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

Annual report & accounts

2021–2022

Introducing the College

The Royal College of Pathologists is a professional membership organisation with more than 13,000 fellows, affiliates and trainees worldwide. We are committed to setting and maintaining professional standards and promoting excellence in the teaching and practice of pathology, for the benefit of patients.

Our members include medically and veterinary qualified pathologists and clinical scientists in 17 different specialties, including histopathology, haematology, clinical biochemistry, medical microbiology and veterinary pathology.

The College supports pathologists at every stage of their careers. We set curricula, organise training, run examinations, publish clinical guidance and provide opportunities for continuing professional development.

We engage a wide range of stakeholders to improve awareness and understanding of pathology and the vital role it plays in everybody's healthcare. Working with members, we run programmes to inspire the next generation to study science and join the profession.

Contents

On the cover: Students from the College's Diamond Jubilee Open Day take part in the Heart of Healthcare origami session.

Welcome from the President Professor Mike Osborn

This Annual Report is a celebration of pathology and pathologists. It highlights our collective mission in providing the best pathology service we can.

Welcome to the 2021–2022 Royal College of Pathologists' Annual Report. In this year's report we highlight some of the many activities of the College over the last year. We also look forward to the future of the College and how we plan to develop our services to allow us to provide the very best pathology services we can for our patients.

In 2021, we launched our new three-year strategy. Building on our previous strategies, this focuses on putting the needs of our members at the core of all our College functions and activities. Only by supporting and championing the needs of our members and those of pathology as a whole can we continually develop, refine and improve the quality of care we, and our colleagues in other healthcare specialties, provide to patients throughout the UK and worldwide.

The other core focus of our three-year strategy is improving patient safety. Our activities as a College are centred on both members and patients – providing members with the tools and support they need to provide high-quality, dependable and safe healthcare for patients.

2022 marks the 60th anniversary – the Diamond Jubilee – of our College. This is a fantastic landmark and it has provided us with the opportunity to look back and reflect on the amazing contribution pathologists and pathology have made to healthcare in the UK and worldwide since 21 June 1962 when the College was founded. As part of our Diamond Jubilee celebrations, this Annual Report will highlight our activities to showcase these achievements and the people who have been involved with them. We will also report on the wonderful events that have taken place over this year to celebrate this great milestone.

This Annual Report is a celebration of pathology and pathologists. It highlights the College's values, aims and our collective mission to ensure patient safety by supporting the great work of our members in providing the best pathology service we can for all patients. I hope you find it interesting, engaging and informative.

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SECTION 01
INTRODUCTION

Message from the Registrar Dr Lance Sandle

During 2021–2022, the College responded and adapted to the challenges created by the pandemic.

Although we are still in its slipstream, 2022 has seen a return to some pre-pandemic working practices, such as face-to-face meetings at Alie Street and in-person examinations. More of our interactions and meetings are now of a hybrid nature and this change in our working environment will undoubtedly become embedded practice. This is both owing to the flexibility provided, but also because of economic imperatives, with increased pressure on resources caused by the ongoing conflict in Ukraine and the consequences of the pandemic.

Despite ongoing international health issues, geopolitical uncertainty and domestic industrial unrest, we have still been able to enjoy success stories. The College's Diamond Jubilee has been celebrated with a variety of activities across all four nations of the UK, highlighting the value of pathology to the public.

Traditional events such as scientific meetings, alongside College endowed lectures, showcase the breadth of contribution to a wide range of subspecialties. Meanwhile, exercise-based activities (both real and virtual), including cycling, running and walking, have proved a popular way for members to celebrate our Jubilee and raise funds for worthy causes.

There have been events to raise awareness of the College within the wider community such as a concert at the Royal Liverpool Philharmonic, participation in the Welsh National Eisteddfod and a pet portrait competition, which served to highlight the role of our veterinary fellows.

It is essential that the College reflects its membership at all levels and progress has been made and is reported on within this report. However, there is still a long way to go and over the next year we will be working with members to help us identify and address inequalities. There has been ongoing reappraisal of the staffing structure to ensure that we have the staff needed to deliver on our commitments and mission as a College while managing finances at this difficult time.

Be reassured that thanks to the efforts of staff and officers the College will remain successful and relevant for the next 60 years.

Our strategy & achievements

02

" We want to be a constant support for our members, whatever their specialty and whatever their stage of career. We'll always speak up for their interests, to get policies in place that help them to help patients."

Our strategic vision and aims

Developing and supporting excellence in pathology for healthcare across the world.

Our mission

Advance the science and practice of pathology.

Further public education in the field of pathology.

Promote study, research and innovation in pathology and disseminate results.

Our 2021–2024 strategy

In 2021, we published our new three-year strategy, which was developed with all of our members, and with patient care and safety at its core. It highlights the College's values, aims and our collective mission to shape the future of pathology.

Strategic aim 1

- Support all members through the delivery of high-quality member services

  We're committed to delivering member services that promote diversity and inclusion and support continued career development.

Strategic aim 2

- Develop and maintain high standards of education, training and research across all pathology specialties

  We're committed to setting high standards for pathology education, training and research, to improve patient care and safety.

Strategic aim 3

- Promote excellence and advance knowledge in pathology practice across all specialties

  We work with members to improve the services they deliver to patients in disease prevention, diagnosis and treatment.

Strategic aim 4

- Increase the College's influence through a clear, coherent, professional voice

  By communicating the central role that pathology plays in patient care, outcomes and safety, we'll strengthen our position as an expert body, extending our influence and affecting national and international policy for the benefit of patients and pathologists.

Strategic aim 5

- Resource the future development of the College

  We'll make best use of the College's resources and improve financial stability to achieve our strategic aims and charitable objectives.

Supporting pathologists and future pathologists throughout their careers

We support our members through a range of initiatives and digital platforms that help drive their careers and pathology forward. Our continuing professional development accredited programme is always evolving to reflect changes in pathology education and practice. We're committed to delivering inclusive member services and providing support and guidance around areas such as wellbeing and mental health. We are working with our members to further our work in these areas.

15

successful Certificates of Eligibility for Specialist Registration (CESR) recommended to the General Medical Council

131

Certificates of Completion of Training (CCT) recommended to the General Medical Council

Wellbeing and mental health

The COVID-19 pandemic and the extra pressure and stress experienced by all healthcare professionals brought wellbeing, burnout and mental health into the spotlight. Although these have long been issues affecting our members, there has been a renewed opportunity to highlight to policymakers how the issues our members are facing can affect their physical and mental health. Providing exceptional patient care becomes more difficult for a workforce not properly cared for themselves.

The College is committed to opening up conversations and providing support for our members at all stages of their career.

The need for responsive pathology training programmes

The College's Trainees' Advisory Committee launched the COVID-19 impact trainee survey in summer 2021. This assessed the effect of the pandemic on trainees' wellbeing and their ability to progress through their training programmes. Although there was a strong desire within pathology departments to reboot training as soon as possible, it was essential that there was a clear understanding of any issues this may involve.

The survey results showed that wellbeing had been significantly affected, with trainees experiencing burnout and higher levels of stress. With workload increasing in response to the backlog of cases and tests, the College is acutely aware that this could be further exacerbated, with trainees leaving the specialty. We've been lobbying policymakers and NHS training bodies, highlighting the issues around training caused by the pandemic, but also reiterating that there were issues in pathology before COVID-19.

We'll keep using the data gathered to highlight what support and resources pathology trainees need; for example, investment in digital pathology equipment, equality in access, and recognition that greater case exposure will be required for some trainees.

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Starting the conversation

Our professional development blog series by Dr Chris Tiplady started in January 2020. It touches on subjects from stress, coaching and mentoring and burnout, to grief. The blogs offer advice and the opportunity for self-reflection. They've resonated strongly with our members and healthcare colleagues, particularly over the last year, being shared widely across social media. 'The Empty Chair' blog, which was viewed over 18,000 times, recognises the importance of unpaid carers and reflects on the COVID-19 pandemic, when empty chairs became a very common sight. We'll continue to develop this series as part of our efforts to build a supportive culture for our members.

Members have been given the opportunity to share their experiences with each other in our evolving *Bulletin*, which now covers a wider collection of topics. Our April issue featured articles on mental health and wellbeing, discussing the importance of reflecting on our mental health and the need for better for support for healthcare professionals.

Supporting new consultants and trainees

With the NHS under increasing pressure, we recognise the impact this has on pathologists and all healthcare workers. Working in a system under extreme pressure is likely to increase burnout and decrease retention. For those taking on new roles, the pressure can be even greater as they face new challenges and responsibilities.

To support recently appointed consultants or those shortly taking up a consultant post, we launched a new event in April 2022 – New Consultants' Day. The event was open to new consultants of all pathology specialties, and both medical consultants and consultant clinical scientists. Attendees heard the experiences of others who'd already made the transition from trainee to consultant and could offer tips and advice. They spoke about the reality of the first few weeks and months in a new consultant post, as well as specific areas such as revalidation and appraisal, handling complaints, and obtaining resources.

Our annual New Trainee Welcome Day introduces new trainee pathologists to the College and provides them with a clearer picture of our role, pathology training programmes and examinations, and what support is on offer. We had more than 145 trainees join us for our 2021 event.

Alongside presentations covering general pathology information, there were also tailored specialty breakout sessions to delve deeper into new curricula and assessment and examination requirements for each specialty. To increase interaction during this virtual event, we used an audience interaction platform. Trainees could submit their questions as well as upvote the questions of other participants.

> "We've been lobbying policymakers and NHS training bodies, highlighting the issues around training caused by the pandemic, but also reiterating that there were issues in pathology before COVID-19."

132

new specialty registrars registered with the College

> "The College is committed to opening up conversations and providing support for our members at all stages of their career."

191

events approved for continuing professional development

All the sessions were recorded and these resources alongside the Q&As are available on our website.

Equality, diversity and inclusion

Equality, diversity and inclusion (EDI) are central to the work of our trustees, Council and leadership team. Over the past year we've made good progress in establishing the framework to support improvements in these areas. Our EDI Network, established by Esther Youd, former Assistant Registrar, brings together those with expertise, interest and lived experience in EDI matters to discuss key areas and emerging issues.

The Network has delivered some great work so far. For example, in April 2022 some of the members held a panel discussion on disability adjustments in pathology. It was a fantastic opportunity to celebrate how inclusive pathology is and the value diversity brings.

Our 2021–2022 action plan sets out how we're addressing issues relating to access, fairness and openness. It also outlines the work we'll do to better support people in assessing impact, ensuring appropriate language is used, and making reasonable adjustments. There are also a range of actions we'll take to ensure inclusivity and promote and support diversity.

Identifying and addressing barriers to engagement

It's important that we build the data to help us understand our members' characteristics and any barriers they face in engaging with us. Collecting this information, along with other data, will help us identify and address inequalities, improve diversity and assure inclusion.

Working with members of the EDI Network and staff at the College, we've now developed two surveys. The first of these seeks to better understand our members and asks for information relating to: protected characteristics; socioeconomic indicators; work patterns and caring responsibilities; and work settings and plans.

This survey is voluntary, and all questions will have a 'prefer not to say' option, but the data we collect has the power to drive significant improvements that will benefit all our members. The second survey seeks feedback on any barriers members face in engaging with the College and will be used to help remove these barriers wherever possible.

Continuing professional development

A key commitment we've made to our members is to provide excellent continuing professional development (CPD) support services. In response to the demands placed on our members by the pandemic, we again extended the deadline for CPD returns giving participating members an extra three months to submit. This gave them some much-needed breathing space.

The pandemic changed the CPD landscape and it's likely that this change will be permanent. We see this as an opportunity to support increased accessibility to a more varied programme of CPD activities. As our members navigate change, we've offered regular tips and advice via our social media channels on various aspects of CPD, including how to participate in various activities. We've developed our CPD programme to cover volunteering activities, with College accessors sitting on Advisory Appointment Committees and job description reviewers now able to obtain CPD points. We'll also extend our guidance on CPD to cover reflective learning, self-accreditation and volunteering.

We want to ensure that our CPD portfolio meets our members' needs and we're continuously looking for ways to further improve this service. We recently asked CPD participants for their views on topics such as our online portfolio and retention times for supporting information uploaded when entering activities. It was encouraging that 77% of participants stated that they were happy with the current online CPD portfolio, but we know there's more we can offer members to support their growth and it's an area we'll work on as part of our three-year strategy.

"The pandemic changed the professional development landscape… We see this as an opportunity to increase accessibility to a more varied programme of activities for our members."

Access to learning

We're always evaluating our member services, looking for ways to improve user experience and consistent access to learning, whether by bringing in new functionality or developing new technologies and platforms.

> "Our Equality, diversity and inclusion (EDI) network brings together those with expertise, interest and lived experience in EDI matters to discuss key areas and emerging issues."

The new LEPT system

In September 2021, a new Learning Environment for Pathology Trainees (LEPT) system was launched, initially for trainees who started Integrated Cellular Pathology Training (ICPT) and Chemical Pathology training from August 2021. The new platform was developed to support changes to curricula published in 2021 and is the culmination of a two-year project. It offers more defined functionality and a user-friendly experience.

Brand new functionality embedded in the new LEPT system includes the Annual Review of Competence Progression (ARCP) form, which deanery and Local Education Training Boards (LETBs) staff are able to initiate for the ARCP panel meetings. This allows trainees' ePortfolios to be automatically populated with their ARCP outcomes, as members of the panel meetings will be able to complete the forms directly on the LEPT system.

Workplace-based assessments in the form of supervised learning events (SLEs) are also embedded.

680

trainees used both LEPT systems to create Annual Review of Competence Progression (ARCPs) up to June 2022

9,197

workplace-based assesments were used in those ARCPs

The SLEs are strictly formative assessments, aimed at reinforcing learning. Their primary role is to give feedback on performance as they offer the opportunity to monitor progress continuously.

We held three virtual bite-size sessions during autumn 2021 to demonstrate the new functionality to trainees and provide tips for using the new system. The old LEPT system will be phased out during the latter part of 2023 as all trainees, except for those in their final year of training, will effectively be transferred to the new system together with their training items; this process started in spring 2022. This also applies to Certificate of Eligibility for Specialist Registration (CESR) doctors using the old LEPT system. We'll continue to support trainees during their transfer to the new system.

> "The Pathology Portal is a fantastic, innovative training and educational resource that trainees and practicing pathologists will be able to access throughout their career."
>
> **Professor Mike Osborn**
> **President**

The Pathology Portal

The Pathology Portal officially launched in August 2022. An innovative adaptive learning platform designed to support trainees and practicing pathologists in digital learning, it has been in development since 2019 in collaboration with Health Education England (HEE) (it was previously known as Digital Now). It is hosted within the HEE Learning Hub and will be accessible via the College's website through a single sign-on process as part of ongoing development work.

Using technology to enhance learning, the Portal incorporates the ability to host a range of learning materials, including virtual microscopy whole slide imaging, to enable pathology tissue samples to be annotated and viewed as part of learning sets.

The Portal supports not only digital morphological learning, but also clinical and macroscopic learning. It includes the upload of material already scanned as part of previous deanery/LETB projects, to reduce duplication and provide broader access.

Members of the Pathology Portal Editorial Board have worked tirelessly in loading a range of learning materials and teaching cases to the Portal covering areas such as allergy, blood transfusion, cellular pathology, clinical biochemistry, genetics, haematology, histocompatibility and immunogenetics, immunology, infection, metabolic medicine, reproductive science and toxicology. Materials and teaching cases for these and other specialties will be loaded on a continuous basis as the Portal evolves.

Celebrating pathology

RCPath Achievement Awards

The College's annual Achievement Awards were launched in 2019 and celebrate excellence in pathology practice. They promote high standards in pathology education, training and research to deliver the best patient care.

Nominations were invited for teams and individuals of all professional backgrounds and disciplines. The winners were presented with their awards virtually as part of the College Council meeting on Thursday 18 November 2021 with College President Professor Mike Osborn congratulating them.

Patient safety
Dr Laura Green won this award for her vision and expertise in integrating research into clinical service, driving changes that optimise NHS resources, reduce national variability and improve the standard of care for patients.

Innovation in pathology practice
Dr Maria O'Donovan won this award as co-inventor of Cytosponge, which aids the early detection of Barrett's oesophagus, dysplasia and oesophageal cancers.

Contribution to education
Professor Shivayogi Bhusnurmath was recognised for his contribution to education. Professor Bhusnurmath has been actively involved in enhancing pathology education for medical undergraduates and postgraduate trainees around the world for over 45 years.

4,254

continuing professional development returns processed

> "The RCPath Achievement Award winners exemplify the best of pathology practice through their work in furthering pathology education, improving patient safety and the innovation of new diagnostics and treatments – all for the benefit of patients. To achieve this throughout a global pandemic is truly inspiring."
>
> **Professor Mike Osborn**
> **President**

Contribution to specialty
Dr Benjamin Brown was recognised for his contribution to medical microbiology. This included the development of the dried blood spot (DBS) testing service in Manchester, providing outreach training on DBS testing and supporting Public Health England's response to the Ebola outbreak through his work in Sierra Leone.

Lise Estcourt, Dave Roberts, Sheila MacLennan and Heli Harvala were also acknowledged in this category for their research during the pandemic, which shaped the use of antibody therapy in the treatment of COVID-19.

