation and a whole new way of thinking was in place. This was an exciting world, times were changing and it looked like Alice's world was changing too.

Then out of the blue came a request: would Alice cross the great Oceans? Her talents had been noted and she was wanted in a far away land. The time in Wonderland had given her the confidence to do this and Alice packed her bags and travelled to another magical world. Things were new and

exciting and focussed on changing how we would look at things forever. This was the world of research, where the underlying mysteries of disease were being unravelled and ways that this new science could help patients were being revealed. This was another journey of enlightenment for Alice and very different to the world from which she came. Though interesting and exciting, Alice missed the world of now, she missed the real world of diagnosis and making a difference every day, though recognised that this new science would be the way of the future.

So what, you may ask, went wrong?

Alice returned from the distant shores brimming with enthusiasm and excitement. She could see the way the world could be and wanted so much to bring this new science with her. But Alice's return was not what she envisaged; it was as if time had stood still. The business cases had fallen onto rocky shores, and opportunities for change that should have been plenty were few. Even the very wise Absolem had changed, emerging as a butterfly and finding new skies in which to fly. She tried to get engagement from those around her, but everyone seemed lost in their own worlds. Alice thought back to her adventures in the Leadership Wonderland and wondered what tools she could use to implement change, and through determination, passion and sheer bloody-mindedness she managed to bring some change.

Alice's success also became her downfall. As she cast out her nets to catch FISH, more and more came and the nets became fuller and fuller, with an ever-increasing array of colours and types of species. She had to work harder and longer just to maintain the nets. Eventually Alice lost her way; she lost her passion and lost her excitement. Alice had become like a machine. She didn't think, she didn't fulfil all her other roles, she just spent day after day in the dark. Though in the dark, Alice did still dream. She could see the way the world was changing and so wanted that to be part of her world.

And then there it was! Out of the corner of her eye was the White Rabbit, that amazing White Rabbit that had first lured her into Wonderland. Alice couldn't believe it, she had another chance and, as the Rabbit turned the corner, she ran as fast as her legs would carry her. This was an opportunity too good to be missed and as she fell into that Ladership world of Wonderland, she realised that this time things had to change.

Wonderland had grown since her previous visit. She began to remember all the things she had learned and yet there was more. In her new journey she began to meet new creatures that could help her. The glamorous Change Model, a very attractive creature that everyone wanted to meet, was very endearing and showed the way to a better future... and have you ever seen a fish riding a PDSA cycle? A fascinating creature that tries and learns and tries and learns until it actually gets it right! Alice could even use her beloved FISH to find out why things in her world were going so wrong, just by looking at their bones (although this is something she could never tell the creatures that dwell in the oceans of Wonderland).

And what of now? Well, Alice is slowly starting to rebuild her belief in herself and this visit back to Wonderland is the catalyst to finally make change.

The End.

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Laura Mason

Egg, sperm and embryo donation in IVF

The world of IVF isn't exclusive to treating patients with their own sperm and own eggs. Patients may find that their only option for having their long-wanted child is to fall upon the kind and selfless donations of others.

Donations of eggs, sperm or embryos may be needed when the patient has trouble producing their own, due to a multitude of reasons. Some of the most common reasons are previous medical conditions such as cancer, a genetic trait they do not wish to pass on to their child, premature menopause, testicular failure or poor embryo quality. In addition, a significant area of clinical work is treating patients in a same-sex relationship or single women who, without the donation of others, would not be able to go on to have a family. In fact, the Human Fertilisation and Embryology Authority (HFEA), the UK's independent regulator of eggs, sperm and embryos for treatment and research, has seen a sharp increase in the number of same-sex couples treated in more recent years.

The process of donation can be lengthy and requires commitment and dedication to extensive screening, medical examinations and, in the case of a female donor, medical procedures. Consent and

detailed donor information is recorded, as well as the donor's wishes for the maximum number of families they want to create (the HFEA stipulate that the upper limit is 10 families). The change to donor anonymity is now in its tenth year, with the status changing in 2005 from anonymous donation to non-anonymous. In simple terms, when a donor-conceived child reaches 16 years of age, they may find out non-identifying details about their donor such as their characteristics, interests and a goodwill message. At the age of 18, if they wish, the child can enquire about identifying details of their donor, including their name, date of birth and last known address. In return, the donor may enquire as to whether any children were born as a result of their donation, the sex of the child/ren and the year they were born.

Screening of a donor extends beyond the basics of an IVF cycle and includes viral screening (hepatitis B, hepatitis C, HIV, CMV), screening for STIs (Chlamydia trachomatis, Neisseria gonorrhoea, Treponema pallidum [syphilis]) haemoglobinopathies, blood group and Rhesus antigen, autosomal recessive conditions, karyotyping and more, as required according to the donor's history.

When screening a donor's karyotype, unsuspected cytogenetic abnormalities may be detected and a donor found to have a significant chromosomal abnormality will be rejected. Likewise autosomal recessive conditions specific to the ethnic status of the donor, such as cystic fibrosis for the Caucasian population or sickle-cell disease for African or Afro-Caribbean populations, should be screened for and all results would have to be negative in order for the donor to proceed. The donor is made aware at the start of the process that previously unknown conditions may be detected during screening. If they are found to be affected by an abnormality, they can be referred for further testing and genetic counselling.

Quarantine periods are important within the donation process in order to protect both the recipient and any donor-conceived offspring from viral or bacterial infection. However, the reality of quarantine for eggs and embryos is somewhat difficult, due to the inherent poor ability of freeze/thaw survival. By freezing eggs, the realistic chance of success would be dramatically reduced from fresh donation and, subject to the recipient being informed of the theoretical risks of transmission, fresh donation can proceed. Ideally and advisably, embryos would be created and frozen, allowing for the quarantine period, before thaw and transfer, however in practice this has limited use.

Semen carries the biggest risk of all donated material due to the high content of leukocytes. Therefore screening of sperm donors is subject to a minimum of an 180-day quarantine period to account for the latency of virus infection to detection and can make the process of donation quite lengthy. Nevertheless this is a requirement for safety and, although the nucleic amplification test (NAT) can be utilised in order to bring forward the release from quarantine date for semen samples, current advice remains to conform to the 180-day quarantine period.

Donor treatment does not stop with conception. Within IVF, all pregnancy outcomes are monitored and no exception is made when it comes to births of donor-conceived children. In fact, the outcomes of donor-conceived children, in particular birth abnormalities, are closely monitored. This is to ensure that should a birth abnormality be reported, appropriate discussion can be held about the risk to the donor's own children and donor-conceived siblings. Likewise, it is important that the donors are informed of their duty to notify their clinic if they learn or suspect that they, or their own children, may have a genetic condition. A failure of the donor to declare potential harmful health issues at the time or in the future can lead to legal consequences.

Every year, thousands of donor-conceived children are born, all of which wouldn't be possible without the selfless donation of others giving many people the dream of having a family a reality. If you would like to find out more information, the National Gamete Donation Trust and HFEA hold extensive information for donors and intended parents.

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Pre-Registrant Representative
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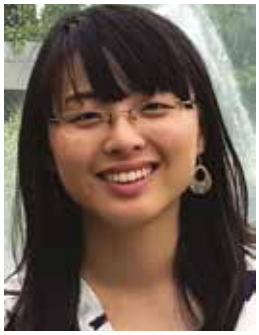
References

1. B Tomlinson M, Pacey A, Morroll D, Jones IL, Pacey A, Kendrew H *et al.* UK guidelines for the medical and laboratory screening of sperm, egg and embryo donors. *Hum Fertil (Camb)* 2008;11: 201–210.
2. The Human Fertilisation and Embryology Authority. www.hfea.gov.uk (accessed 12 August 2015).



Dr Chee Ling Liu

Professor Tony Elston

What do primary care users want from their microbiology service

The results of a survey into satisfaction, effectiveness and the needs of primary care users regarding the microbiology service at Colchester University Hospital Foundation Trust.

Background

Pathology services at Colchester University Hospital Foundation Trust (CHUFT) are managed by the Pathology Partnership, a joint venture between six trusts in the East of England and formed in response to changes driven by commissioners and NHS England to transform pathology services and implement best-practice recommendations set out in the Carter Report.

Systematic evaluation and reviews (Carter, 2003; NHS England, 2011) into pathology and laboratory services have identified key drivers for change to the service, including the need for pathology service providers to be responsive to user needs and engage with its service users.

We recognise that a large proportion of microbiology workload comes from primary care (NHS England, 2011) and, as commissioners seek to improve productivity in pathology services, it is clear that efforts to do so must be aligned to user need (NHS England, 2011).

Project aims

We aimed to capture service satisfaction, effectiveness and the needs of primary care users who utilise microbiology services at Colchester University Hospital Foundation Trust (CHUFT). Primary care users included general practitioners (partners, locums, salaried and trainees), practice managers and nurse practitioners.

Methods

An online 10-point questionnaire was disseminated to general practice trainers, general practice trainees and practice managers in the North East Essex area via a mailing list provided by the Colchester Postgraduate programme administrators. Practice managers were asked to forward it on to all relevant members of staff within their practice. The questionnaire was circulated to a total of 15 GP practices and reminder emails were sent after one week. The survey was kept open over a three-week period from June to July 2015.

Seven key service domains were surveyed, including: supply of microbiology consumables, sample collection, ordering requesting tests, accessing/receiving results, clinical advice via microbiology consultant in hours and out of hours, and general enquiries to the department.

For each domain, respondents were asked to evaluate satisfaction and effectiveness using a closed-ended, ordinal 1–5 point scale ranging from 'very satisfied' to 'very dissatisfied'.

Respondents were asked to evaluate statements regarding accessibility of microbiology services using 1–5 point scale from 'strongly agree' to 'strongly disagree'. These statements included accessibility of speaking to a microbiology consultant in/out of hours, helpfulness of interim reports being phoned to practitioners, and general departmental enquiries.

Respondents were given the opportunity to state their GP practice and clinical role. Free-text boxes were used to capture respondents' views on unmet needs with general practice and specific improvements to the service.

Results

A total of 16 respondents from six different GP practices were captured (approximately 40% response rate from the mailing list). Over half of the respondents were GPs (partner or salaried), with the remainder being nurse practitioners. The results below summarise some of the more pertinent and key findings in the survey.

1. Service use

All respondents utilised at least one of the microbiology services, with the majority of primary care users utilising the consultant microbiology advice (n=16) and ordering/accessing test results (n=14)

2. Service satisfaction

The majority of users were generally satisfied with microbiology services. However, areas that were a source of dissatisfaction related to provision of separate urine microscopy and culture results, and collection times for specimens. Highly rated services included clinical advice from microbiology consultants.

Microbiology sample collection and delivery

Of those who utilised the service (approximately 83% of respondents, n=14), just over half of users were at least fairly or very satisfied with the service. Of those respondents that were fairly dissatisfied sample collection and delivery, issues regarding collection times were highlighted.

"*Last collection too early – samples have to be personally delivered or stored overnight*" (nurse practitioner).

"*Pick up of samples later in the day would help (Courier arrives at 10.30 am)*" (salaried GP).

"*One collection a day at 10.30 am so we have to de-*

liver ourselves at the end of the morning and sometimes in the evening" (GP partner).

Accessing/receiving test results

50% and 43% of respondents utilising this service were very satisfied or fairly satisfied with this service respectively. Concerns were identified regarding mid-stream urine (MSU) culture and microscopy results in which results are sent out twice, thereby doubling their workload. This was identified by several GPs at three separate practices. Their comments elaborate on their concerns:

"*MSU results are now sent through twice, once with microscopy and again when culture is complete. Microscopy alone is not that helpful for on-the-day decision making, I have already made my decision whether to prescribe or not based on history/exam and dipstick result. Adds to workload when going through mountains of results*" (salaried GP).

"*Having microscopy result for an MSU result and then a separate result for culture if sent for culture not only increases our workload of having to look at and file the result twice, but also can more easily miss a sterile pyuria, for example*" (salaried GP).

Clinical advice from microbiology services (working hours and out of hours)

This was highly rated by primary care users, with the majority of respondents (73%) of its users being very satisfied with clinical advice from microbiology consultants in working hours. Out-of-hours clinical advice from the microbiology consultant was used infrequently by primary care users, with over 50% of users having never used this service. Free-text boxes captured respondents' reasons for their rating, and were generally positive.

"*I have always appreciated being able to speak directly to a consultant colleague quickly. I have tried not to abuse the privilege*" (GP partner).

"*Very helpful consultants. Sometime busy and difficult to get hold of but most of the times are available on other end of phone*" (GP partner).

