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

The Royal College of Pathologists' response to the House of Commons Health and Social Care Committee inquiry on Delivering Core NHS and Care Services during the Pandemic and Beyond

8 May 2020

Introduction

This inquiry response from the Royal College of Pathologists (RCPath) has been compiled with contribution from sub specialty advisors on Cellular Pathology; relevant College Specialty Advisory Committee Chairs, College Council and College members.

The Royal College of Pathologists is a professional membership organisation with more than 11,000 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 specialties, including cellular pathology, haematology, clinical biochemistry, virology, medical microbiology and veterinary pathology.

How to achieve an appropriate balance between coronavirus and 'ordinary 'health and care demand

Now that there is consideration being given to opening up the NHS to more routine services, especially in cancer services, there will need to be arrangements to test patients who need to be physically seen for treatment as near to treatment time as possible. There should be efforts to have COVID-19 clear sites manned by staff who are regularly tested before coming into work. Screening programmes, especially bowel screening, should be re-instituted as soon as possible. Staff, especially those in vulnerable groups, will continue to need to be protected.

Meeting the wave of pent-up demand for health and care services that have been delayed due to the coronavirus outbreak

The College has serious concerns over preparations to deal with the backlog of patient need and the surge of expected demand for pathology services, especially in cancer diagnosis and treatment including areas such as blood cancer.

There are huge concerns about going back to even greater backlogs for cancer care, and seeing patients wait and wait for their diagnosis. No pathologists want to see this.

Our transfusion medicine colleagues have concerns over the ability to respond to the increasing blood requirements when 'normal 'or near-normal service resumes. The blood services will need to be kept informed of plans at a local and national level to reinstitute elective surgery in order that blood collection can be adjusted accordingly. Increasing chemotherapy is also likely to increase demand for blood. This is going to be on a back drop of a potentially reduced donor base due to ongoing COVID-19 infection/ social distancing requirements. The blood services will be continuing to collect and issue convalescent plasma for use in clinical trials alongside this.

We have a very narrow window of opportunity to make changes to our technological infrastructure to help reduce delays during the period of active epidemic and provide a more efficient system for the future.

Workforce concerns

The College workforce census, *Meeting pathology demand*, showed that only 3% of NHS histopathology departments have enough staff to meet clinical demand. We have only three quarters of the staff we need to run at levels of activity seen in 2019, and demand is rising all the time.

There are concerns for histopathology nationally with regard to staffing and lack of budget to run labs optimally. Institutions have seen an additional impact of the pandemic as pathology staff are self-isolating or ill; being diverted to other activities such as running the increased mortuary service, and some biomedical staff have been redeployed to mortuary and microbiology labs. Therefore capacity to respond to even normal levels of NHS cancer activity is further reduced, and any "surge" in cancer services will be difficult to cope with.

Pathology demand depends on samples sent by clinicians and as such directly reflects the need and throughput of clinical medicine. This has dramatically changed during the COVID-19 pandemic, and as such many cellular pathologists have been able to use the reduced histopathology and cytopathology throughput to ensure any historic backlogs are reduced, or totally eliminated. As such most, if not all, departments are likely to be able to recommence post COVID-19 with zero backlogs. It has also allowed cellular pathology staff and departments, where workloads and staffing levels have allowed, to catch up on areas such as audit, Quality Assurance, Standard Operating Procedures and Continuing Professional Development. This drop of up to 30% of activity has returned us to sustainable working levels in staffing.

Cellular pathology departments would expect the current low levels of throughput to rise back to pre-COVID-19 levels once the pandemic restrictions are eased. This will include material (both histology and cytology) from cancer screening and treatment, as well as routine clinical practice such as endoscopies, elective non-urgent surgery, and GP derived minor surgery. It is predicted that cancer related material will start first, and if other areas of work are not recommenced at the same level initially, that cellular pathology departments would be able to cope and deliver good turnaround times. If all services commence at the same time, cellular pathology services, given that all reporting currently relies on human interpretation, will be swamped very quickly. Good clear liaison and communication between national decisions, clinical teams and pathology for plans on

recommencement of work is vital to ensure good marrying up of resources. But there will remain a fundamental mismatch between workload and the people to do the work.

