

Comprehensive Spending Review Submission

October 2021

About the RCR

The Royal College of Radiologists (RCR) is the professional membership body for doctors specialising in the fields of clinical radiology (including interventional radiology) and clinical oncology. We provide leadership to improve the standard of medical practice and training across both disciplines.

We engage with our Fellows, members and multiple clinical partners, combining the latest research with the development of guidelines to support clinical radiology and clinical oncology patient care. This enables us to effectively educate and support doctors throughout their career by providing practical guidance and supporting individuals and their clinical services to facilitate better patient outcomes.

Introduction

Doctors in our specialties will be at the forefront of efforts to tackle the backlog in patients awaiting checks, scans and treatment caused by COVID-19. Imaging is involved in almost every patient pathway. Quicker and more accurate diagnosis is one of the most effective tools that we have in reducing the backlog as it can ensure that patients receive the optimal treatment first time round.

Patients suffering from cancer are some of the worst affected by the backlog. For instance, in England urgent referrals for early diagnosis of suspected cancers decreased by 76% compared with pre-COVID-19 levels.¹ Investment in imaging departments and cancer centres will be essential to both tackling this backlog and achieving ambitions within the Long-Term Plan, including the aim for 75% of cancers to be diagnosed at an early stage by 2028.

At the RCR, our members work tirelessly to ensure that the NHS is able to deliver a world class service to patients. To achieve this over the next three years investment will be necessary in people, equipment and new ways of working across our health service. These three principles can help to drive our health service into the future and deliver the best possible care to all patients.

An enduring workforce

The biggest issue facing our specialties are workforce shortages. A lack of staff directly impacts patient outcomes as seen through rising waiting lists for examinations and treatment, staff burnout and more costly treatment. A global study found that a treatment delay of four weeks for cancer is associated with a 6-13% increase in the risk of death.

Clinical Radiology

The NHS radiologist workforce is now short-staffed by 33% and needs at least another 1,939 consultants to keep up with pre-COVID-19 levels of demand for scans². This shortfall is forecast to hit 44% (3,613 consultants) by 2025. Already, more than half (58%) of radiology leaders say they do not have enough diagnostic and interventional radiologists to keep patients safe.

Moreover, there are significant regional variations in workforce shortages across England. Clinical radiology workforce shortages are highest in the East Midlands and the North East, both of which stand at 43%. The East Midlands also has the lowest number of radiologists (whole-time equivalent)

¹ Kampf & Kulldorff (2021). Calling for benefit-risk evaluations of COVID-19 control measures. The Lancet. Retrieved Feb 8 2021, from [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)00193-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00193-8/fulltext)

² The Royal College of Radiologists. Clinical radiology UK workforce census 2020 report. London: The Royal College of Radiologists, 2021.

per 100,000 population, currently at 6.8 – the European average is 12.8 radiologists per 100,000. Investment in training places and training infrastructure can help to level up all regions across England and ensure that patients receive the best possible care, regardless of where they live.

Furthermore, there are large shortages in the interventional radiology workforce. Interventional radiologists use image-guided techniques to carry out minimally-invasive - and often life-saving – procedures, including treatments for stroke and severe bleeding due to trauma. Patients are potentially missing out on these life-saving procedures as half of trusts and health boards (47%) do not have the staff or transfer arrangements needed to run safe 24/7 interventional radiology services.

Clinical Oncology

The NHS needs at least another 189 (17% of the workforce) clinical oncologists to meet rising demand, and more than half of UK cancer centre clinical directors (52%) say oncologist shortages are negatively impacting patient care³. In 2020, 55% of clinical oncology consultant vacancies remained unfilled after a year - compared to 29% in 2015.

There are also large regional variations in workforce shortages for the clinical oncology workforce across England. While a quarter of cancer centres reported average annual workforce growth of 6% or more per year, another quarter reported no gain or a decline in their workforce. Regional variation in workforce has a direct impact on the care that patients receive. In areas that have severe staff shortages, access to services is likely to be more difficult and there is no time to implement treatment innovations, potentially adversely affecting patient outcomes.