Trainee research medals

The College's research medals are awarded for outstanding research work undertaken by trainees.

Gold medal

William Hamilton
Medical Microbiology (dual training with Infectious Diseases)

William won the gold medal with a paper on the use of rapid SARS-CoV-2 sequencing and detailed epidemiological analysis to investigate healthcare-associated SARS-CoV-2 infections and inform infection control measures.

Silver medals

Lyn Ferguson
Chemical Pathology and Metabolic Medicine

Mark Ponsford
Clinical Immunology

Meng Wang
Haematology

Caroline Young
Cellular Pathology

Sheila Lumley
Infectious Diseases and Microbiology

Muge Cevik
Infectious Diseases and Medical Virology

Hugh Platt Foundation Essay Prize – Maeve McLaughlin

The winner for 2021, Maeve McLaughlin, discussed testing strategies for managing COVID-19, exploring the utility of the different tests available, the benefits of sewage analysis and highlighting the issues around the rapid emergence of private antigen tests.

Maeve is in her second year of training at the Severn Foundation School. Here's what she had to say about winning the competition.

"I am delighted, I really enjoyed learning about the subject and found it extremely relevant in the current climate."

Paola Domizio Undergraduate Essay Prize – Rebecca Sarsam

Medical, biological science and veterinary undergraduates wrote about the role of pathology in managing COVID-19. Rebecca's essay highlighted the vital work of virologists in genome sequencing and the production of diagnostic tests, as well as the role of immunologists in the development of vaccines. Rebecca is studying medicine at King's College London and currently undertaking an intercalated MSc in Immunology of Infectious Diseases at the London School of Hygiene and Tropical Medicine.

"…the competition was a good way to practice essay-writing skills and explore areas of pathology that were only touched upon in my medical course, such as the roles of virologists and immunologists."

Furness Prize for Science Communication – Dr Phillip (Pip) Nicolson

The Furness Prize for Science Communication celebrates and recognises trainees and undergraduates who have undertaken science communication activities to inspire awareness and understanding of pathology in others. This year's winner was Dr Pip Nicolson, a Clinical Lecturer and Registrar in Haematology. Pip co-founded and chairs HaemSTAR – a network facilitating communication and promoting research among haematology trainees.

"I feel honoured and surprised to be selected as the winner of the Furness Prize. I am a strong believer in collaborative work, both in medicine and in science, and effective and efficient communication is key to achieving this. [My] passion has been to facilitate communication among budding haematologists to enable the brilliant research and audit projects performed at local level to be upscaled nationally."

Key achievements

- Launching the Pathology Portal – an adaptive learning platform hosting resources and materials that will support trainees and practicing pathologists.
- Launching a new LEPT (Learning Environment for Pathology Trainees) platform to support changes implemented in the development of new curricula.
- Celebrating and supporting research and excellent pathology practice through our awards and competition programme.

Improving patient care

Patient care and safety drives our work for excellence and innovation in pathology. We work directly with our members, kindred organisations and healthcare stakeholders to promote a strong safety culture within pathology. We're driving changes to ensure a consistent and standardised quality assurance framework, developing high-quality resources and audits to raise international standards. This requires investment to achieve, and we're advocating for the funding needed to keep delivering the best possible services to patients.

601

people attended our first three guideline implementation webinars

6

NICE-accredited guidelines were published

Supporting service improvement

Patient safety

To mark World Patient Safety Day on 17 September 2021, our Professional Standards and Clinical Effectiveness teams launched Patient Safety Awareness Week, running from 17 to 23 September. The week encourages participation in patient safety activities and discussions in the workplace, and raises awareness of how we can support our members to improve safety in their workplaces.

During the week we shared new resources on our website, including an infographic highlighting how high-quality laboratory medicine underpins patient safety, and relaunched resources from previous patient safety campaigns. The resources are available all year round for members and we publish new patient safety bulletins every month to encourage shared learning and help create a strong safety culture.

Improving external quality assurance

We're leading a review of the oversight and governance of technical external quality assurance (EQA). Our aim is to work with stakeholders to support the development of a robust systems governance and assurance framework for EQA for laboratories in the UK. We've made progress, producing policies and standard operating procedures within the EQA improvement programme. These will help to identify and manage poor practice. They clearly set out the steps for escalation between EQA providers, National Quality Assurance Advisory Panels (NQAAPs) and the Quality Assurance in Pathology Committee.

Our role in external consultations

This year the College has responded to external consultations from a wide range of organisations, agencies and societies, providing invaluable input to improve patient care and safety. We've had direct involvement in the National Institute for Health and Care Excellence (NICE) objectives and work programme and represented the professional interests of our members by contributing expert advice. Our Specialty Advisory Committees (SACs) are integral to this process, providing us with evidence and advice.

Our members helped us to successfully highlight pressures on NHS teams. We worked alongside other medical royal colleges and the Academy of Medical Royal Colleges to raise awareness of current workforce shortages. And we're pushing for an honest conversation about the future of NHS healthcare with policymakers. We want to ensure that the expectations of government, staff and patients are realistic and there are adequate resources to meet targets.

We contributed to the NHS England and NHS Improvement consultation to support best practice around blood test requesting. The intention of this consultation was to both provide support during the current shortage of blood testing equipment, and to support recovery.

Setting standards

Consistency through collaboration

The pandemic shone a spotlight on the essential role of infection services in healthcare and highlighted disparity in the provision of infection services. Infection services are configured in a way that means there are differing amounts of infection expertise in different trusts and hospitals. As demand on these services continues to rise, so will the challenges, particularly around workforce. A one size fits all infection service provision is not appropriate, but standards are needed to ensure parity. Although standards exist for diagnostic laboratories and some aspects of patient care, to date, there hasn't been a single set of standards looking at the requirements of an infection service.

In collaboration with the British Infection Association and the Royal College of Physicians, we created a single set of standards for delivering infection services. These draw on published guidance and evidence where they exist as well as extensive experience in delivering infection services in hospitals across the NHS. They incorporate laboratory and clinical practice standards, and allow for flexibility, acknowledging the disparity in the provision of infection expertise within the NHS.

Members in infection specialties contributed to these standards through our consultation process and the College's Medical Microbiology/Medical Virology SAC approved the final version for publication. The standards represent a baseline for infection services to benchmark themselves against and to provide an indication of the resource needed to provide a high-quality service.

Quality improvement

Our NICE-accredited clinical guideline programme currently consists of cancer datasets, tissue pathways, autopsy guidelines and cross-specialty guidelines. We're always expanding to cover different aspects of cellular pathology and are working to increase the number of guidelines we produce in other specialties. Over the last year we've been working to improve our guideline processes.

92

NICE and 8 external consultations were responded to

> "We're pushing for an honest conversation about the future of NHS healthcare with policymakers. We want to ensure the expectations... are realistic and there are adequate resources."

7

patient safety bulletins were published

18

audit templates were published

We're also building relationships with key organisations to share resources that will aid the development of our cancer datasets and tissue pathways. As a result, we've formalised an agreement with the International Collaboration on Cancer Reporting (ICCR) and International Agency for Research on Cancer (IARC) that will benefit the development of UK and international standards in pathology reporting of cancer.

Clinical audits play a vital role in quality improvement in pathology. Our clinical audit templates ensure audit activities are conducted efficiently with maximum benefit to patient care while helping pathologists to meet the requirement of revalidation. These templates are published alongside our clinical guidelines to support guideline implementation. They also assist in promoting participation in work-based learning. The audit certification scheme provides educational value to our members, fostering high-quality audit projects that are selected for publication, and helping pathologists with accreditation schemes such as UKAS.

> We're building relationships with key organisations that will... benefit the development of UK and international standards in pathology reporting of cancer."

A sustainable workforce

Our members work as part of an underfunded and under-resourced workforce. This hugely affects their working lives and the quality of care they can deliver to patients. Significant issues around workforce in pathology remain, and we continue to dedicate resources to advocate for a properly resourced, supported and sustainable pathology.

Member input into our workforce surveys is also vital in providing us with the evidence we need to lobby for changes.

Workforce reporting and planning

The College's Workforce team work in partnership with our SACs to analyse data from our workforce surveys. The analysis helps us to understand where current pressures and shortages exist, disparities between roles and locations, and what's needed for the future to meet increasing demands for pathology services.

In July 2021, we published our cytopathology workforce report, which focused on diagnostic cytopathology outside the cervical screening programme. The report highlighted that 83.6% of pathologists reporting on cytopathology samples are general cellular pathologists rather than specialised cytopathologists – only 5.5% of the pathologists who responded identified themselves as cytopathologists. Given the retirement plans of the cellular pathologists who responded, there will be a gap in cytopathology reporting unless trainee pathologists and consultant pathologists are encouraged to report cytopathology samples. With around 25% of biomedical scientists planning to sit high-level qualifications in cytopathology, this will help fill staffing and service gaps. We're working closely with the Institute of Biomedical Science to ensure that future cytopathology staffing models factor this in. There needs to be sufficient material for training, education and maintaining competence for all staff involved in cytopathology service provision.

Our veterinary pathology workforce report was published in summer 2022, focusing on the issues and barriers to recruitment in the UK. Our survey results highlighted difficulties in recruiting veterinary pathologists, with institutions having to go through multiple rounds of recruitment.

As part of our recommendations, we're looking at how we can improve visibility of veterinary pathology among school students, undergraduates and trainees, and how we can increase access to and funding and support for training. We need to ensure there are the right numbers of trainees to meet demand. An action plan has been published and work is underway.

We launched neuropathology, virology and histopathology surveys and are currently analysing the data. We'll be publishing reports for these specialties over the next year.

We want to ensure members can use our workforce data to understand what's happening in their specialty and region. We have expanded access to workforce data on our website to provide a clearer and more up-to-date picture of the current pathology workforce.

> Significant issues around workforce in pathology remain and we continue to dedicate resources to advocate for a properly resourced, supported and sustainable pathology."

Informing and lobbying

We continue to raise the issue of workforce at every opportunity with government and policymakers. Our message is clear – we need the right number of correctly trained, skilled staff in the right place at the right time to provide the excellent healthcare our patients need.

Our workforce data has been used in responses to consultations by various Health and Social Care committees. We also use the data to engage kindred organisations, associated bodies and charities to widen the reach of our voice and to bring a patient-focused element to the issues we're raising.

We were pleased to see the influential House of Commons Public Accounts Committee report on NHS backlogs and waiting times in England feature College evidence highlighting pre-pandemic pathology workforce shortages. We welcomed the committee's recommendations for an assessment of the number of staff that will be available to deal with the backlog and how staff working under intense and consistent pressure will be supported.

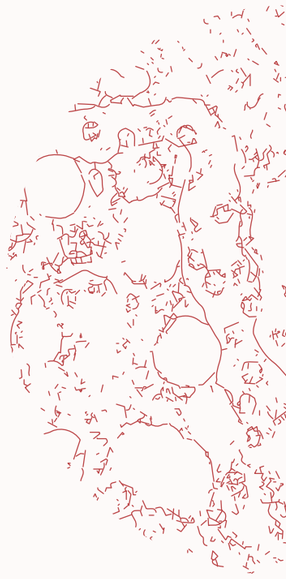
The Health and Social Care Committee expert panel on cancer services used much of our evidence on cancer services and workforce in their evaluation report. Highlighted areas included concerns that certain

26

audits were submitted to the audit certification scheme for evaluation

349

job descriptions were reviewed and approved



222

College assessors attended advisory appointment committees in England, Wales and Northern Ireland

specialties don't have enough staff in post to meet patient demand and that there have been workforce shortages for some time. The evaluation also reflected our concerns about how the new Cancer Diagnostic Centres across England would be staffed, and how the capacity of the workforce would expand to match the investment in diagnostic pathways.

We welcomed the commitment in the Queen's Speech of £2.3 billion for diagnostics with plans for over 100 Community Diagnostic Centres over three years. We've also highlighted that the pathology workforce will need to be expanded to manage increased investigative tests from the new centres.

The Health and Social Care Committee report on cancer services used our evidence on the shortage of pathologists. Now more than ever, it's vital that services are sufficiently funded and supported to tackle the diagnostic backlog, particularly in cancer services.

"We continue to raise the issue of workforce at every opportunity with government and policymakers. Our message is clear – we need the right number of correctly trained, skilled staff in the right place at the right time to provide the excellent healthcare our patients need."

Looking forward: workforce intelligence review

This last year has seen great success with how our workforce data has been used as evidence to promote investment in pathology. We want to reach further. To this end, we are evaluating and remodelling our approach to the collection, analysis and reporting of workforce data. This is a significant project that will overhaul current processes. We will use the data to monitor workforce numbers, identify trends and issues, and highlight gaps in the pathology workforce to lobby for increased training places and resources for pathologists.

Over time, these reports will benchmark how the workforce situation is evolving, identify whether specific issues are being adequately addressed, and provide robust data for internal and external College use. Information and data can be extracted to produce evidence-based briefings for decision-makers and influencers and assist them in advocating for the needs of pathology and pathologists and, ultimately, safe patient care.

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OUR STRATEGY AND ACHIEVEMENTS

Image: College Registrar, Dr Lance Sandle, introducing the Dacie–Wilkson lecture at the 62nd Annual Scientific Meeting of the British Society for Haematology. Reproduced with permission from the British Society for Haematology, 2022.

Key achievements

- Inclusion of our workforce data that highlighted pathology workforce shortages in the House of Commons and Health and Social Care Committee reports.
- Delivering Patient Safety Awareness Week to encourage shared learning around patient safety and a strong safety culture.
- Creating policies and standard operating procedures within the EQA improvement programme to provide the consistency and standardisation required to identify and manage poor practice.
- Securing a memorandum of understanding with the International Collaboration on Cancer Reporting (ICCR) and International Agency for Research on Cancer (IARC) that will benefit the development of UK and international standards in pathology reporting of cancer.

Shaping the future of the profession

Together with our members, we're an influential collective voice for pathology. We can make sure governments, health stakeholders, the media and the public understand the expertise and vital role of the pathology workforce. This year, as ever, we've been very active in raising issues that affect the day-to-day lives of our members. Using data-driven evidence we continue to highlight workforce shortages and the impact those can have on patients. And we'll keep calling for the resources needed now and in the future.

Influence and engagement

Investment in pathology

The COVID-19 pandemic has moved onto the next phase – recovery while living with the virus. However, one of the biggest issues in healthcare now is the backlog the pandemic has caused. Although most media coverage about the backlog has focused on cancer treatment, it is affecting all areas of healthcare and all our pathology specialties.

There are various projections as to how long the NHS will be dealing with this backlog but, to make headway, the NHS needs to be adequately resourced and funded. The NHS Recovery plan was launched in February 2022 to tackle the elective care backlog over the next three years. In our response, we highlighted the role of pathologists in tackling the diagnostic backlog.

Our message was clear on this – without targeted investment in pathology services, it will be impossible to achieve this target. The pathology workforce is key to reducing the backlog and crucial to disease prevention and infection control.

Professor Mike Osborn has been taking this message directly to parliamentarians and stakeholders. He met Jeremy Hunt MP, Chair of the Health and Social Care Select Committee, to give a pathology perspective on the workforce issues in healthcare. They discussed how a lack of resources and staff were becoming even more significant and were at risk of derailing any expansion of services that the government or stakeholders might want.

Similarly, Professor Osborn met Feryal Clark MP, Shadow Minister (Health and Social Care), and his local MP Ellie Reeves to discuss pathology issues directly affecting patient care, for example workforce and the impact of COVID-19. We'll continue to work with MPs to raise issues that are important to our members.

Other significant pandemic-related issues affecting pathologists include the training of junior doctors, laboratory staff and other colleagues. There were substantial workforce issues in pathology before the pandemic, as well as issues around technology, such as poor-quality IT and LIMS provision. These issues have not gone away and have only been intensified by COVID-19 and the associated backlog.

We've been working in all four nations to highlight these issues to policymakers and the relevant NHS, training and other bodies. We want all pathology specialties to have the resources they need to provide the highest possible quality healthcare to our patients.

We highlighted not just funding and training needs, but that future plans must not lead to fragmented pathology services. We're raising the profile of pathology and will continue to do so.

Genomics

Genomics has the potential to radically redefine diagnostics and healthcare. There is hope it will improve cancer survival statistics, as well as service access, equity and efficiency. College members are the driving force in harnessing the opportunities of genomics medicine for faster, accurate diagnosis and tailored treatment for people with cancer, and with inherited diseases.

However, there is no planned resource provision for the significantly increased workload that the Genomic Medicine Service will create for pathology, which will grow over time. Unless this is addressed there will be issues in providing the quality and level of service desired.

The College's Working Group on Cancer Services, and the Cellular Pathology Genomics Focus Group, carried out a survey on genomic and molecular testing, and its effect on members' workloads. The College also wanted a deeper understanding of how testing is implemented and can be improved, as well as overall service delivery and patient care. The results of the survey have informed discussions about the resourcing and structure of pathology laboratories as genomic and molecular testing is rolled out. We'll continue to use the results to engage politicians and key organisations, making the case to government for sustained support for the pathology workforce across the UK.