3. Service effectiveness

Service effectiveness in each of the seven domains generally echoed results obtained for service satisfaction. Services which were the most effective in meeting primary care users' needs were ordering and requesting tests, rated as "very effective" by 66% of primary care users. The majority of respondents felt that clinical microbiology advice was effective in meeting their needs, rating it as very or fairly effective by 64% and 21% of users in respectively. One GP partner praised the service: "*advice is usually efficiently and succinctly given. Excellent*".

Out-of-hours advice was rarely used by primary care users, with 63% of respondents having never used the service. This was echoed by comments from on GP partner who could "*only remember using this once or twice in over 25 years*". Of those who did use this service, 18% of users found this to be very effective in meeting their needs.

Again, issues of concern amongst primary care users pertained to sample collection and reporting of urine specimens.

Microbiology sample collection and delivery

38% and 30% of primary care users who utilised this service felt that it was fairly or very effective in meeting their needs respectively. Free-text comments echoed previous satisfaction results, with GP partners commenting on a request for "*a second run in the afternoon*" and having to "*supplement, driving into Colchester to deliver*" (GP partner).

Accessing/receiving test results

Just over half of respondents (53%) felt that this service was very effective in meeting their needs, with 26% fairly effective and 13% neither effective nor ineffective. GPs utilising this service felt that urine results did not meet their needs well, with two separate results resulting in a "*doubling of our workload in filing*" (GP partner). One nurse practitioner felt "*it would be better if we could assess the path system directly, rather than waiting for the results to be sent through to the surgery*".

4. Unmet needs

75% (n=12) of respondents stated there were no unmet needs, with one respondent having specific needs and another not known.

Whilst the majority of respondents did not have any specific unmet needs, there was concern regarding provision of MSU results.

Comments from a salaried GP expand on this:

"*...Think the service provided is good overall, especially access to consultants when needed. However, I think sending results for MSU twice in effect, with microscopy and then culture if need be, has increased our workload in having to look at the same result in effect twice. Also concerned that can miss a sterile pyuria more easily and would be good if the microscopy and culture could be on one result if has been sent for culture*".

5. Accessibility of microbiology services

Services rated highly for their accessibility included microbiology advice from a consultant or department. Primary care users appreciated consultants phoning in interim reports. Key findings are summarised below.

Access to microbiology consultant in working hours

100% of respondents using this service agreed or strongly agreed that it was easy to contact a microbiology consultant during working hours. Indeed, one GP partner identified that it was "*much easier than speaking to a physician or a surgeon*".

There was concern, however, at the ease of telephone access.

"*Always excellent advice. Getting through can sometimes be an issue getting though. From time to time no-*

one is available to take my call, but I have always had a call back" (salaried GP).

Access to microbiology consultant out-of-hours
Approximately 75% of respondents had not used this service, but despite being used rarely, one GP partner stated "*it's nice to know it is available*". Of those who have used the service, 18% agreed that it was easy to speak to a consultant out of hours.

Interim reports being phoned in prior to results appearing on the system, e.g. salmonella, group A streptoccocus
100% of primary care users utilising this service strongly agreed or agreed that this was helpful. Comments from GPs identified that this was a very useful service for their practice, allowing for prompt treatment and diagnosis.

"*Urgent faxed or phoned results would be dealt with by our duty GP ensuring patient is treated quickly, often avoiding worsening of their condition and in some cases deterioration and hospital admission*" (GP partner).

6. Specific improvements to microbiology services

Respondents were given a free-text box to feedback on specific improvement to the service or comments. The majority of respondents had no further comments or were generally satisfied with the service. Several GPs highly valued the consultant microbiology advice service, as reflected in the comments below.

"*Please don't give up making consultants available to us on the phone*" (GP partner).

"*I know it is old fashioned but being able to pick up the phone and speak to another human being is invaluable to me as GP*" (GP partner).

Discussion

This survey captured the views of primary care users utilising the microbiology services at CHUFT. A small sample size and limited breadth of respondents limit interpretation of results. While the majority were satisfied with the service and did not have any unmet needs, key areas for service improvement should focus on provision of urine results with potential release of results of microscopy and culture at same time.

The ability to generalise our findings is limited by the fact that only GP practices based on mailing lists provided by the CHUFT postgraduate centre were invited to participate, so this does not represent all primary care users within the North East Essex clinical commissioning group (CCG). Practice managers were asked to disseminate this survey to their staff and thus may not have captured all relevant primary users. It would be important to capture a larger number of respondents, including all practices within North East Essex, and a wider range of clinical roles. Thus this survey should be interpreted as a snapshot of primary care users within the North East Essex CCG.

Our results, however, demonstrate that the majority of needs of primary care users were being met by our microbiology service. Highest levels of satisfaction and effectiveness were with clinical advice via the microbiology consultants, and practitioners highly valued and rated this service. Primary care users in this survey appreciated the clinical advice and expertise from their microbiology colleagues – this would be provided as phone-in service thus offering 'live' advice to aid quick clinical decision making.

Primary care users also found that phone-in of interim reports prior to results appearing on the system were very helpful for users, with all respondents strongly agreeing or agreeing that that this was helpful for timely clinical diagnosis and appropriate referral for secondary care.

GPs, however, expressed frustration at the provision of new MSU results in two parts (microscopy and culture), which was a change from previous practice. Interestingly, our microbiology department implemented changes to urine reporting as a result of feedback from secondary care. This proved a source of dissatisfaction amongst GPs, citing that it meant a doubling of their workload regarding filing and reviewing results, and from a practical perspectice one GP highlighted that microscopy alone was "not that helpful on the day of decision making", and that immediate prescribing decisions were "based on history/exam and dipstick result". Some of these issues may be resolved with the provision of full results microscopy and culture at the same time.

GPs also highlighted issues with limited sample collection times, currently once a day in the morning. The potential for computer access to results directly from the pathology laboratory were also considered important by one respondent.

Whilst only providing a snapshot of primary care user satisfaction and effectiveness of their microbiology service, our simple online survey gained important information as to unmet needs and valuable user feedback. We have highlighted the importance of engaging with microbiology service users, including those in primary care, to ensure the development and provision of an effective microbiology service.

Dr Chee Ling Liu
Foundation Year 2 Microbiology

Dr Tony Elston
Department of Microbiology
Colchester General Hospital, Essex

Acknowledgements

We thank all the GPs, nurse practitioners and practice managers for their valuable feedback and participation in the survey. Thanks to Professor Elston for helping with the survey design.

References
Lord Carter of Coles. *Report of the Review of NHS Pathology Services in England.* Department of Health. 2006.
Strategic Projects Team. *Transforming Pathology Services. Views from patient and GPs.* NHS East of England, 2011. www.strategicprojectseoe.co.uk/uploads/files/Views%20from%20patients%20and%20GPs%20FINAL.pdf (Accessed 1 July 2015).

Professor Atholl Johnston

2,4 – Dinitrophenol (DNP)

The Editor's undergraduate biochemistry teaching featured 2,4-Dinitrophenol as a chemical that uncoupled oxidative phosphorylation. The clinical and toxicological relevance of this knowledge is outlined in this article by Atholl Johnston.

In recent years there have been a spate of deaths caused by 2,4–Dinitrophenol (DNP), the most recent being the 21-year-old student, Eloise Perry, in April 2015.[1] DNP is an industrial chemical that has had a number of uses over the years. These include being used to make explosives in the First World War, when it was said that 16 individuals died of DNP poisoning for every 10,000 tons of explosives manufactured. It is also used as an intermediate chemical to produce other products such as dyes and herbicides; but perhaps its most notorious use has been as a slimming drug.

The compound is frequently promoted online as a "fat burner" for bodybuilders and a weight loss aid for dieters. Consequently, it has been used by individuals who want to lose weight. In the early 1930s, after the discovery of DNP's ability to increase metabolic rate,[2] the chemical was marketed as a slimming drug. DNP disrupts the body's normal cellular processes that generate useful energy and allow normal muscle function. The result is that energy is wasted, and therefore fat is used up in the production of excess heat. However, the drug's dangerous and potentially fatal side effects, and the fact that patients taking the drug developed cataracts, resulted in DNP being withdrawn as a slimming product in the United States by the end of 1938.

Unfortunately, a little too much DNP can result in fatal hyperthermia.[3] In 1937 in the United Kingdom, the Chief Medical Officer warned of "the evils which have followed in the train of this noxious drug" for slimming. Much more recently, the UK Food Standards Agency highlighted DNP as "an industrial chemical known to have serious short-term and long-term effects, which can be extremely dangerous to human health" and advised "consumers not to take any product containing DNP at any level. This chemical is not suitable for human consumption".[4]

There have been the inevitable calls for the compound to be banned and for it to be classified as a Class C drug, with penalties for possession and supply,[5] but this is unlikely to achieve anything except criminalise users since the chemical is mostly bought online. Education and publicity are likely to achieve more in preventing the needless deaths of vulnerable individuals.

Professor Atholl Johnston
Professor of Clinical Pharmacology
Barts and the London School of Medicine and Dentistry, London

References
1. BBC News. 2015. Eloise Parry inquest: 'Diet pills' user sent death text message. www.bbc.co.uk/news/uk-england-shropshire-33635222 (accessed 11 August 2015).
2. Dunlop DM. The use of 2,4–dinitrolphenol as a metabolic stimulant. *British Medical Journal* March 24 1934, 524– 527.
3. Grundlingh J, Dargan PI, El-Zanfaly M, Wood DM. 2,4-dinitrophenol (DNP): a weight loss agent with significant acute toxicity and risk of death. *J Med Toxicol* 2011;7:205–212.
4. UK Food Standards Agency, 2012. Warning about 'fat-burner' substances containing DNP. http://webarchive.nationalarchives.gov.uk/20150624093026/http://www.food.gov.uk/news-updates/news/2012/5371/dnp-warning#.UJjqO2ci5rN (accessed 11 August 2015).
5. *The Guardian*, 2014. DNP victims' families lead fight to have fat-burning drug classified. www.theguardian.com/politics/2014/jan/14/dnp-victims-families-fat-burning-drug-reclassify (accessed 11 August 2015).

Amaka Nwagbara

National Pathology Week 2015

This year's National Pathology Week (NPW) is taking place on 2–8 November and the programme is busy with events around the country.

Running an event

There is still time to organise an event for NPW. If you are looking for ideas, you can visit the 'I Love Pathology' website at www.ilovepathology.org/events for ready-made event templates and resources suitable for a variety of audiences. Those who have organised an event in the past should consider running it again.

Promotional materials

The College has a selection of promotional materials, including the NPW poster, available free of charge for anyone running an event. To order, please visit www.ilovepathology.org/events/npy-promotionalmaterialsrequestform

Registration and prize draw

Remember to register all your NPW events on www.ilovepathology.org/events/registration-form.

This year, everyone who registers will be entered into a prize draw to win £100. We will be rewarding four event organisers – from England, Northern Ireland, Scotland and Wales – with cash prizes for raising awareness of pathology during NPW. Full details are on www.ilovepathology.org/events/national-pathology-week/competitions-and-prizes/register-your-event-and-win-a-prize

College-led events

National Pathology Week is a great opportunity for the College team to promote pathology to a diverse audience. This year we have five great events planned in London:

- 3 November: 'Pathology 19 ways' at Barts Pathology Museum – for schools
- 3 November: 'Virtual Autopsy' at the Old Operating Theatre – for members of the public
- 4 November: 'Where's my biopsy result?' at the Hunterian Museum – for medical students
- 5 November: 'Microbiology Open Day' at Public Health England – for GCSE students
- 6 November: 'Your body, your consent' at the Hunterian Museum – for A-level students.

NPW exhibition

We are excited that the College has been successful in a bid to hold an exhibition in the House of Commons, to herald our NPW celebrations. The exhibition will run from Monday 26 October to Friday 30 October 2015. We are excited to bring pathology to the decision-makers, engage more with politicians and policy-makers and also demonstrate the contribution that pathology makes to healthcare. During the week we will deliver hands-on, practical activities and also debunk some of the myths and misconceptions surrounding pathology.

For up-to-date information about NPW, please visit www.ilovepathology.org. For advice, help and support, please contact your local Public Engagement Regional Coordinator (details at www.ilovepathology.org/Regional+Coordinators) or email amaka.nwagbara@rcpath.org. We hope you will join us in raising the profile of pathology.

Amaka Nwagbara
Communications Team Administrator

Stuart J Cannon

The Big Bang Fair

On 25 June eight healthcare science trainees from the South West set up a stand at the regional 'Big Bang Fair' held at the University of Exeter. Stuart Cannon ran a stand to promote healthcare science in the NHS.