Potential efficiency gains

The emergence of artificial intelligence and other technologies that can support clinicians to report scans more efficiently, assist in the delivery of radiotherapy and the increasing use of 'skillsmix' (allowing other healthcare professionals to work to the top of their license) will help to increase productivity within the imaging and cancer workforce but will not solve the shortages currently faced.

Even if there were to be efficiency savings through these improved working practices, alongside increased outsourcing and recruitment from abroad, there would still be large workforce shortages. If we were to assume efficiency savings of 50% with a 50% uplift in international recruitment and a doubling in outsourcing, this would still only be 56% of the workforce increases that would be required for clinical radiology by 2030.⁴⁵

Similarly, for clinical oncology if we were to assume efficiency savings of 30% through AI and skillsmix, with the same uplift in international recruitment, this would still only fill 18% of the shortfall by 2030.⁶

Aside from the practical constraints of the scale of change needed, and the associated costs, it is also clear that each of these options is only viable alongside a thriving and effective workforce. AI in particular will only be successful if it is used in conjunction with professionals who can add in clinical history and evaluate results. Otherwise, it risks posing additional costs that outweigh benefits to patients and health systems.

Training Places

This year, there has been an increase in training places in both clinical radiology (including IR) and clinical oncology, which is a positive first step to addressing these workforce shortages. However, so far this is just a one-year funding settlement. The CSR should be used to ensure the increase in training places is repeated in future years. In order to futureproof the workforce and provide the highest

³ The Royal College of Radiologists. Clinical oncology UK workforce census 2020 report. London: The Royal College of Radiologists, 2021.

⁴ A 50% efficiency saving by 2030 is a very generous calculation that is unlikely to be achieved as it would half the necessary radiology workforce.

⁵ WPI Economics. Understanding the impacts of investing in training for clinical radiology and clinical oncology. London: WPI Economics, 2021.

⁶ We have assumed 30% here as a very generous calculation due to skillmix already being more prevalent within clinical oncology teams, and AI having less potential for efficiency gains in the short-term.

quality patient care, over the three years of this spending review, we estimate that this would cost **£63.8 million for clinical radiology and £22.8 million for clinical oncology.**⁷

Overall increases in training numbers present a cost-effective strategy for tackling the workforce shortfall in the long-term. Compared to an alternative approach of increasing overseas recruitment and outsourcing, maintaining the increase in training numbers as outlined above would provide cost savings of £420 million by 2030.⁸

The approach would also be sustainable. With pressures already on overseas recruitment and outsourcing, it is unlikely that these routes could feasibly deliver such a large increase in whole-time equivalent (WTE) workforce.

Additional training numbers will help to address workforce shortages going forwards, but to address immediate issues it will be necessary to increase international recruitment of clinical radiologists and clinical oncologists.

Both clinical radiologists and clinical oncologists work in multidisciplinary teams, therefore, to realise real benefits for patients, funding to grow the numbers of medical oncologists, therapeutic and diagnostic radiographers, sonographers, medical physicists, specialist nurses, administration staff and other associated medical professionals will also be essential.

Investment in the clinical oncology and clinical radiology workforce will be crucial to meeting ambitions within the NHS Long Term Plan to diagnose cancer earlier and improve cancer survival rates. It will also prevent unnecessary delays in diagnosis and treatment and free up time for clinicians to undertake service improvements and research.

In addition, investment in workforce will improve team morale at a time when staff wellbeing has been severely impacted by the pandemic. The NHS People Plan outlined behaviours and actions that staff can expect from NHS leaders and colleagues to improve the experience of working in the NHS for everyone. A continued focus on staff wellbeing will be essential to improve staff morale, productivity, and retention. The Treasury must ensure that all measures necessary to support and improve staff wellbeing, including those outlined in the People Plan, are adequately supported, and funded.

