



**TRANSFORMING CANCER OUTCOMES IN THE UK:
CLEARING THE BACKLOG, IMPROVING CAPACITY
AND BUILDING SERVICES FOR TOMORROW**



Contents	
Introduction and Executive Summary	3
Cancer outcomes in the UK	4
Northern Ireland	5
Diagnosis	5
Treatment	7
Wales	8
Diagnosis	8
Treatment	9
Scotland	9
Diagnosis	9
Treatment	10
England	12
Diagnosis	12
Treatment	13
Spotlight on staffing levels in England	14
Overview of staffing	14
Shortages in the oncology workforce and implications for clearing the backlog	14
Impact on patient experience and safety	15
Working together to tackle the backlog and staffing challenge	16
Conclusion	16
Recommendations	16
About BMS	19

Introduction and Executive Summary

The COVID-19 pandemic has had a significant impact upon the capacity of the National Health Service (NHS) to diagnose and treat cancer patients on NHS waiting lists across the UK. This is true across England, Scotland, Wales and Northern Ireland. Action to begin clearing the backlog and moves to develop refreshed cancer plans across these health services are welcome. However, these issues are not new, and rather than being caused by the pandemic, have instead been exacerbated by it. The success of new policies and strategies hinges on policymakers being equipped with a clear understanding of the root causes of the backlog.

BMS has partnered with the Office of Health Economics (OHE) to obtain a clearer picture on the backlog in cancer services and identify the priority areas for reform if services are to address these persistent challenges. This report also sets out a series of recommended steps that the NHS and governments across the UK can take to accelerate clearing the backlog.

- Cancer outcomes in the UK were already below the Organisation for Economic Co-operation and Development (OECD) average prior to the pandemic.¹ Therefore, the return to pre-pandemic services should be seen as a baseline objective for policymakers. Given the link between a timely diagnosis and outcomes², a significant reason for these lower outcomes was the extent of the pre-existing backlog in cancer care and diagnostics.
- Differences in outcomes and waiting times exist across the four nations, and there is also heterogeneity in relation to the impact of the pandemic on different cancer types.^{3,4} However, one common theme across all nations is that the extent of the backlogs means that even if all health systems across the UK worked at 110% of pre-pandemic capacity, and resources were split equally between all cancer types, it would still years to clear the backlogs.^{3,4}
- Increasing activity levels, improving outcomes and raising patient experience will not be possible without tackling the workforce crisis within cancer care and the NHS more broadly. There is a key correlation between patient-staff ratios and both patient experience and mortality (which is potentially a more valuable ratio to consider than available bed numbers).⁵ COVID-19 has exacerbated this workforce problem, but even prior to the pandemic, the UK ranked close to the bottom (versus 31 comparable countries) in the proportion of doctors and nurses per head of the population.⁶ This shortfall in the oncology consultant workforce also continues to grow, offsetting the availability of doctors finishing speciality training, now, and in the coming years.

These findings demonstrate the scale of the challenge facing the NHS in England, Scotland, Wales and Health and Social Care in Northern Ireland. To beat the backlog and transform patient outcomes, policymakers must consider a variety of sources to understand the challenge and set a series of bold policies and recommendations to health services across the UK. To that end, this report includes a series of recommendations designed to prompt further discussions between BMS and government/NHS policymakers. BMS have also developed a series of tools, including a workforce forecasting tool in collaboration with Macmillan, which could be deployed to help local health systems understand needs in their areas.



Cancer outcomes in the UK

Data shows that UK patients already experienced poorer cancer outcomes pre-pandemic, with worse survival after five years for three common tumour types when compared with 6 other high-income countries.⁷ While there were some improvements in cancer patient outcomes in the years before the pandemic, the UK continued to lag behind the OECD average with several countries reporting higher five-year survival rates.¹ There should also be recognition that many of the core targets that were set for each of the UK health systems were being missed on a regular basis.^{3,4} The UK's relatively poor performance in these areas is a consequence of several underlying capacity issues.^{3,4}

The first of these issues is **early detection and diagnosis of cancer**, which is critical to improving a person's chances of survival, because early-stage cancer is more responsive to treatment.¹ For example, 5-year survival for bowel cancer is over 90% if caught early, but 10% if diagnosed late.⁸ The proportion of people being diagnosed with cancer in England at an early stage remained almost static between 2018 and early 2020⁹, and during the pandemic saw a drop.¹⁰ Across the Home Nations the picture is equally stark with little progress in Wales, Scotland or Northern Ireland.⁴

NHS services in England and the devolved nations were also **missing key waiting time targets for cancer** and elective procedures before the pandemic.^{4,11} Data suggests that there is a statistically significant increase in chance of death for each four-week delay in treatment across various cancer types.¹² Yet, Northern Ireland is said to have the worst hospital waiting times in the UK, and amongst the worst in Europe.¹³

Furthermore, the **UK's clinical research environment continues to lag behind competitors**, particularly in later stage clinical trials research, which often have the highest patient benefit.¹⁴ These trials are vital to improve outcomes and ensure that health systems are utilising the most up to date methods. The UK also trails competitors on key indicators such as speed and cost of recruitment which are often pivotal for industry when deciding where to place trials.¹⁴ The pandemic has exacerbated these issues with researchers struggling to restart trials due to lack of patient recruitment and inadequate staffing levels.¹⁵

Additionally, while the Life Sciences Vision set out the ambition for the NHS to be an innovation partner¹⁶, there are significant **barriers to the spread and adoption of innovation** including in service design, the conservative introduction of technology and lack of adequate data infrastructure.¹⁷

Finally, there were significant staffing shortages before the pandemic, including in cancer care. The UK has fewer doctors and nurses per capita than comparable countries, and the number of clinical nurse specialists (CNS) is well below the level needed for personalised cancer care.^{6,18}

To understand how the pandemic has further exacerbated these issues and in turn impacted cancer outcomes, BMS commissioned analysis from OHE on the scale of the 'COVID backlog' in cancer diagnosis and treatment. This analysis shows that each of the Home Nations has a complex picture, with heterogeneity in the specific cancer types that have been affected by the pandemic.^{3,4}

What is consistent is that these issues with capacity were prevalent across each health system in the years preceding the pandemic. This presents an almost impossible task as those same systems are now being asked to go above and beyond pre-pandemic activity levels to alleviate the COVID-19 induced backlog without any additional capacity. To help policymakers to better understand these challenges and set a series of bold policies and recommendations, the next section examines the picture in each of the four nations in turn.