Given changes in the use of clinical pathways during COVID-19, it may be that some clinical pathways will alter long-term and this may have a direct impact on cellular pathology requirements, but we anticipate the fundamentals of molecular, cell and tissue diagnosis to remain key for the foreseeable future. Pathologists will work with our other clinical users and professional groups to establish what these new pathways are and look at the impact.

Investment in infrastructure

Urgent changes are needed to support our return to core services. Rapid replacement of at risk outdated and at risk laboratory information management systems (LIMS - lab computers that handle all the results) is key to de-risking future function, and roll out of digital pathology is urgent.

As an exemplar of huge change at scale during the period of the epidemic, our laboratories, working with NHS Digital and NPex, have rolled out data connectivity between the vast majority of our laboratories to allow reporting and transfer of results for COVID-19 testing, a rapid and transformational change for the future, and one with much wider capabilities in allowing network working.

Rapid IT infrastructure transformation, hardware (to replace the nearly 30% of LIMS) that are virtually obsolete), connectivity to link systems, and, for histopathology and haematology, digital imaging will be key to making services more stable and efficient. There have been some good examples of single LIMS roll outs in Wales that have made patients' test results more accessible, and able to be reported across the country. Similarly, some regions have good systems that link many hospitals and indeed some acute and primary care systems. These models need to be widely adopted. LIMS are vital to effectively manage samples, and associated data and automate workflows.

Historically there has very poor investment in pathology IT systems, leading to most laboratories using very old systems on limited resources, often run by part time lab staff rather than informatics specialists. The companies who make these systems struggle to innovate, as they don't have resources to invest in improving systems and are locked into a business model of collecting recurring license fees for out of date systems.

Large scale failure of obsolete LIMS has happened recently, and had major incident level impact on clinical services. This must be prevented by rapid replacement.

Digital pathology

Digital pathology (whole slide imaging) is a technology that allows glass histopathology slides to be reviewed digitally on a computer screen, rather than with a microscope. As a result, it is a technology that can transform pathology services in the NHS and beyond.

Digital pathology is an enabling technology that allows cellular pathology laboratories to share work digitally, instead of a microscope and glass slides. The technology is relatively new and rolled out in a relative minority of labs[1] and very few are using it for substantial amounts of diagnostic work.

It also facilitates remote working in several ways which are useful during the pandemic - home reporting, avoiding the need to be physically in the same space as a colleague giving a second opinion, and facilitating trainee pathologists in learning.

We expect that the uptake of this technology will be accelerated by the pandemic, as for example video conferencing has been.

If we invest further in digital pathology it would help with delivery of cellular pathology services by (a) making it easier to refer cases to specialist centres (b) making it possible for labs to make use of other pathologists to deliver the service (e.g. home workers, recently retired colleagues, outsourcing to other pathologists) and (c) working more flexibly (e.g. avoiding the need to commute at normal office hours into a crowded lab).

Any investment in informatics to help pathology must be long term and well spent. Implementing these systems requires significant laboratory and medical transformation. While a single scanner can be installed and connected in a matter of months, providing some short term benefit, most labs find that substantial digitisation projects require 2-3 years including the planning and workflow changes necessary to make a successful full digital transformation.

For any informatics investments it will be better and more cost effective to have single national systems, or co-ordinated standards based federated systems, rather than multiple small systems.

Any investment should also build on the initial investment of the NHS to develop centres of excellence in digital pathology nationally[2]. These centres can help with any further expansion of the technology across the NHS, by sharing knowledge and standards.

Recommendations

1. Urgent digital pathology transformation - we propose as a bare minimum one high capacity scanner in all cellular pathology labs in the country, linked in a national system to provide flexibility - estimated basic cost £70m.

2. A national digital pathology system, to go fully digital and have an image network, propelling the UK to the forefront of this new technology. This is our preferred option, since it brings us to where we need to be nationally and allows maximal efficiency in the times of workforce constraint. This will have a cost of approximately £400m.

3. Investment to research and innovate on safety of AI and utilisation across the UK, so that there is equivalent evidence to that seen in radiology - 5-7 year program of research, approximately £10-15m.