Equipped for the future

There is an urgent need for investment in radiotherapy equipment to ensure that patients continue to benefit from the most advanced technologies with the highest chances of cure and lowest levels of side effects. Radiotherapy is a highly effective cancer treatment. Around 4 in 10 people whose cancer is cured receive radiotherapy and 16% of all cancer cures can be attributed to radiotherapy entirely.⁹ Furthermore, it is estimated that between 40 and 50% of people diagnosed with cancer should receive radiotherapy as part of their treatment.¹⁰ However, only 5% of the NHS cancer budget is spent on radiotherapy (£383 million a year). By 2025, the percentage of cancer patients needing radiotherapy as part of their treatment will have risen from the current 50% to 60% (many as part of a curative treatment).¹¹ Funding equipment for radiotherapy delivery will reduce waiting times for patients, improve patient experience of treatment and reduce regional variation in patient care.

In the same vein, there is a need for significant investment in equipment for diagnostic imaging. Any equipment that is more than ten years old can be considered obsolete or inadequate for conducting certain procedures and must be replaced; yet previous industry surveys have shown one in ten CT scanners and nearly a third of MRI scanners in UK hospitals exceed this threshold and hence pose a

⁷ This would be the training costs (inclusive of core training costs, study leave budget, trainee salary, National Insurance contributions and pension contributions) for 110 additional clinical radiology trainees (plus 20 interventional radiology trainees) and 50 additional clinical oncology trainees to start in 2022/3, 2023/4 and 2024/5, up to 2024/5.

⁸ WPI Economics. Understanding the impacts of investing in training for clinical radiology and clinical oncology. London: WPI Economics, 2021.

⁹ Cancer Research UK: [Vision for Radiotherapy 2014-24](#)

¹⁰ Cancer Research UK: [Response to the APPG on Radiotherapy's Inquiry \(June 2019\)](#)

¹¹ <https://www.axrem.org.uk/radiotherapy/>

risk to patients.¹²¹³ ¹⁴ The UK also has fewer scanners than the majority of comparable OECD countries - 9.5 CT scanners per million population while France has 18.2 and Germany has 35.1.¹⁵ Adequate funding for diagnostic imaging will support ambitions for early diagnosis by improving access to diagnostics and bringing the UK into line with other comparable countries in terms of provision of diagnostic equipment.

The RCR welcomes the Prime Minister's recent announcement on plans for a health and social care levy and confirmation that this will be used to invest in the next generation of scanners and screening equipment. We estimate that within the next three years, 251 CT machines and 167 MRI machines will exceed the 10-year age limit and will need to be replaced through these machine upgrades. The cost of replacing these machines will be approximately **£392.5m**, based on a cost of £900,000 for one CT machine and £1,000,000 for an MRI machine.¹⁶ The RCR also estimates that capital expenditure for a UK-wide rolling radiotherapy equipment replacement programme, including linear accelerators (LINACs), brachytherapy machines, CT and MRI planning machines, would cost approximately **£87.3m per annum** with an additional **£300m** to replace linear accelerators (LINACs) over 10 years old¹⁷.

It is important to note however, that to support all the asks outlined above, all equipment upgrades need to be supplemented with funds to cover installation costs (which can be as much as the equipment itself), maintenance costs, regular software updates and staffing. Investment in modern information technology (IT) and digital infrastructure will also be essential as thousands of NHS computers continue to run on obsolete hardware and software.¹⁸ Unfit equipment prevents staff from receiving information from other trusts and health boards and causes delays by not having integrated electronic patient record systems. These limitations and inefficiencies are a waste of time and money, and fundamentally inhibit doctors' ability to care for their patients. The CSR must commit to greater healthcare capital expenditure in this area, with incentives and initiatives to enable trusts and health boards to rapidly modernise their IT. If not, any investment in workforce, equipment and new ways of working will all be undermined.¹⁹