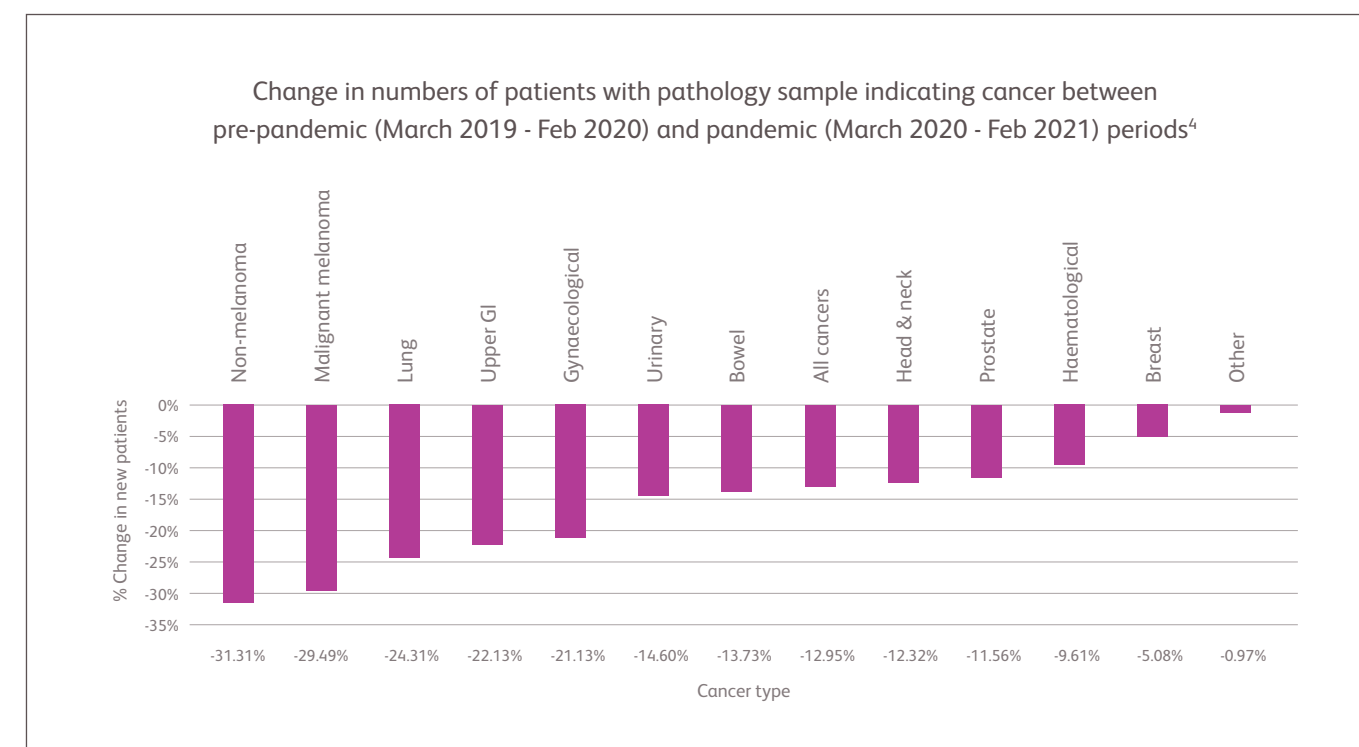
Northern Ireland

Diagnosis

Between March 2020 and February 2021 there had been 1,018 patients who were expected to receive a cancer diagnosis in Northern Ireland but did not.⁴ It is expected these patients are likely to enter the system with later stage disease, worsening outcomes and placing a greater burden on the health service.⁴

There were disproportionate falls in diagnosis across skin, lung, upper GI and gynaecological cancers ranging from -30% in skin cancer to -21% in gynaecological cancers.⁴ Whilst the pandemic has delayed diagnoses in Northern Ireland, the country was already performing poorly in this area, with a significant proportion of cancers diagnosed in emergency settings or beyond the 62 day cancer waiting time.¹⁹

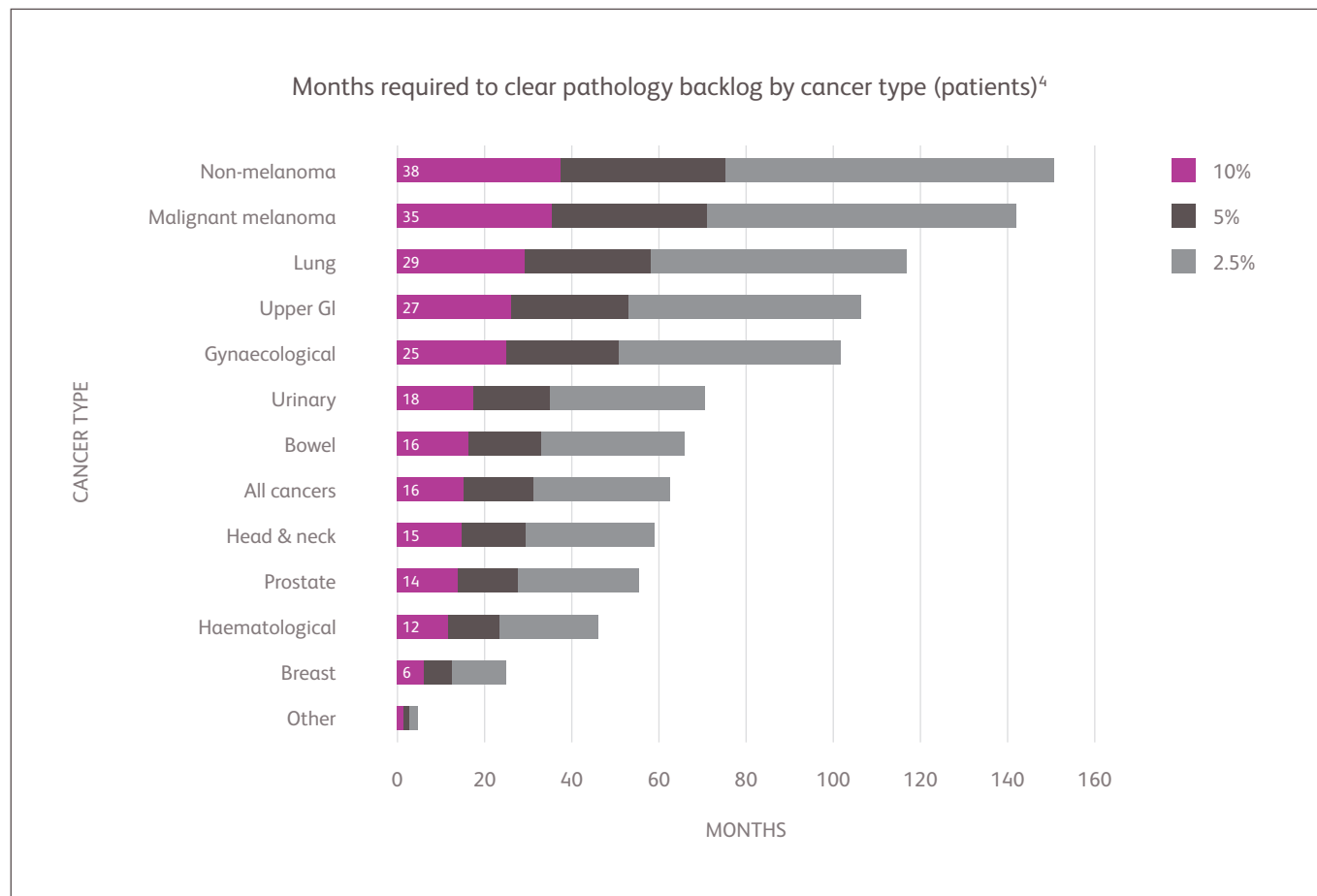
Data in Northern Ireland showed a return to pre-pandemic activity levels in pathology (diagnostic tests being analysed in laboratories) by March 2021.⁴ However, the system will now need to work above pre-pandemic levels for a significant period of time to clear the backlog.⁴



The size of the backlog is compounded by the impact of new patients presenting into the system, with each patient requiring multiple pathology samples. This increases clinical workload and results in longer lead times to clear the backlog.