On 25 June eight healthcare science trainees from the South West set up a stand at the regional 'Big Bang Fair' held at the University of Exeter. The Big Bang Fair is a science fair where professionals who work in science, technology, engineering or maths (STEM) can showcase their area of expertise and provide insight into future careers to the visiting 11–17 year olds.

There is also a large focus on the students themselves showcasing their science projects, with prizes for the winners. The student winners can also take their projects along to the national Big Bang

From left to right: Celia Duff-Farrier (Genetics), Richard Clements (Cardiac), Jodie Weston (Vascular), Emma Partridge (Vascular), Phil Hickman (Vascular), Laura Haworth (Vascular), Stuart Cannon (Bioinformatics), Martin Wray-Cook (Medical Physics)

Fair and showcase their great ideas on a slightly larger stage, with more potential prizes!

We were promoting healthcare science in the NHS. Collectively, we represented these five disciplines and, as well as explaining our roles, we also ran some interactive activities:

- genetics: extracting DNA from fruit so it becomes visible
- bioinformatics: using computers to look up DNA sequences
- vascular science: scanning veins and arteries
- cardiac science: a model of the heart and example technology, e.g. pacemakers
- medical physics: using a radiation detector to pick up background radiation

All in all, the Big Bang Fair was a great opportunity to engage with the younger generation and hopefully we inspired a few budding scientists. We would definitely recommend it to others!

Stuart Cannon
Clinical bioinformatics trainee

Dr Preethi Gopinath

Grace Boyle

Living Autopsy at the Shuffle festival

On Saturday 1 August 2015 the College supported a 'Living Autopsy' event at Shuffle Festival in Tower Hamlets Cemetery Park, one of the original 'Magnificent Seven' cemeteries and the peaceful, now wooded resting place of 380,000 people.

The living autopsy was performed by Dr Preethi Gopinath, who brought with her a brilliant range of equipment and materials to guide the audience from their reality of a sunny outdoor festival to an imagined autopsy room. An audience of approximately 50 people, many of whom had come specially to attend the event, packed into the unique venue of Shuffle's 'Migration Pavilion', a beautiful indoor/outdoor construction in a glade in the woods.

Standing over a living volunteer, who had gamely stripped to the waist in the forest to climb on a table and act dead, Dr Gopinath began by explaining why autopsy was important and the many roles that pathology fulfills in our society. To demonstrate the process of autopsy she drew lines of incision on the volunteer, and passed autopsy instruments around the audience, who were curious and delighted to be able to handle tools that they would otherwise be very unlikely to ever come into contact with.

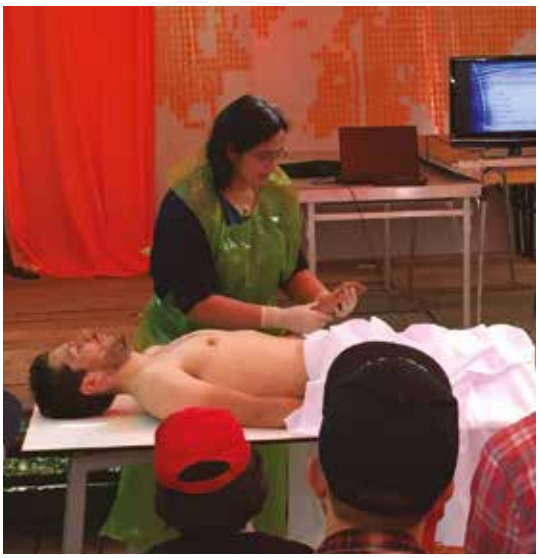
Aided by an impromptu forest monitor (Dr Gopinath's own screen), causes of deaths such as myocardial infarction and pulmonary embolism and the effects of smoking and alcohol were illustrated with images of emphysematous lungs and liver cirrhosis.

This year's theme of the festival – which always incorporates art, science, spoken word, music and community engagement – was 'Movement, Migration and Place' and Dr Gopinath related her presentation to this theme by including information about the conventions for death and autopsy for different nationalities and faiths.

Shuffle is a community festival, and the audience was a varied one with people from different backgrounds and a wide age range, including a few local 17 year olds who had worked on the festival's own student engagement programme.

The event ended with a question-and-answer session that lasted at least 15 minutes, with fascinated audience members asking practical questions such as the risks to the pathologist when performing an autopsy, new discoveries made at autopsy and the institutional structures in place to deal with death. After the audience had departed, Dr Gopinath was kept talking by the cadaver who, relieved of his death duties, sat up and began asking his own questions about the autopsy process!

"I thought it was a brilliant and incredibly imaginative way to engage the public in science," said Jane O'Sullivan, a community manager for engagement at the local George Green's School



Dr Preethi Gopinath with her living volunteer at the Shuffle Festival

in Tower Hamlets, "and just generally very informative. I really want to get someone to come and do something similar at my school as part of a science careers info day. So much more exciting than someone just talking about their job!" Jane has since written to let us know she has already visited The Royal College of Pathologists' website to find out more.

Shuffle is extremely grateful to the College and Dr Gopinath for supporting this event, which we found a great success. It fitted in well with our science programme, which is unusual, ambitious and varied, and this year also included London's first treehouse restaurant and a '4D' (multi-sensory) cinema built around virtual reality headsets.

Grace Boyle
Shuffle Science Director
www.Shufflefestival.com

Dr Preethi Gopinath
ST5 Histopathology
Princess Alexandra Hospital NHS Trust

Miss Ayuen Lual

Kingsley Academy Science Day – disease detectives workshop

On 14 July a science day was held in Kingsley Academy in Hounslow for Year 7 students (aged 11–12). Ayuen Lual ran a workshop for students, infecting them with gastroenteritis and diarrhoea!

There were various STEM workshops and each ran for 50 minutes (repeated three times). The idea was to make sessions as interactive as possible, encouraging students to think about how science and technology relates to the real world.

The College and Public Health England delivered a workshop based on the investigation of an infection. The students also learnt about hand hygiene and preventing the spread of disease.

Students were 'infected' with a microorganism sticker and, through guided discussion, worked out which disease/infection they had. For ease, one illness was used for the rest of the investigation, in this case, gastroenteritis and diarrhoea. The students choose the appropriate clinical sample ('faeces', AKA chocolate milk) and at this point moved from patient to laboratory scientist. Different types of laboratory tests were discussed, and the students plated out the faeces onto agar plates whilst dressed in full laboratory personal protective equipment. We then looked at fake plates and confirmation techniques, and identified which organism they could be infected with. They measured zones for antibiotic susceptibility, and decided which antibiotics may result in the best outcome and why. Following this, the students undertook a hand-washing exercise using UV gel; they were quite shocked to see that their current techniques left much to be desired!

By the end of the session they were fully 'cured', with an understanding of the process involved with diagnosing and treating an infection, antibiotic stewardship and the importance of hand washing.

The workshop worked really well when the groups were small, but didn't work so well when groups were larger. The workshop was very hands on and there wasn't enough space or resources to accommodate the larger groups. In the future it would be good to adapt the workshop so that the students could see some results. Instead of only plating fake samples, the students could also plate swab their hands. Pictures of the results could then be sent to the individual students. This would support the hand-washing section and would nicely complete the workshop.

Ayuen Lual
Standards Microbiologist, Standards Unit
External Quality Assurance Department
Public Health England, London

Dr Preethi Gopinath

Dr Saimah Arif

Practical pathology and ethical debate

Dr Preethi Gopinath (ST5 Histopathology) organised recent two public engagement events, a pathology workshop in June and a dedicated pathology session in July 2015.

The first was a pathology workshop in June 2015 for Year 6 student group at Forest School, London, with Dr Saimah Arif (consultant histopathologist and Forest School parent) and Ms Lisa Greenhalgh (lead biomedical scientist). Preethi, Saimah and Lisa facilitated practical activities including hand-washing with UV detection, cheek-smear microscopy, the College's organ resource activity and a lamb's heart dissection. The event was a great success, with one participant stating: "I did not want the event to end because I enjoyed it so much and loved taking part in all the experiments. It was really cool because I felt like a real scientist, doing something important".

Students at the dedicated pathology session

The second event was a dedicated pathology session within a week's residential course for 60 sixth-form students, run by the Social Mobility Foundation in London in July 2015. I was helped by volunteers Dr Hasan Rizvi, Dr Priya Bhagwat, Dr Geetha Devarajan and Dr Rachel Rummery. This event included group discussions on ethical issues related to pathology, with student presentations and a demonstration of an autopsy on a living volunteer, using images and autopsy instruments as visual aids. Pathology awareness significantly improved after the event. One student wrote: "I enjoyed how thorough the presentations were; clearly you are all very passionate about your work! ...The live autopsy was very interesting and insightful." Another wrote: "I'm now much more aware about pathology as a career path".

Dr Preethi Gopinath
ST5 Histopathology

Dr Saimah Arif
Consultant Histopathologist
Princess Alexandra Hospital NHS Trust

Science communication training

The next session of science communication training will take place at The Royal College of Obstetricians and Gynaecologists in London on Thursday 11 February 2016. Run by Karen Davies from the Science Museum, the session will be an excellent opportunity for members to gain experience in organising events and working with the public. Places are limited and will be offered on a first-come, first-served basis. For information on the terms and conditions, see www.ilovepathology.org/whats-in-thenews/science-communication-training. To attend or for more details, please contact Amaka on amaka.nwagbara@rcpath.org or 0207 451 6717.

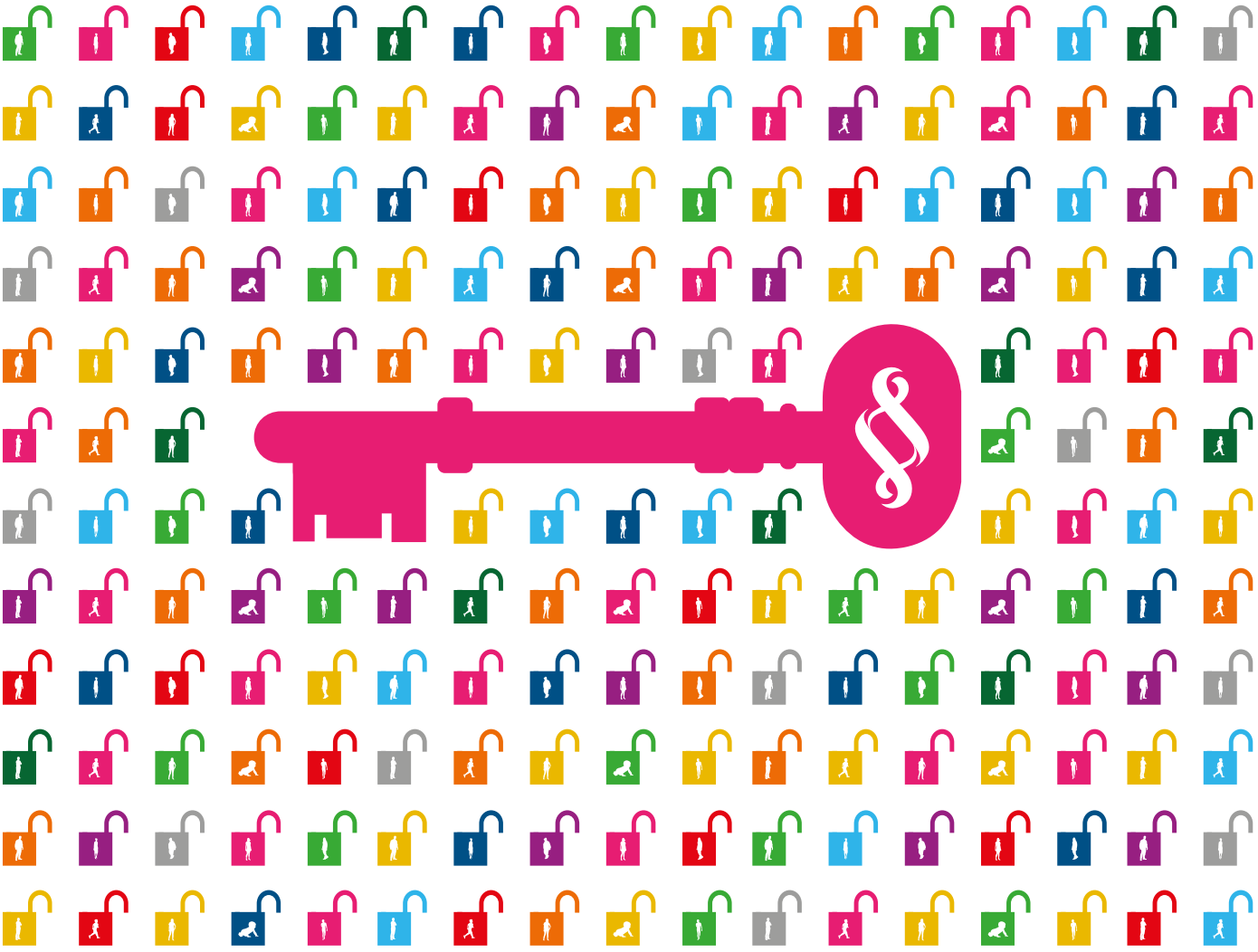
Advanced science communication training

The next advanced science communication training will take place on 27–28 July 2016 in London. This workshop aims to enhance existing communication skills and provide new ideas for public engagement events. Graduates of our basic science communication training course are invited to learn how to engage the public with pathology and organise hands-on activities for an adult audience.