Investing in new ways of working

Operational Delivery and Imaging Networks

We welcome progress in delivering NHS England's 2019 specifications for Operational Delivery Networks (ODNs), particularly the radiotherapy ODN. Due to the estimated 33,000 missing cancer diagnoses these networks will be vital for pandemic recovery and addressing the cancer backlog.²⁰ There is a clear financial argument for their ongoing support as radiotherapy provides value for money, typically costing £6000-7000 per patient compared to £40,000 for some drug-based treatments.²¹ The effectiveness of radiotherapy means that savings will go further as it cures patients, reducing the number and cost of subsequent treatments. To deliver the full benefits of these ODNs, they require ongoing managerial and clinical input. Furthermore, as previously mentioned, their success will be linked to increased funding for oncology workforce training places and the relevant equipment. We

¹² COCIR. Medical imaging equipment: age and profile density, 2019 edition. Brussels: COCIR, 2019.

¹³ Association of Healthcare Technology Providers for Imaging, Radiotherapy and Care (AXREM). AXREM Aged Asset Article. London: AXREM, 2017. Available at: <https://www.axrem.org.uk/wp-content/uploads/2017/08/AXREM-Aged-Asset-Article-CTMR280717.pdf>

¹⁴ Clinical Imaging Board. Magnetic resonance imaging (MRI) equipment, operations and planning in the NHS: Report from the Clinical Imaging Board. London: The Royal College of Radiologists, 2017.

¹⁵ OECD.Stat. Available at: stats.oecd.org (last accessed 24/09/20).

¹⁶ The Royal College of Radiologists. Comprehensive Spending Review (CSR) Submission. 2020. Available at: www.rcr.ac.uk/sites/default/files/final_csr_submission_for_upload.pdf (last accessed 07/12/20)

¹⁷ The Royal College of Radiologists. Comprehensive Spending Review (CSR) Submission. 2020. Available at: www.rcr.ac.uk/sites/default/files/final_csr_submission_for_upload.pdf (last accessed 07/12/20).

¹⁸ UK Parliament. NHS: Computer Software: Question for Department of Health and Social Care. Available at: [questions-statements.parliament.uk/written-questions/detail/2019-07-17/278598](https://www.parliament.uk/written-questions/detail/2019-07-17/278598) (last accessed 24/09/20)

¹⁹ Techradar. One in three NHS computers still running Windows 7. 2020. Available at www.techradar.com/uk/news/one-in-three-nhs-computers-still-running-windows7#:~:text=In%20a%20statement%2C%20NHS%20Digital,organisations%2C%20until%2014%20January%202021 (last accessed 24/09/20).

²⁰ <https://medium.com/macmillan-press-releases-and-statements/macmillan-responds-to-july-2021s-cancer-waiting-times-data-for-england-c0e7c66f55e7>

²¹ APPG for Radiotherapy. Catch Up With Cancer - The Way Forward. London: APPG for Radiotherapy, 2021

therefore continue to ask for a dedicated ODN support fund. We estimate the cost to be £1.5m for each of the 11 networks, which is **£16.5m per annum and £49.5m for the period of the spending review**. This money would fund the clinical time needed for ongoing system leadership, quality improvement and audit activities which allows rapid roll out of innovative techniques safely using mentorship and supports new innovations via clinical trials.

The RCR continues to support NHS England's strategy to establish 18 imaging networks by 2023. These are integral to building a joined-up radiology service across the UK. Professor Sir Mike Richards's 2020 diagnostics review highlighted their importance and recommended they be developed and facilitate greater connectivity to enable image sharing between providers and enable flexible working. This would help increase clinicians' productivity and flexible working.²² We welcome that recommendation and believe a dedicated fund of approximately **£150m** should be ringfenced to support their creation and fund the necessary IT alignment.