Many College recommendations – such as genomic tests being approved for access via a registered health professional, and support for NHS professionals encountering patients who have used genetic tests – were included in a report from the House of Commons Science and Technology Committee on regulations for direct-to-consumer genetic testing. This followed a consultation where the College provided evidence with the Royal College of Physicians. Our evidence has also been published on the committee's website.

> "Our message was clear on this – without targeted investment in pathology services, it will be impossible to achieve this target. The pathology workforce is key to reducing the backlog and crucial to disease prevention and infection control."

"Ensuring the roles of pathology and pathologists are recognised is a priority and we have successfully moved from having almost no voice in genomics to representation on most of the significant committees involved in the roll-out of the Genomic Medicine Service."

It's a priority for us that the roles of pathology and pathologists are recognised. We've successfully made a voice for ourselves in genomics, with representation on most of the significant committees involved in the roll-out of the Genomic Medicine Service.

Professor Mike Osborn will co-Chair the 'Task and Finish' group along with Dame Sue Hill, Chief Scientific Officer for England. The group will lead the roll-out in England and our presence will allow pathologists to help steer developments and push for the resources needed. Professor Osborn also attended an influential roundtable discussion on tumour agnostic policy and associated genomic issues, hosted by the PHG Foundation. It highlighted issues to policymakers and stakeholders to help improve patient care.

Our work with All-Party Parliamentary Groups

Dr Srinivas Annavarapu, Chair of the College's Prenatal, Perinatal and Paediatric SAC, attended a meeting of the All-Party Parliamentary Group (APPG) on Baby Loss, which was held jointly with the APPG on Maternity. The College recommendations were well received by the panellists, especially the issues relating to the acute national shortage of the perinatal and paediatric pathology workforce.

Following this, Dr Annavarapu was invited to present spoken evidence to a meeting of the APPG on the staffing crisis in maternity services, to give the perspective of pathologists.

College Fellows attended the launch of a joint report from the APPGs on Blood Cancer and Stem Cell Transplantation and Cellular Therapies. The report looks at the impact of the COVID-19 pandemic on blood cancer services. We submitted evidence to this crucial inquiry, which investigated how the diagnosis and management of blood cancer have changed as a result of the pandemic, and what measures are needed for services to recover.

The College and the Transfusion Medicine SAC responded to the APPG on Sickle Cell and Thalassaemia report 'No One's Listening' following their inquiry into avoidable deaths and failures of care for sickle cell patients. We endorsed the recommendations and welcomed the call for urgent action to ensure sickle cell patients receive care at a standard to which they are entitled.

We responded to the APPG for Allergy and the National Allergy Strategy Group report – 'Meeting the Challenges of the National Allergy Crisis'. We welcome the call for urgent improvement in UK allergy services, and support workforce expansion, but this shouldn't come at the expense of clinical immunology and laboratory immunology services, which also require support and expansion. Following this we met Carla Jones, CEO of Allergy UK, who is keen to work more closely with us in the future. We hope to work collaboratively with the National Allergy Strategy Group and will be including them in one of the Immunology SAC meetings.

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The importance of visibility

We want to see improved recruitment in pathology, and we want to reduce the growing recruitment gap. We've been campaigning for greater investment in training to increase training posts in pathology, help attract trainees and ensure protected training time for those involved in training. We also have a programme of events that increase the visibility of pathology among school students, undergraduates and foundation doctors, and promote pathology as a career choice.

National Pathology Week

National Pathology Week is our hugely successful annual celebration of pathology. With the 2022 event moving to June to coincide with our 60th anniversary, we've held two National Pathology Weeks within the last eight months. Our Public Engagement team, volunteers and members were integral to the success of both these events.

Our 2021 event had the theme 'All Together Now' inspiring a diverse range of events and activities. We invited our members to highlight how teamwork and collaboration help them to deliver the incredible work they do in our healthcare system, and how the 17 pathology specialties work together to diagnose, prevent and treat diseases.

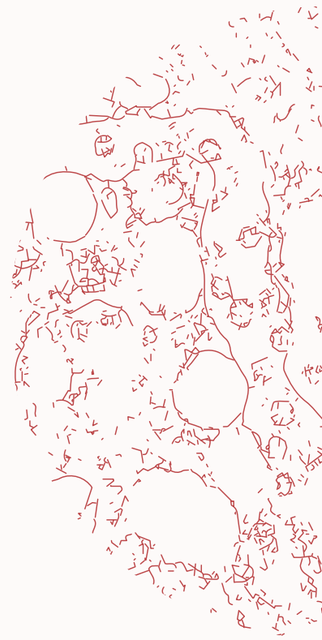
The College-led programme included an RCPath Book Club, medical ethics workshops for medical students in collaboration with the Social Mobility Foundation, a veterinary pathology workshop for secondary school students with the Royal Veterinary College, a webinar with Malcolm Robinson – the founder of inspirational charity Harvey's Gang, and virtual pub quizzes for undergraduates studying medicine, biomedical science and veterinary medicine.

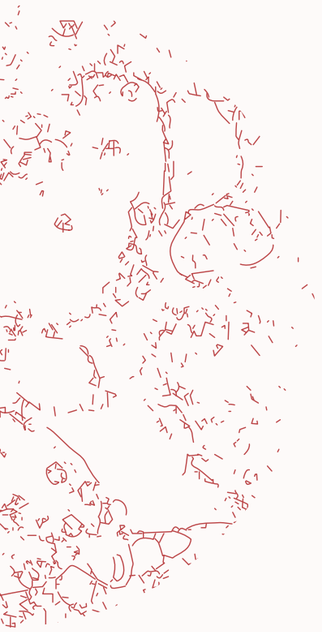
Our virtual pathology careers talks focused on secondary school students. More than 100 people attended these two events, including schools who were live-streaming the session and individual school students joining from home. The students gained real-life insight into all that a career in pathology has to offer and 95% of attendees said they'd learned something new.

We also supported members and other organisers to run in-person events around the UK. We had great engagement on our social media channels with fantastic photos, videos and posts of support during the week.

The theme of our 2022 event was 'Pathology: Past, Present and Future' with our message focusing on pathology being at the heart of everyone's health. Celebrations started with our virtual panel discussion exploring the history of the College, key milestones for pathology, current practices, hot topics and future advancements. The panel featured experts from different pathology specialties.

Other highlights of the week included the RCPath Book Club with Professor Heidi Larson, a pathology-based online origami workshop by Dr Lizzie Burns, and two fun and enlightening virtual pub quizzes for undergraduates. With questions gathered from our members who work in different specialty areas, these quizzes gave the students the chance to test their knowledge





of disease prevention, diagnosis and treatment. They were hugely popular with international students and we're looking to develop further quizzes with international students.

Foundation doctors

Safe and effective care is dependent on a sufficiently resourced workforce that can cope with both current and future demands. Our Meeting Pathology Demand workforce reports have highlighted gaps across multiple pathology specialties. Actively promoting and encouraging pathology as a career choice among foundation doctors was one of our longer-term solutions.

It's at the foundation stage that doctors consider their choices for specialty training, yet few foundation rotations contain pathology-related placements. To raise the profile of pathology among foundation doctors, we introduced several new initiatives, including the annual Foundation and Undergraduate Taster event, the Foundation Fellowship scheme and pilots of Longitudinal Integrated Foundation Training (LIFT).

The Foundation Fellowship scheme launched in 2020 and it offers foundation doctors interested in pathology, and whose rotations include a post in a pathology specialty, the opportunity to engage with the College. Benefits of the fellowship include College membership, and the chance to attend College events and educational meetings, and present at events and take part in public engagement events.

Our evaluation at the end of the scheme's first year showed the scheme had been successful in its aim of encouraging foundation doctors to choose a career in pathology. Of the foundation fellows who responded, 92% intended to apply for specialty training in pathology following their fellowship, with 66% stating that the fellowship had influenced their decision. Following on from this success, 25 new fellowships were launched in 2021.

Following the success of the LIFT model in aiding recruitment into general practice and increasing retainment in hard-to-recruit areas, we started discussions with the UK Foundation Schools Directors Committee and Wales Foundation School to pilot a pathology LIFT programme. As part of the programme, foundation doctors spend time in a pathology department every week (usually one day a week) for a year, gaining hands-on experience.

In August 2021, a pathology LIFT programme was launched in Wales with LIFT posts in histopathology, medical microbiology/infectious diseases, chemical pathology and forensic pathology. The feedback from LIFT doctors and their supervisors has been extremely positive and show the programme has benefits for both the foundation doctor and the department in which they work.

"I was keen to develop this placement in our health board to create bridges between the laboratory and the wards. The unexpected benefit I've seen already is that our F1 doctor discusses her experiences with peers on the wards and has emphasised the importance of quality information on cellular pathology request forms."

Dr Alison Finall, Clinical supervisor of LIFT Foundation Year 1 in histopathology, Swansea

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"This experience has improved my understanding of the complexities around death reporting and the role of the coroner's service. This is something that I had only limited teaching on at medical school and I am looking to adopt into my own clinical practice…"

Dr Ed David, LIFT Foundation Year 2 in forensic pathology, Cardiff

Careers events

With pathology specialties under-represented in the medical school curriculum and foundation-year rotations, we funded a virtual pathology careers event through our Public Engagement Innovation Grant Scheme. Working with the University of Buckingham Medical School and Milton Keynes University Hospital, our aim was to inform and inspire students to become the next generation of pathologists. Final year medical students were given a series of presentations by pathologists from various specialties who were at differing points of their careers. The event made an impact, with fantastic feedback from students who felt inspired to further research pathology careers.

"The event was a fantastic learning opportunity, as pathology underpins all of medicine. Pathologists across all pathology specialties play a vital role in patient care."

Catherine McIlroy, Final year medical student, University of Buckingham

Medical electives scheme

We launched a new medical electives scheme to mark the College's Diamond Jubilee. The scheme is joint funded by the College and partner societies from different disciplines, offering grants of up to £1,000 to help support undergraduate medical and veterinary students who wish to undertake electives in pathology disciplines anywhere in the world. There are six awards covering clinical biochemistry, haematology, immunology, veterinary pathology, microbiology and cellular pathology.

Key achievements

- Delivering two National Pathology Weeks to promote the incredible work of our members and raise awareness of the role of pathology throughout people's lives.
- Successfully campaigning for greater pathology involvement and representation in the roll-out of the Genomic Medicine Service.
- Increasing the visibility of pathology among undergraduates and foundation doctors through initiatives such as the Foundation Fellowship scheme and medical electives scheme, and supporting pathology careers events funded by our Public Engagement Innovation Grant Scheme.
- Increasing engagement with parliamentarians and All-Party Parliamentary Groups to raise the profile of pathology and become the leading voice in important healthcare discussions that affect our members and their patients.

We are regional

We've been actively pursuing the interests of our members and working to prioritise patient care across all four nations of the UK. Many of the challenges our members face are the same across England, Northern Ireland, Scotland and Wales; however, within these challenges are nuances specific to the four nations that require different approaches and solutions. We work alongside our regional councils and representatives to raise the profile of pathology and advocate for health equality, be that equal access to medication and services for patients or training programmes for trainees.

Regional representation

The chairs of our regional councils work with parliamentarians, policymakers, healthcare bodies and organisations to highlight the needs of pathology services, our members and the public. They also provide a crucial link between pathologists in the regions they represent and the College. In November 2021, Dr Gareth McKeeman was elected as Chair of the Northern Ireland Regional Council, succeeding Professor Ken Mills who was in the post for five years.

Regional symposia

The regional symposia are annual College events where members, trainees and healthcare workers have the opportunity to discuss developments in their region and upcoming themes in pathology. They are also an opportunity for policymakers and advisors to hear first-hand the issues pathologists are facing.

Professor Sir Michael McBride, Chief Medical Officer for Northern Ireland, attended the Northern Ireland Regional Symposium in May this year as well as holding a meeting with College President Professor Mike Osborn. Sir Michael was supportive of the College's work to increase investment in pathology services and its workforce. We'll foster more opportunities to work with Sir Michael in the future.

During each symposium there's a dedicated section for trainees where they can meet with Professor Mike Osborn and raise issues they're facing. This year, trainees highlighted their concerns around exams and the impact of the pandemic on their training, with some giving talks on their personal experiences. We were able to give details of how the College can support them and outline our priorities following the results of the COVID-19 impact trainee survey.

The symposia continue to provide the College with feedback, data and information that informs our policies for promoting and supporting pathology across all four nations.

Regional surgeries

Regional representatives in England organised and hosted regional surgeries before every College Council meeting this year. These surgeries allowed members to raise concerns and discuss relevant issues specific to their regions, which were then highlighted and considered at Council meetings. Members attending surgeries had useful discussions around workforce and particular problems within certain regions, covering effects of the pandemic, changes to training, impending retirements and an increase in part-time working.

Election priorities in Northern Ireland

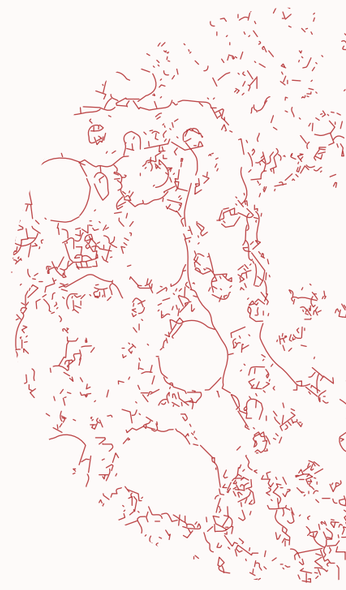
In May 2022, the Northern Ireland Assembly election was held and the College launched its priorities for the next government. These focused on investment in workforce, IT and infrastructure, staff wellbeing and learning from the pandemic. We called for increased investment in equipment and transport for specialist laboratories and digital pathology. The roll-out of digital pathology will help address some of the access inequalities faced by people living in rural areas, allowing rapid referral across pathology networks and improving access to expert advice and diagnoses.

As more and more people access pathology services, recruitment and retention of staff is essential to meet demand and improve long-term resilience. More funded training places are needed and we're calling for pay parity for new histopathology trainees in Northern Ireland in line with their counterparts in England.

We must use lessons learned from the pandemic to future-proof pathology services and plan for further outbreaks and pandemics. The pandemic brought the role of microbiology, virology and infection control teams into sharp focus, as well as the need for leadership in areas such as stewardship of antibiotics, vaccination and disease prevention. We're advocating for increased capacity within these specialty areas and are ideally placed to contribute to discussions around antibiotic resistance and infectious diseases.

During the earlier phases of the pandemic, there was a drop in the number of patients seeking help and utilising screening programmes. Now we must prioritise equal access to screening for the future, focusing on transport issues and demystifying procedures.

Although the election was inconclusive, we approached the leaders of the main political parties to highlight the priorities in our manifesto. Once a government is formed, we'll engage minsters and Members of the Legislative Assembly around our manifesto and work closely with the new government to prioritise pathology and facilitate high-quality patient care.



Policy and stakeholder engagement

The College and the regional chairs have been working with kindred organisations, other partners and government agencies to push for investment, develop recovery plans and to highlight the role and importance of pathology and pathologists.

> We lobbied and pressed hard for investment and, although there is still much work to be done to put the investment to work... we feel this is a step toward gaining the proper recognition of pathology informatics."

"We work alongside our regional councils and representatives to raise the profile of pathology and advocate for health equality, be that equal access to medication and services for patients or training programmes for trainees."

Dr Bernie Croal, Chair of the College's Scotland Regional Council, led the response to the petition urging the Scottish government to act on post-mortem activity relating to the human tissue act. We also submitted a detailed response to the target operating model for cellular pathology – a 10- to 15-year plan on how cellular pathology services will be organised and delivered.

The Scottish government's NHS Recovery Plan failed to mention histopathology or laboratory medicine. Dr Croal wrote to the Cabinet Office secretary pointing out the pivotal importance of laboratory medicine in directing patient flow, outcomes and overall financial efficiency of the wider NHS.

This is important at a time when, typically, new plans to address waiting times and cancer backlogs frequently omit laboratory services. We suggested a concerted plan to ensure adequate laboratory services are in place, especially histopathology capacity, which will be so important for cancer pathways.

Dr Jonathan Kell, Chair of the Wales Regional Council, had a positive meeting with Eluned Morgan MS. They discussed a range of pathology-related issues including workforce challenges, developing scientists into consultants by increasing their access to specialist training, and the need to complete the Digital Cellular Pathology programme.

Dr Kell represents the College at the Academy of Medical Royal Colleges and Faculties in Wales. He met the Chief Medical Officer for Wales, Sir Frank Atherton, to discuss workforce issues and has been raising the profile of pathology and its role in patient care, advocating for the involvement of the College in healthcare policies and strategies.

Following Dr Kell's contribution to the 'Priorities for healthcare in Wales forward planning' event in January 2022, he was contacted by the Care Programme about taking forward some of the ideas that came out of the meeting.

A significant investment of £120 million in LIMS and digital pathology in England was announced for the 2021/2022 financial year. We lobbied and pressed hard for investment and, although there is still much work to be done to put the investment to work – and though more funding will be required in the future – we feel this is a step toward gaining the proper recognition of pathology informatics.