Day 1 of the workshop will take place at the Science Museum on Wednesday 27 July, from 5.30 pm-8.30 pm during a 'Lates' event. Part 2 of the workshop is the following day at The Royal College of Psychiatrists. It is a interactive, full-day course where participants critique the 'Lates' event, share experiences of their own events and develop creative ideas for future events. The training, facilitated by Karen Davies and Jane Dowden from the Science Museum, will be a mix of group exercises, short presentations and small group discussions. To book your place or for more information, please contact Amaka Nwagbara on amaka.nwagbara@rcpath.org

National Pathology Week

2–8 November 2015



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LETTERS

The College welcomes informed contributions to the conversations generated by letters from Fellows. As the BMS histopathology reporting pilot prepares to deliver its first output, Fellows need to debate how best to integrate these well- trained scientists into diagnostic services, how to develop their careers, and whether and how we might develop the careers of bright and interested life sciences graduates through the Higher Specialist Scientific Training Programme. The College writes the curricula and delivers the assessments for HSST. Molecular pathology training is well advanced and the College are looking to involve more pathologists in the assessment process. Is this the time to expand HSST into other areas of Cellular Pathology? Please let us know your views.

Please mark correspondence for the attention of the Editor of *The Bulletin*, and email it care of the Publications Department at **publications@rcpath.org.** The deadline for the January 2016 issue is **6 November 2015**.

The future of the Coronial autopsy service

Dear Editor

I thank David Bailey for his review of this issue in the July 2015 issue of The *Bulletin*, which is perhaps the most important and contentious facing pathology in the British Isles (nearly 20% of all deaths in England and Wales are investigated by Coronial autopsy). I also thank him particularly for his speed in incorporating the results of the survey, which I filled in only a month ago. As he implies, it would be even more powerful if every employed histopathologist completed the questionnaire.

The one result I found disappointing concerns reasons that might prompt consultants to restart Coronial autopsy work: 80% of respondents did not agree with Coronial work being included in paid NHS patient administration systems (current or additional). Conversely, I note that 1% of responders (which was five pathologists) stated that this measure had already been undertaken to bolster a failing service (Table 3).

Fifty years ago, Mr Norman Brodrick QC was appointed to lead a committee that reviewed death certification and Coronial practice, *inter alia*. Recommendation number 96 of his 1971 report stated: "The provision of a pathology service for Coroners should become the responsibility of the NHS". *Plus ça change*.

We read in a recent *Journal of Clinical Pathology* about the imminent death of the hospital-consented autopsy (Turnbull, Osborn and Nicholas, 'Hospital autopsy: endangered or extinct?', *JCP* 2015, published online in June), which oddly gives the impression that Coronial autopsies do not count for much in the quality-control role of autopsies within modern medicine. This is nonsense. You only have to look at inquests into complicated hospital deaths.

Surely, if the autopsy is going to have a continued central place in medicine – as I believe it does – then the distinction between 'academic hospital consented' versus 'Coroner-instructed' investigations of the dead needs to disappear or be blurred. All cases need to be investigated as thoroughly as the scenario determines. All interested parties will benefit by placing Coronial-funded and -instructed autopsies within NHS work, and performing them to quality levels demanded of pathology by the NHS.

The pathologists will lose their fees, but their work becomes part of planned activity (PA) and will be as rewarding as the diagnostic biopsy and cytology work. This reward could assuage the 80% who appear not to favour this approach. Yes, it is going to cost more, since PAs are more expensive than the ridiculously static basic fees for Coronial autopsy work, which have remained unchanged for more than a decade. However, the alternative is going to be the collapse of the whole system, as Dr Bailey discusses, with dire consequences for relatives and public health. It is much better that, as pathologists, we plan and control the refashioning of the system of death investigation in advance of such a collapse. We need a campaign, preferably from the College, for the radical change that Brodrick recommended ages ago.

Professor Sebastian Lucas
Department of Histopathology
St Thomas' Hospital, London

Biomedical science histopathology reporting

Dear Editor

I read with interest your article reviewing the progress of the BMS Histopathology Reporting Pilot in the January 2015 issue of The *Bulletin*. The reasons for delays in implementation are alluded to in the article and in some ways we are behind the game – we already work in a devolved healthcare environment, with blurring of boundaries between professional groups. I have no doubt that the graduates of this programme will prove the doubters wrong and form an integral part of the histopathology service of the future. My only concern with the current proposal is it is inherently constrained in that it limits the talent pool to biomedical scientists.

Some will be aware of the new generation of physician associates currently being trained in the NHS. Physician associates support doctors in the diagnosis and management of patients. They are trained to perform a number of roles, including taking medical histories, performing examinations, diagnosing illnesses, analysing test results and developing management plans. They work under the direct supervision of a doctor. This is a new and developing role, providing a novel career option for high-calibre life-science graduates (a 2:1 degree is required). A small number of universities are pro-

viding the two-year course at the current time and, with further changes in the role of junior doctors afoot, this is likely to develop further in the coming years.

I recognise that BMS histopathology reporting is a pilot and may yet provide further opportunities for expansion. If we offered such training to life-sciences graduates, either through development of the physicians associate scheme or our own clinical scientist programme (and hence the Fellowship examination of The Royal College of Pathologists), then such opportunities could be broadened.

Dr Daniel Scott
Consultant Histopathologist
Head of School of Pathology
Health Education Yorkshire and the Humber

Response from Dr Rachael Liebmann

Dear Dr Scott

It is gratifying to all of us who have been involved to see that the progress the biomedical scientists (BMS) histopathology reporting pilot has made is welcomed by such a senior educationalist. While I agree with you that "the graduates of the programme will prove the doubters wrong and form an integral part of the histopathology service of the future", I consider the doubts to be the sincerely held concerns of our histopathology colleagues. These concerns justified a cautious approach to implementing such a new way of working and also justified the setting up of a rigorous examination process overseen by College Fellows. At the time of writing, we are approaching the final examinations of the pilot participants completing their third year and nerves are already beginning to emerge among the participants.

In order to prove that the concept that histopathology reporting could safely be carried out by non-medics, at the outset of the pilot we limited the recruitment to senior BMSs. This was because these individuals, by years of experience in histopathology laboratory BMS practice, had both the knowledge and experience of insiders to the profession and also had easy relationships with consultant histopathologists prepared to take on the training responsibility. Limiting the recruitment to established BMSs also allowed the College to run a pilot without the funding required for new positions.

Your letter comes at an opportune time for this development. Initial recruitment to the pilot was on a small scale. In subsequent years the pilot expanded rapidly and now involves a large number of histopathology departments spreading acceptance of the theory of reporting of histopathology specimens by appropriately trained and qualified scientists. However, recruitment to the current programme, now overseen by The Institute of Biomedical Science/RCPath Conjoint Board, has slowed. There are many possible local and national reasons for this, but as a result the potential for the broadening of access to histopathology reporting by life-sciences graduates again seems a possibility worth pursuing.

I look forward to picking up the conversations with Health Education England.

Thank you again for your interest and support for further development of this initiative.

Dr Rachael Liebmann
Registrar RCPath

New Honorary Fellows

Allan Wilson and Professor Joannes Henricus Josephus Maria (Han) van Krieken were admitted to Honorary Fellowship of the College at the New Fellows' Ceremony at Trinity House in March 2015. The following citations were given at the ceremony.

Allan Wilson

Allan Wilson is a senior biomedical scientist with advanced practitioner status in cytology at Monklands Hospital. He has spent the bulk of his career working in the field of cervical cytology. He was one of the first biomedical scientists to take up a senior role in cervical cytology and played a major part in developing cervical cancer screening policy in Scotland.

He has worked closely with many Fellows of this College throughout his career and his outstanding contribution to cervical cytology is widely recognised. Allan Wilson's dedication to service development and improving standards in cervical cytology deserves the recognition of this College.

Allan Wilson and Dr Suzy Lishman

It is hard to overestimate the impact that Allan has had on cervical cytology in the UK. He was the Treasurer and then Secretary for the British Society for Clinical Cytology (BSCC), an organisation primarily of pathologists, and was a very significant part of the team which engineered the merger of the BSCC with the National Association of Cytologists to form the BAC. He was the inaugural Chairman of the BAC and will take over the presidency next month. The formation of the BAC was a landmark, which has been keenly watched around the world as the first fully merged medical and non-medical cytopathology society, well placed to maintain the interests of patients as cervical cytology undergoes massive changes with the introduction of HPV. I anticipate that Allan will have a very high-profile role as his presidency is likely to encompass the period when a move to HPV primary screening is announced.

Cervical screening in Scotland owes much to Allan, who is at the heart of planning and managing the service. It has been very innovative, introducing a new national computer system, automated screening and laboratory centralisation, all well ahead of England. In addition to all this activity, Allan is a highly respected clinical opinion and trainer, along with being an elected member of the Institute of Biomedical Science Executive.

In our opinion, Allan is by some margin the most influential biomedical scientist in the UK currently working in cytology.

Professor Joannes Henricus Josephus Maria (Han) van Krieken

Han van Krieken is a pathologist with special expertise in the fields of haemato-pathology and the pathology of the gastrointestinal tract. Since 2004 he has been Professor of General Pathology and Chairman of the Department of Pathology, Radboud University Nijmegen Medical Centre, Nijmegen and, since 2009, Chairman of the Radboud University Centre for Oncology. He is currently President of the European Society of Pathology and was formerly its Treasurer (2003–2011).

His research interests focus on the understanding of disease, especially the development of cancer of the immune system and colorectal cancer. His research has embraced both basic experimental research involving animal models and cell lines and more clinically applied research on patient material including all aspects of tissue evaluation (histology, immunohistochemistry, *in-situ* hybridisation, tissue microarray) and molecular methods (clonality assessment, MSI-testing, high-throughput genomics and proteomics).

Han van Krieken is the author or co-author of more than 350 peer-reviewed articles (cited more than 13000 times; Hirsch-index 67) and several chapters in books, including *Medical Oncology*

Professor Joannes Henricus Josephus Maria (Han) van Krieken and Dr Suzy Lishman

(Dutch, editor), *Histology for Pathologists* (spleen), *Oxford Textbook of Medicine* (gastric cancer), *WHO Classification of Haematological Malignancies* (lymphoproliferations in immune deficiency), *WHO Classification of Gastrointestinal Tumors* (lymphomas, premalignant lesions), *Paediatric Haematopathology* (lymphomas in immunodeficiency); IARC book on prognostic factors (gastric cancer) and the ESMO handbook on cancer diagnosis. He serves on the editorial board of the *American Journal of Surgical Pathology* and the *Journal of Pathology*, is managing editor of *Virchows Archiv* and is the editor-in-chief of the *Journal of Hematopathology*. Since 2011 he has been a member of the German Academy of Sciences Leopoldina. He is Chair of the Pathology Euroclonality Group, Chair of the Euro-FISH group and Chair of the European Quality Assurance Program for KRAS testing in colorectal cancer of the European Society for Pathology.

His substantial contribution to postgraduate education has largely been related to the introduction of molecular diagnostics in pathology. Han van Krieken organises a course on clonality testing twice a year, and gives lectures at most European Congresses for Pathology and Hematopathology. He has given invited lectures at many institutions and meetings of national societies, including the German, Danish, Spanish, Hungarian, Greek, Belgium and Portuguese societies for pathology.

Veterinary pathologists honorary fellows

Three leading veterinary pathologists were recognised by The Royal College of Veterinary Surgeons (RCVS) at the RCVS Open Day on 10 July.

Professor Don Kelly was admitted to Honorary Fellowship of the RCVS in recognition of his lifetime of service to veterinary pathology on the national and international stage. In his oration Professor Stuart Reid, outgoing RCVS President, praised Professor Kelly for being a leader in the field of veterinary pathology and for inspiring generations of trainee veterinary pathologists, particularly during his tenure at the University of Liverpool.