Meeting the needs of rapidly discharged hospital patients with a higher level of complexity

Discharged hospitalised patients with complex needs need to be included in the shielded group of patients, with both patients and their families understanding the full extent as to what is required. If outside care from district nurses, physios etc is required then their COVID-19 status must be regularly assessed.

Transfusion medicine members recommend that home blood transfusion should be considered and supported. Access to home blood testing has been the biggest problem for shielding patients.

Our immunology colleagues recommend home care support which can be delivered safely during a pandemic, with appropriate infection control and PPE measures for patients and staff.

Providing healthcare to vulnerable groups who are shielding

Transfusion medicine members predict that they may be asked to provide blood for transfusion to clinical areas that they have not supplied before in order to help manage vulnerable patients safely. This may have training implications for staff performing these transfusions as well as implications for laboratories designing new services. The importance of transfusion safety will remain paramount.

Sickle cell patients need a dedicated area close to a car park, minimal distance to 'safe area', dedicated staff with appropriate PPE, same day bloods so that they can make one visit, with appropriate funding for this and medication delivered.

Supporting mass testing and vaccination

The availability of reliable antibody tests will be rolled out, and questions will remain to be answered about the nature and duration of the antibody response. Similarly, any vaccine will have to demonstrate effectivement. Plans should be made now on the assumption that a useful vaccine will become available, so that production facilities and a rationale roll-out programme are planned. As antibody tests become available, a decision will need to be made as to whether natural immunity is as "useful" to that obtained through vaccination, so that those who are already immune are not offered and do not receive vaccination. Since shielded/vulnerable patients should be least likely (in principle) to have had COVID-19, consideration should be given to these groups receiving vaccination early on.

Our immunology colleagues recommend that simple finger spot blood sampling or swab sampling that can be returned by post for laboratory analysis in a properly quality controlled environment with the necessary expertise. This should be the local pathology laboratory for reasons of convenience, robust decentralised distribution of supply, scalability and flexibility (demand will rise and fall) and to utilise existing capacity, equipment and expertise, rather than re-creating it elsewhere at extra expense.

Our medical microbiology and medical virology members tell us (refers to PCR testing on nasal and throat swabs) that mass testing only makes sense in the context of efforts to eradicate COVID-19 infection. Effective vaccination will support this but there is no guarantee that an effective vaccine can be produced. However, mass testing could be leveraged to support eradication through identification of infection hotspots and implementation of control measures such as mandated quarantine. Existing NHS microbiology laboratories could support such mass testing. Use of these current local facilities would reduce the risks of fragmentation and overlap that are likely to follow from sending specimens to remote laboratories.

How to ensure that positive changes that have taken place in health and social care as a result of the pandemic are not lost as services normalise.

More advanced innovation and approaches to "telemedicine" in all its new variations must not be lost as we emerge from the pandemic, e.g. with reduced face-to-face consultations where these are not really required.

The major changes that have occurred in health care during the pandemic are at the level of management and finance. Decisions have been taken locally, at ad hoc committees established to

deal with specific questions, and actions implemented quickly. While this appears to have been effective, the loss of oversight, governance and connected thinking is a risk. The ability to spend money quickly has been very welcome. To a large extent, this expenditure highlights long-standing deficiencies in estate, equipment and staffing that should have been addressed years ago.

Our members tell us:

'Histopathologists have serious concerns regarding the tsunami of work that is heading our way as the NHS and private hospitals try to strike a balance between caring for COVID-19 patients and providing safe and timely health care for those with other conditions.

With shortages of histopathologists already recognised prior to the pandemic, with many departments running significant backlogs and using outsourcing companies, this time where there has been a significant down turn in reporting has been used to catch up and clear the back log. However, when activity picks up and there is a rush from the clinical side to catch up on delayed activity and cope with the number of new cancer patients, many of which have delayed presentation due to COVID-19, we will very rapidly be in an even worse situation.

This will be especially so in cancer related work. In dermatopathology, our work has virtually ground to a halt as possible cancer patients have had many reviews and surgeries delayed and in addition the patients have not been presenting to GPs or hospitals.