The Quality Standard for Imaging (QSI) has been developed by the RCR and its partners to support patient orientated imaging services and it provides a quality benchmark for emerging networks to deliver improved patient access. To support standards for imaging networks and enable quality delivery, the QSI standard should be funded in full at a cost of **£9m** (£0.5m for each of the 18 networks).

Rapid and community-based services

The RCR supports the roll out of Community Diagnostic Hubs (CDHs) and agrees that Rapid Diagnostic Centres (RDCs) are integral to the future of imaging, community-based testing and new diagnostic pathways. We agree with the recommendations regarding CDHs in Professor Sir Mike Richards' review that they should be rapidly rolled out to reduce visits to acute hospital sites, create new pathways to reduce delays for patients and relieve pressure on emergency/acute diagnostic services.

We are pleased that RDCs are growing in number with 102 pathways live and 98 more in development, indeed they diagnosed nearly 1600 cancers between May 2020 and May 2021. Furthermore, progress on establishing the 150 planned new CDH sites across England is welcome and we await updates when bidding ends for the designated £10bn CDH fund.

Despite progress, we recognise that both RDCs and CDHs will require funding for workforce (as outlined in the section above), premises, equipment and connectivity for them to succeed in driving down diagnostic waiting times. In particular, CDHs will need to be incorporated into imaging networks in order to realise the full benefits. We welcome the Prime Minister's recent support for investing in the next generation of scanners. We believe that support should come as soon as possible to help fund RDCs, CDHs and address the NHS backlog, we recommend that a proportion of the recently announced £5.4bn for NHS COVID-19 response and recovery is used to invest in the rapid roll out of CDHs and RDCs.²³ Their quick delivery would play a vital role in addressing the 5.3 million patients awaiting treatment in England whilst also creating the framework for quicker diagnosis.²⁴ In addition to that funding, we estimate that the total cost of imaging equipment for CDHs and RDCs across the 167 trusts/health boards would be circa **£378m**. This figure would fund the basic imaging package for each location of 1 MRI machine (£1m each), 1 CT machine (£900k), 1 X-ray machine (£160k) and 2 ultrasound scanners (£100K each), which is a cost of **£2.26m per centre**.

Making Artificial Intelligence (AI) work

The RCR believes that if AI is properly funded and regulated, it will benefit both patients and healthcare professions. Technological advancements could improve clinician workflow, free up clinicians time by taking over highly protocolised tasks and provide new data insights in population health. We welcome the government's continued support for AI through the £250m funding for the NHSX AI Lab. This funding is already identifying technologies of the future such as Imperial College London's 'R-CANCER' which will aid decision making in detecting and diagnosing cancer and the [National AI](#)

²² <https://www.england.nhs.uk/wp-content/uploads/2020/11/diagnostics-recovery-and-renewal-independent-review-of-diagnostic-services-for-nhs-england-2.pdf>

²³ <https://www.gov.uk/government/news/additional-54-billion-for-nhs-covid-19-response-over-next-six-months>

²⁴ <https://ifs.org.uk/publications/15557>

[Medical Imaging Platform](#) (NMIP) project.²⁵ To lay the foundations for an NHS fit for the future and build back better, we recommend the government continues to fund AI. However, it must be highlighted that the NHS will still need the increased oncology and radiology workforce in order to realise the benefits that AI can deliver.

Conclusion

This submission outlines real and lasting solutions for improving patient outcomes and levelling up healthcare in the UK. As part of the government's 'Build back better' campaign, investing in our workforce, state of the art equipment and funding new ways of working will create an NHS fit for the future whilst also addressing the backlog of care created by the pandemic.

If these investments are made, we will be in a strong position by 2024/25. Our workforce will be on a solid footing and have the equipment, processes and support they need to reduce waiting times and provide world leading care to patients.

We would be happy to discuss these issues further and provide more detail should you need it.

Contact

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²⁵ <https://www.nhsx.nhs.uk/ai-lab/ai-lab-programmes/ai-health-and-care-award/>