Professor Cheryl Scudamore, Head of Pathology at the MRC Harwell and current Chair of The Royal College of Pathologists' Specialty Advisory Committee on Veterinary Pathology, received the award of Fellowship by Meritorious Contributions to Learning, in recognition of her scholarship in the field of laboratory animal pathology.

Professor Ken Smith, Head of Pathology at the Royal Veterinary College, received the award of Fellowship by Meritorious Contributions to Learning in recognition of his work on the pathogenesis of equine herpesvirus-1 and -4 infections, which are an important cause of respiratory disease, pregnancy failure and occasionally debilitating neurological disease in horses.

Professor Don Kelly, Professor Cheryl Scudamore and Professor Ken Smith receiving their Fellowships

The award of Fellowship is the highest award of the RCVS and is seen by many as the ultimate goal of a veterinary surgeon's career. For three RCVS Fellowships to be awarded to veterinary Fellows of The Royal College of Pathologists at a single ceremony emphasises the very close links between the RCVS and the RCPath, and the importance of an ongoing partnership in maintaining the quality of veterinary pathology training and comparative pathology research in the United Kingdom and further afield.

Diana Maxwell
Committee Administrator
SAC on Veterinary Pathology

Medical consultants: new appointment offers

The following appointments have been offered (as at 7 August 2015), and are naturally subject to acceptance by the applicants. The lists are prepared by the College's Workforce Department, on the basis of returns completed by College Assessors on Consultant Advisory Appointment Committees and submitted by the above date. (Please note, however, we receive no return following 20% of AACs.) Any forms received after this date will be published in the next issue. If doctors fail to take up their posts or have any additional information, they should inform the Workforce Department on **workforce@rcpath.org**. Whenever you move home or job, please remember to inform the College Membership Department too, sending your new details to **membership@rcpath.org**

Region	NHS Trusts/Health Authorities	Base Hospital	Appointee
Chemical pathology			
East of England	West Hertfordshire	Watford General	Dr Kevin AT Stuart
South West	Plymouth	Derriford	Dr Tony Y Avades
South London	Epsom and St Helier	Epsom General	Dr Nikhil Johri
Haematology			
East Midlands	United Lincolnshire	Pilgrim	Dr Juan F Contesti
East of England	Norfolk and Norwich	Norfolk and Norwich	Dr Nimish NK Shah
East of England	Norfolk and Norwich	Norfolk and Norwich	Dr Katherine M Rice
East of England	East & North Hertfordshire and UCL	Across trusts	Dr Momin R Ahmed
North, Central and and East London	Barking, Havering and Redbridge	Queens and King George	Dr Sandra Hassan
North, Central and East London	Homerton	Homerton	Dr Chauhan-Azad
North East	City Hospital Sunderland	Across sites	Dr Emily A Graves
North West London	Imperial College	Hammersmith	Dr Aristeidis Chaidos
North West London	London North West Healthcare	Northwick Park	Dr Vinod Devalia
North West London	London North West Healthcare	Northwick Park	Dr Siamak Arami
North West London	Royal Marsden	Royal Marsden	Dr Kevin D Boyd
North West	The Christie	The Christie	Dr Anna Z Castleton
South London	St George's	St George's	Dr Alison SB Thomas
South London	King's College	King's	Dr Subarna Chakravorty
South London	Croydon	Croydon University	Dr Jane C Ritchie
Thames Valley	Oxford	John Radcliffe	Dr Deborah Hay
Thames Valley	Oxford	Churchill	Dr Susan E Shapiro
Thames Valley	Buckinghamshire	Stoke Mandeville	Dr Renu Riat
Wessex	Portsmouth	Queen Alexandra	Dr Edward I Belsham
Wessex	Poole	Poole	Dr Louise S Fraser
West Midlands	NHS Blood and Transplant	NHSBT and University Hospital Birmingham	Dr Suzanne M Hall
West Midlands	Royal Wolverhampton	Across sites	Dr Shabeeha K Rana
Yorkshire and the Humber	Airedale	Airedale General	Dr Vishnu P Banumukala-Madhava-Rao
Yorkshire and the Humber	Leeds Teaching	St James's	Dr Talha Munir
Histopathology/cytopathology			
East Midlands	Derby	Royal Derby	Dr Nirav P Gandhi
East Midlands	Kettering General	Kettering General	Dr Elizabeth A Webb
East Midlands	Nottingham	Nottingham City	Dr Somaia EAEW Elsheikh
East Midlands	Nottingham	Nottingham City	Dr Ashu Loona
East Midlands	University Hospitals of Leicester	Across sites	Dr Jane A Kitchen
East of England	Bedford	Bedford	Dr Graeme Maidment
East of England	Bedford	Bedford	Dr Ashraf EK Ibrahim

LETB Region	NHS Trusts/Health Authorities	Base Hospital	Appointee
East of England	East and North Hertfordshire	Across sites	Dr Lisa Mears
East of England	Luton and Dunstable	Luton and Dunstable	Dr Stefano Crippa
East of England	Mid Essex	Broomfield	Dr Manisha Ram
East of England	West Suffolk	West Suffolk	Dr Lilani M Ranasinghe
East of England	West Suffolk	West Suffolk	Dr Thomas R Gowanlock
North West	Central Manchester	Manchester Royal Infirmary	Dr Nicholas P Mapstone
North West	East Lancashire	Across sites	Dr Madhuri V Deolekar
North West	East Lancashire	Across sites	Dr Muammer A Al-Mudhaffer
North West	Wirral University	Arrowe Park	Dr Mohanad FA Alalusi
North West	Wirral University	Arrowe Park	Dr Keloth Pradeep
North West	Royal Liverpool & Broadgreen and Aintree	Liverpool ClinLabs	Dr Mared P Owen-Casey
North West	Royal Liverpool & Broadgreen and Aintree	Liverpool ClinLabs	Dr Niki E Stefanos
Northern Ireland	Belfast Health and Social Care	Belfast City	Dr Shauna Casey
South West	North Bristol and University Hospital Bristol	Across trusts	Dr Silvia Planas-Roman
South West	North Bristol and University Hospital Bristol	North Bristol	Dr Edward A Sheffield
South West	Plymouth	Derriford	Dr Robert Hadden
South West	Royal Cornwall	Royal Cornwall	Dr James E Garvican
Thames Valley	Royal Berkshire	Royal Berkshire	Dr Hanan SEO El-Mahallawi
Thames Valley	Royal Berkshire	Royal Berkshire	Dr Yasser Zoroofchian-Moghaddam
Thames Valley	Oxford	John Radcliffe	Dr Ruchi Tandon
Wessex	Hampshire	Across sites	Dr Nada K Ibrahim
Wessex	Hampshire	Across sites	Dr Rajesh H Rawlani
West Midlands	The Royal Wolverhampton	New Cross	Dr Abigail Pugh
West Midlands	The Royal Wolverhampton	New Cross	Dr Kelvin M St Pierre-Robson
West Midlands	Worcestershire	Across sites	Dr Terence J Jones
West Midlands	Walsall	Manor	Dr Amandeep S Mann
Yorkshire and the Humber	Leeds Teaching	St James's	Dr Eldo T Verghese

MM, CCDC, virology and epidemiology

East Midlands	Sherwood Forest	King's Mill	Dr Poonam Kapila
East of England	Norfolk and Norwich	James Paget	Dr Davis Nwaka
East of England	Norfolk and Norwich	Queen Elizabeth	Dr Eleni Tsiouli
North West	Blackpool Teaching	Blackpool Victoria	Dr Nurfarah Sabtu
North West	Royal Liverpool University Hospital and Aintree University Hospital	Liverpool Clinical Laboratories	Dr Jenifer C Mason
North West	Salford Royal and the Christie's	Across trusts	Dr Fozia Tariq
North West	University Hospital of South Manchester and Stockport and Tameside	Stockport	Dr Dominic A Scarr
South London	Guy's and St Thomas	St Thomas	Dr Mary F Varia
South London	St George's	St George's	Dr Angela C Houston
South West	Royal Devon and Exeter	Royal Devon and Exeter	Dr Robert J Porter
South West	Great Western	Great Western	Dr Gloria Kiapi
Thames Valley	Oxford	Across sites	Dr Philippa C Matthews
Wales	Betsi Cadwaladr	Across sites	Dr Deepannita Bhattacharjee
Yorkshire and the Humber	The Mid Yorkshire	Across sites	Dr Elizabeth M Trautt

Dr Marian Malone

Appreciations

Dr Marian Malone

The death has occurred of Dr Marian Malone, paediatric pathologist and long-time Fellow of the College. For nearly thirty years a consultant at Gt Ormond St Hospital for Children, she was for many the face of paediatric pathology in the UK.

Marian was born in Dublin. Her father was Professor of Psychiatry at University College Dublin and her mother had been Assistant Master at the National Maternity Hospital, Holles St, the first woman to hold the post. Marian was educated by the Loretto nuns in St Stephens Green and did her undergraduate studies at University College, qualifying MB BCh BAO in 1977. Her house jobs were in the Mater Misericordiae Hospital in Dublin and in July 1978 she joined the annual exodus of Irish graduates to London.

Her pathology career began at the London Hospital a few weeks later under the direction of Professor Sir Colin Berry. It was he who introduced her to paediatric pathology and at a presentation by Professor Brain Lake from Great Ormond St Hospital (GOSH) on the histochemistry of Hirschsprung disease her interest was ignited. Shortly afterwards a trainee position became vacant at GOSH under Professor Albert Claireaux, and Marian was appointed. With the exception of a short attachment to Kings College Hospital, where she met her future husband, Peter Rose, she was to spend the rest of her professional life there.

She was admitted to membership of the College by examination in Autumn 1984, becoming a Fellow in January 1996. She joined the panel of examiners for the College in October 1998, chaired the examiners panel in Paediatric Pathology from 2003–2008, and served as an examiner until her retirement. She was a member of the Specialist Advisory Committee in Paediatric Pathology and served on the Histopathology CATT from 2008–2012. She was instrumental in gaining approval of the paediatric and perinatal pathology curriculum by the UK General Medical Council in October 2012.

She was appointed as Consultant Histopathologist and honorary Senior Lecturer at GOSH in 1986. The department grew under the guidance of Prof Tony Risdon, and moved into its purpose-built new premises – the Camelia Botnar Laboratories – in 1996. With the expansion of the department, although sharing in the general workload, Marian developed a special interest in dermatopathology and immunopathology and ran the multidisciplinary team meetings in both these disciplines. She had a particular interest in the disorders of histiocytes. In 2000 she became chair of the Histiocytosis Pathology Reference panel of CCLG. Succeeding her mentor and good friend, Dr Ron Jaffe, Pittsburgh, Marian became pathology advisor at the Nikolas Symposium on Langerhans' cell disease held annually in Greece.

Marian became Specialty Lead in Paediatric Laboratory Medicine at GOSH in 1999. In that role she escorted HM the Queen around the laboratories on the occasion of the royal visit as part of the 150th anniversary celebrations of the hospital. Marian was keen on integrated working across pathology and was assisted by a succession of capable laboratory managers. She introduced Lean methods to the laboratories in 2008. She established a core blood sciences laboratory in 2010 that she invited Lord Carter of Coles to open.

Marian trained many of the paediatric pathologists practising in the UK. For ten years she ran the annual GOSH Pediatric Pathology Course. She was tutor on the IPPA Advanced Courses in Paediatric Pathology held in Portugal in 1994 and Budapest in 2006 and for many years she lectured on paediatric pathology at the Sheffield Diagnostic Histopathology Course. She was an invited speaker at many international meetings on topics in paediatric pathology but most especially on the histiocytic disorders.

She was author of over 100 publications. She was co-author in 2009 with her GOSH colleagues of *Diagnostic Pediatric Surgical Pathology* and wrote chapters in many pathology and clinical books. *A Textbook of Paediatric Dermatopathology* was interrupted by her final illness and had to be abandoned. She was a member of the Editorial Board, and European Editor, of the journal *Pediatric and Developmental Pathology* from 2001 onwards, and was a reviewer of papers in other journals. Being on the editorial board of *Pediatric and Developmental Pathology*, Marian regularly attended the meetings of the Society for Pediatric Pathology (SPP) in North America and became well known to the North American paediatric pathology community.