Integrated Care Systems

The England regional representatives continue to work with Integrated Care Systems in their respective regions. We want to be sure every system has established pathology input and are working to establish the links that will make this happen.

Dr Ali Robb, the College's England Regional Representative for the North of England, attended the first meeting between the Academy of Medical Royal Colleges and NHSE/I on 5 April. This meeting, titled 'What does effective clinical leadership look like in ICS?', was organised to support the launch of the new NHSE/I Clinical and Care Professional Leadership Guidance.

There were opportunities to share some of our learning in pathology and the College will continue to contribute to these meetings.

In October 2021, the College published its commentary on the consolidation of pathology services. This paper discusses the issues that must be considered to improve the likelihood of success. It's based on first-hand experience and feedback from our members, and includes new advice for members based on this peer-to-peer insight. We will continue to promote engagement and collaboration between each system with its pathology services.

Improving access to pathology careers

The College's partnership with the Social Mobility Foundation (SMF) helps us to reach a greater number of school students across the UK to show that a career in pathology can be for anyone. Breaking down the barriers that prevent people from pursuing a career in pathology is essential, and this is an important aspect of the College's work.

As part of our regional Diamond Jubilee celebrations, we arranged for the MELISSA bus to visit schools across the North East of England identified by the SMF. MELISSA is a double decker bus that has been designed to deliver healthcare education and training. It was turned into a mock pathology lab to encourage students to take part in interactive experiments to learn more about the different pathology specialties. Dr Ali Robb helped to plan the events and volunteers were on hand to chat to students about their work as pathologists and healthcare scientists. The visits were a huge success and we had great engagement from the school students who attended.

"I was really excited to visit our Social Mobility Foundation partner schools with MELISSA to give students in the North East and Cumbria a small taste of how much fun pathology can be. [It was] a great way to celebrate the College's Diamond Jubilee. I hope others may be inspired to run events elsewhere in the North – or indeed across the UK and the world – to engage the public in the important work we do, to understand more about our pivotal role in the journey of their samples, and even to think about joining us in the future."

Dr Ali Robb, England Regional Representative for the North of England

We are international

The College is committed to raising international standards in pathology, engaging our members around the world, and sharing our knowledge, expertise and services as widely as possible to benefit everyone. This year has been another turbulent and challenging one for our members, with ongoing consequences of the pandemic and conflicts in Ukraine and Myanmar affecting healthcare services around the world. We've introduced new initiatives and have worked closely with global partners and organisations to provide much-needed support.

31

international medical graduates placed into UK training posts under the College's Medical Training Initiative

Supporting our colleagues around the world

Our colleagues in Myanmar and Ukraine continue to provide vital medical services despite living and working in treacherous conditions. We've been liaising with members, colleagues and representatives to find the best ways to help. In Myanmar, there are shortages of not only everyday medical provisions, but also medical books and learning materials. In September 2021, we received the news that our funding application to the British Medical Association (BMA) had been successful. The resources purchased with the funding were donated to medical doctors in Myanmar of all specialties and allied healthcare professionals to assist with their continued professional development.

We have formal links with Ukraine through our country advisors, and a long-standing memorandum of understanding with Shupyk National Medical Academy of Postgraduate Education. Our International team has been in close contact with the Ukraine country advisors and provided information for them to share with Ukrainian doctors seeking refuge in the UK. This includes details of the Refugee Scheme (UK), which we launched in 2021.

Our refugee scheme

We recognise that doctors seeking refuge in the UK face particular challenges as international medical graduates (IMGs). Our new initiative was developed to support and assist refugee pathologists located in the UK. It's free of charge for doctors who have trained as pathologists in their home country and IMGs who have started their training in pathology but were unable to complete their training. The initiative offers refugee pathologists a free one-year membership of the College and access to a wide range of resources and events, as well as our mentorship programme.

International Pathology Day 2021

International Pathology Day (IPD) celebrates the work of pathologists all over the world and the difference pathology makes to the lives of so many. We use this day as a platform to share experience, knowledge and ideas and promote collaboration to improve health outcomes. Now in its eighth year, the essence of IPD has never been more important.

IPD 2021 focused on the implementation and benefits of digital pathology and artificial intelligence (AI). The growth in digital pathology and AI allows pathologists to engage and evaluate quickly and remotely with colleagues, and has the potential to aid greater international collaboration.

During the event, the issue of inequality in access to diagnostic services was discussed, with data indicating that almost 50% of the world's population have no access to services. Solutions put forward include innovations in, and the use of, technology. There were presentations on projects assessing the viability of whole-slide imaging scanning technology in primary settings and a look into a healthcare future where informatics play a greater role in cancer care.

The roundtable topic was how digital pathology can break down international borders. The discussion raised thought-provoking information and ideas, and considered how we can achieve sustainable digital practice globally, the future of telepathology and whether digital pathology can tackle inequalities in healthcare provision.

As well as joining us for the live-streamed event on the day, our members celebrated with us across social media and showcased their work, labs and events.

> "International Pathology Day is an amazing chance to meet up and interact with colleagues from all around the world, to learn from each other and to develop friendships and rekindle old acquaintances, which help develop and further pathology for the benefit of patients everywhere."
>
> **Professor Mike Osborn**
> **President**

Collaborating with international partners

Cobadging

Over the last reporting year, we've proudly endorsed six different international activities through our cobadging initiative. These include Medlab Middle East in Dubai, Haem Icon Conference in Sri Lanka and the Gynaecological pathology online teaching programme for spring/ summer 2022 residents in Moldova.

All year round, we get regular requests from international organisations to enter cobadging arrangements with us. We have a strict internal cobadging policy to ensure the materials we cobadge meet our standards. Cobadging agreements extend our influence and reputation globally, strengthening international relations and support for our overseas members.

Virtual learning resources

Our virtual resources are developed through international collaborations and UK partnerships. They support objectives set out in our international strategy to aid the continued professional development of current and future pathologists worldwide.

36

international medical graduates sponsored for GMC registration

300+

international medical graduates attended three International Pathology School events

Key achievements

- Live-streaming International Pathology Day 2021 to a global audience, with more than 95 people joining us from Europe, the Middle East and North Africa, South East Asia, sub-Saharan Africa and Western Pacific.
- Securing £2,000 funding for learning materials for healthcare workers in Myanmar.
- Launching our new refugee scheme to support and assist refugee pathologists in the UK.
- Collaborating with the Ghana College of Physicians and Surgeons to launch a new series of 24 video lectures to support Ghana Residents in their training and continued professional development.

over

18,000

page views for our Ghana video lecture series in the first two months since launch

In May 2022, we launched a new series of 24 video lectures in collaboration with the Ghana College of Physicians and Surgeons and in conjunction with the Tropical Health Education Trust (THET) Ghana Workforce Health Partnership. This project was funded through the Building the Future International Workforce Programme (Ghana) by the UK Department of Health and Social Care to benefit the UK and partner country health sectors. The partnership aims to strengthen health services in lower middle-income countries as well as the NHS, and to help achieve healthcare workforce sustainability.

The video series is mapped to recently revised curricula from the Faculty of Laboratory Medicine of the Ghana College of Physicians and Surgeons and supports Ghana Residents in their training and continued professional development. These lectures, delivered by pathologists from the UK and overseas, cover four specialties – chemical pathology, haematology, histopathology and microbiology. They provide learning opportunities that support better practice, patient management and improved outcomes, helping to tackle some of the challenges at the forefront of pathology in Ghana and worldwide.

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Celebrating 60 years of the College

03

"2022 marks the College's Diamond Jubilee. The College owes a debt of gratitude to all the members who have volunteered over the last 60 years, from chairing committees, to becoming FRCPath examiners or helping to raise awareness of pathology. The College could not function without them."

Professor Mike Osborn, President

Your College

Since it was founded in 1962, the Royal College of Pathologists has advocated for its members and for people using pathology services, to ensure the highest quality of care.

The College has continually evolved over the last 60 years to reflect changes in the profession and society. We have grown from 300 members in 1962 to over 13,000 across the world, while our commitment to our members and to the public remains the same.

Many of our activities depend on our members volunteering. Without them, the College couldn't function. We thank all our members who have volunteered for the College over the past 60 years. Your work has been essential in shaping and guiding our work. We're focused on making the needs of our members our prime directive and, as part of our 2021–2024 strategy, will launch new initiatives that will deepen our insight into what our members want and need.

We will continue to work with you and for you, ensuring that pathology is at the heart of healthcare conversations.

Our Diamond Jubilee

To celebrate the historic milestone of turning 60, we planned year-long celebrations with fantastic events taking place all around the UK. The Diamond Jubilee has been a great opportunity to highlight the importance of pathology in healthcare and the excellent service our members provide for patients, healthcare colleagues and the NHS.

Turning 60

Tuesday 21 June 2022 was the College's official 60th anniversary and College officers and staff had worked hard to host a selection of events on this day, including an Open Day for school students. Unfortunately, rail and tube strikes led to the postponement of the Open Day, but this didn't dampen celebrations.

We were delighted that College Fellow Professor Sir Jonathan Van-Tam was able to present the College's Foundation Lecture virtually. Sir Jonathan discussed his take on the pandemic and the lessons learned. He also gave advice on how to respond to and manage rapidly developing and fast-moving events with limited information, and shared his insight in dealing with media and politicians in these situations. Nearly 300 people joined us on the day, with many more viewing the lecture on our website since then.

We collaborate with organisations and stakeholders across healthcare, and it was fantastic to see such support and so many well wishes on 21 June across social media. Conversations using #RCPath60 showed great recognition of the dedicated work of our members and pathology colleagues and appreciation of how integral they are to everyone's healthcare.

Pathology for all

We've launched a new Pathologists in Profile podcast series, releasing a new episode every month throughout this special year. This series has showcased the diversity of pathology, featuring pathologists and scientists from different specialties working across the world.

> "I was amazed at the variety of pets people have and the love for them which came across really strongly in the pet/owner photos. The value of veterinary pathology in establishing diagnoses and treatments for these important family members shone through."

Reverend Dr Jenny McKay
RCPath Pet Portrait Competition judge

We learn more about the paths they've taken and why they chose a career in pathology. To build on this, we've published four special issues of the *Bulletin*, which have celebrated pathologists and scientists and our specialties, underpinning that pathology can be for anyone. We've had great dialogue with the Specialty Advisory Committees who provided us with articles shining spotlights on past achievements in their specialties, as well as looking at future challenges and what's needed to overcome them.

How you got involved

From a classical music concert at the Liverpool Philharmonic Hall, to cycling challenges, a Pet Portrait Competition and 'Living Autopsy' tour, there have been so many celebrations to get involved with. We'd like to say a huge thank you to everyone that organised events and took part in what has been a fantastic year celebrating 60 years of the College and our members.

The RCPath Pet Portrait Competition coincided with National Pet Month and was a creative way of highlighting the value of veterinary pathology, and the breadth of pathology. We received 82 entries across social media, with an amazing array of species, including salamanders, pigeons, rabbits and dogs. There were two winning categories – cutest pet and pet that looks most like its owner.

Past-President Dr Suzy Lishman CBE took her 'Living Autopsy' event on tour to celebrate our Diamond Jubilee. This event has been hugely popular and successful since it was created, with one lecture receiving over 1.7 million views on our YouTube channel. Using a model playing a dead body, attendees learn about the role of pathologists and follow the process of a post-mortem examination with real-life equipment used to explain this. The tour has visited Northern Ireland, Leeds, London, Edinburgh, Newcastle, Cardiff and Worcester. Regional living autopsy events have also been taking place with local pathologists in Derry, Merseyside and Tregaron. Dr Emyr Benbow delivered his living autopsy event in Welsh as part of the National Eisteddfod of Wales.

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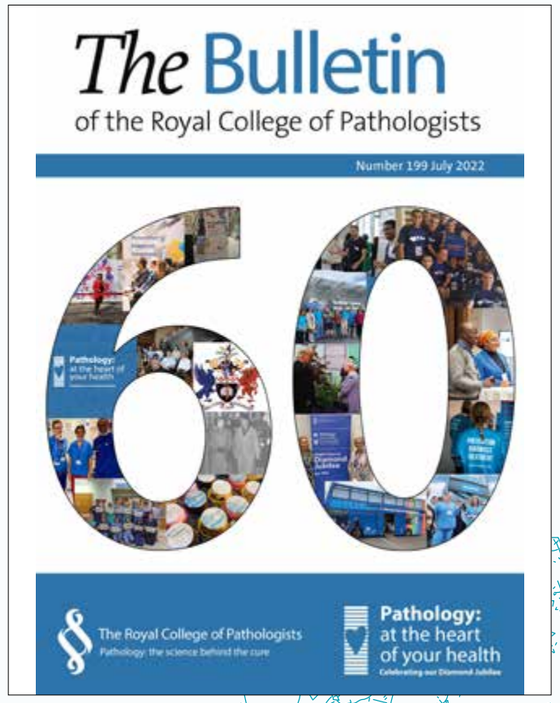
The Wales Regional Council organised the Wales Coast Path walk as part of our celebrations in Wales. On Saturday 2 July 2022, walks took place around the coast of Wales and President Professor Mike Osborn joined pathology colleagues and their family and friends on the South Wales section. The Mayor of Penarth, Cllr Laura Rochefort, joined Professor Osborn between Penarth and Cardiff Bay, discussing issues facing the pathology workforce in Wales as they walked. Dr James Davies MP also took part in the walk from Prestatyn to Rhyl along with a group from the Betsi Cadwaladr University Health Board, organised by Wales Regional Council member Dr Anu Gunavardhan.

Other events in Wales included a lecture at the Senedd sponsored by Vaughan Gething MS, Minister for the Economy, and given by Professor Meena Upadhyaya OBE – a medical geneticist and honorary professor at Cardiff University. In her lecture, Professor Upadhyaya discussed her life, work and the challenges she has faced. She is dedicated to medicine and genetics and improving opportunities for everyone. Professor Roberto La Ragione, Chair of the RCPath Veterinary Pathology Specialty Advisory Committee, delivered his Diamond Jubilee guest lecture on 'Zoonoses: a global One Health issue' at Swansea University as part of the Microbiology Society's 'What's new in Cryptosporidium?' meeting. Professor La Ragione's lecture highlighted the growing threat of zoonotic pathogens and the impact that climate change and intensive farming is having on transmission.



> "It was brilliant to see members across Wales taking part in the College coastal walk to highlight the amazing work pathologists do. We were grateful for the support of Cllr Laura Rochefort, Mayor of Penarth, and Dr James Davies, MP for Vale of Clwyd, and look forward to continuing to work closely on promoting the work of pathologists in Wales."
>
> **Dr Jonathan Kell**
> **Chair of the Wales Regional Council**

NOVEMBER
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ROYAL COLLEGE OF PATHOLOGISTS
ANNUAL REPORT & ACCOUNTS

SECTION 03
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"I was honoured and privileged to be invited to speak at the Senedd about my challenging but worthwhile journey in medical genetics as part of the College's Diamond Jubilee celebrations."

Professor Meena Upadhyaya OBE

In September, members of the College joined Professor Sarah Coupland, Vice President for Communications, on the Land's End to John O'Groats bike ride. They covered 1,000 miles across 12 days of cycling. The College teamed up with Cancer Research UK, Cycle Retreats, who organised the event, and Sonic Healthcare UK, who sponsored the event, to raise awareness of the role of pathology in cancer diagnostics and patient care. The funds raised for Cancer Research UK will support research carried out by pathologists and scientists to discover new therapies to treat different types of cancer. Well done to all who took part in this challenge and our virtual cycling and walking challenges earlier in the year.

Open Day celebrations moved to 8 September and we were delighted to be joined by 65 14–18 year olds from schools from around London. We wanted to use the Open Day to inspire and inform local young people about pathology and pathology careers, bringing school students from diverse backgrounds to the College to participate in interactive activities. It was a great opportunity for College members to communicate with young people about their work and its importance to the nation's health.

Proceedings started with the arrival of Her Royal Highness, Birgitte Eva van Deurs Henriksen, Duchess of Gloucester, and Mr Leslie Morgan OBE, Deputy Lord Lieutenant for Tower Hamlets. We were delighted that they were able to join us for our celebrations. Professor Mike Osborn invited The Duchess of Gloucester to unveil a plaque to mark the 60th anniversary of the College and to sign the College's visitors' book.

The Duchess of Gloucester and school students attended a ‘Living Autopsy’ session with Dr Suzy Lishman. With the aid of a living model, Dr Lishman talked through the step-by-step process of a post-mortem examination, showing instruments used during a real autopsy. School students and their teachers enjoyed the opportunity to meet The Duchess of Gloucester before the session.

In the afternoon, students took part in nine hands-on pathology-related activities. Each student received a bag full of pathology-themed resources, including activity sheets and a bingo card, which students filled in as they went around the activities. Completed cards were collected at the end of the final round and a prize was given to two lucky students from each school.

The afternoon activities were delivered by members from different specialties, including neuropathology, haematology, chemical pathology, histocompatibility and immunogenetics, and veterinary pathology. The activities offered different ways for students to learn more about pathology – interactive quizzes, roleplay, using microscopes and 3D printers, and producing science-themed art. We are grateful to all members who volunteered their time and expertise to deliver these activities. The students had a fantastic day learning more about pathology and we’ve since received excellent feedback.