Assuming activity reaches 110% of pre-pandemic levels, and if resources were split equally between all cancer types, it would take 15.5 months to clear the pathology backlog. For conditions such as non-melanoma skin cancer this could take up to 37.6 months.⁴

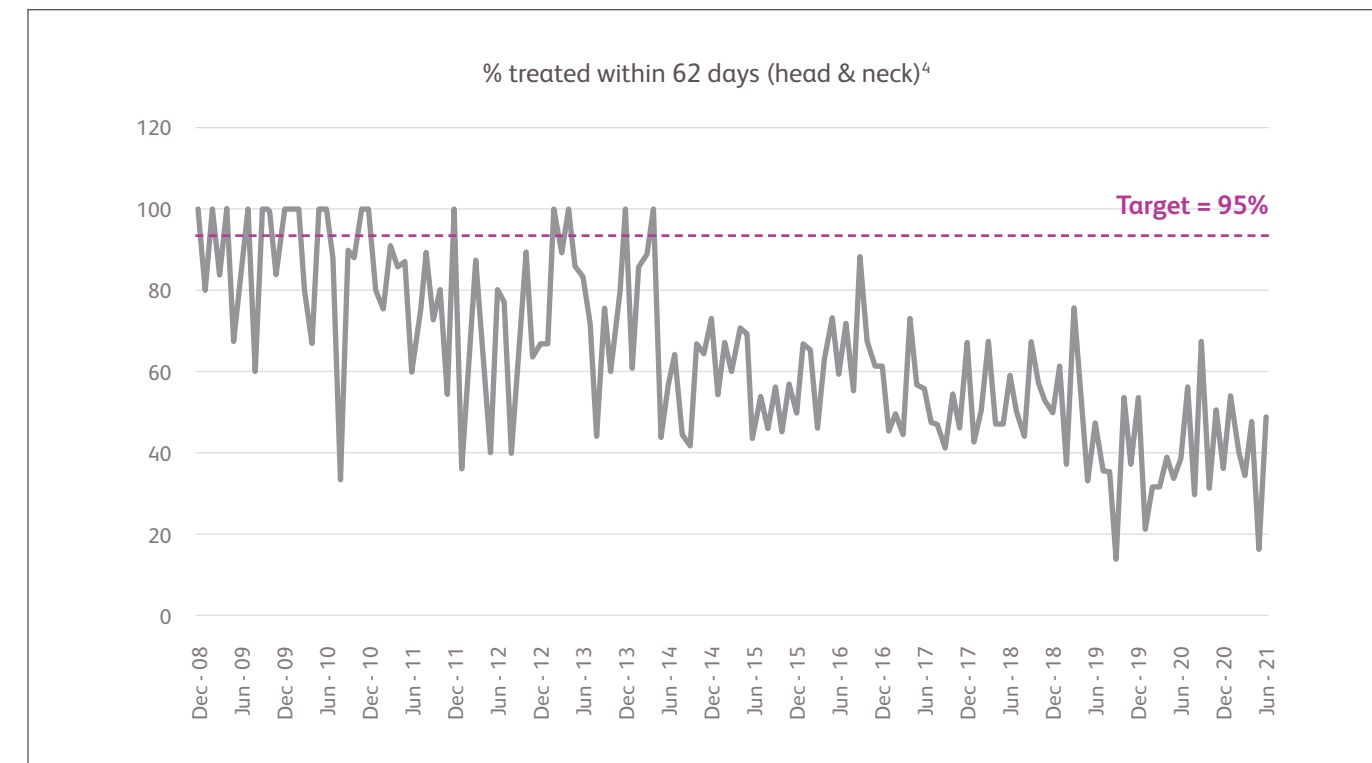
Treatment



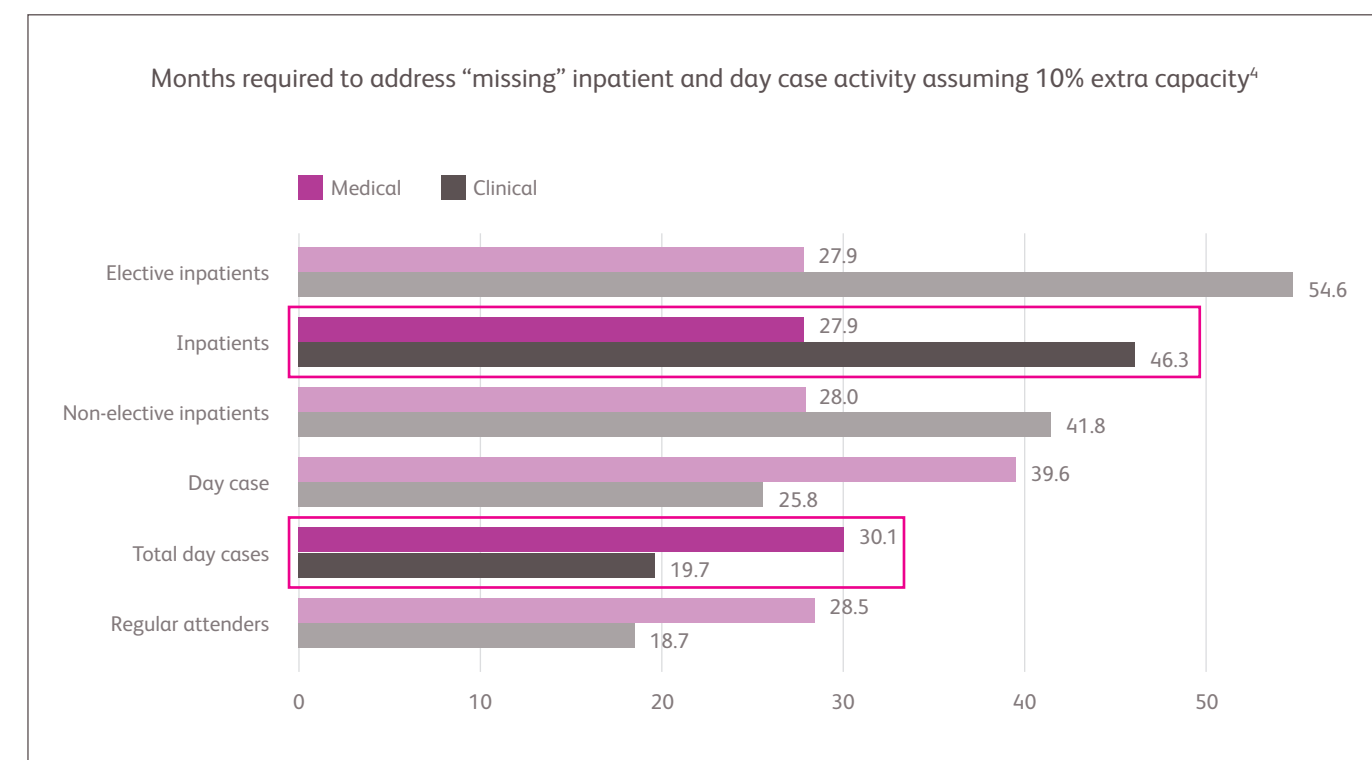
If the health service increases activity to 5% above pre-pandemic levels it would take over three years to tackle the backlog in non-melanoma, malignant melanoma, lung, upper GI, and gynaecological cancers.⁴ For non-melanoma skin cancer in particular, assuming health system activity is 5% above pre-pandemic levels, it would take over six years to clear the backlog.⁴



Prior to the pandemic, NI was falling behind its target of 95% of cancer patients being treated within 62 days of referral, and lagged behind comparable countries in Europe for cancer survival rates.^{4,13} For head and neck cancer, the last time this target was met was in December 2013.⁴ For all cancers this stood at 53.9% in March 2020.²⁰



In September 2021, due to the impact of the pandemic, referrals suffered a significant drop with only 42.5% of patients seen within 62 days of a GP referral, under half of the ministerial target.^{4,20} Between April 2020 to March 2021 there was a 38.6% decrease in inpatient clinical activity and a 23.3% fall in inpatient medical activity compared to pre-pandemic levels.⁴



Assuming the health service can dedicate an extra 10% above pre-pandemic capacity, the total cancer backlog would take around four years to clear.⁴

The pre-pandemic situation in Northern Ireland was compounded by political instability and the absence of a Northern Ireland Executive between January 2017 and January 2020. Elections to the Northern Ireland Assembly occurred in May 2022, in which Sinn Féin, the primary nationalist party, returned the highest number of seats for the first time since the beginning of the devolved institution.