Marian was a member of the British Medical Association and many pathology societies. In addition to her membership of the Paediatric Pathology Society, of which she was an ex-officio council member, she was a founder member of both the British Paediatric Pathology Association and the London Perinatal Pathology Network. She was a National Inspector for Clinical Pathology Accreditation (CPA) UK and a Pathology Assessor for the confidential enquiries CEPOD and CEMACH. She held advisory posts on paediatric pathology with NHS London and

was chair of the Children's Cancer CRG, a post that involved her in planning children's cancers services throughout Britain. In recognition of her contribution to children's health in the UK, she was awarded an Honorary Fellowship of The Royal College of Paediatrics and Child Health in November 2014.

Despite her many achievements Marian was modest. She had a strong religious faith that she wore lightly, but that provided immense inner strength. She was not afraid to stand up for her principles. She carried out her duties diligently and always with a smile and with a kind word for everyone. She liked nothing more than to hear people's stories and took genuine delight in people's company. She had a large extended family in Ireland with whom she was in frequent contact, and visited Dublin regularly.

She retired early, in December 2014, following a diagnosis of advanced cancer. Her final year, despite the inconveniences of her treatment, was her busiest ever and she saw her many friends frequently and enjoyed their company greatly. She was a model of positive attitude and radiated *joie de vivre*. Her untimely death has deprived us of a good colleague and true friend whom we were fortunate to know and whose like we shall not see again.

Dr Michael Ashworth

Dr George Alan Rose

Dr George Alan Rose

Dr George Alan Rose was the consultant chemical pathologist of the St Peter's Group of hospitals in Covent Garden, London. He specialised in kidney stones and chemical analysis. From 1965 until he retired in 1990, he ran the laboratories, organised his research and prepared publications and lectures for national and international conferences and symposiums.

Born in London in June 1925, he was the second of three sons of Flora and Edward Rosen, the founder and CEO of Ultra Electronics. After being evacuated in 1939 from UCS to Canford School in Wimborne, Dorset, Alan completed his A-levels in one year, entering Wadham College Oxford at the age of 17 to study chemistry. After graduating, he worked with Professor Charles Dent at UCH, and over time they were writing papers together, the first entitled 'The Bence Jones protein of multiple myelomatosis'. The second was on 'Protein chromatography' in 1951 and the third, written later in 1964, was entitled 'Radiological diagnosis of osteoporosis, osteomalacia, and hyperparathyroidism'. These three works are now included in many studies of biochemistry at university. With the encouragement of Charles Dent, Alan returned to Wadham College to study medicine, as Charles himself had done, and this was completed in 1952.

His first medical appointments included that of house physician and surgeon at Lambeth Hospital and six months later as house physician at Dulwich Hospital. Then in 1955 he was appointed medical registrar at UCH with Charles Dent, where he was based for the next five years. Towards the end of that time, Professor Pyrah of Leeds General Infirmary invited Alan to become reader of medicine there, and at the University. He did agree, but before going expressed a wish to spend at least six months at the National Institute of Health in Bathesda, near Washington DC, doing research and lecturing at that world centre of medical research. This was agreed. So in 1960, the family went to the USA, living in a small house near the NIH enabling Alan to walk to work – the only time he ever did so. We did, however, have a large car, a Chevrolet station wagon, which stood us and our three children in good stead, especially in our final trip across the States six months later. Whilst working at NIH USA, he also lectured in the hospitals in Boston, New York, Lexington Kentucky and Los Angeles, where his talks were on renal applications of biochemistry and all things related to kidney stones.

Once more back in the UK, in Leeds, the work continued, as did his visits to European and international conferences, where he gave new and innovative papers.

In 1965 he was appointed consultant chemical pathologist, at the St Peter's Group. This saw us returning to London and settling in Mill Hill. Now running the laboratories, Alan got them completely computerised and reorganised until they became one of the leading nephron-urological laboratories in the country. They were receiving kidney stones from all over the country and abroad, analysing them and advising on treatment.

Alan also attended the annual conferences in Vienna, Bonn, Holland, Madrid, Davos, Balogna and New York. His papers at these events include 'Inhibitors of crystallisation in renal lithiasis and their clinical application'. In 1972 he presented papers in Jerusalem on 'Hypercalcuria, osteomalacia and chemical pathology'.

The New York symposium was followed by 10 other presentations from 1974–1992. These were at Williamsburg, USA, at the first Australian stone symposium in Perth, and in

Melbourne, Sydney, Freemantle, Brisbane and Darwin. The Singapore stone conference of 1983 included papers given at Chandigargh and Deli in India.

In 1985, the British Council invited Alan to go on a three-week lecture tour to hospitals in Bombay, Madras, Vigiawada, and then to attend an international stone conference in India at Trivandrum. His 1987 lecture to the Massachusetts Medical School was followed by a workshop on 'The crystallisation conditions in urine'. The following year he was invited to an international conference in Vancouver and in 1990 he gave his papers at an international conference in South Africa. Soon afterwards came his automatic retirement from the NHS at the age of 65.

Alan was then invited to be visiting professor at the Sultan Qaboos University in the Sultanate of Oman for 3 months, lecturing to the medical students on biochemistry and kidney stone analysis. Back home, Alan saw his medicolegal work increasing as he appeared as an expert witness in many magistrates' courts on the effects of alcohol in drink driving prosecutions. He also came to national attention through his robust defence of a technique to help couples choose the sex of their babies. He insisted that the service should only be used to balance families. So the London Gender Clinic came into being, where he was consultant along with Dr Peter Liu, as referred to in his book, *Sex and Alcohol in Retirement*. Alan published over 200 papers, which can be accessed on the internet at 'Google Scholar G. Alan Rose'.

His talents and interests were not solely academic. At Wadham College he rowed in the top team and one year they were Head of the River. He was also secretary of the rowing club. Later he took up gliding, photography and squash. An avid skier, he taught cross country skiing (langlaufing) in Norway and later in Switzerland, Italy, France and the USA. He always had something interesting or exciting to talk about, and had a wonderful sense of humour. He was a great family man and a huge support for me looking after our disabled son, who so sadly predeceased him seven years ago. Alan will be sorely missed everywhere he was known.

He is survived by his wife Jean, whom he married in 1954, his son, daughter and four grandchildren.

Jean Rose

Deaths

The deaths of the following Fellows were announced at the September 2015 Council meeting. We extend our condolences to those who grieve for them.

Adam Fleck	UK
Alan Guthrie Green	UK
David Greenwood	UK
Richard Pell-Ilderton	UK
George Alan Rose	UK
Geoffrey Randolph Shellam	Australia
Margaret Mary Bernadette Sinnott	Ireland

Erratum: Examination results

The following candidates have passed all components of the Haematology (Clinical Scientists) Part 2 examination in the Spring 2015 session. We apologise for the oversight in their omission in the last edition of The *Bulletin*.

Dr Abbas Hashim Abdulsalam
Mr Stephen John Couzens
Ms Ruth Mary de Tute
Dr Sana Dlawar Jalal

Emerging zoonoses and AMR: A 'one-health' approach through multidisciplinary collaboration

Background and aims of the meeting

High levels of antibiotic resistance are emerging worldwide and this resistance is jeopardising our ability to treat common infections in animals and humans. In order to address this global threat, a concerted effort between the medical and veterinary professions is urgently required. The above meeting was held on 15 May 2015 at the Royal Society of Medicine, which drew upon one of the goals of the UK's Five-Year Antimicrobial Resistance (AMR) Strategy (2013–2018) to improve the knowledge and understanding of AMR through cross-professional collaboration in human and veterinary medicine.

Proceedings

The meeting organisers, Professor Roberto La Ragione and Dr Prema Singh, gave a brief introduction to the day.

Overview of the AMR strategy: Setting the scene, why it's important

Professor Dame Sally Davies, Chief Medical Officer and Chief Scientific Adviser to the DoH, and Dr Nigel Gibbens, Chief Veterinary Officer, set the scene by highlighting the aims and the actions outlined in the UK five-year strategy, which have led to a number of workstreams to form a cohesive 'one-health' approach such as to encourage scientific research into AMR and novel diagnostics, the review of novel business models for the development of new antibiotics, broadening the scope to incorporate human, animal and environment, and generating international engagement. The UK achievements to date were also highlighted, such as setting up the Government risk registers, the UK strategy and cross-party support, the Prime Minister's commission of an independent review of the drug pipeline for antimicrobials, the Longitude Prize and the Fleming Fund.

At the international level, the following measures have been implemented: ratification of the WHO Resolution in May 2014, drafting of the global action plan, recognition at G7 and G20 summit, setting up the Global Health security initiative and the new EU law to reduce AMR risks in animals by reducing antibiotic use in livestock production.

Dr Nigel Gibbens, Professor Roberto La Ragione, Professor Dame Sally Davies and Dr Prema Singh

AMR at the farm level: Protecting the food chain

Dr Chris Teale elaborated on the point that not all resistance in veterinary and human medicine is connected, though humans can act as a vector introducing new strains of resistant organisms into an area that can then affect animals locally. Furthermore, a better understanding of the spread of resistance within the farm and food-chain environments is urgently required.

ESBLs in the food chain: A veterinary and medical issue?

Professor Neil Woodford reviewed the extended spectrum beta-lactamases (ESBLs), i.e. enzymes that hydrolyse all generations of cephalosporin antibiotics, usually conferring resistance. Though ESBL-producing *E. coli* have been reported widely from humans as a cause of community-onset urinary tract infection and bloodstream infections, as well as having been reported from food production, companion animals, retail meat and environmental sources, to date it remains highly controversial whether non-human reservoirs of ESBL-positive *E. coli* pose a public health risk issue. More studies are required to seek the presence of ESBL-positive *E. coli* in defined groups of people who have occupational exposure to animals to quantify their risk of gut colonisation by strains from the animals and the longitudinal follow up of these cohorts to quantify the risk that these colonisations will eventually result in human infections.

Responsible antibiotic prescribing in hospitals: What works?

Professor Dilip Nathwani elaborated on the principles of good antimicrobial stewardship such as the 'Start smart, then focus' strategy (the right

antibiotic at the right dose at the right time and for the right duration), the challenges of bringing about changes in antimicrobial prescribing, and the need for educational initiatives in achieving these changes. The British Society of Antimicrobial Chemotherapy is launching a MOOC (massive open on-line course) on antimicrobial stewardship in the forthcoming months, which will be free at the point of access.

What are the drivers of resistance in zoonotic pathogens?

Dr Fiona Walsh introduced the concept of the microbiome, the genome of an aggregate of microorganisms that reside on the surface in deep layers of skin, the oral mucosa and the gastrointestinal tract and their role as drivers and reservoirs of resistance in zoonotic pathogens.

AMR: There is a lot going on

Professor Peter Borriello referred to the 12 actions from the 'EU Activity: Commission Action Plan', five of those being veterinary specific and three being joint human and veterinary, which include: strengthening the regulatory framework, making recommendations on prudent use, stimulating development of new antibiotics and strengthening consumption surveillance.

A European perspective on AMR in the food chain

Professor Dik Mevius demonstrated that an epidemiological association between resistant organisms in livestock, the food chain and infected humans may be coincidental and that detailed analyses show that those are mostly evolutionary relationships and, to a lesser extent, direct relationships through consumption of contaminated animal products. Measures to control AMR in humans should therefore not solely focus at livestock or the food chain.

MRSA in animals and humans: Anything in common?

Dr Mark Holmes highlighted the emergence of a particular sequence type of MRSA (ST 398) in continental Europe and its association with pigs as the first indication of a broader host species adaptation of *S. aureus* lineages. Phylogenomic analyses showed that all companion animal isolates were interspersed throughout the human epidemic EMRSA-15, suggesting a human source for isolates infecting companion animals and hence considerable traffic of MRSA between human and animal populations with evidence of host-species adaptation.

Molecular diagnostics: Is this the future?

Dr Muna Anjum gave a comprehensive account of the various genotypic and phenotypic screening technologies for the characterisation of antimicrobial resistance in bacterial isolates. At present, genotypic methods are preferred due to the depth of information that can be gathered rapidly from these techniques, but better bioinformatics pipelines for clinical applications are urgently required.

Pet animals and AMR

Professor Nicola Williams indicated that through close contact with companion animals there may be an important link in the development of zoonotic disease, including the transfer of antimicrobial resistance, though some ESBL genotypes in animals do not always reflect those associated with clinical disease in people. The public health risk is likely to vary depending upon the levels of contact with different populations of companion animals such as, for example, those that have been hospitalised and with other exposure factors.

Evaluation and feedback

The meeting was well attended and participants benefited from the exchange of information and the networking opportunities that the day provided. Feedback was very good, with comments including: "An excellent day", "Very interesting", "Informative and consistently excellent presentations" and "Successful meeting and forum".