> “Very detailed, informative and jam-packed. I would recommend for science lovers.”

In the evening of the Open Day, we welcomed sponsors and key partners who showcased their work to guests at the President’s Annual Dinner. Thank you to our sponsors Sonic Healthcare UK, Aiforia, Sectra, Smart in Media, Agilent and the Pathological Society, and to our partners 3D LifePrints and LabTests Online.

Further events will be taking place across the UK until the end of year. In November, the College’s Scotland Regional Council will host a special Diamond Jubilee symposium at the Royal College of Surgeons Edinburgh. The symposium will highlight the vital role of laboratory services in healthcare, discussing new research and innovations, cutting-edge cardiac markers and advances in artificial intelligence. We’re delighted that we’ll be joined by Professor Sir Gregor Smith, Chief Medical Officer for Scotland, Catherine Ross, Chief Healthcare Science Officer for Scotland, and Professor Dame Anna Dominiczak, Chief Scientist (Health) for the Scottish Government.

> “A really inspiring day that showed the wide variety of professions in pathology. Thank you!”

Our specialties and case studies

04

" Founded in 1962 to develop and support the evolving specialties of pathology, the College has flourished since then owing to the hard work and professionalism of you, our members. The College continues to champion the role of all our 17 specialties and our members who work to help us deliver and develop excellence in patient care."

Professor Mike Osborn, President

Our specialties

The College is very proud of all our medical and scientific colleagues working across 17 specialties and many subspecialties. Our colleagues make exceptional contributions to health at all stages of our lives. Examples of this essential work range from diagnosing inherited and acquired disease in the fetus and newborn, immunisation in childhood and adults, care of pregnant mothers, diagnoses, investigation and treatment of a multitude of disorders, infections and cancers together with screening programmes right through to post-mortem examinations that inform the care of the living. We have briefly outlined the key roles of each specialty with a further spotlight on just some of the ongoing work in the clinical case studies in the next few pages.

Cellular pathology

Cellular pathology includes many subspecialties, including cytopathology and dermatopathology. Cellular pathologists are doctors and scientists who diagnose and study diseases including cancer and inflammatory diseases, such as ulcerative colitis, in tissues and organs. Cytopathologists diagnose cervical cancers through the screening of cells. Examination by microscope of a small biopsy or tumour can provide the diagnosis but, increasingly, this is supplemented by DNA examination of cancers to tailor treatment.

Chemical pathology

Chemical pathologists and clinical biochemists monitor bodily fluids like blood and urine to detect important changes in the body's chemistry. They play a key role in diagnosing and monitoring patients with a wide variety of illnesses, from high cholesterol to thinning bones. Chemical pathologists interact with patients at several different points through their treatment journeys – they investigate test results and meet patients in person to support their treatment.

Forensic pathology

Forensic pathologists perform medico-legal post-mortem examinations to determine the cause of death, including cases where a crime is suspected. They collect, examine and interpret tissue specimens under the microscope, as well as documenting and interpreting injuries, including on living victims. They provide scientifically objective expert reports for the police, coroners, procurators fiscal and solicitors and give expert evidence in crown, family and coroners' courts among others.

Genetics and genomics

As advances in technology have allowed us to study DNA in ever greater detail, genetics and genomic medicine have become an important weapon in the fight against disease. Doctors and scientists working in genetics diagnose inherited diseases and advise families on treatment. Genomic testing also contributes to the better understanding of infection, including mapping of the COVID-19 pandemic.

Genomic medicine is at the forefront of transforming patients' lives by enabling a quicker diagnosis for patients with a rare disease; matching people to the most effective medications and interventions; and increasing the number of people surviving cancer each year because of faster, accurate diagnosis and tailored treatment with targeted therapies.

Haematology

Haematologists are experts in blood cells, including those circulating round the body and in the blood cell factories of the bone marrow. Haematologists diagnose and treat malignancies such as leukaemia and anaemias like sickle cell disease. They also deal with abnormalities of the blood clotting system, such as haemophilia. Haematologists care directly for patients on hospital wards and out-patient clinics, and carry out diagnostic work in laboratories.

Histocompatibility and immunogenetics

Histocompatibility and immunogenetics (H&I) is the study and testing of the genes and proteins that are important in the matching of organ and bone marrow transplant donors with recipients. H&I scientists ensure that transplanted organs and cells are compatible with the recipient to lessen the chances of rejection. They also support transfusion of platelets and granulocytes and are involved in investigations into transfusion reactions. H&I tests are important in the diagnosis of inflammatory diseases and can help predict adverse reactions to drugs used to treat disease, e.g. HIV.

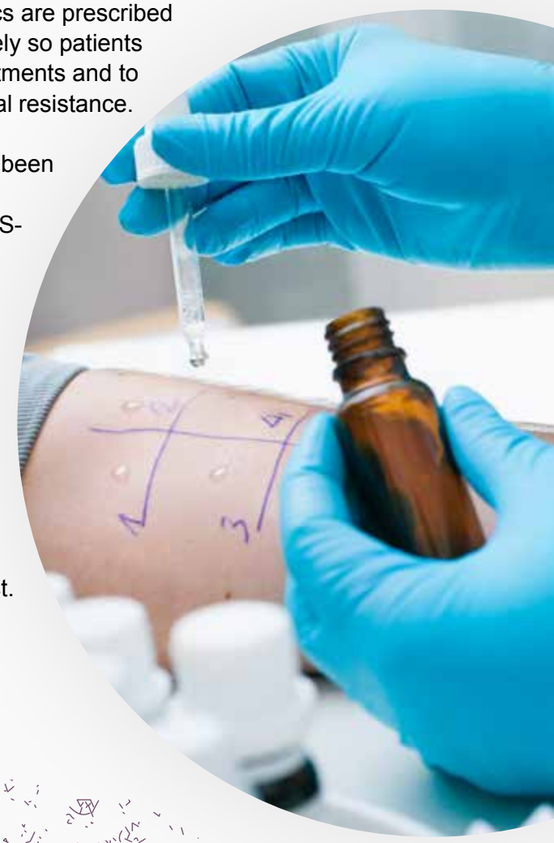
Immunology

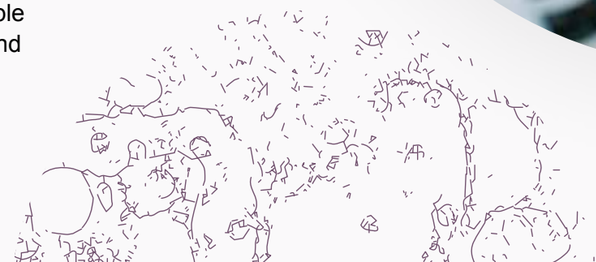
Immunologists deal with the study, diagnosis and management of people with disordered immune systems and immune deficiency. They advise on conditions in which immunological treatment forms an important part of therapy and/or prevention. Immunologists also specialise in the diagnosis and treatment of allergies. This specialty is playing a key role in better understanding the immunological response to SARS-CoV-2, including the development of potential therapies and vaccines.

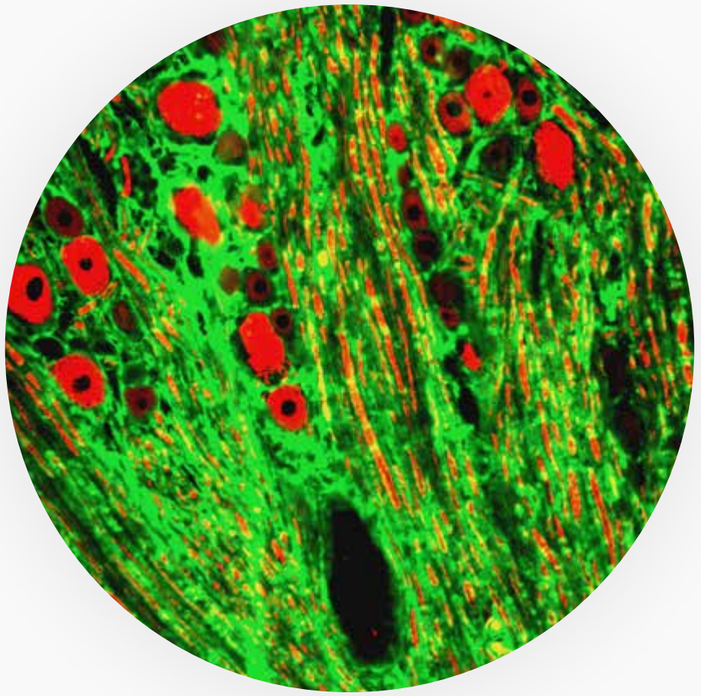
Microbiology

Medical microbiologists support and oversee the prevention, diagnosis and treatment of illness caused by microorganisms such as bacteria. They give advice on clinical and laboratory diagnosis of infection, identify the best treatment for infectious diseases and monitor patients following treatment. They also ensure antibiotics are prescribed and used appropriately so patients receive the best treatments and to minimise antimicrobial resistance.

Microbiologists have been at the forefront of the response to the SARS-CoV-2 pandemic, advising on infection prevention and control measures, public and occupational health, strategic planning and overseeing COVID-19 testing and diagnosis in centres where there is no on-site virologist.







Molecular pathology

Pathologists working in this specialty examine molecules, particularly DNA, within organs, tissues or bodily fluids to study and diagnose diseases. Molecular tests check for specific changes in genes or chromosomes that can cause disease, such as cancer and infectious diseases. Molecular pathologists have an important role in personalised medicine, which identifies patients that can benefit from targeted therapies based on the molecular characteristics of the tumour present.

Neuropathology

Neuropathology is concerned with diagnosing and investigating diseases in the nervous system, i.e. brain, spinal cord and nerves, as well as the muscles of the skeleton. These include a wide range of disorders, such as tumours, inflammatory disorders, infections and genetic diseases. Neuropathologists use microscopes to examine samples of tissues but, in recent years, findings from molecular tests have been increasingly incorporated into their reports, for example for brain tumours. This provides much more detailed information to the clinicians with whom they work closely.

Oral and maxillofacial pathology

This lesser-known branch of dentistry – oral and maxillofacial pathology – is concerned with diagnosing diseases in the head, neck, mouth, jaws and face. Oral and maxillofacial pathologists use soft tissue and bone biopsies alongside information from dental examinations and X-rays to investigate patients' cases. They are also involved in research into the development of treatments for head and neck cancer and the investigation of the genetic causes of developmental diseases.

Paediatric and perinatal pathology

Paediatric pathologists diagnose, investigate and monitor disease in children from conception up to 18 years of age. This includes areas such as genetic disorders, congenital diseases, cancers, disorders of metabolism, inflammatory disorders and infection. They are experts in a range of pathology specialties, such as cellular pathology, laboratory medicine and medico-legal pathology. Perinatal pathologists diagnose and investigate disease processes that affect unborn babies, newborns and infants. They investigate causes of pregnancy loss, miscarriage, stillbirth and neonatal disease. They are experts in pathology involving the placenta.

Reproductive science

Using increasingly sophisticated technology, scientists working in reproductive science can give hope to couples who are having trouble conceiving. They are experts in diagnosing infertility, as well as investigating, offering advice and insight on treatment options and delivering treatments, such as in vitro fertilisation.

Toxicology

Toxicologists are scientists who work across a broad range of environments in healthcare. In hospitals, they analyse samples from patients who have, for example, taken recreational drugs or overdoses of prescription medicines. They also advise public health bodies and industry on chemical and environmental hazards and on drug safety.

Transfusion medicine

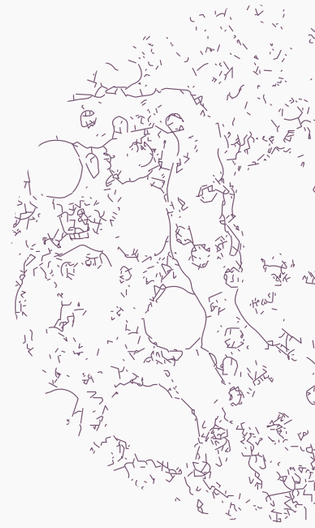
Transfusion doctors and scientists are haematologists who specialise in transfusion medicine. They make sure that every patient who needs a transfusion is matched with blood from a suitable donor. They oversee the health and wellbeing of donors, the testing of blood for infections, the management of hospital blood stocks and promotion of the safe and appropriate clinical use of blood and components. Transfusion staff participate in and contribute to haemovigilance activities promoting patient safety.

Veterinary pathology

Veterinary pathologists work in animal disease surveillance, prevention, diagnosis and treatment. They play a key role in the development of safe and effective medicines and vaccines for animals and humans. They investigate diseases in pets and farm animals, as well as exotic species. They also contribute to animal conservation and protection, and public health.

Virology

Virologists are doctors and scientists who oversee the diagnosis, management and treatment of patients with viral infections, from common viruses like chickenpox to emerging infections like Zika and Ebola. Virologists are also involved in public health – studying and advising on infections spreading globally as a result of travel and climate change. Some virologists specialise in vaccine development. This specialty has been particularly recognised in making an enormous contribution to COVID-19 testing and diagnosis, which have been essential to the care of healthcare staff and patients throughout the pandemic.



CASE STUDY

Implementing a newborn screening programme: our experience in Kaduna State, Nigeria

Newborn screening programmes for sickle cell disorder ensure early diagnosis, allowing preventative measures to be established early in childhood and reducing the likelihood of major health complications. Here, Dr Ifeoma Ijei-Enesi, Dr Livingstone Dogara and Dr Psalm Baba Inusa describe how their screening programme has overcome challenges to improve diagnostic and treatment services for patients with sickle cell disorder.

Sub-Saharan Africa accounts for more than 80% of the over 400,000 sickle cell disorder (SCD) annual births globally, with Nigeria having the most cases. Despite the significant public health implications, no African country has implemented universal newborn screening (NBS) similar to national childhood immunisation programmes.[1] NBS is essential for early diagnosis and the initiation of basic health intervention strategies and steps to prevent diseases like malaria, to reduce illness and death.[2]

Experts in Africa have identified a complexity of factors contributing to the challenges faced in initiating, operating and expanding NBS programmes. There is consensus that the government's role in the design, implementation, funding and integration of NBS programmes for SCD into public health systems can influence the sustainability.

The north-western state of Kaduna has a population and density of 8 million and 183.1/km^2, respectively (as at 2016).[3] It is here that our young NBS programme exists at a sub-governmental level in a small network of rural and urban facilities offering tiered healthcare.

The African Research and Innovative Initiative for Sickle Cell Education (ARISE), an EU-funded project (www.ariseinitiative.org), is working with state, local and international partners to increase research, diagnostic and clinical management capacity throughout the healthcare system. The aim is to bridge the screening gap by screening 10,000 infants annually.

Amina's story

Amina's* parents drove 11.2 km across the Kaduna metropolis to our facility, a tertiary hospital in the heart of the city. They had been referred for specialist care for their son aged almost four. Amina, his three-month-old sister, was offered screening as she was an at-risk infant.

Amina underwent dried blood spot sampling, whereby a small volume of blood was collected from Amina onto a piece of absorbent paper called a Guthrie card. The blood dried on the paper before being packaged and sent to a screening laboratory in Kafanchan, a town about three hours away from the metropolis. The lab uses isoelectric focusing, which is a cost-effective technology that separates proteins, to identify abnormal types of haemoglobin associated with SCD.[4,5]

Unfortunately, in a country facing the challenges of incessant power outages, supply chain interruptions, difficult travel terrain and insecurity, the testing platform was experiencing equipment downtime. It was six months before Amina's results were received on-site. The parents were contacted by phone within 24 hours of receipt, but they were unable to make a physical appointment until three weeks later due to paternal schedule conflicts.

Amina was now one year old. She had developed symptoms at four months and the results showed she had SCD like her older brother. Despite the delay in obtaining her results, the parents' concerns were allayed by education about how her disorder could be managed and were both relieved and delighted to hear about our care plan for her going forward. She is currently enrolled at our facility receiving malaria and pneumococcal prophylaxis, folic acid, vaccinations and health checks.

We have since secured increased government commitment and American Society of Hematology-Consortium on Newborn Screening in Africa (ASH-CONSA) laboratory support for resources for tests and equipment. We have been able to provide service and training to primary healthcare centers to help improve the services provided and set standards. To further reduce delays and promptly identify and address challenges along the screening pathway, we established an additional NBS laboratory, implemented regular twice-monthly meetings and facilitated a review process. We have reduced our turn-around-time and babies are now enrolled into clinical care within four to six weeks of the blood spot being taken.

Amina's story depicts the myriad of challenges faced in providing diagnostic and therapeutic treatments for people with SCD in low- and middle-income countries and some strategies to overcome such barriers. With her parents eager to partner with us to provide the best possible care for her, I know we haven't seen the last of that little girl and I'm privileged to have been a small part of her story.

Acknowledgements to Monica Shuaibu and Janet Yakubu.

*The child's name has been changed to maintain confidentiality.