However, the parties have since failed to form an executive, and a speaker has also not been elected to the Assembly, meaning it cannot sit to pass legislation. The absence of a Northern Ireland executive, and the current political impasse, has resulted in the halting of new policy initiatives. While a health minister remains in place in a caretaker capacity, they do not have the mandate or power to drive new policy initiatives.

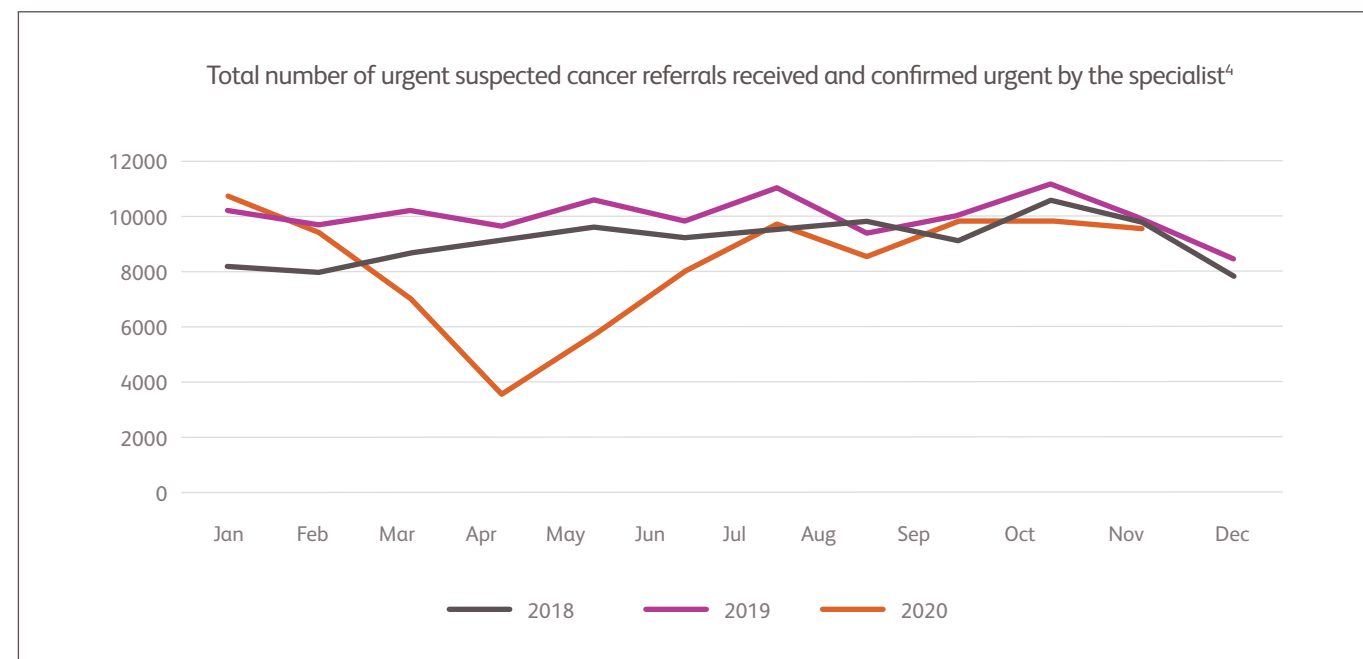
This has meant that services have often stagnated leading to policy recommendations such as the 'Systems Not Structures Review' published in 2016 have still not been implemented.²¹ It is therefore critical that momentum is maintained following the publication of the 10-Year Cancer Strategy and that this is implemented in full, regardless of the political circumstances.¹⁹

Wales

Diagnosis

In Wales, urgent cancer referrals fell to the lowest level in 10 years at the beginning of the COVID-19 pandemic. Referrals recovered to near pre-pandemic levels seven months later.⁴

If NHS Wales is able to increase the resources allocated to dealing with the cancer backlog by 10% above pre-pandemic levels, it will take 20 months to clear the cancer diagnostic backlog.⁴



The analysis shows that if health system activity reaches 2.5% above pre-pandemic activity, it will result in a 6.5 year wait to clear the backlog.⁴

Treatment

The percentage of patients starting treatment within 62 days of referral was already below target at just 78.8% in March 2020, and both initial cancer treatment and outpatient oncology referrals decreased further during the onset of the pandemic.^{4,22} In October 2020, both of these indicators recovered slightly but were still below pre-pandemic levels.⁴

Based on a 10% increase in pre-pandemic activity, it will take 10 months to clear the backlog in people waiting for their first cancer treatment.⁴ Even with a 10% increase, it will take 14.5 months to clear the backlog for outpatient referrals.⁴

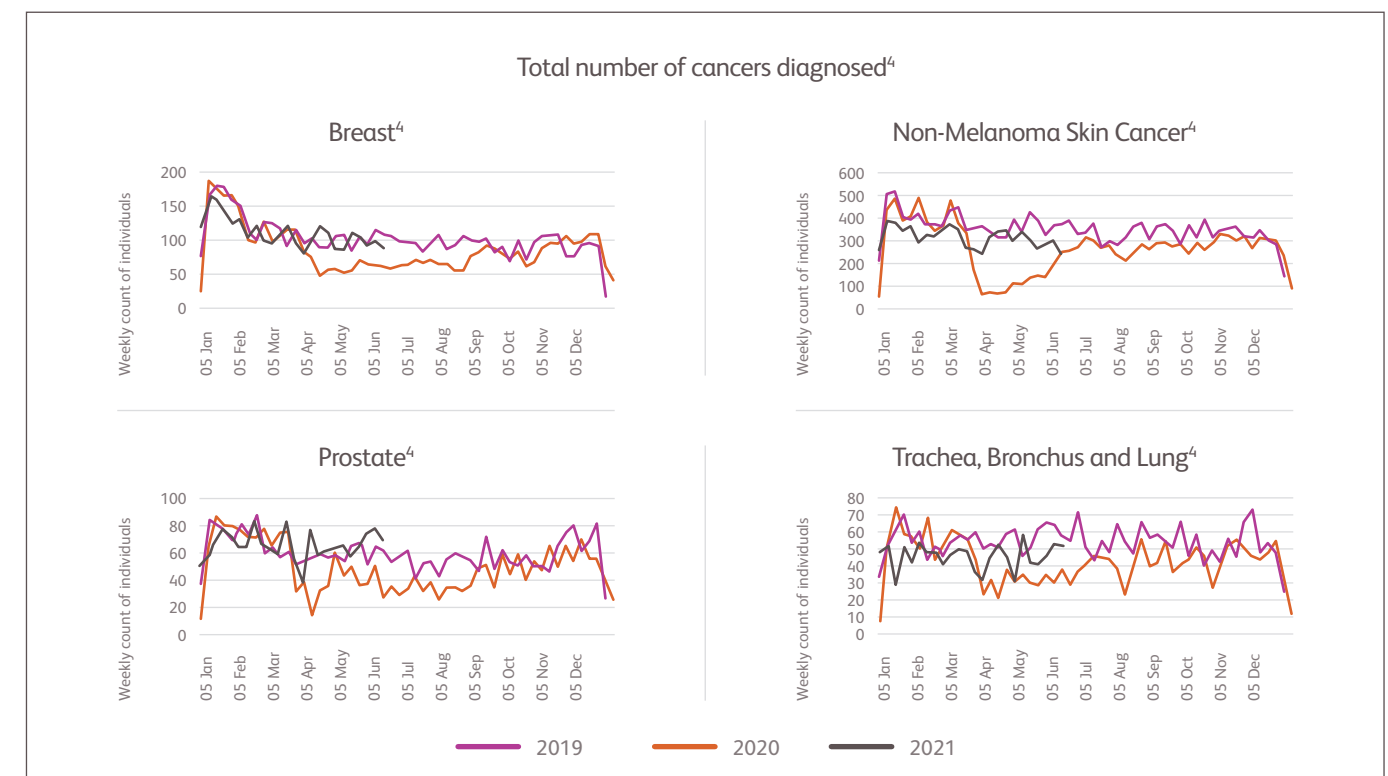
A key hurdle for the Welsh health system will be to overcome inadequacies in data collection.⁴ Data for cancer diagnosis is not readily available in Wales which places constraints on those who are planning services. This lack of data sharing prevents a complete understanding of the scale of the cancer backlog or of the situation prior to COVID-19.⁴ Further, it results in an inability to determine which tumour types are the most prevalent across the health system in Wales and which have been worst affected. The lack of data on treatment is particularly stark and resulted in an inability for the OHE to analyse treatment data and fully understand the scale of the cancer treatment backlog.⁴

