

## Written evidence submitted by The Royal College of Radiologists (CSV0015)

### Introduction

1. 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 covering the entire spectrum of diagnosis and treatment of cancer.
2. We engage with our Fellows, members and multiple clinical partners, combining the latest research with guideline development to support patient care by radiologists and oncologists. This enables us to educate and support doctors effectively throughout their career, providing practical guidance, supporting individuals and their clinical services facilitating better patient outcomes.

### Why do cancer outcomes in England – in particular survival – still lag behind comparable countries internationally?

#### Delays in diagnosis

3. One of the key reasons why cancer survival rates in England continue to lag behind other comparable countries is due to delays in diagnosis, the reasons of which are multifactorial. Early diagnosis of cancer remains one of the best tools that we have in tackling the disease and increasing all patients' chances of long-term survival. The earlier a patient is diagnosed the sooner they can begin treatment. A global study found that a treatment delay of four weeks is associated with a 6-13% increase in the risk of death.<sup>i</sup> Delays of up to twelve weeks further increase this risk.
4. We can see this even more clearly when looking at certain types of cancer. If breast cancer is detected at stage I, the 5-year survival rate is nearly 100%, whereas if detected at stage III it falls to 72%.<sup>ii</sup> Lung cancer follows the same pattern, with one-year survival reaching 87.3% for stage I disease, but only 18.7% for stage IV.<sup>iii</sup>
5. Data shows that the UK diagnoses a greater percentage of cancers at a later stage compared to international comparators. Looking at Lung Cancer just 22.9% of total diagnoses in the UK between 2010 and 2014 were at stages I and II, compared to 28.7%, 27.7% and 27.1% in Norway, Ireland and Canada respectively.<sup>iv</sup> Undoubtedly this will be a contributing factor to the higher survival rates for lung cancer in these respective countries.<sup>v</sup>

#### Shortages within the imaging workforce

6. One of the key barriers to increasing early diagnosis in England and achieving the target set in the NHS Long Term Plan for 75% of cancers to be diagnosed at stages I and II by 2028 is the large shortages within the imaging workforce. The NHS radiologist workforce is now short-staffed by 33% and needs at least another 1,939 consultants just to keep up with pre-coronavirus levels of demand for scans.<sup>vi</sup> 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.<sup>vii</sup>
7. 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) per 100,000 population, currently at 6.8 – the European average is 12.8 radiologists per 100,000.<sup>viii</sup>

8. Staff shortages have severe impacts on the ability to roll out new innovations throughout the NHS as workforce pressures mean that staff both have less time to innovate and take part in clinical research. More needs to be done at a national and local level to ensure staff have the time and support to continue to innovate.
9. The emergence of artificial intelligence and other technologies that can support clinicians to report scans more efficiently and the increasing use of 'skillmix' to allow healthcare professionals to work to the top of their license, will help to increase productivity within the imaging workforce but will not solve the shortages currently faced. There is also the potential for further efficiency gains through the implementation of imaging networks, community diagnostic hubs and rapid diagnostic centres but ultimately none of these can be a substitute for appropriate workforce numbers.
10. We estimate that to address the current shortfall in the clinical radiology workforce we need to see the increase of 110 training places that was implemented this year continued for four further years. As it costs roughly £80,000 per trainee per year of training this increase would require funding of £35million.

#### **Lack of investment in imaging equipment**

11. Similarly a lack of investment in imaging equipment means that the NHS is not currently equipped to make the most of the imaging capacity it does currently have. The UK has fewer scanners than the majority of comparable countries in the OECD - 9.5 CT scanners per million population while France has 18.2 and Germany has 35.1.<sup>ix</sup> Previous industry surveys have shown one in ten CT scanners in UK hospitals are over ten years old.<sup>x</sup>
12. 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. The cost of replacing these machines will be approximately £392.5m, based on a cost of £900,000 for a CT machine and £1,000,000 for an MRI machine - although it should be noted that some trusts and health boards will continue to lease rather than purchase equipment outright, and others may be able to secure discounts during procurement.<sup>xi</sup>

#### **Inefficient patient pathways**

13. In order to facilitate quicker diagnosis of patients it is crucial that patient pathways are streamlined to ensure that patients are referred for the most appropriate scan as quickly as possible. To support this the RCR has developed the iRefer tool which supports referring GPs, clinicians and other healthcare professionals to determine the most appropriate imaging investigation(s) or intervention for patients. It provides practical guidance based on the best available evidence and the guidelines are accredited by National Institute for Health and Care Excellence (NICE). Use of the guidelines minimises the risk of a patient being exposed to potentially unwarranted ionising radiation through incorrect investigations. While NHS Scotland, Wales, and Northern Ireland have national subscriptions to the iRefer website, NHS England is yet to have a national subscription and we would like to see use of iRefer to become widespread throughout the NHS to help to streamline these patient pathways.
14. Furthermore the RCR is currently looking at producing further guidance for our members on "fail safe" alerts for notification of unexpected findings, which often relate to the detection of cancer. We have already worked to provide a list of unexpected findings that should be

alerted to referrers, along with expected time frames for each of these. While CQC guidance states that it is the responsibility of the referrer to read all reports following scans, the “fail safe” notification seeks to highlight urgent findings that need to be acknowledged by the clinical team.