Sickle cell disorder affects the nature of haemaglobin (a special protein that carries oxygen and is found in red blood cells). Normal red blood cells are doughnut-shaped – red blood cells affected by sickle cell disorder become sticky and rigid when they lose their oxygen and become sickle-shaped, like a crescent moon. This causes them to block blood vessels, leading to symptoms that are often painful, or be destroyed too early sometimes requiring a blood transfusion. It's a lifelong condition and early diagnosis means treatment can start promptly. There are treatments to manage sickle cell disease, but a cure is not widely available.

References: References can be found online: www.rcpath.org/profession/publications/annual-reports.html

CASE STUDY

Improving blood matching for transfusions in patients with sickle cell disorder

The transfusion of red blood cells may be a one-off event, or it may be required every few weeks over many years, for example for people with an inherited anaemia such as sickle cell disorder. Here Dr Sara Trompeter, a consultant haematologist, discusses the challenges in matching blood for transfusions and advances in red cell genotyping through the Haem-Match project.

Matching blood

Red blood cells – the cells that carry oxygen around the body – have labels on their surfaces, known as antigens or blood groups, which we inherit genetically from our parents. Blood is selected for transfusion according to the blood groups of the donor and the blood group of the recipient – we call this 'matching'. There are over 2 million units of blood donated a year in the UK. There are over 200 blood groups so matching for everything every time is not feasible. Currently, we routinely provide blood matched for the ABO blood groups and also for RhD (a protein found on the surface of red blood cells; previously also referred to as Rhesus).

The consequences of unmatched blood groups

For most people undergoing a blood transfusion, provided they are ABO and RhD matched, there are no complications. However, a patient may form an antibody against a blood group if the red cells of the donor have an antigen that is 'foreign' to the patient (i.e. if the red cells of the donor have a blood group that the red cells of the recipient do not). This is known as alloimmunisation.

Alloimmunisation can be dangerous, because if the patient is transfused subsequently with blood containing the antigen that caused the antibody to form, there is a risk that the immune system of the patient will attack the transfused cells, causing a haemolytic reaction that can be fatal. We know that some people who receive transfusions (such as those with sickle cell disorder and thalassaemia) are more likely to form antibodies than patients with a condition requiring a one-off transfusion.

> "When [Ama] was pregnant … there were only two units of blood available for her nationally. If she were to have had a serious sickle-related complication, she would have likely needed at least eight units of blood to treat her."

To reduce the risk of antibody formation, blood for regularly transfused patients is matched at present by considering other Rh antigens, for example C, c, E, e and the K blood groups in addition to the A, B, O and D blood groups. Despite this, around 17% of

such people do make antibodies to the other blood groups that we do not match and many will have severe transfusion reactions. This can result in real difficulty in getting blood for them.

Ama's story

Ama has sickle cell disorder and developed antibodies following transfusion. When she was pregnant in 2018 there were only two units of blood available for her nationally. If she were to have had a serious sickle-related complication such as a chest syndrome, she would have likely needed at least eight units of blood to treat her. We met with Ama and had a conversation about the impact of alloimmunisation on her. She spoke candidly about the anxiety that she experienced during her pregnancy. She discussed the enormous lengths the clinical and laboratory staff in the hospital and NHS Blood and Transplant (NHSBT) – the national blood service for England – went to ensure that suitable blood was made available for her should she have needed it.

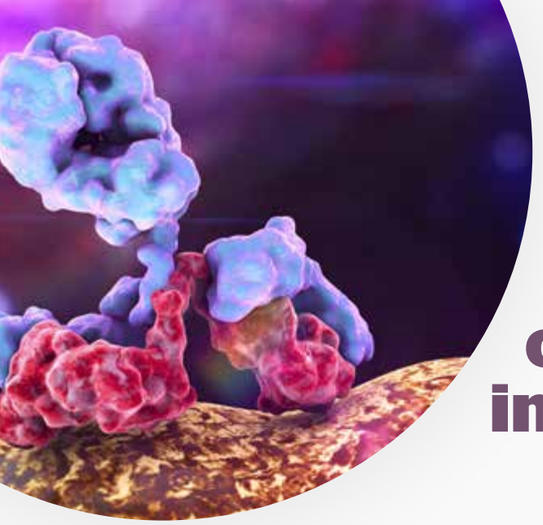
> "Ama spoke about her hopes … for her children who also have sickle cell disorder. Ama is hopeful that they might not form antibodies and be in such a vulnerable position as herself. This is a major aim of Haem-Match."

We spoke about the rare donor panel – a group of donors with rare blood groups who are supported by NHSBT to donate, sometimes in an emergency – whose selflessness she was particularly touched by. The National Frozen Blood Bank in Liverpool and teams in NHSBT such as the red cell immuno-haematology (RCI) teams and the International Blood Group Reference Laboratory (IBGRL) undertake testing and research to support those who are difficult to transfuse. Ama spoke about her hopes for the future, particularly for her children who also have sickle cell disorder. Ama is hopeful that they might not form antibodies and be in such a vulnerable position as herself. This is a major aim of our research project Haem-Match.

What is Haem-Match?

Haem-Match aims to provide blood for transfusion that is more precisely matched to patients' blood groups, known as extended (red cell antigen) matching. In doing so, we can reduce the risk of harm caused by transfusion (for example antibody formation, alloimmunisation and transfusion reactions), streamline the allocation of precisely genetically matched units to patients with complicated transfusion needs, and reduce waste and improve efficiency in the collection and allocation of blood units.

Although the project initially focuses on reducing the risk of blood transfusion treatment for people with sickle cell disorder, we hope to expand this to people with other transfusion-dependent anaemias such as thalassaemia and myelodysplastic syndrome. You can read more about Haem-Match here: www.haemmatch.co.uk.



CASE STUDY

Finding a novel cause of primary immunodeficiency

Clinical immunologists specialise in diagnosing and treating patients with inherited or acquired failures of the immune systems that lead to infections and autoimmune complications. When the cause of an immune system disorder is unknown, clinical trials and research can be vital in providing answers. Here, Dr Sinisa Savic describes how a novel cause of primary immunodeficiency was discovered.

Maurice was well as a child but began suffering with frequent chest infections from his mid-teens. At 15 years old, he recalled being treated for pneumonia. It was not until he was 19 years old that he came to the attention of the clinical immunology department at St James's University Hospital in Leeds. His referral was triggered by a finding of very low levels of immunoglobulins (antibodies) in his blood, following routine investigations for chronic diarrhoea.

> "As medical science continues to advance, the technology for correcting genetic conditions will become more readily available."

Once he was under the care of the clinical immunology team, detailed investigations of his immune system were arranged. This included studying particular types of white blood cells, mainly lymphocytes, to determine more precisely the type of immunodeficiency Maurice was suffering from. These tests showed that his immune system was not producing enough immunoglobulin or a specific type of lymphocyte called a CD4 T cell. In addition, when his lymphocytes were activated by signals mimicking natural infection, they did not respond properly. Maurice had no family history of immunodeficiency to suggest a genetic cause for his condition, but neither did his condition fit with one of the genetic types of primary immunodeficiency known about at time, since his disease onset was so late. Therefore, he was given a diagnosis of common variable immunodeficiency – a diagnostic label used for some primary immunodeficiencies of unknown cause. He was started on immunoglobulin replacement therapy and has remained on this treatment ever since.

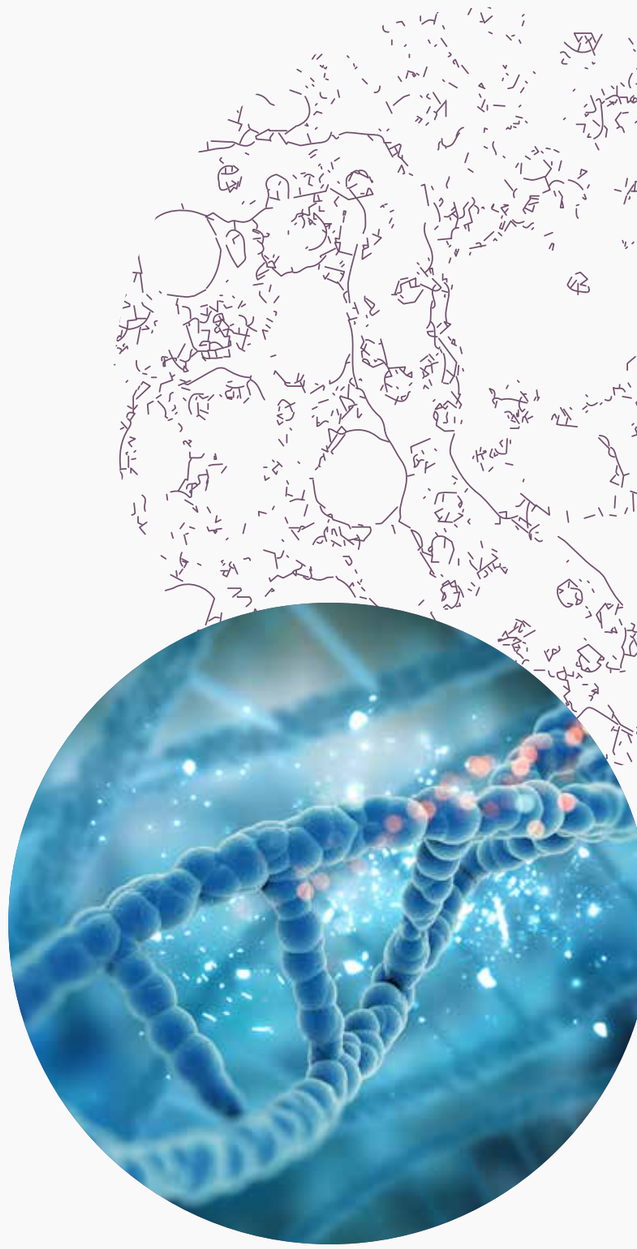
In 2014, Maurice was invited to take part in a local study that aimed to improve the diagnosis of primary immunodeficiencies through the use of advanced genetic testing. Maurice was found to have unique changes within his genetic code, in a gene called *CRACR2A*. Changes in this gene had not previously been linked to any specific health conditions, but studies in mice had shown that when this gene was deleted, it resulted in abnormal function of the immune system. In particular, it led to the reduced capacity of CD4 T cells to respond to infection, similar to what was seen when testing Maurice's lymphocytes.

Following this initial genetic discovery, it took several years to complete the testing required to provide definitive proof that the changes in Maurice's genetic code were the cause of his immunodeficiency. In part, this is because Maurice is the only person in the world where these specific genetic changes have been associated with immunodeficiency.
It has been almost 20 years from the onset of symptoms to the point where we were able to establish a precise diagnosis for Maurice's condition. Over this period of time, many new immunodeficiency conditions have been identified and genetic testing is now part of the routine diagnostic work-up for patients presenting with suspected immunodeficiency. We have more sophisticated ways in which to study the immune system and the length of time from becoming ill to getting a precise diagnosis is ever shorter for our patients.

> "None of this research would be possible without Maurice and others like him volunteering to take part in studies and help advance medical science."

The discovery of a genetic cause for Maurice's immunodeficiency did not result in any immediate change to his treatment. However, simply having an explanation helps him to cope with this long-term condition and he is now better able to make informed decisions about his career and family plans. As medical science continues to advance, the technology for correcting genetic conditions will become more readily available. Since this will only be relevant in patients with a precise genetic diagnosis, the importance of such diagnoses cannot be overemphasised.

None of this research would be possible without Maurice and others like him volunteering to take part in studies and help advance medical science. The practice of clinical immunology has always been closely linked to basic translational research. This is probably why the recent update (2022) from the International Union of Immunological Societies can list 485 separate human inborn errors of immunity, with 50 of these identified in the last two years.



CASE STUDY

Combining dentistry and pathology to diagnose and treat oral cancer

Oral and maxillofacial pathologists are dentists by degree qualification and take a further training programme and FRCPath examination that is similar to their medically qualified colleagues. Their dentistry background provides them with in-depth knowledge of the complex processes that are involved in the development of teeth. Here, Dr Gillian Hall describes an unusual case of a tumour arising from the lining of a dental cyst.

I am sure that most people will be aware of the troubles that teeth can cause, but may not know that cellular remnants and clusters of residual cells from tooth formation lay dormant in our jaws, and have the ability to wake up, proliferate and form lesions in later life. These include common cysts, which occur around unerupted/partially erupted wisdom teeth and inflammatory cysts that appear around the roots of teeth that have been traumatised or are decayed. These lesions form much of the daily work of an oral and maxillofacial pathologist and are resolved when the tooth causing the problem is removed or if tooth-saving dental procedures are performed.

In some cases, a sample of tissue is taken and sent to us for diagnosis. Occasionally, the clinical and radiological appearances may not be entirely typical or explainable as one of these common cysts, and pathological examination of the tissue is essential. Whatever the scenario, we examine the tissue cells using a microscope, searching for evidence that might signify a more worrying diagnosis, namely one of the rare types of tumours that these cells have the capability to form.

> "In more than a dozen years as a consultant, this is the first time that I have seen a carcinoma arising in [a dental cyst] (and likely the last)."

Considering that these cluster of residual cells are present within the jaws and the soft tissues of the gums as scattered groups of rarely more than ten cells, the diversity of appearances of the lesions that they can become is astonishing. The most recent 2022 WHO publication lists 11 types of cyst, 16 benign and seven malignant tumours. In the UK population, less than 6% of tumours that develop in the tissues responsible for tooth formation are malignant and the less worrisome cysts are at least five-times more common than all the benign and malignant tumours combined.

In late 2021, tissue was submitted for diagnosis of a white growth that was seen on the gum of a 59-year-old woman, behind her last standing lower molar tooth. She did have a

past history of tobacco use, so she could be considered as at risk from oral cavity cancer.

An urgent biopsy was performed. When I examined the tissue under the microscope, I could see that the squamous epithelial cells (the cell type that forms the lining of the mouth) weren't typical. From this investigation, it wasn't possible to show there was invasive growth, which would have indicated a diagnosis of cancer.

> "In the UK population, less than 6% of tumours that develop in the tissues responsible for tooth formation are malignant..."

The clinical appearances were, however, highly suspicious, and there were features of concern in the bone that were visible after examination using radiography. To complicate matters, the scans revealed a buried wisdom tooth immediately below the abnormal area around which was a sizable cyst.

A limited surgical removal of the lesion would be considered the ideal treatment, but the presence of the tooth and cyst meant this was not possible. A full thickness segment of the jaw, to include the lesion, buried tooth and cyst was removed.

The macroscopic appearances after slicing the segment using a bandsaw suggested an inseparable relationship between the proliferative lesion on the gum and the cyst, which encased the unerupted tooth. Examination of slides showed the lesion to be a cancer that had arisen from the lining of the cyst.

> "...our job is to provide the precise diagnosis, thus give clarity to the patient and their clinical team and to inform the right course of treatment."

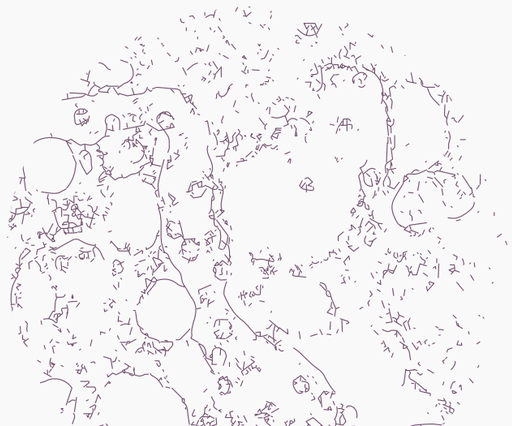
The reported incidence of the tumours that arise from the previously described tooth-forming cell clusters is 0.5 per 100,000, which in the current UK population would be 350 cases per year, and if less than 6% are cancerous, then this would amount to just 21 per year nationally.

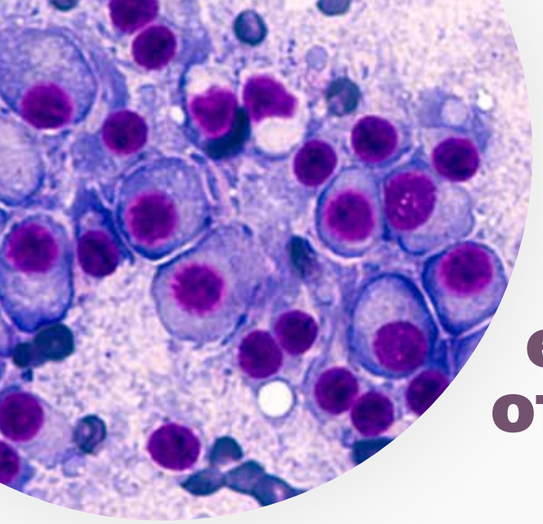
The tumour was low grade and cut out with good margins to ensure no tumorous cells were left. There were no aggressive features and no spread to the lymph nodes of the patient's neck. The prognosis for this patient based on these findings is excellent and no chemotherapy or radiotherapy was needed.

Before the reader dashes for an emergency trip to the dentist to check their wisdom teeth, it should be noted that I probably see a dozen dental cysts or more every week. In more than a dozen years as a consultant, this is the first time that I have seen a carcinoma arising in one (and likely the last).

Dentists are always on the lookout for soft tissue growths and check for abnormalities on X-rays that could indicate the presence of a dental cyst or tumour, and will refer to a specialist when something is amiss.

