

Written Evidence Submitted by the Royal College of Pathologist's Digital Pathology Committee

(CRV0004)

This submission has been submitted by the Royal College of Pathologists' Lead on Digital Pathology and the Digital Pathology committee .

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- What role can technology, research and innovation play in supporting the UK's economic recovery from COVID-19 and how can it best be supported in this?

1. The pandemic has had a disruptive effect on the economy but this disruption has not been evenly spread, and the long term impact on different sectors will vary, with some likely to see long term lack of growth (e.g. aviation/ travel). Conversely, some industry areas – digital technology, healthcare and the life sciences industry have seen both a short term increase in importance and demand, and are the economic areas most likely to show robust growth in the medium term.

The UK is in a very strong position to capitalise on its strengths and it could focus on innovation and research precisely at the intersection of these three domains (healthcare, life sciences technology and digital).

The NHS is uniquely placed as an environment to develop these areas as it can facilitate ambitious research and innovation with a population of 60 million people, for both digital technology development such as data analytics, artificial intelligence (using data) and diagnostics (using access to patients and patient tissue samples). The post-pandemic recovery should accelerate the already identified opportunities in these areas such as [Industrial Strategy Challenge Funding](#) and the [Life Sciences Industry Strategy](#).

2. The pandemic has highlighted the value of diagnostic testing, and of having a highly developed and agile diagnostic testing industry in the UK, which can link to and support therapeutics development – i.e. a healthy environment in diagnostics (and pathology).

3. As a College we see the need for investment in (a) pathology services and staff and (b) diagnostic technologies

For the former, we recommend a highly trained scientific and medical workforce with the skills (e.g. PhD, clinician scientists) and capacity to support research, both in the public sector and in collaboration with industry. The UK is suffering a shortage of consultant pathologists and academic pathologists, the people who are key in the translation of basic research into useful innovation.

For the latter, investment in genomics and digital pathology is recommended.

Acute workforce shortages highlighted 'pre-COVID' remain. Especially urgent workforce shortages – those with the potential to impact on the functional capacity and performance of services – relate to transfusion and histopathology. Although recruitment into histopathology has increased, there remains a 25% shortfall in staff able to report results, with some regions having even higher shortages. Much more needs to be done, particularly with regard to the rapid rollout of digital pathology and increases in scientific and medical specialist training.

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 labs¹ 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.

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.
 - Does the current or post-COVID situation lead to any particular opportunities or challenges for economic growth driven by technology, research and innovation??

Opportunities

The pandemic has highlighted the utility of digital technology for remote working, an area previously considered a “nice to have” for the NHS. For example as a response to COVID, the College issued emergency guidelines for the use of digital pathology so that laboratories could continue their cancer diagnosis using remote working, a trend which is likely to continue. This transformation in attitude will lead to an acceleration in the use of digital imaging, leading to more use of AI and better pathology correlation with other specialities (e.g. genomics and radiology), generating new research and innovation opportunities.

The pandemic has highlighted the value of diagnostics for population health and the life sciences industry, and how a healthy therapeutics industry depends on an agile diagnostics sector in the NHS and in Industry.

It has also firmly demonstrated the critical nature of data sharing and data use to protect and improve healthcare, an area which was previously held back by uncertainties and unwillingness to share data

Challenges

The NHS suffers from a lack of investment in health technology including severe underinvestment in information technology and in health technology such as diagnostics, so the overall level of technology adoption in the NHS is at a low starting point compared to other countries.

This is exacerbated by a low risk-tolerance of the NHS in research and innovation and technology use.

The lack of joined-up systems, or single national systems, also hinders the use of healthcare technology in the NHS.

A focus on cost-saving in pathology departments in the NHS has led to an environment of low staffing levels and limited capacity to develop or implement new technologies.

Evaluation science in the diagnostics sector, including regulatory science, lags significantly behind that in the therapeutics sector. We recommend investment in this area.

- What lessons can be learnt from the role of technology, research and innovation in recoveries from previous economic downturns, and how relevant are these to the current situation?

The pandemic demonstrated that those who were better prepared suffered much less disruption, making the case for better resource planning for future events.

e.g. Those organisations already well-resourced for remote working (with VPNs, laptops, subscriptions to Teams) were much better placed for a rapid transition to remote working, and so suffered far less disruption than others whose operations were brought to a standstill

Investment in the recovery phase is essential. 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.

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.

- How have research and innovation in UK universities, businesses and other settings been affected by the COVID-19 pandemic, and how might they be affected by any lasting changes post-COVID?

As a College business as usual is still not in place in either the University sector or the NHS. Both sectors are struggling to deal with the demands of remote working; clinical trials are for the large part on hold as only covid research is supported; NHS patients are suffering the effects of the massive reduction in NHS capacity over the last months. See report from Cancer Research UK, *The impact of COVID-19 on cancer patients in the UK*:

https://www.cancerresearchuk.org/sites/default/files/pes-covid_2020.pdf

- How effective have measures adopted by the Government to support research and innovation, such as the support packages for innovative firms and university researchers, and the 'Ministerial University Research and Knowledge Exchange Sustainability Taskforce', been?

UKRI acted quickly to reassure research fellows that their funding would be extended and their fellowships would not be affected, which is welcome.

The Innovate UK bridging grants for SMEs were also promptly offered and was a good support for the UKRI Centres of Excellence in Artificial Intelligence.

There is overall considerable ongoing uncertainty in the R&I sector.

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.

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