## **How will covid-19 affect efforts to catch up to the best cancer outcomes internationally?**

### **Increased waiting lists**

15. Cancer services in England were already overstretched, but the pandemic has put extra pressure on them due to the pausing of elective services. At the start of the outbreak in England, urgent referrals for early diagnosis of suspected cancers decreased by 76% compared with pre-COVID-19 levels.<sup>xixiii</sup>
16. As of June 2021 there were 75,000 patients waiting 6 weeks or more for an MRI/CT scan - this is more than three times the number facing this length of wait in March 2020.<sup>xiv</sup> While overall scanning activity now exceeds pre-Covid levels, it must increase to work through the backlog of patients waiting for diagnosis as a result of reduction of scans during the pandemic.
17. There are estimated to be around 45,000 ‘missing cancer diagnoses’ – meaning that 45,000 fewer people have been diagnosed with cancer compared to a similar time frame last year.<sup>xv</sup> The number of people in England starting treatment for cancer in April 2021 was 24,963. This is lower than the pre-pandemic average, at a time when there is an urgent need to clear the backlog in treatment.<sup>xvi</sup>
18. In April 2021 there were record numbers of people who had been waiting for more than two months before they started cancer treatment following a screening diagnosis.<sup>xvii</sup> Macmillan Cancer Support estimates that the NHS in England would need to work at 110% capacity for 17 months to catch up on missing cancer diagnoses, and for 14 months to clear the cancer treatment backlog.<sup>xviii</sup> This estimate does not take into account the time it will take to clear the rest of the imaging backlog.
19. In England, delays in diagnosis and treatment are expected to increase the proportion of cancer deaths from 5% to 17% (depending on cancer type) within 5 years of diagnosis.<sup>xix</sup>

### **Innovation**

20. While the pandemic will undoubtedly set back ambitions to improve cancer survival rates in England, there have also been examples of innovations brought on by adaptations Covid-19 made necessary that can help to improve future service provision. For instance, the increased use of remote consultations and the ability for clinical radiologists to report remotely on scans through imaging networks will help to make it easier for patients to access healthcare, as well as increasing the number of clinicians able to work remotely which will help to improve wellbeing amongst NHS staff and increase the number of reported scans as staff undertake ‘insourced’ work at home. Full realisation of this innovation depends on a high quality, connected IT infrastructure to facilitate it.

## **Will implementing the Long Term Plan for cancer improve cancer outcomes to the level of the best countries internationally?**

### **Cancer workforce shortages**

21. Whilst implementing the ambitions within the Long-Term Plan, and providing the significant investment that this will require including increasing radiology training places, will be a very

positive step and help to bring the UK closer to the best countries internationally survival rates will not overtake these countries unless investment is also provided for the treatment of cancer. For lung cancer 3-year survival rates in the UK are lower than in Norway, Ireland and Canada for all four stages of cancer at diagnosis.<sup>xx</sup>

22. These lower survival rates are also caused by a lack of investment in the cancer workforce that has created large shortfalls. 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 care.<sup>xxi</sup> In 2020, 55% of clinical oncology consultant vacancies remained unfilled after a year - compared to 29% in 2015.<sup>xxii</sup>
23. There are also large regional variations in workforce shortages for the clinical oncology workforce across England. Although the clinical oncology consultant workforce grew by 3% per year (on average over the last five years), growth was minimal (average 1% per year) in the East of England and the North West.<sup>xxiii</sup> 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.<sup>xxiv</sup> Regional variation in workforce has a direct impact on the care that patients receive. In areas that have acute staff shortages, access to services is likely to be more difficult and there is no time to implement treatment innovations, potentially detrimenting patient outcomes.
24. To address these shortfalls and ensure that we have a cancer workforce that is equipped to provide optimum care for all patients in to the future, we need to see the increase of 50 clinical oncology trainees implemented this year continued for the next four years. This would require additional investment of £15.2million.

### **NHS structural changes**

25. Upcoming changes to the structure of imaging networks in the NHS and the introduction of the 28-day diagnosis target have the potential to increase access to diagnosis, but only if workforce issues are addressed. The RCR recognises the benefits that plans to introduce Community Diagnostic Hubs (CDH) and a new Rapid Diagnostic Centre (RDC) service model could bring about in providing a single point of access to a diagnostic pathway for all patients. To achieve the ambitions of delivering more elective care out of hospital, including as part of CDHs it is paramount that ICSs, imaging networks, RDCs, CDHs and operational delivery networks for radiotherapy are aligned on a local level to reduce fragmentation and ensure consistency in service design and patient care.