Likewise, the histopathologist, whatever their background, is forever looking for that once in a career rarity that makes our job so fascinating. But, far more importantly, our job is to provide the precise diagnosis, thus give clarity to the patient and their clinical team and to inform the right course of treatment.





CASE STUDY

Multiple myeloma: entering a new era of genetics

Patients with multiple myeloma – a type of bone marrow cancer – often have poor outcomes. Professor Guy Pratt, a clinical haematologist, explains how genetic testing can be used to aid decisions around the best treatment for patients, ultimately improving survival rates.

Multiple myeloma is a haematological cancer of plasma cells (a type of white blood cell) that arises in the bone marrow. Patients have symptoms such as pain, infections, anaemia and renal impairment. It affects over 20,000 people in the UK currently, with 5,000 new cases diagnosed each year. Late diagnosis remains a problem since patients often present with non-specific symptoms and it is relatively uncommon.

Over the last 20 years there have been significant improvements in the availability of novel treatment options. This has led to a marked improvement in outcomes. Despite this, multiple myeloma remains an ultimately fatal condition.

> "We are entering a new era where the results of genetic testing will increasingly be used in treatment decisions … for patients with myeloma."

Patients receive repeated treatments over years before the disease becomes resistant to treatment or patients reach a point where they cannot tolerate further treatment. Traditionally, initial treatment decisions have been based on the fitness of the patients for intensive treatment and whether severe renal failure is present. For several years it has been recognised that one in four patients with myeloma have a tumour with adverse genetic abnormalities (causing high-risk myeloma). High-risk myeloma is associated with poorer outcomes and a median survival of three years with conventional approaches.

Myeloma management has lagged behind other blood cancers in terms of genetic testing and the use of genetics in treatment decisions and discussions with patients around their outlook. The genetics of myeloma is complex and more heterogeneous (diverse) compared with other haematological cancers. However, it is known that the presence of two or more certain genetic abnormalities is associated with a worse outlook.

Myeloma UK trial 9 was the first molecularly stratified (where patients were grouped according to the molecular characteristics of their cancer) prospective trial that aimed to improve the outcome for patients with high-risk myeloma. Between 2017 and 2019, 472 patients with suspected high-risk myeloma from 39 UK NHS hospitals were screened for genetic abnormalities. Patients found to have high-risk disease genetically were offered participation in the trial.

In this trial, combinations of multiple novel agents were used during induction therapy (the first therapeutic measures taken to treat a disease) and after a stem cell transplant (where a patient receives healthy stem cells from a donor to replace damaged cells). These agents were used for the 18-month consolidation period post-transplant, followed by maintenance with two drugs. This was in contrast to current treatment regimens that use limited novel agents with a very short duration of consolidation and maintenance with just one drug.

> "Myeloma UK trial 9 has highlighted that outcomes for patients with high-risk genetics can be significantly improved by maintaining patients on a combination of novel agents indefinitely…"

A total of 117 high-risk patients received intensive therapy with combinations of multiple drugs before, during and after the stem cell transplant. The trial demonstrated that progression-free survival at 18 months was superior for high-risk patients treated in this study compared with patients treated with current treatment strategies. The use of better-tolerated drugs helped to reduce toxicity and the regimen was well tolerated. Myeloma UK trial 9 has highlighted that outcomes for patients with high-risk genetics can be significantly improved by maintaining patients on a combination of novel agents indefinitely and that such an approach is well tolerated with newer drugs.

Sara's story

Sara was 35 years old when she was diagnosed with multiple myeloma in 2018. She'd had back pain for at least a year that had worsened, limiting her mobility and requiring her to be off work. Imaging investigations showed wedge compression fractures in her spine and other bone lesions, her blood showed the presence of a myeloma protein and a bone marrow biopsy confirmed myeloma. Sara agreed to have her bone marrow screened in the Myeloma UK 9 screening trial and it showed high-risk disease.

Sara entered the trial and has tolerated treatment well including a stem cell transplant in June 2019. Four years after starting treatment her myeloma remains in a deep remission. Another feature of the Myeloma UK 9 trial is that a large percentage of patients who achieve complete remission continue in prolonged deep remission when using a combination of lenalidomide and daratumumab (drugs used to treat cancer) as a maintenance treatment.

We are entering a new era where the results of genetic testing will increasingly be used in treatment decisions as we hopefully head towards more effective personalised medicine for patients with myeloma. Indeed, examples are emerging where the genetic results of patients with myeloma have indicated high response rates to specific drugs.

CASE STUDY

Tackling bird flu in the UK

The UK and Europe are currently tackling the longest and largest series of avian influenza outbreaks, posing a serious threat to wild bird populations and people's livelihoods. Here, veterinary virologist Dr Sharon Brookes describes the work of the Animal and Plant Health Agency in response to this outbreak.

Avian flu is causing systemic disease in birds globally. In the UK, threatened bird species like roseate terns, puffins, seal eagles and hen harriers have been affected, as well as poultry farms and wild bird populations.

As a veterinary virologist based at the Animal and Plant Health Agency (APHA; in the Department for Environment Food & Rural Affairs), with a primary interest in how viruses develop and cause disease, my work has encompassed disease pathology of a range of host animal species working closely with our veterinary pathologists. Most of my time at the APHA has involved working with animal influenza A viruses, both swine and bird flu.

Avian influenza viruses (AIV) cause bird flu in poultry and wild birds. The arrival of AIV is normally connected to wild bird migration in the autumn and winter months. The current 2021/22 outbreak of H5N1 (a strain with high pathogenicity [HP], i.e. a high ability to induce disease) started at the end of October 2021. The peak risk period for AI outbreaks is between December and February and case numbers reduce with in-country population control of infected poultry and kept birds (pets and collections) and decline of incoming migratory birds.

At the APHA we are responsible for UK government science expertise on AIV and for providing all the testing and diagnoses. APHA offers the scientific evidence for disease confirmation and undertakes the epidemiological response to the disease in the field. These activities support decisions to enable fast and effective control of this notifiable disease. Surveillance is also necessary for the UK to become disease free again (in seasons prior to this one) and be able to re-start international trade of poultry products. The APHA have expert virologists, bioinformaticians, epidemiologists, veterinarians, field staff, risk analysts and modellers to coordinate our scientific response to help stop further spread of this important disease.

The last few years have seen an escalation of AIV incursions infecting more poultry, a wider range of wild bird species and even crossing over to mammals, including a single case in humans. As of 15 September 2022, we were at day 321 of the ongoing outbreak with 144 cases declared and over 1,649 detections of AIV in wild birds in 392 locations, involving 57 species in 82 counties, including conservation and predator bird species.[1] This represents a significantly greater detection of HPAIV in poultry and captive birds than previously reported in 2020–2021 (26 cases) and 2016–2017 (13 cases).

Globally, HPAIV H5N1 is widely dispersed, causing outbreaks in Europe, North America, Asia and Africa, affecting people's livelihoods and wildlife conservation. It is important to raise awareness of how to diagnose the disease through an understanding of how it affects the birds' organs and tissues. This will improve investigations, for example realising pathognomonic signs following natural infection. HPAIV H5N1 in poultry species,

such as chickens, turkeys, ducks or geese, or captive or wild birds, including mute swans, tufted ducks, jackdaws or white-tailed eagles, typically causes tissue damage in the pancreas and spleen.[2] Interestingly, the disease usually appears to be more severe in poultry than wild waterfowl.

The close linkages between the APHA and the Public Health Agency (UK Health Security Agency) have facilitated active surveillance among people exposed to the HPAIV, which enabled the detection of HPAIV H5N1 in an asymptomatic human case during the current avian influenza season.[3] Russia reported infection in poultry workers with H5N8 during 2021.[4] However, it should be noted that, despite extensive global avian–human interaction, cases of H5 AIV detected in people are very rare.

H5 AIVs have also been detected in mammals. HPAI H5N1 virus infections (2021–2022) have been detected in wild red foxes across Europe.[5] In late 2020, a wildlife rehabilitation centre in the UK reported that there had been deaths of young seals and a red fox. These deaths were associated with HPAI H5N8 infection.[6] In August 2021, HPAIV H5N8 infection was detected in three adult harbour/common seals found at the German North Sea coast.[7] Interestingly, neurological signs were reported for several of these mammals and the virus was detected in brain tissue with limited or no detection in the respiratory tract and other organs. For mammals, the most probable route of infection is consumption of contaminated water, faeces or scavenged infected bird carcasses. In North America, the mammals infected with H5 AIV include red fox, coyote, skunks, otters, a lynx and a polecat.

These cases highlight the importance of HPAIV disease investigations and surveillance in poultry and wild birds, and mammals including humans, to monitor the hazard, threat and risks to safeguard animal, environmental and public health.

"The last few years have seen an escalation of [avian influenza virus] incursions infecting more poultry, a wider range of wild bird species and even crossing over to mammals, including a single case in humans."

With thanks to Professor Ian H Brown (avian influenza disease consultant), Dr Alejandro Nuñez and Fabian ZX Lean (veterinary pathologists) and Mr Scott Reid (avian virology lead from APHA).

References: References can be found online: www.rcpath.org/profession/publications/annual-reports.html.
For additional information, see https://aphascience.blog.gov.uk/

CASE STUDY

Advances in the management of thrombotic thrombocytopenic purpura

Thrombotic thrombocytopenic purpura is an acute life-threatening condition with a high mortality rate. Here, consultant haematologist Professor Marie Scully MBE explains how recent advances in its treatment and management have improved the outcomes for patients with this condition.

Thrombotic thrombocytopenic purpura (TTP) is life-threatening and a medical emergency. It presents rapidly around 40 years of age and is more common in females. Without treatment, the mortality rate is over 90%. Around 90% of cases are due to patients forming antibodies to the metalloprotease enzyme ADAMTS 13 – this is known as immune TTP. The other 10% of cases have a genetic cause (hereditary deficiency of ADAMTS 13) known as congenital TTP.

> "Thrombotic thrombocytopenic purpura is a medical emergency … Without treatment, the mortality rate is over 90%."

ADAMTS 13 is a protein that plays an essential role in the regulation of blood clotting by cleavage of von Willebrand factor (VWF) with splitting of ultra-large VWF multimers into smaller VWF multimers. In TTP, there is a deficiency of ADAMTS 13, resulting in the accumulation of ultra-large VWF multimers, which have increased platelet binding. This results in microvascular thrombosis with blockage of small blood vessels and end organ damage.

Clinically, the presentation of TTP may be heterogeneous (diverse) but it is usually associated with low levels of blood platelets (thrombocytopenia) and microangiopathic haemolytic anaemia (a type of anaemia resulting from damage to red blood cells when blood vessels are blocked).

Mark's story

Mark, a 45-year-old male of Afro-Caribbean heritage, presented on a Saturday night with vomiting, confusion and a rapid decrease in his Glasgow Coma Scale (GCS) that measures the level of consciousness in a patient. He required admission to the intensive care unit (ICU) following intubation and ventilation. He was transferred for urgent plasma exchange (PEX) following a presumed diagnosis of TTP. In PEX, diseased plasma is separated and removed from the blood and replaced with donor plasma. A blood film confirmed thrombocytopenia, fragmented red blood cells and polychromasia (the latter indicating a high number of immature red blood cells in the bloodstream seen in haemolytic anaemia). A diagnosis of TTP was confirmed through analysis of ADAMTS 13 activity levels, which were severely reduced, and antibodies to ADAMTS 13, which were very high.

Mark's presentation was severe and his prognosis was poor even with treatment. He had neurological involvement with confusion and reduced GCS on admission and raised levels of troponin – a protein released into the bloodstream when the heart muscle is damaged.

Mark received PEX immediately on transfer and intravenous methylprednisolone, a drug used to treat inflammation and immune reactions in various organs. Before his second PEX on the day of admission and following confirmation of severe ADAMTS 13 deficiency, Mark was started on caplacizumab (an antibody fragment that targets VWF, preventing it from binding to platelets and causing blockages), which he then received daily. As well as receiving daily PEX until his platelet count had increased, Mark started rituximab on day 2 of admission and oral prednisolone. Both rituximab and prednisolone inhibit the production of anti-ADAMTS 13 antibodies, thus increasing ADAMTS 13 activity. Mark was extubated within 48 hours and discharged with continued treatment as an out-patient on day 8.

> "The identification of the immune basis of thrombotic thrombocytopenic purpura has resulted in the introduction of appropriate immunosuppressive treatment that reduces the time patients spend in hospital receiving treatment."

Advances in TTP care

Mark's case highlights several achievements in TTP care. Firstly, prompt diagnosis using blood film analysis and the testing of LDH levels as useful tools allowing rapid initiation of treatment.

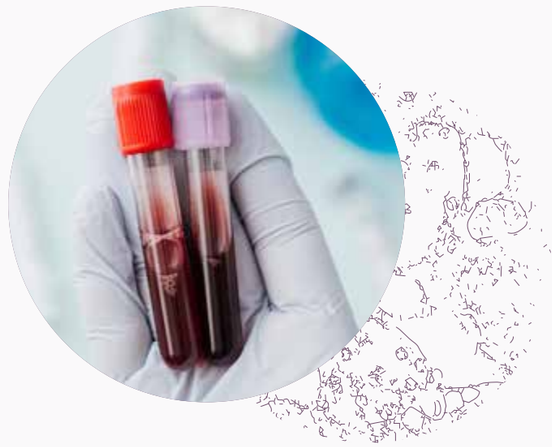
Secondly, the identification of the immune basis of TTP has resulted in the introduction of appropriate immunosuppressive treatment that reduces the time patients spend in hospital. For example, rituximab shortens the time to remission and in-patient care to a median of 14 days or 21 days if admitted to ICU. Finally, the introduction of the novel anti-VWF antibody caplacizumab into the patient treatment pathway results in quicker normalisation of the platelet count and reduces the number of PEX procedures required and days in hospital.[1] Mark's case exemplifies this.

What is the future for Mark?

TTP is a chronic condition that requires lifelong follow up. There is a 30–50% risk of relapse, which can be averted by monitoring ADAMTS 13 activity levels in an out-patient setting. When the levels drop from normal (complete remission) to 15–20% (ADAMTS 13 relapse), despite normal routine laboratory parameters, further treatment with rituximab is given to normalise ADAMTS 13 activity levels and re-achieve complete remission.

The treatment pathway in acute TTP and the long-term monitoring of this condition have resulted in a significant decrease in mortality, preventing the likelihood of the condition worsening, failing to respond to treatment and relapse. The recent commissioning of regional TTP centres in England will enable equity of care and improve national outcomes in this rare but devastating condition.

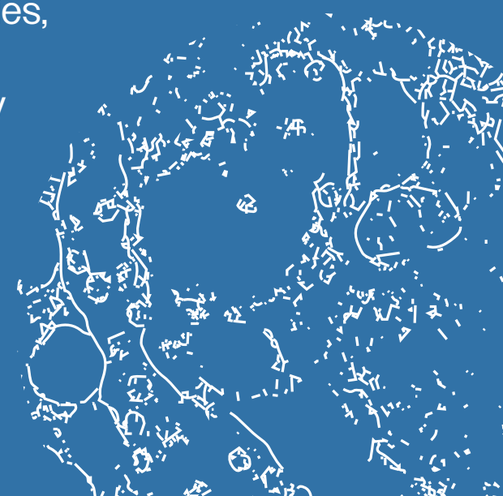
1. Scully M, Cataland SR, Peyvandi F et al. Caplacizumab Treatment for Acquired Thrombotic Thrombocytopenic Purpura. N Engl J Med 2019;380:335–346.



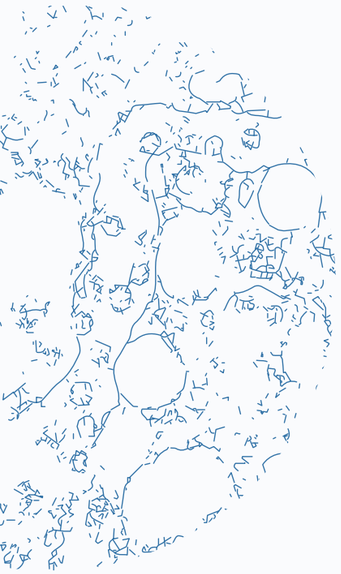
Our governance

05

"This year the College has responded to external consultations from a wide range of organisations, agencies and societies, providing invaluable input to improve patient care and safety. Our Specialty Advisory Committees are integral to this process, providing us with evidence and advice."