Scotland

Diagnosis

Data in Scotland shows that 8,666 patients are estimated to have missed a diagnosis between 2019 and 2020.⁴ This has increased further during the pandemic, with negligible ground having been made in tackling this backlog by mid-2021.²³ Again, Scottish waiting times against the 62 day referral standard were relatively poor before the pandemic, with the 95% target not being met from June 2015 to December 2019.²⁴ If the NHS in Scotland is able to allocate an extra 10% of resources compared to pre-pandemic levels it will take at least 30 months to clear the backlog.⁴

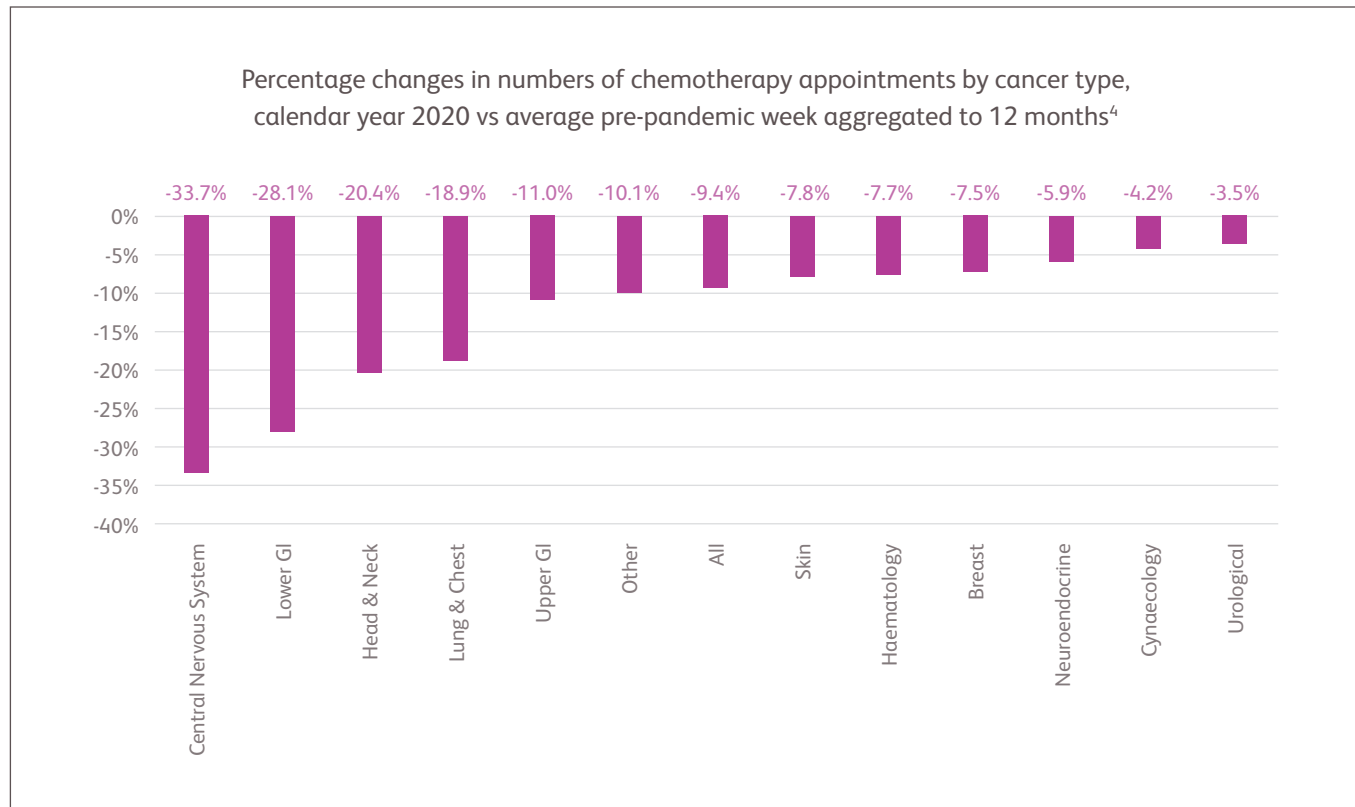
Meanwhile, with a 2.5% increase in activity it will take nearly a decade (9.8 years) to clear the backlog.⁴ These estimates are based on equal allocation of resource, but the situation in Scotland is made more challenging by significant heterogeneity between cancer types.⁴



A 10% increase in diagnostic capacity for lung and chest cancers will enable the backlog to be cleared in 19 months, compared to nearly 80 months in capacity is only increased by 2.5%. For head and neck cancer, this would be under 20 months and over 70 months, respectively.⁴

Treatment

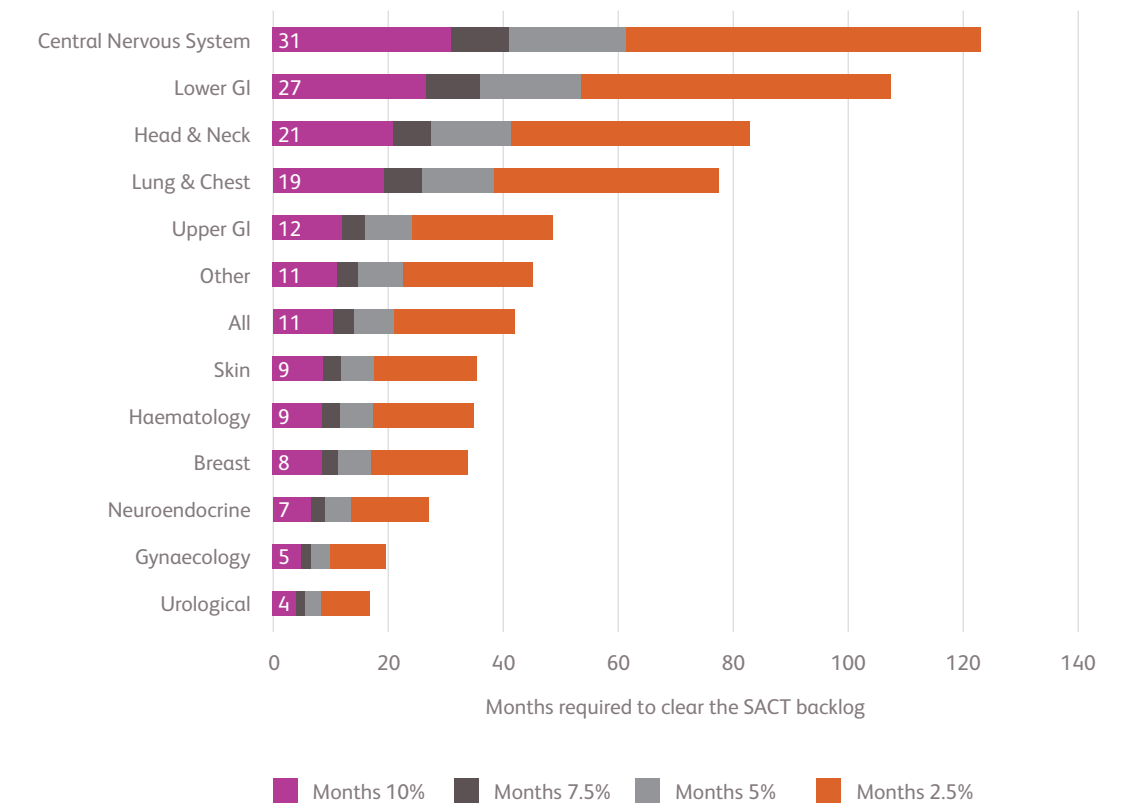
Chemotherapy appointments in Scotland fell by almost 10% during the pandemic.⁴ This reduction in treatment disproportionately affected appointments for cancers related to the central nervous system, head and neck, lower GI tract, lung and chest.⁴ This may have reflected clinicians' reluctance to increase the risk posed to vulnerable patients by the virus, with many treatments requiring increased hospital visits.²⁵