### **Radiotherapy**

26. RCR firmly believes that radiotherapy can present one of many possible solutions to tackling the covid-induced backlog and improving survival rates. Not only is it a curative form of treatment for many cancer patients but it is also relatively low cost, typically costing £6-7k per patient compared to £40K for some drug-based treatments.<sup>xxv</sup> It can also be delivered in a manner to ensure that environments are Covid protected and therefore can present an alternative to surgery to bring down waiting lists in some cancers.
27. To ensure that the healthcare system can meet demand on cancer services we need capital investment in a rolling radiotherapy equipment replacement programme in England, including linear accelerators (LINACs), brachytherapy machines, computed tomography (CT) and magnetic resonance imaging (MRI) planning machines. This would cost approximately £87.3m per annum<sup>xxvi</sup> with coordinated deployment to meet population needs, and also requiring an initial investment of £300m to replace all LINACs over 10 years old.

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- <sup>i</sup> Hanna, et al. (Nov 2020) Mortality due to cancer treatment delay: systematic review and meta-analysis. BMJ. Retrieved Feb 1 2021, from <https://www.bmj.com/content/371/bmj.m4087>
- <sup>ii</sup> John & Broggio (2019). Cancer survival in England: national estimates for patients followed up to 2017. Office for National Statistics, UK. Retrieved Mar 11 2021, from <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/cancersurvivalinengland/nationalestimatesforpatientsfollowedupto2017#how-does-stage-at-diagnosis-affect-net-survival>
- <sup>iii</sup> Hawkes, 2019. Cancer survival data emphasise importance of early diagnosis. BMJ. Retrieved 11 Mar 2021, from <https://pubmed.ncbi.nlm.nih.gov/30683652/>
- <sup>iv</sup> International Agency for Research on Cancer, GLOBOCAN 2018 accessed via [Global Cancer Observatory](#). Accessed July 2021.
- <sup>v</sup> Ibid
- <sup>vi</sup> The Royal College of Radiologists. Clinical radiology UK workforce census 2020 report. London: The Royal College of Radiologists, 2021.
- <sup>vii</sup> Ibid
- <sup>viii</sup> Ibid
- <sup>ix</sup> OECD.Stat. Available at: [stats.oecd.org](https://stats.oecd.org) (last accessed 24/09/20).
- <sup>x</sup> 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> (last accessed 01/12/20).
- <sup>xi</sup> The Royal College of Radiologists. Comprehensive Spending Review Submission. London: The Royal College of Radiologists, 2021.
- <sup>xii</sup> 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)
- <sup>xiii</sup> Lai, et al. (Nov 2020). Estimated impact of the COVID-19 pandemic on cancer services and excess 1-year mortality in people with cancer and multimorbidity: near real-time data on cancer care, cancer deaths and a population-based cohort study. BMJ Open. Retrieved Feb 1 2021, from <https://bmjopen.bmj.com/content/10/11/e043828#ref-8>
- <sup>xiv</sup> <https://www.england.nhs.uk/statistics/statistical-work-areas/diagnostics-waiting-times-and-activity/monthly-diagnostics-waiting-times-and-activity/monthly-diagnostics-data-2021-22/>
- <sup>xv</sup> <https://www.bbc.co.uk/news/health-57092797>
- <sup>xvi</sup> <https://medium.com/macmillan-press-releases-and-statements/macmillan-responds-to-nhs-england-cancer-waiting-times-for-april-2021-87f3ca6999ae>
- <sup>xvii</sup> Ibid
- <sup>xviii</sup> <https://medium.com/macmillan-press-releases-and-statements/macmillan-responds-to-june-2021s-cancer-waiting-times-data-for-england-d2a17cb654f6>
- <sup>xix</sup> Maringe, et al. (Aug 2020). The impact of the COVID-19 pandemic on cancer deaths due to delays in diagnosis in England, UK: a national, population-based, modelling study. The Lancet Oncology. Retrieved Feb 1 2021, from [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(20\)30388-0/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(20)30388-0/fulltext)
- <sup>xx</sup> International Agency for Research on Cancer, GLOBOCAN 2018 accessed via [Global Cancer Observatory](#). Accessed July 2021.
- <sup>xxi</sup> The Royal College of Radiologists. Clinical oncology UK workforce census 2020 report. London: The Royal College of Radiologists, 2021.
- <sup>xxii</sup> Ibid
- <sup>xxiii</sup> Ibid
- <sup>xxiv</sup> Ibid
- <sup>xxv</sup> APPG for Radiotherapy. Catch Up With Cancer - The Way Forward. London: APPG for Radiotherapy, 2021
- <sup>xxvi</sup> RCR, ScOR, IPEM submission to the CSR call for evidence, Sept 2020