On a personal note, we both thoroughly enjoyed organising this conference and felt it was a great success and a very stimulating and rewarding day. It was a privilege to have received the input of our high-profile speakers, Professor Dame Sally Davies and Dr Nigel Gibbens, emphasising the need for a multidisciplinary, national and global approach in addressing AMR.

The College – through its role in improving professional education, training and public engagement and strengthening national collaboration with the professional infection societies, academic departments and public health agencies of the DoH – is ideally placed to support and promote the key areas for action in the combat against antimicrobial resistance.

Dr Prema Singh
Consultant Microbiologist
Watford General Hospital
Chair of the SAC on Medical Microbiology

Professor Roberto La Ragione
Head of the Department of Pathology and Infectious Diseases
School of Veterinary Medicine
University of Surrey
Member of the SAC on Veterinary Pathology

Acknowledgements

We are grateful to Diana Maxwell, Committee Administrator, as well as Clare Winter and Michelle Merrett from the College's Events and Facilities team for their help in organising this meeting.

Professor Tim Helliwell

The 27th European Congress of Pathology

The 27th European Congress of Pathology was held at the Sava Centre in Belgrade on 6–9 September and attracted over 1800 participants from across Europe, though relatively few from the UK, and visitors from Japan, China, the United States and Canada. This was a scientifically eclectic meeting, heralded by an impressively noisy and wet thunderstorm on the Saturday evening. Fortunately the scientific sessions were calmer, with parallel sessions covering everything from the heterogeneity of breast cancer, through the molecular pathology of urological cancers to digital pathology, pathology in the undergraduate curriculum and pathology and the public. Keynote lectures included the importance of the morphological pathologist in advances in infectious disease by Albert Osterhaus, the immune reactions to cancer from Wolf Fridman, Fred Bosman on the history of the WHO Blue Books and Simon Herrington on optical imaging for cancer diagnosis.

The European Congresses are primarily aimed at working histopathologists from across Europe, providing updates on diagnostic topics and 'digestible' scientific presentations on diagnostics that will be mainstream in the next few years. A newly formed residents' group promises to provide a stimulus to more presentations in the future of particular relevance to trainees. This year, there was a distinctly immunological theme, with the promise of an immunoscore for colorectal cancers that is more prognostically relevant than traditional staging, and several presentations on drugs that act on immunological checkpoints and are able to release the anti-tumour immunological response from its inhibition by tumour cytokines. Expect to see PD-1 and PDL-1 assessments being increasingly requested by oncologists, keen to exploit this potential vulnerability of many cancers.

The Sava Centre in Belgrade

The success of European Congresses may be evaluated in many ways, but I look for a stimulating mix of presentations of relevance to my current work and a taste of topics that I don't usually encounter. Add to the mix the experience of difference places and cultures, and meeting old and new friends, and you have the perfect meeting. Belgrade, despite the turmoil of history and the current migrant crisis, is a fascinating place and the local people are remarkably proud and friendly. The cultural traditions were emphasised by folk dancing at the welcoming ceremony and an evening of gypsy folk song and music. All in all, an enjoyable and successful meeting.

The next Congress is in Cologne on 25–30 September 2016 (www.esp-congress.org/2016) and will be a joint meeting with the International Academy of Pathology. I know many people from other countries who will be there; let's make this the Congress where participation from the UK becomes much more evident. I look forward to seeing you and your trainees there.

Professor Tim Helliwell
Vice President for Learning

Speak up: give your view on College consultations

All members should get involved in College's consultations on the guidance and documents that are relevant to their specialty.

Your opinion is vital in helping us ensure that all the documents we produce are reliable and workable in practice – and what you say, counts. You can also claim up to 2 CPD credits for this work. All College documents are put for consultation on the website, you just need to login and visit www.rcpath.org/fellows

Here you will find all the documents open for consultation and information on the status of documents in the process of being revised before final publication. When a new document is posted, we send out an email to the relevant members advising them of the open consultation. If you've forgotten your login details for the website, please contact webmaster@rcpath.org

BOOK REVIEWS

Disposition of Toxic Drugs and Chemicals in Man (10th edition)

Randall C Baselt
Biomedical Publications, 2014, £394 (hardback), 2011 pp
ISBN 978 0 96265 239 4

This was my first encounter with a frankly amazing book that offers succinct monographs on a wide range of drugs and other chemicals. The preface indicates that 280 substances have been added in the new edition, bringing the total to around 1500. This is clearly a work in progress, as the changes from previous editions are listed: addition of CAS (Chemical Abstracts Service) numbers, molecular weight and empirical formula, amongst others. The substances are listed in alphabetical order in entries of mostly one or two pages in relatively small, but clear, font on fine paper.

A useful introductory section – described as a prologue – offers guidelines for the interpretation of analytical toxicology results. This makes clear the inherent hazards in such a book by stating that the "appropriate use of the information contained in this book is by no means straightforward". This is analogous to the difference between reading a book about driving and actually being allowed behind the steering wheel of a moving car. From the pathologist's point of view, particularly the forensic pathologist, there is useful comment on the changes in blood, plasma and tissue concentrations of drugs and other substances that can occur post mortem, how these relate to the situation ante mortem and the difficulties of interpretation. The entries include brief sections on 'Occurrence and usage', 'Blood concentrations', 'Metabolism and excretion' (some with structural diagrams), 'Toxicity and analysis' and comprehensive listing of references. The sections on toxicity include potentially lethal doses and a review of treatment options.

Taking a couple of examples, a review of the entries makes interesting and useful reading. Paracetamol (listed in the index as such but otherwise using its North American name, acetaminophen) starts with a listing of numeric data, including half-life of elimination (t½), volume of distribution, pKa, CAS number and molecular weight. The abbreviations for these are fairly straightforward; a hunt through the prologue was necessary to define Fb (fraction bound to plasma protein) and b/p (blood:plasma concentration ratio). The structure of the drug is also given. This is a well-known and characterised substance that is widely used therapeutically and as an extremely unpleasant means of self-termination. Within the constraints of three pages, the main aspects of paracetamol pharmacokinetics and toxicity are summarised, including a structural diagram of metabolism and description of the mechanism of toxicity. The analytical details given are useful, if brief. An entry for Paraquat is also quite comprehensive, although the mechanism of toxicity (accumulation into the lung due to close structural similarity to endogenous polyamines such as putrescine) is not discussed.

While most of the entries are for drugs, other chemicals discussed include (for example) acetone, tetrodotoxin, methanol, diazinon and dioxin. It is similar in some respects to *Medical Toxicology (3rd edition)*, edited by RC Dart and published by Lippincott Williams & Wilkins in 2004, however the coverage of these two books is different both in scope and format, meaning that they could probably be used together. This book promises to be a major and most welcome addition to my shelves.

Adam Woolley
Consultant Toxicologist
ForthTox, Linlithgow

Prostate Cancer: Diagnosis and Clinical Management

AK Tewari, P Whelan and JD Graham (editors)
Wiley-Blackwell, 2014, £64.99 (hardback), £52.99 (Kindle), 350 pp
ISBN 978 1 11834 735 5

The authors of this new textbook aim to provide an up-to-date and evidence-based guide to all aspects of the diagnosis and management of prostate cancer. The first chapter sets the scene with a description of the epidemiology of this commonly diagnosed malignancy. The subsequent chapters follow the patient pathway, beginning with coverage of the investigative techniques involved in diagnosis, and with a discussion of the pros and cons of screening programmes. There is a chapter devoted to histopathology, which manages to give concise yet comprehensive coverage of the handling and reporting of routinely encountered specimen types. The comment in the last paragraph of this chapter, suggesting that clinicians visit a histopathology laboratory in order to better understand the processes involved, will be appreciated by any pathologists reading this textbook.

The use and limitations of prostate-specific antigen (PSA) measurements as a diagnostic test are extensively covered in the chapter on biomarkers. This section also provides information on a wide range of biomarkers in body fluids and tissue, which have been previously reported in the literature. There follows a well-illustrated and detailed account of modern imaging techniques. Further chapters cover all present treatment options, from active surveillance, surgery (with a very detailed and illustrated description) and radiotherapy, to novel focal therapies. The existing limitations in understanding how best to avoid over- or under-treatment of patients with prostate cancer are clearly described. There is a section on patient counseling and the latter part of the book covers the detection and management of relapse and metastatic disease and end-of-life care. The final two chapters discuss the future challenges of managing prostate cancer as a chronic disease and potential developments in the approach to diagnostic and disease management strategies, including genetic studies.

The overall presentation of this textbook is excellent. Topics

are covered in a logical manner and the content is presented in 17 relatively short chapters, with appropriate subheadings, that make for easy access to areas of interest. The text is well-written and clear and the level of detail is commendable in such a compact volume. The illustrations complement the text and the range of tables, radiological images, diagrams and photographs (including a set of colour plates) are of good quality. Each chapter is well referenced and the index is good. There are 38 contributors to the book, from seven countries. Either European or USA perspectives are therefore predominantly discussed in some chapters, depending upon each contributor's affiliation, but the general international balance is maintained. There is inevitably an overlap in the content of some chapters, with different contributors covering the same topic, such as PSA, but this is largely complementary information, with alternative viewpoints or aspects discussed. The Gleason grading system is, however, much better discussed in the histopathology chapter, as would be expected, than it is when described elsewhere.

This textbook fulfills its objective of giving a detailed – but succinct and easily accessible – account of prostate cancer for interested clinicians of different specialties and grades, with guidance on appropriate and best-practice patient management. Pathologists wishing to expand their knowledge of current diagnostic techniques, and the various treatment modalities available for prostate cancer, will find it an enjoyable and informative read.

Dr Anne Y Warren
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Cambridge University Hospitals NHS Foundation Trust

Pathology of the Female Reproductive Tract, 3rd edition

George L Mutter, Jaime Prat
Churchill Livingstone, 2014,
£163.77, 904 pages (Kindle edition £155.58)
ISBN 978 0 70204 497 7

Pathology of the Female Reproductive Tract has been a truly international project since its inception. The current edition is authored by 33 experts in gynaecological pathology, including two authors from the UK, C Simon Herrington and W Glenn McCluggage. The book originally began with Malcolm Anderson's volume of the *Female Reproductive System* in the *Symmers Pathology Series* in 1991, becoming a standalone textbook in 2002.

The 2009 second edition was named *Robboy's Pathology of the Female Reproductive Tract* in recognition of the enormous editorial effort of Stanley Robboy. He was the main editor and contributed to 27 of the 36 chapters. Robboy was inaugurated President of the College of American Pathologists in 2011 and has contributed to six chapters in the current edition.

Readers will find this book an excellent reference for gynaecological pathology. It has an easily readable text accompanied by high-quality images, tables and algorithms, and uses the most recent FIGO staging and WHO classifications throughout.

New to this edition are the presence of a helpful outline in the beginning of each chapter, a chapter dedicated to the molecular biology of cervical neoplasia (chapter 9) and practical information on intra-operative consultation and sampling/tissue issues included in some chapters.

HPV-related diseases of the lower genital tract are comprehensively discussed in six chapters. The two-tier system of low-grade dysplasia (LSIL) and high-grade dysplasia (HSIL) for all HPV-related pre-invasive squamous lesions of the lower ano-genital tract has been used and a similar theme is also used for endometrial hyperplasia (non-atypical *versus* atypical) and endometrial carcinoma (type 1 *versus* type 2). Some UK pathologists may be disappointed to see the term '(AIS)' used instead of high-grade CGIN and low-grade CGIN with its images have been deleted in this edition.

The topical subject of differentiated VIN is thoroughly discussed, including its pathology/aetiology, microscopy, differential diagnosis, biomarkers and clinical behaviour.

It is often difficult to predict the behaviour and plan for treatment of endometrial serous EIC, especially when it is found focally in an endometrial polyp. A statement that reads: "serous EIC cannot be considered a precursor lesion but rather an intraepithelial stage of carcinoma capable of spreading to distant sites" can be helpful for pathologists, gynaecologists and patients.

The malignant potential of endometriosis and the role of ARID1A mutations in endometrioid and clear cell carcinogenesis is clarified with this statement: "Nearly half of clear cell carcinoma carry the ARID1A mutation, this suggest that ARID1A inactivation occurs early during malignant transformation of endometriosis".

High-grade endometrial stromal sarcoma, which was prematurely removed in the second edition, is now resurrected based upon its distinctive histological and molecular characteristics. The role of (STIC) in the development of ovarian serous carcinoma is discussed in chapter 21, including the helpful practical advice about the use of the SEE-FIM protocol for extensive sampling of the fallopian tubes in women with BRCA gene mutation.