Based on the assumption that the NHS in Scotland can increase capacity by 10%, it will take over 31 months to clear the treatment backlog.⁴ However, even prior to the pandemic, the target of 95% of patients being treated 62 days after an urgent cancer referral was not met at any time between March 2018 and June 2021.²⁶ As of March 2020, this stood at 84.7% for all cancers.²⁶



Months required to clear the SACT backlog, calendar year 2020 vs pre-pandemic reference period⁴



These challenges are compounded by the fact that health inequalities in Scotland are among the worst in Europe²⁷ and individuals from deprived areas are less likely to present with signs and symptoms for diagnosis.²⁸ This has a follow-on impact for individuals who are then referred on to treatment at a later stage of disease, with greater stress being placed on services that are already at or beyond capacity.



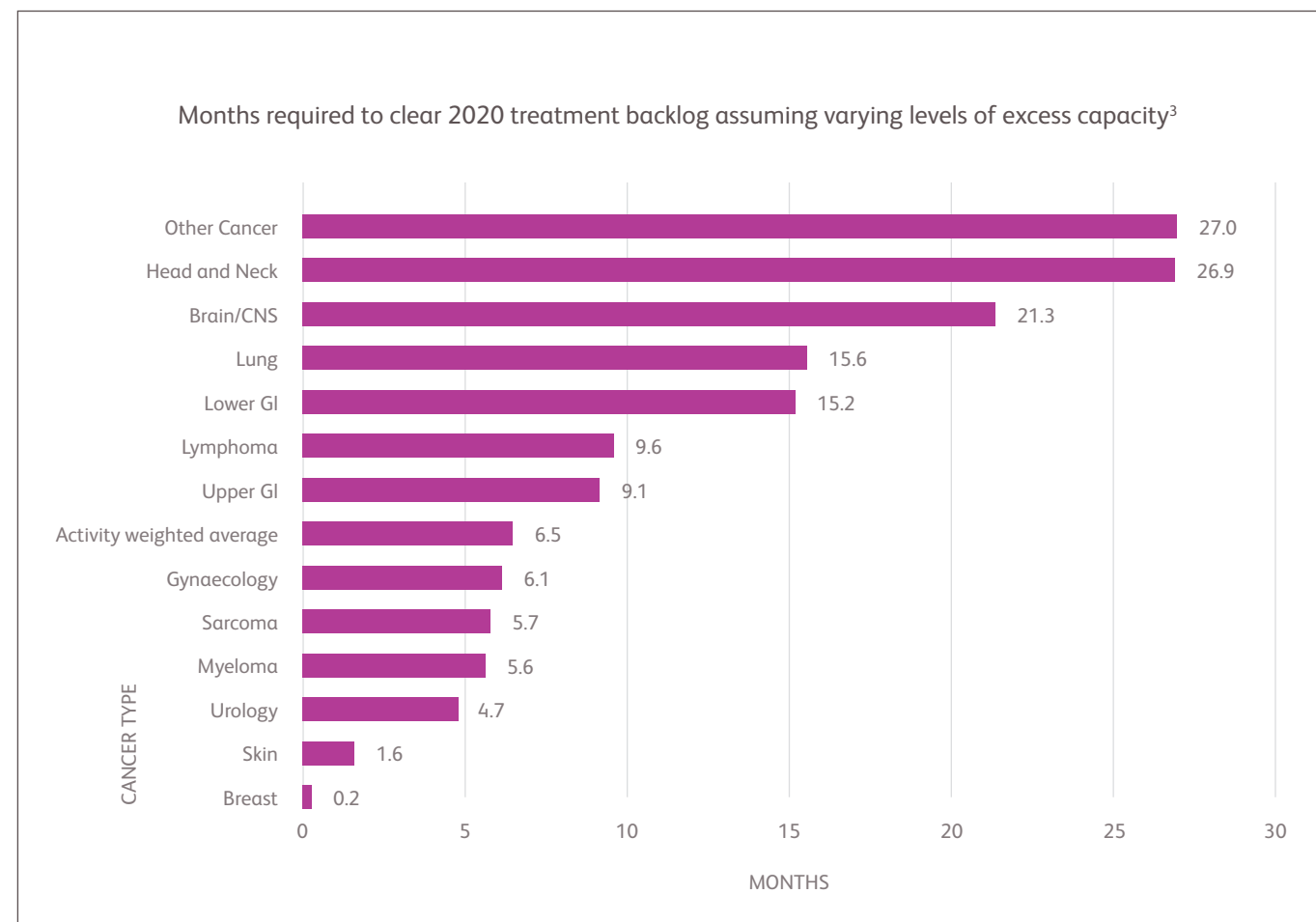
England

Diagnosis

Much like the Home Nations, England has experienced challenges in workforce capacity for many years. As a result, key metrics such as the 62 day wait target have not been met on a consistent basis since 2013.²⁹

These pre-existing issues contributed to the record highs that were seen in the diagnosis backlog in England following the substantial drop in non-COVID NHS activity during the peak of the pandemic. In total, there was a ~12% fall in cancer diagnoses.³ Like Scotland, Wales and Northern Ireland, these changes were heterogenous.³ For example, head and neck cancer experienced the largest decline in activity levels, with an over 22% drop in the number of treatments and more than 15% drop in the number of new patients.³