Governance of the College



Council and Trustee Board (as at 30 June 2022)

Trustee Board

- Mr Robert Smith, Chair and Lay Trustee
- Professor Michael Osborn, President
- Professor Sarah Coupland, Vice President for Communications
- Professor Angharad Davies, Vice President for Learning
- Professor Peter Johnston, Vice President for Professionalism
- Dr Andrew Boon, Treasurer
- Dr Lance Sandle, Registrar
- Dr Stephen Morley, Assistant Registrar
- Dr Gareth McKeeman, Chair, Northern Ireland Regional Council
- Dr Bernard Croal, Chair, Scotland Regional Council
- Dr Jonathan Kell, Chair, Wales Regional Council
- Dr Anita Hill, Co-opted Trustee
- Dr Elijah Matovu, Co-opted Trustee
- Ms Jill Gauntlett, Lay Trustee
- Mr Vincent Voon, Lay Trustee

Council Members

- Professor Michael Osborn, President (Chair)
- Professor Sarah Coupland, Vice President for Communications
- Professor Angharad Davies, Vice President for Learning
- Professor Peter Johnston, Vice President for Professionalism
- Dr Andrew Boon, Treasurer
- Dr Lance Sandle, Registrar
- Dr Stephen Morley, Assistant Registrar
- Dr Gareth McKeeman, Chair, Northern Ireland Regional Council
- Dr Bernard Croal, Chair, Scotland Regional Council
- Dr Jonathan Kell, Chair, Wales Regional Council
- Mr Robert Smith, Chair, Trustee Board
- Professor Ismail Matalka, Chair, International Committee

Nationally Elected Council Members

- Professor Simon Cross, Elected
- Professor Roger Feakins, Elected
- Dr Giovanni Satta, Elected
- Dr Ravinder Sodi, Elected

Regionally Elected Council Members

- Dr Laszlo Igali, England, Midlands and East Region
- Dr Rachael Liebmann, England, London Region
- Dr Negar Maghsoodi, England, South Region
- Dr Alison Robb, England, North Region

Co-opted Council Members

- Dr Lisa Ayers, Chair, Healthcare Science Committee
- Dr John Ashcroft, Chair, Intercollegiate Committee on Haematology
- Professor Neil Anderson, Chair, Clinical Biochemistry Specialty Advisory Committee (SAC)
- Dr Louise Jones, Chair, Genomics and Reproductive Science SAC
- Dr Darren Treanor, Chair, Digital Pathology Committee

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- Dr Shubha Allard, Clinical Director of Publishing and Engagement
- Dr Srinivas Annavarapu, Chair, Prenatal, Perinatal and Paediatric Pathology SAC
- Dr David Bailey, Chair, Death Investigations Committee
- Dr Adrian Bateman, Chair, Cellular Pathology SAC
- Ms Joanne Brinklow, Director of Learning
- Dr Matthew Clarke, Chair, Trainees' Advisory Committee
- Professor Nicki Cohen, Clinical Director of Training & Assessment
- Dr Nigel Cooper, Chair, Forensic Pathology SAC
- Dr Paul Craig, Chair, Dermatopathology Sub-Committee
- Professor Paul Cross, Chair, Cytopathology Sub-Committee
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- Ms Jill Gauntlett, Lay Trustee
- Dr Anita Hill, Co-opted Trustee
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- Professor Roberto La Ragione, Chair, Veterinary Pathology SAC
- Dr Suzy Lishman, Chair, Medical Examiners Committee
- Dr Berenice Lopez, Clinical Director for Safety and Quality and Chair, Quality Assurance in Pathology Committee
- Dr Sanjiv Manek, Clinical Director of Examinations
- Professor Jo Martin, National Specialty Advisor for Pathology, NHS England/Improvement
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- Dr Shruthi Narayan, Chair, Transfusion Medicine SAC
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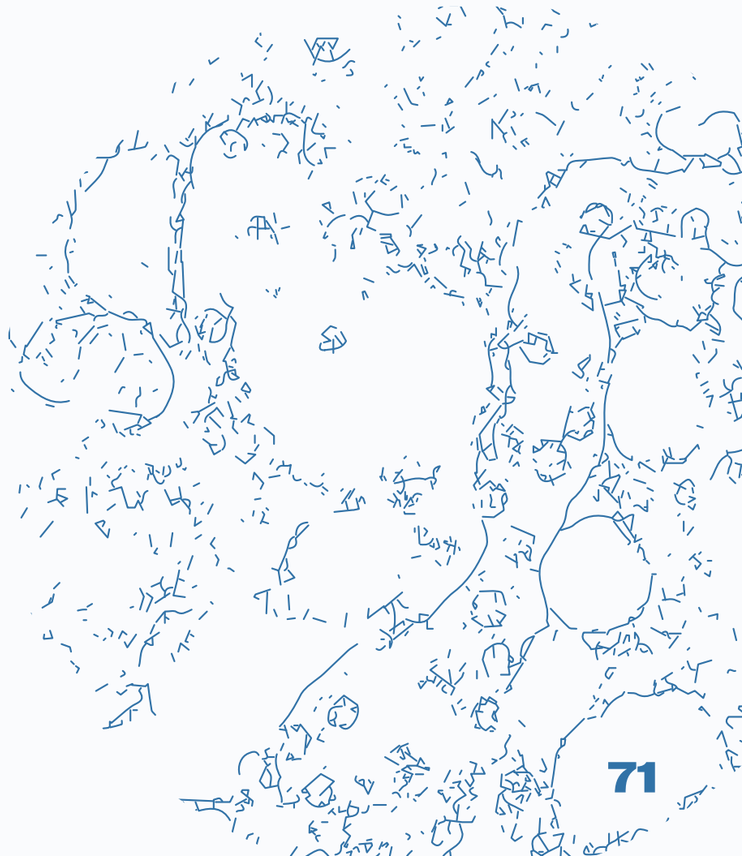
- Mr Nigel Pollard, Director of Corporate Services
- Dr Natasha Ratnaraja, Interim Chair, Joint Medical Microbiology and Medical Virology SAC
- Professor David Roberts, Chair, Research Committee
- Mr Daniel Ross, Chief Executive
- Appointment process in place, Chair, Neuropathology SAC
- Ms Katherine Timms, Director of Professionalism
- Dr David Turner, Chair, Histocompatibility and Immunogenetics SAC
- Vincent Voon, Lay Trustee
- Dr Patrick Yong, Chair, Immunology SAC



Financial report

The total income of the College amounted to £7.85 million, with expenditure of £7.35 million and a resultant surplus of £499k.

The investment portfolio decreased by £1.03 million, resulting in a deficit for the year of £536k. Membership subscriptions continue to be the largest source of income, amounting to £3.97 million. We measure our success by membership numbers, which stood at 12,500 at the beginning of the financial year and 13,000 at the end. Income from postgraduate education and examinations amounted to £2 million compared with £2.2 million last year. The prior year was unusual in terms of income as we were dealing with catch up as a result of COVID-19, effectively running an additional examination sitting. Examination operations have now normalised, with candidate numbers continuing to be strong. The College continued to hold many meetings virtually, thus saving on travel and accommodation costs.

Income from the trading activities of the College through the Events @ No 6 conference centre amounted to £901k, a considerable increase over the prior year. Following the relaxation of the restrictions that had to be imposed because of the COVID-19 pandemic, the centre has been able to operate throughout the year, with bookings returning slowly for the second half of 2021 and then more robustly for the first half of 2022. Due to a strong performance in the last three months of the financial year, the budget for the whole year has been exceeded, and bookings continue to hold up well going forward. The decision to retain the sales and marketing staff so that we could be on the front foot as the economy opened up was the right one, as we were able to respond quickly to booking enquiries and convert these into firm contracted business. The trading subsidiary currently has a net deficit and the trustees anticipate it will return to surplus within the next five years.

On investment markets, the last 12 months were a tale of two contrasting halves. The second half of 2021 was still cheerful for markets, whereas the first half of 2022 destroyed value almost everywhere. In sterling terms, the first period saw global equities rising 8.5%, whereas the second period witnessed a drop of 12.5%, for a net 12-month return of -5%. UK government bonds showed something surprisingly similar in direction, but much worse in outcome, with the first period up 0.6% and the second down -14% for a net 12-month return of -13.5%.

As the investment mandate is to ensure that securities in the portfolio do not contravene the specific ethical requirements regarding direct investment in fossil fuels, mining, tobacco and armaments, this has affected the overall portfolio, resulting in a fall in value over the last 12 months. However, over the longer term, the investments have still delivered good positive returns.

The accounts published overleaf are not the statutory accounts, but a summary of information relating to both the statement of financial activities and the balance sheet. The full financial statements have been audited and contain an unqualified audit report. They were approved by the Trustee Board on 4 August 2022 and have been submitted to the Charity Commission. Any member may request a copy of the full accounts by writing to the Chief Executive.

Dr Andy Boon Treasurer
Mr Daniel Ross Chief Executive

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ROYAL COLLEGE OF PATHOLOGISTS ANNUAL REPORT & ACCOUNTS
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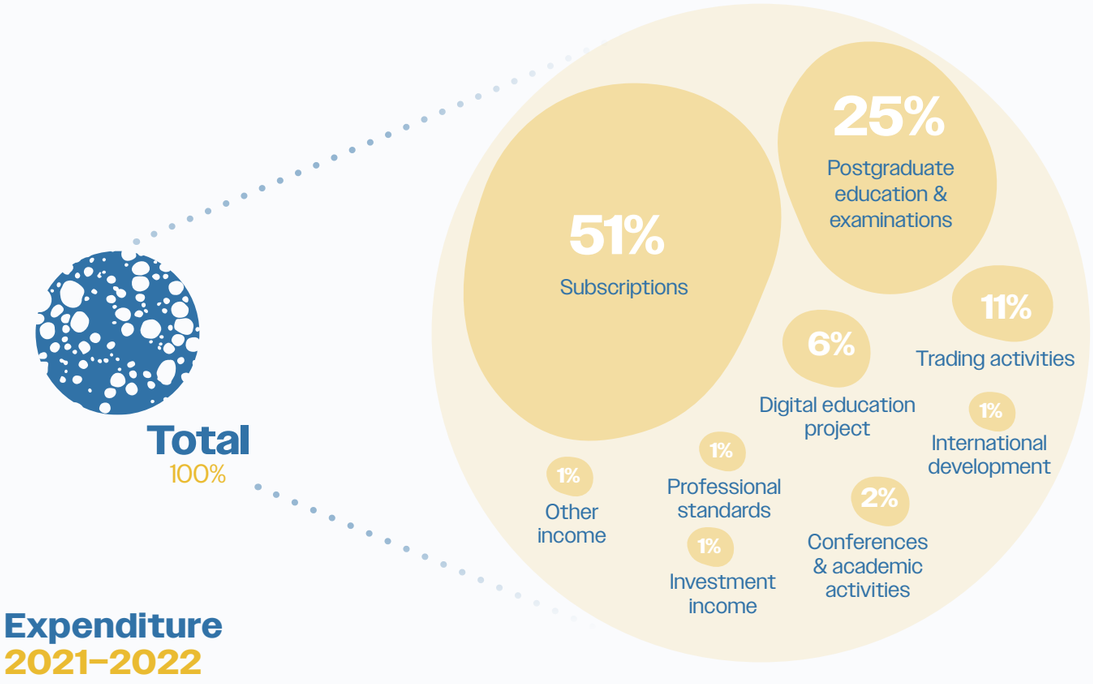
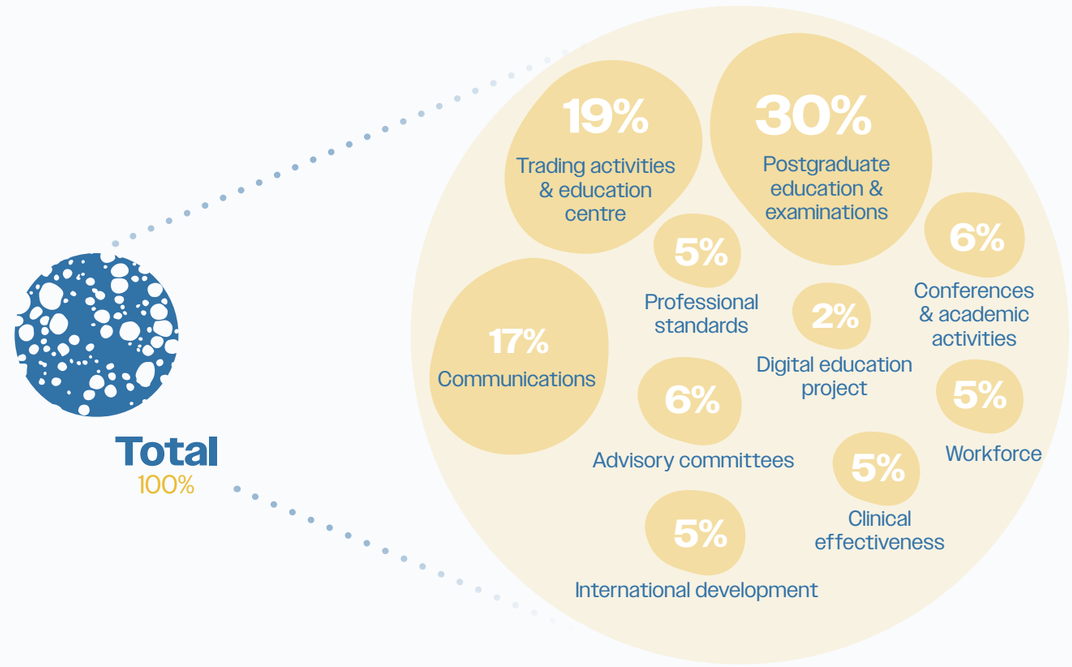
Income 2021–2022



Expenditure 2021–2022



Consolidated Statement of Financial Activities
for the year ended 30 June 2022

	Unrestricted General Funds	Unrestricted Designated Funds	Restricted Funds	Total Funds 30 June 2022	Total Funds 30 June 2021
	£	£	£	£	£
Income from:					
Donations & legacies	588	-	-	588	1,483
Charitable activities					
Subscriptions	3,974,297	-	-	3,974,297	3,785,867
Postgraduate education & examinations	1,981,094	-	13,500	1,994,594	2,199,501
Pathology Portal	-	-	500,000	500,000	175,000
International development	35,218	-	10,021	45,239	14,316
Conferences & academic activities	190,467	-	-	190,467	262,107
Professional standards	57,844	-	-	57,844	52,626
Research	-	-	40,000	40,000	-
Communications	115	-	-	115	423
Trading activities	901,377	-	-	901,377	68,324
Investments	77,614	-	1,863	79,477	93,946
Other	65,253	-	-	65,253	79,820
Total income	**7,283,867**	**-**	**565,384**	**7,849,251**	**6,733,413**
Expenditure on:					
Raising funds					
Trading activities	1,350,735	1,154	50,297	1,402,186	946,270
Investment management fees	41,682	-	-	41,682	23,557
Charitable activities					
Postgraduate education & examinations	2,202,566	-	-	2,202,566	1,750,826
Pathology Portal	-	-	160,987	160,987	138,871
International development	343,197	-	16,342	359,539	360,670
Conferences & academic activities	390,508	-	24,668	415,176	354,816
Research	-	-	-	-	3,462
Professional standards	361,753	-	-	361,753	269,543
Clinical effectiveness	365,192	7,768	-	372,960	259,300
Workforce	378,239	-	-	378,239	313,000
Communications	1,217,789	-	821	1,218,610	1,096,090
Advisory committees	436,080	-	-	436,080	413,749
Total expenditure	**7,087,741**	**8,922**	**253,115**	**7,349,778**	**5,930,154**
Included in the above expenditure is £121,623 relating to non-recurrent IT costs					
Net income / (expenditure) before net gains on investments	196,126	(8,922)	312,269	499,473	803,259
Net (losses) / gains on investments	(874,964)	-	(160,984)	(1,035,948)	1,035,62
Net income / (expenditure)	(678,838)	(8,922)	151,285	(536,475)	1,838,882
Transfers between funds	(129,753)	128,753	1,000	-	-
Net movement in funds	(808,591)	119,831	152,285	(536,475)	1,838,882
Reconciliation of funds:					
Total funds brought forward	7,596,098	29,436,817	1,458,634	38,491,549	36,652,667
Total funds carried forward	**6,787,507**	**29,556,648**	**1,610,919**	**37,955,074**	**38,491,549**

Consolidated Balance Sheet
as at 30 June 2022

	2022	2021
	£	£
Fixed assets:		
Tangible assets	37,777,416	38,403,585
Investments	5,233,165	6,294,113
Total fixed assets	**43,010,581**	**44,697,698**
Current assets:		
Stocks	4,489	4,900
Debtors	803,693	477,465
Cash at bank and in hand	7,066,834	6,143,921
Total current assets	**7,875,016**	**6,626,286**
Liabilities:		
Creditors: Amounts falling due within one year	(4,607,566)	(4,040,079)
Net current assets	**3,267,450**	**2,586,207**
Total assets less current liabilities	46,278,031	47,283,905
Creditors: Amounts falling due after more than one year	(8,322,957)	(8,792,356)
Total net assets	**37,955,074**	**38,491,549**
The funds of the College:		
Unrestricted funds – general funds	6,787,507	7,596,098
Unrestricted funds – designated funds	29,556,648	29,436,817
Restricted funds	1,610,919	1,458,634
Total College funds	**37,955,074**	**38,491,549**

The financial statements were approved by the Trustee Board on 4 August 2022 and signed on behalf of the Trustee Board by Professor Mike Osborn, President, and Dr Andy Boon, Treasurer.

Independent Auditor's Statement
to the Trustees of the Royal College of Pathologists.

The full financial statements were audited by Begbies, Chartered Accountants, and approved by the Trustee Board on 4 August 2022 and signed on their behalf by Professor Mike Osborn and Dr Andy Boon.

Begbies

Chartered Accountants and Registered Auditors
9 Bonhill Street, London EC2A 4DJ

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

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