Relevant and updated cytogenetic alterations are discussed such as JAZF1-SUZ12 gene fusion in low-grade endometrial stromal sarcoma and YWHAE-FAM22 gene fusion in a subset of high-grade endometrial stromal sarcoma. Chapter 36, which is dedicated to immunohistochemistry/biomarkers, contains helpful advice regarding the diagnostic and prognostic usefulness and limitations of these markers in gynaecological pathology.

This book is a very useful reference text for the day-to-day diagnostic work of trainees and 'generalist' consultant histopathologists. Specialist gynaecological pathologists who seek to update and extend their knowledge in this field will find this book very helpful. The text and/or images can be accessed online through Expert Consult website.

Dr N Hasan
Consultant Cellular Pathologist
Whiston Hospital

COLLEGE SYMPOSIA

November 2015

International Pathology Day

Wednesday 18 November 2015

Location: The King's Fund, London W1G 0AN

International Pathology Day celebrates the contribution made by pathologists, scientists and laboratory professionals in tackling global health challenges. Participants on the day will have the opportunity to share the experience of colleagues who have worked on the front line diagnosing and treating Ebola, have worked to strengthen laboratory medicine, or who are UK-based to detect and minimise the risk of rare or imported pathogens. Attendees will also hear about College initiatives to improve laboratory medicine with a focus on education, training and enhancing the diagnostic skills of laboratory professionals. 4 CPD credits. This is a free event. Please email Amaka.Nwagbara@rcpath.org to book your place.

Screening day

Thursday 26 November 2015

Location: St James's University Hospital, Leeds LS1 3EX

Academically this meeting is to celebrate the success of our National Screening Programmes and to give insights into where they should go in the future. It is also to celebrate the work of Professor Julietta Patnick CBE who has achieved so much over the years in establishing and running these programmes. She has been an excellent example of what the health service can achieve by excellent management, professional engagement and leadership and this meeting is dedicated to her work. 5 CPD credits.

January 2016

Gynaecological pathology: Putting virtual microscopy to the test

Friday 22 January 2016

Location: The Royal College of Physicians, London NW1 4LE

As histopathologists, we progressively have to deal with digital images and virtual microscopy for consultations, web-based external quality assurance schemes and e-learning resources. How challenging is this and how ready are we to adopt this on a larger scale in our practice? This course is an opportunity to put these questions to the test through practical, interactive, virtual microscopy sessions in the field of gynaecological pathology. This conference will be useful for histopathology consultants as well as trainees. 6 CPD credits.

February 2016

Liver biopsy in the assessment of medical liver disease

Monday 29 February 2016

Location: The Royal College of Psychiatrists, London E1 8BB

This course will provide a practical diagnostic approach to reporting medical liver biopsies, focusing on the importance of clinico-pathological correlation in assessing common patterns of liver damage. Recommended for senior trainees in pathology and hepatology and consultant histopathologists and gastroenterologists who are regularly involved in liver biopsy assessment (without necessarily working in a liver unit). 5 CPD credits.

May 2016

Combined RCPath/BNS neuropathology/ neuro-oncology meeting

Wednesday 11 May 2016

Location: The King's Fund, London W1G 0AN

This conference has been designed to correspond with the release of the latest update of the WHO classification of CNS tumours. The day will provide a practical approach to the diagnosis of CNS tumours, focusing on the interpretation of new molecular tests and their integration into the overall classification of the patient's tumour. 6 CPD credits.

June 2016

Uropathology reporting: What really matters – when and why

Monday 20 June 2016

Location: The Royal College of Psychiatrists, London E1 8BB

It is important for histopathologists to understand the clinical significance of their reports and how a data item that is critical in one clinical scenario may be entirely irrelevant in another setting. This novel study day, aimed at senior trainees and consultant histopathologists, will explain how uropathology data is used to guide patient management and discuss the significance of each data item in different clinical scenarios and specimen types. The course will enable delegates to adopt a more efficient personalised approach to histopathology reporting by focussing on accurately reporting data items that are clinically relevant in a particular case. 6 CPD credits.

To see programmes in full and get online booking discounts, please visit
www.rcpath.org/meetings/college-conferences

Conference application form and proforma invoice

Surname:..... Initials:..... Title:.....

Address:.....

.....

.....

Postcode:..... Specialty:.....

Telephone:.....

Fax:.....

Email:.....

Place of employment (if different from above):.....

.....

Dietary/other special requirements::.....

2015/2016 REGISTRATION FEES

Please tick the appropriate registration fee.

Concessions = trainees, students, nurses, IBMS and retired members.

Early booking = one month prior to the event date.

Screening Day – 26 November 2015 (Leeds)

Early bookings: Conference registration £95 ☐ Conference dinner £45pp ☐

Dinner guest name:.....

2016 one-day events

Early bookings: Members/Fellows £185 ☐ Concessions £99 ☐ Non-members £260 ☐

Late bookings: Members/Fellows £215 ☐ Concessions £130 ☐ Non-members £290 ☐

Conference title (s):.....

.....

Total payment enclosed £.....

PLEASE NOTE:

Confirmation of attendance can not be given until full payment or guarantee of payment in the form of a purchase order is received by the RCPath conference department in advance of the event date.

Cheques should be made payable to The Royal College of Pathologists – please note that cheques should be in £ sterling drawn on a UK bank. Cancellations are subject to a £20 administration charge. No refunds will be made for cancellations notified within seven days of the event, but substitute delegates will be accepted at any time.

If you are forwarding a copy of this application form to your finance department for payment please ensure a copy is faxed to the conference department on 020 7451 6701 to reserve your place and that they quote the title of the conference and your full name on all cheques or payment advice slips.

Please copy and return to conference department via email, or post to:
The Royal College of Pathologists, 4th Floor, 21 Prescot Street, London E1 8BB
Enquiries: Tel: 020 7451 6715 Email: meetings@rcpath.org

Association of Clinical Pathologists

Haematology: preparing for the FRCPath examination
Thursday 21 January 2016
Royal Society of Chemistry
Burlington House, London W1J 0B

Hot Topics/ Current Issues Management Day (Incorporating Link & Branch Officers Meeting)
Thursday 11 February 2016
St Pancras Renaissance Hotel, London, NW1 2AR

Autopsy Update Day
Friday 4 March 2016
Royal Victoria Infirmary
Newcastle upon Tyne NE1 4LP

ACP National Scientific Meeting
9 June 2016
Hallam Conference Centre, London W1W 6JJ

For further information and to register, visit www.pathologists.org.uk, call 01273 775700 or email info@pathologists.org.uk

Legacies

The objectives of the College are to advance the science and practice of pathology, to educate the public in matters relating to pathology and to promote study and research work in pathology and related subjects and publish the result of such study and research. Financially, the College aims to match activities to projected income. The College is funded from subscriptions, examinations and related fees, investment income, grants from outside bodies and charitable donations.

Bequests or legacies are always gratefully received. Leaving a gift to charity in your will is a very special way of helping to secure the future for organisations such as The Royal College of Pathologists. Legacies to the College have the added benefit of being exempt from inheritance tax.

An open legacy may be made toward the general purposes of the College. This is preferred because it allows the College to apply the funds donated where the need is greatest at the time the legacy eventually becomes available. This can be quite different from the perceived need when a will is made. However, you may legally oblige the College to spend the money in a particular area of College work or for a specific purpose by making a restricted legacy.

The College undertakes many educational initiatives. We are actively undertaking an outreach programme that spreads the awareness of pathology throughout the UK and abroad. No other UK college has committed so much to the future of our profession in terms of time and resources. This will promote the importance of pathology to the grass roots of this country through schools, colleges, hospitals and many other sites where the general public can have access to important healthcare information. If we are to safeguard the future of our profession in the face of increasing competition from other medical and science career opportunities, it is vital that we commit ourselves to the promotion and awareness of pathology, and continue to train our young professionals to the very highest standards.

This public engagement programme will require financial support from the College for many years to come and we hope very much that we can build upon the tremendous support you have already given and ask if you would consider leaving a legacy.

Additions to your existing will can be made using a 'Form of codicil', printed on the following page. Please note that witnesses should be present when you sign the form, but it should not be witnessed by a College member or the spouse of a College member. As a general point, we always recommend consulting a solicitor or qualified will-writer before making a will; they should give you all the legal and tax advice that you require.

If you are considering including a legacy to the College in your will, we would very much appreciate being informed of your generous act. To inform us of your bequest or for specific advice on legacies to the College, please contact me.

Daniel Ross
Chief Executive
020 7451 6789
daniel.ross@rcpath.org

Form of codicil

(Please photocopy and complete in block capitals)

I .....(name) of .... (address) declare this to be a Codicil which I make this ..... day of ..... 20..... to my Will which bears the date ..... day of .....(month) .....(year).

I give to The Royal College of Pathologists ('the College'), registered charity number 261035, the sum of £..... (amount in words) ..... free of all taxes whether payable in the United Kingdom or in countries overseas for the general purposes of the College and I declare that the receipt of the Honorary Treasurer for the time being of the College shall be sufficient discharge to my executors.

In all other respects I confirm my said Will. In Witness thereof I have hereunto set my hand the day and year first written above.

Signed by the Testator/rix: ..... (signature) as a Codicil to his/her last Will in our joint presence and by us in his/hers.

FIRST WITNESS: .... (signature of first witness)

Name and address: .....

.....

.....

SECOND WITNESS: ..... (signature of second witness)

Name and address: .....

.....

.....

Pathological Society of Great Britain and Ireland

Pathological Society

Understanding disease

The Pathological Society of Great Britain and Ireland offers several grant schemes, namely:

SCHEME	DEADLINES
EDUCATIONAL GRANTS/COMPETITION	
Bursaries for undergraduate elective or vacation studies (available to Associate Undergraduate Members of the Society)	**14 February & 28 April**
Educational Grant	**1 April & 1 October**
Intercalated Degree (available to Associate Undergraduate Members of the Society)	**31 March**
Seminars for Students (available to Associate Undergraduate Members of the Society)	**Open**
Undergraduate Essay Competition	**1 September**
Pathological Society Meeting Bursary for Undergraduates (available to Associate Undergraduate Members of the Society)	**variable**
RESEARCH GRANTS	
Career Development Fellowship	**1 April**
Equipment Scheme	**1 April & 1 October**
International Collaborative Award	**1 October**
Pathological Society/Jean Shanks Foundation Pathological Research Training Fellowship	**1 October 2015**
PhD Studentship	**1 October***
Sino-European Collaborative Award	**1 October**
Small Grants	**1 April & 1 October**
Visiting Fellowships	**1 April & 1 October**
OTHER GRANTS	
Open Scheme	**1 March, 1 June, 1 September & 1 December**
Pathological Society Meetings Bursaries	**31 May**
Public Engagement	**1 March, 1 June, 1 September & 1 December**
Travel & Conference Bursaries	**Open**

***New deadlines**

Full details are available on our website: www.pathsoc.org or from:
Miss Julie Johnstone, Deputy Administrator, Pathological Society of Great Britain and Ireland
julie@pathsoc.org

Pathological Society of Great Britain and Ireland forthcoming meetings

2016 Winter Meeting
7–8 January 2016
Guoman Tower Hotel
London

2016 Pathological Society Winter School
1–5 February 2016
London

Nottingham Pathology 2016 Joint BDIAP/Pathological Society Meeting
28 June–1 July 2016
East Midlands Conference Centre
University of Nottingham

www.pathsoc.org

FiLM2016

Frontiers in Laboratory Medicine

Getting fit for the future: understanding the opportunities for pathology in the changing NHS

Topics to include:

- The NHS diagnostic strategy 2015 – how will it affect your laboratory service?
- The Carter Review of operational productivity in the NHS – what does the 2015 review mean for Pathology?
- Laboratory services in devolved administrations – lessons from Scotland.
- The Pathology Value Pyramid – a tool to ensure your laboratory is contributing added-value to healthcare.
- Accreditation – does ISO ensure fitness for purpose?
- Big data – using aggregated laboratory data to improve healthcare delivery and public health.
- Digital Histopathology – what's happening globally?
- IT – using middleware to improve operational effectiveness and add value.
- Integrating health and social care provision – what are the challenges for diagnostics?
- New genetic and molecular test technologies – driving centralisation or coming to a lab near you?

Plus:

- Expert panels with *Question Time* sessions
- Breakouts
- Networking opportunities

26th – 27th January 2016

Austin Court Birmingham UK

Further information from:

www.acb.org.uk
film@meetingmakers.co.uk

Organised by

The Association for Clinical Biochemistry & Laboratory Medicine

Better Science, Better Testing, Better Care

THE DARK REPORT