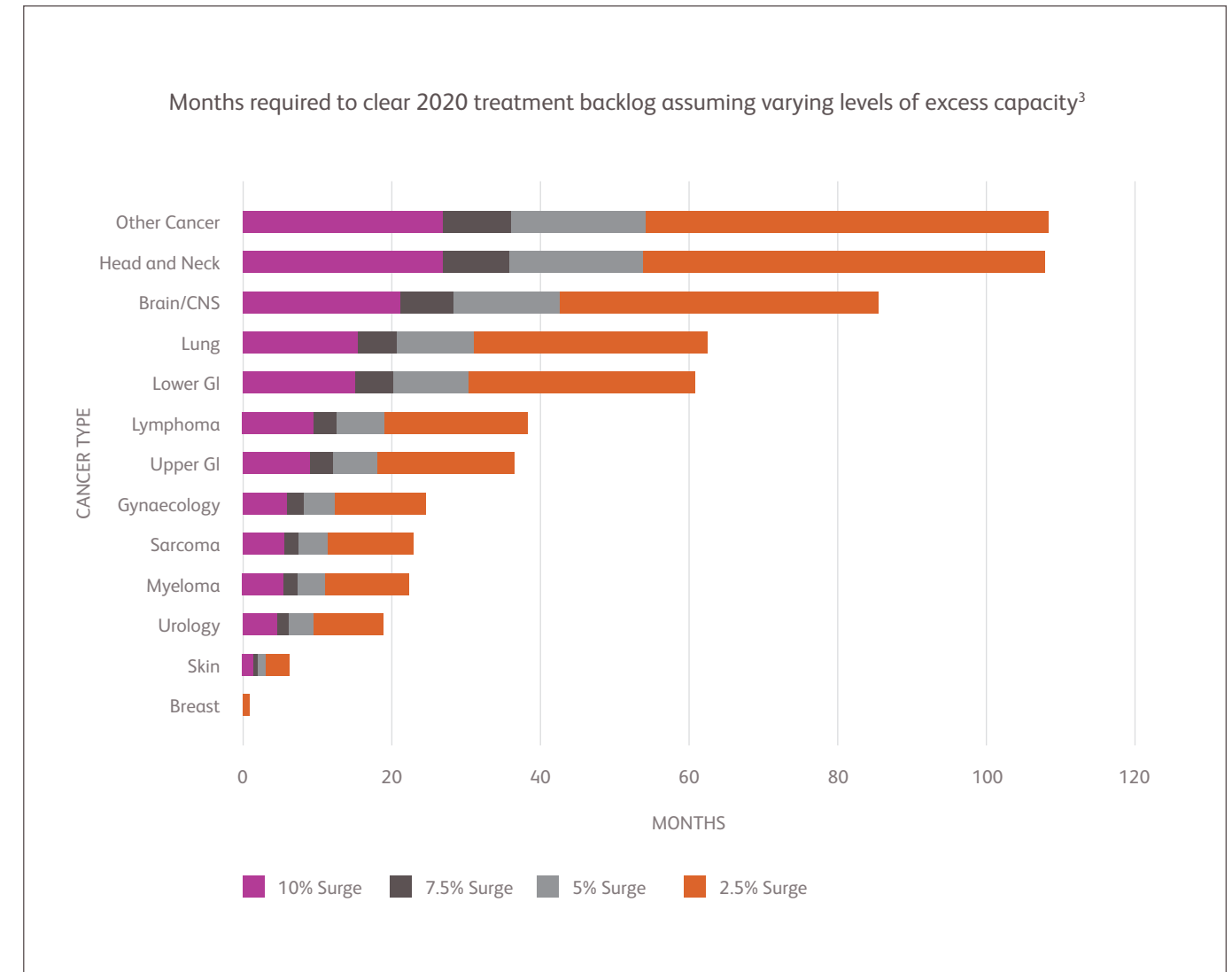
These 'missing' patients are now coming forward in greater numbers and many will have later stage disease. Approximately 12.5% of individuals who should have been diagnosed with cancer in 2020 were not diagnosed due to the pandemic.³ It is estimated that it will take 27 months to clear the diagnostic backlog if the health system worked at 10% above pre-pandemic activity.³



Operating above pre-pandemic levels to tackle the backlog means more resources are needed, including clinical staff hours, but evidence of staff burnout suggests that staff were stretched even before the pandemic.³⁰ With the resourcing pressures currently being felt within the NHS, OHE acknowledge that increasing staff capacity by hiring or training new people is challenging.

Treatment

If only 2.5% extra capacity were to be found, the impact on patient outcomes would be significant – as the estimated time to fully clear the treatment backlog increases to over eight years.³ The analysis reflected findings in the Home Nations,⁴ and at the end of Q1 2020/21 performance against the two-month target had fallen to a low of 62%.³¹ Cancers such as head and neck, brain and lung cancer were particularly affected.³ Even with 5% additional capacity it would take over four years to tackle the treatment backlog for head and neck.³



While there are positive steps being taken, such as the 10-year Cancer Plan, it has been highlighted that any efforts to recover the backlog will need to be matched with sufficient investment in NHS capacity.^{3,32} The biggest barrier to recovery continues to be the pre-existing capacity challenges, including staffing levels – with HCPs reporting high levels of burnout.³

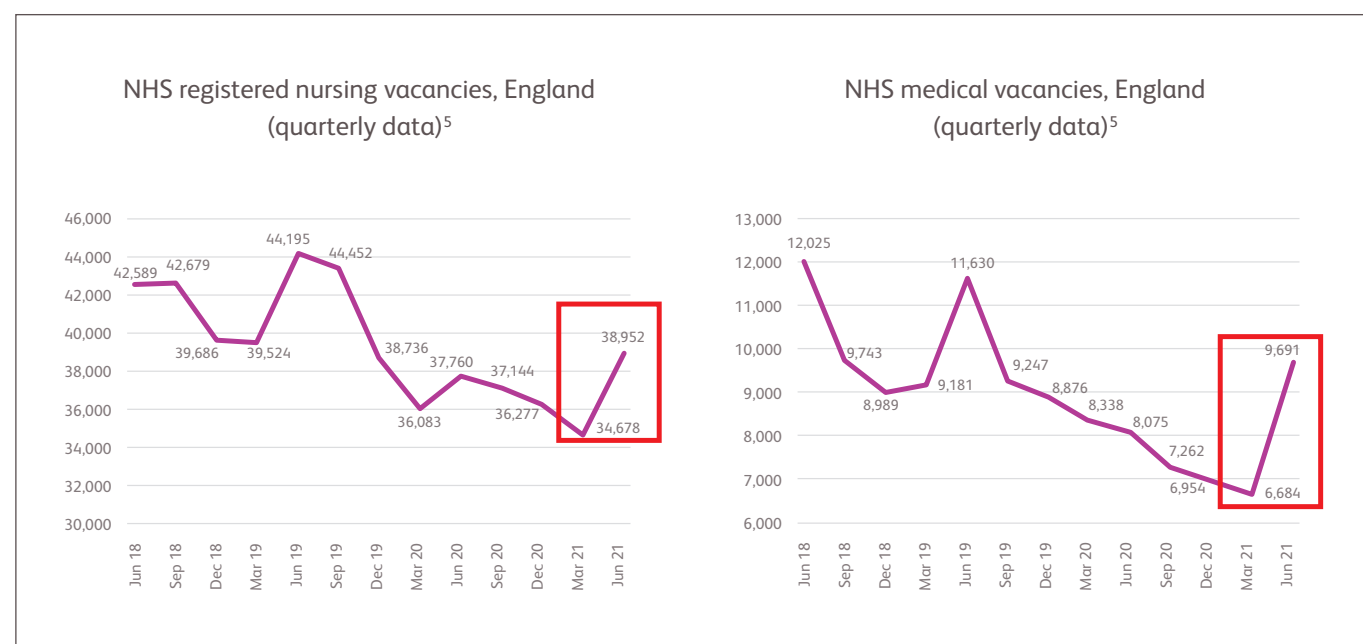
To this end, BMS commissioned additional analysis to understand the impact of patient-to-staff ratios, as well as the aforementioned wider workforce challenges, on clearing the cancer backlog.⁵ The analysis also considers how this links in with patient safety, with a view to building a unique perspective on staff capacity, rather than availability of beds, as a more accurate performance metric to assess the readiness of the system to clear the cancer backlog. This is important to consider because bed capacity was continually referred to throughout the pandemic, but as the NHS Nightingale hospitals showed, may not have the desired impact without adequate staffing.³³