This is going to result in a huge and ever increasing wave of activity. Histopathology is the gold standard for diagnosis in the vast majority of cases. Trusts need to be able to support pathologists in flexible working by enhancing technologies to enable working from home (some of which has been achieved during this crisis).

Going forward there are going to be huge pressures on pathology departments with cancer targets being affected as well as the quality of reporting. We need to support departments financially and in other ways so that staff levels and histopathology activities can meet the increased demand.'

Our immunology members recommend:

- Focus on the time-sensitive and urgent activities that cannot wait first.
- Patience is required, it will be extremely destructive to morale to take an exhausted workforce and impose an unrealistic target-driven culture.
- Remote working is less efficient on many ways than face-to-face consultation, and not always satisfactory and may impair capacity to get back to previous operational efficiency.
- Develop better systems for necessary physical access for those who need it, while reducing risk to staff and patients.
- Develop drive through and home testing phlebotomy with microtubes/blood spots and or near-patient testing.
- Ensure we are ready to adapt rapidly to future pandemic threats or future waves of COVID-19.

Transfusion medicine colleagues tell us that meeting demand for stem cell collections which have been postponed due to the pandemic and supplying blood to support patients who undergo stem cell transplants, when it is safe to do so, will be challenging.

Our transfusion medicine colleagues recommend:

- Planning to provide blood components to patients on the same day of the cross-match sample in day care setting.

- Extending hours of day units/opening up some services over weekends, using other available spaces within hospitals, financial incentives for staff for additional work.
- A blended approach of telephone consultations/virtual clinics and face to face consultations will help manage number of patients but criteria for these will need to be made by individual. Consultants based on patient need.
- Using clean sections of NHS Nightingale hospitals for non-COVID-19 step down care such as social care, physio and rehabilitation, venesections, other nurse led services.

Paediatric and perinatal pathology members tell us:
'Paediatric and perinatal pathology staffing across the country is still a major issue, although there is regional variation – even before COVID-19 – which this is likely to have impacted on further.

If hospitals start to do more cases with mechanisms such as working list weekend working for the surgeons, endoscopists, etc, this will create a backlog on an already stretched service that potentially still has people absent (from all the aspects of the service) due to COVID-19. This will inevitably increase turnaround times, not just for surgical specimens but also for perinatal cases as the same pathologists are usually doing both types of cases.'

Our medical microbiology and medical virology members tell us:

The restoration of healthcare services will need to be balanced by the risks of hospital –acquired COVID-19 infection. Patients receiving healthcare are often especially vulnerable to harm caused by hospital-acquired infection and it is likely that COVID-19 infection will also cause more severe illness if it is caught during recovery from surgery. Controlling this risk is going to be a major challenge. If hospitals had a plentiful number of single rooms, this would not be so difficult. However, the vast majority of hospitals in England do not have near enough the number of single rooms required to isolate patients at the best of times. After the peak of the pandemic, when COVID-19 infection is still likely to be a concern, there will be extra pressure on the need for single rooms, not only to isolate patients with confirmed infection but also to hold patients while screening for COVID-19 is underway. The availability of a rapid (one hour or less turnaround) test that reliably distinguishes between COVID-19 positive and negative patient will be essential to maintaining separation of infected from non-infected patients and reconciling the need to restore ordinary healthcare while preventing hospital-acquired COVID-19 infection.

References

1. https://jcp.bmj.com/content/71/5/463

2. https://www.gov.uk/government/news/artificial-intelligence-to-help-save-lives-at-five-new-technology-centres

Contact details

This briefing was authored by Janine Aldridge, Public Affairs Officer.

E: janine.aldridge@rcpath.org

T: 020 7451 6769

About the Royal College of Pathologists

The Royal College of Pathologists is a professional membership organisation with more than 11,000 fellows, affiliates and trainees, of which 23% are based outside of the UK. 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 cellular pathology, haematology, clinical biochemistry, medical microbiology and veterinary pathology.

The College works with pathologists at every stage of their career. We set curricula, organise training and run exams, publish clinical guidelines and best practice recommendations and provide 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.

Appendices

[list appendices at the back if required – use a page break to start each appendix on new page]