Spotlight on staffing levels in England

Overview of staffing

Staff are the NHS's most critical resource, but they were stretched too thinly even before the pandemic began with high bed occupancy rates, rising waiting lists for care, and fewer doctors, nurses and intensive care beds per capita than comparable countries.⁵ In 2019, the UK ranked 26/31 in doctors per 1,000 inhabitants and 20/31 in nurses per 1,000 inhabitants.⁶ Staff retention was also deteriorating – for example the consultant workforce with a specialty in upper GI and hepatobiliary decreased significantly between 2015 and 2020.⁵ Similar issues also exist across the healthcare services in Scotland, Wales and Northern Ireland.⁴

These problems with retention have been further accelerated by the impact of COVID-19, with a sharp uptick in NHS registered nursing vacancies between March and June 2021 from 34,678 to 38,952 – the highest number since September 2019.⁵ Poor staff retention particularly impacts cancer patients because they have long treatment journeys and value continuity of care.³⁴



Shortages in the oncology workforce and implications for clearing the backlog

While funding announced in the Autumn 2021 Budget aims to improve physical infrastructure and the use of digital technology, it will not address these long-term staffing shortages.³⁵ With the NHS workforce gap projected to double over the next five years and to exceed 475,000 FTE by 2033-34, urgent action is needed to stymie the workforce crisis.⁵ Figures also show that the cancer consultant workforce has grown more slowly than other disease areas, including gastroenterology and respiratory medicine.⁵

As a result, there is now a shortfall of 17% in the oncology consultant workforce, which is set to rise to 28% by 2025.³⁶ The number of doctors starting specialty training would need to double for the next five years to close the forecasted workforce gap.⁵ Meanwhile, the histopathology consultant workforce, which plays a vital role in cancer diagnosis, has grown significantly slower than the aggregate workforce.⁵

England also has fewer clinical oncology consultants per older person than any other devolved nation, and over half (52%) of cancer service leaders reported that workforce shortages have negatively impacted the quality of cancer care.³⁶

In March 2021, there were 42 patients undergoing systemic anticancer therapy (SACT) per cancer doctor, and 138 patients per CNS - higher than any point since March 2019.⁵ The CNS figures seem to be increasing which we would expect due to the missed diagnoses during the national lockdowns now entering the system.

Assuming that workforce remains constant, the patient-to-doctor ratio would have to increase by 4.5% relative to 2020 for 12 months to clear the cancer backlog in England.⁵ For CNS specifically, this ratio would have to increase by 7.8% – meaning another patient for every already overstretched nurse.⁵ Given that staffing is a key determinant of staff wellbeing and patient safety, and that both are impacted negatively by a workforce that is overstretched and supplemented by temporary staff, this is simply not a feasible solution to the backlog.³⁷

Impact on patient experience and safety

While the NHS Long Term Plan committed to deliver personalised care for everyone living with cancer by 2021, Macmillan reports that an 84% increase on the observed number of CNS in 2017 would be needed to achieve this.^{18,38} This equates to an additional 2,500 cancer nurses. By 2030, this figure will have grown to 3,700, a 123% increase on 2017 levels.¹⁸

The shortage in CNSs presents a further challenge for patients. This is because access to a CNS is strongly associated with good patient experience, but in the 2019 National Cancer Patient Experience Survey (NCPES) only 76% of respondents said they were able to get answers they could understand all or most of the time.^{39,40} Cancer patients in Trusts that had the fewest patients per specialist nurse were more likely to report that people treating and caring for them worked well together and provided enough emotional support during ambulatory treatment.⁴¹

Conversely, evidence shows there is a negative association between staff workload per nurse and patient care - demonstrating again the vital importance of patient-to-staff ratios for patient safety.⁴²

As was the case in diagnosis and treatment, these shortages were present prior to the pandemic and have only been exacerbated by it. There is likely to be little room to make existing staff, who have borne much of the pandemic pressures, work even harder to clear the backlog, and doing so would likely lead to a dangerous increase in patient-to-staff ratios.⁵

To help address these longstanding capacity challenges within the cancer workforce, BMS are working in partnership with Macmillan Cancer Support to develop a workforce forecasting tool which will signal where demand is likely to be in the future as new innovations are rolled out. This includes helping individual NHS Trusts to generate business cases at the local level to help meet demand, either by adjusting their existing skill mix or hiring to fill the potential gaps, in turn addressing regional variation in access to innovative new treatments.

Skill mix approaches work by ensuring the roles and responsibilities of a team are designed around the needs of the patient, meaning that there are the right skills at the right level to meet those needs. Currently, readjusting the skill mix is an underutilised method of ensuring that there is adequate expertise within a team. However, deployed properly skill mix can help improve patient experience and enhance access to new innovations.

BMS's new workforce forecasting tool will provide practical support with this by delivering actionable insight to decision makers across government and the health system to predict more accurately the consequences of an ever-evolving cancer treatment landscape on the roles and skills of the future cancer workforce.

Working together to tackle the backlog and staffing challenge

Conclusion

The analysis outlined above demonstrates the scale of the challenge that each government and health system in the UK faces to recover and improve cancer treatment and diagnostic services. Health systems will need to plan extensively and act decisively to overcome these backlogs, ensure that those cancers that are worst affected are targeted with extra resource, and make sure that a post-COVID recovery does not mean business as usual. Doing this today will help guarantee that the UK's cancer services are fit for the challenges of tomorrow.

The recent Northern Ireland Cancer Strategy and forthcoming strategies in England, Scotland and Wales present opportunities to make transformative changes to the cancer environment.¹⁹ BMS believes that these plans must be forward thinking and ambitious. Alleviating these backlogs cannot be achieved solely by one organisation, and will instead require a whole system approach. The following recommendations are intended to prompt further discussions between BMS and government/NHS policymakers to achieve this.

Recommendations

To help tackle the long-standing capacity challenges in the system, which have been exacerbated by the pandemic and contributed to the significant cancer backlog the NHS is now facing, BMS has formulated a set of key policy asks:

- 1** There should be immediate additional investment, including targeted resourcing for cancers which have the greatest areas of unmet need. Any commitment to investment in oncology services will need to be maintained, alongside greater emphasis on early diagnosis (and public awareness), optimising treatment (and therefore new innovative meds), and efforts to ensure a resilient and sustainable cancer workforce.
- 2** Building on this, governments and health systems across the UK should work together with industry to maximise the potential of BMS's new workforce forecasting tool, which can be used to predict more accurately future workforce requirements. The tool will support national and local health leaders to improve workforce capacity by tackling the barriers to adopting skill-mix approaches, ensuring that the roles and responsibilities of a team are designed around the needs of the patient, and there are the right skills at the right level to meet those needs.
- 3** NHS Trusts and Health Boards should also consider whether they are able to backfill the roles of upskilled staff and, if not, take steps to enable this, for example by recruiting more support workers.
- 4** Health system partners should collaborate to increase data availability so that there is greater understanding of the types of cancer with the largest backlog in diagnostics and treatment along with the geographic areas most affected. This will help to inform more targeted intervention and funding.
- 5** Clear and formalised routes to share best practice will be critical in realising the ambition for ICSs, health boards and regional health trusts to act as exemplars for high quality, innovative treatment and workforce solutions for the benefit of patients. Governments across the devolved nations have a role to play in evaluating the success of these organisations - and in scaling up successful innovation with support from patient groups and industry. Embedding responsibility for population health to these regional structures will also play an important role in improving longer term cancer outcomes in the UK.

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About BMS

Bristol Myers Squibb (BMS) is a leading global biopharmaceutical company focused on discovering, developing and delivering innovative medicines for patients with serious diseases in areas including oncology, haematology, immunology, cardiovascular and neuroscience. Our employees work every day to transform patients' lives through science.

In the UK, BMS employs approximately 1,000 people. Our ongoing partnerships with the NHS, academia and scientific institutes represent investment into the UK to the value of over £200 million. Over 750,000 NHS patients rely on our medicines to manage their disease, stay well and live their life to the full.

