

# The road to cancer recovery

## The road to cancer recovery: Update on the recovery of cancer services from COVID-19

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## Introduction

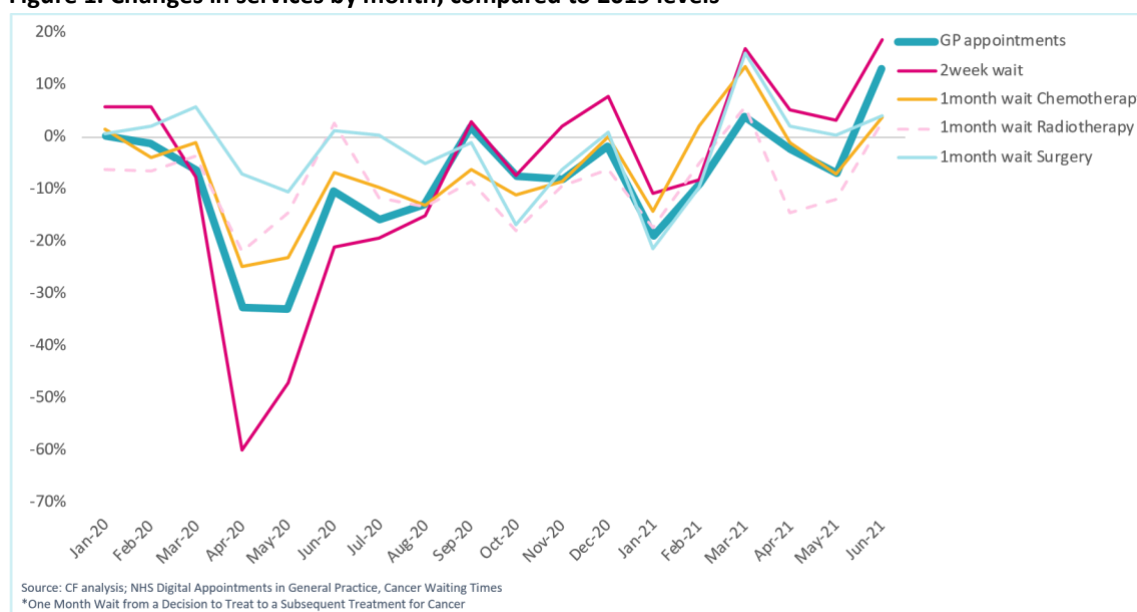
We previously explored in some detail the impact of the pandemic on cancer services across the pathway, investigating the extent of the disruption and estimating the consequences on cancer outcomes, from stage of diagnosis to survival rates, to excess deaths ([read the full report here](#)). Our latest update of these numbers revealed that, during the 5 months of greatest disruption to cancer services, from April to August 2020, there was a 32% average drop in urgent referrals, which would likely lead to delayed cancer detection and a stage shift in cancer diagnosis. This implies that many patients may have been diagnosed at a later stage than they should have been, resulting in a stage shift in diagnosis. Delays in cancer detection, implicitly leading to greater disease progression, has been linked to detrimental effects on cancer survival<sup>1</sup>. According to our analysis this could translate to as many as 4,500 preventable cancer deaths related to the first months of the pandemic alone ([read full update here](#)).

Fortunately, we have seen services recover more quickly during the second COVID-19 wave. The latest update of our analysis revealed that most services returned to pre-pandemic levels by June 2021. This is encouraging news that showcases the NHS' outstanding response to COVID-19 and how resilience in the health service improved after the first wave. That being said, there still remains a significant waitlist, and a long list of missing patients who have not yet presented, and who have either unfortunately already passed away or will need to be attended to in the near future once they present. In the current report, we have modelled different scenarios of activity to estimate how long it would take to work through all the outstanding activity including the cumulative activity missed over the course of the pandemic. We found that, we would need to run at an ambitious 110% of pre-pandemic activity to clear all the backlog and missing patient activity by mid-2026 assuming an unchanged rate of disease prevalence and management.

## The road to recovery

We previously observed how services across the cancer pathway experienced significant disruption during the first COVID-19 wave. Figure 1 showcases how these services dropped again during the second wave, though to a lesser extent, demonstrating that the NHS' improved response to the pandemic in subsequent waves led to more resilience in non-COVID activity. Moreover, Figure 1 clearly shows a return to normal activity by June 2021 across GP appointments, two week wait referrals, and one month wait from decision to treat to subsequent treatment of cancer.

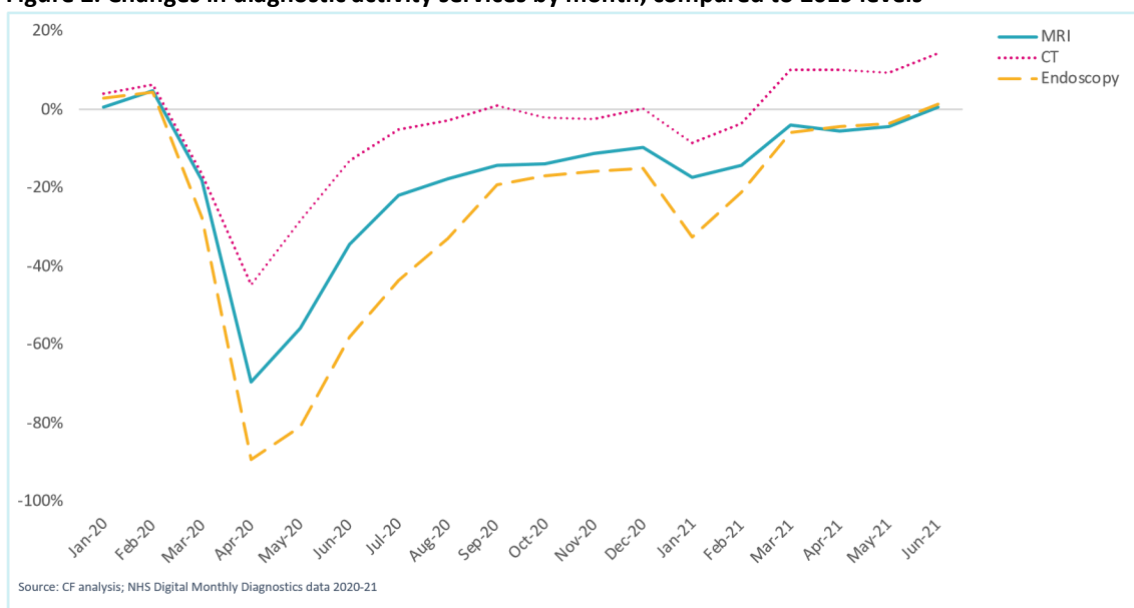
**Figure 1. Changes in services by month, compared to 2019 levels<sup>2,3</sup>**



A similar pattern can be observed for diagnostics. Figure 2 shows that MRI, CT and Endoscopy activity returns to normal activity levels by June 2021. This is encouraging news, and a testament to the NHS' extraordinary efforts in responding to the most challenging healthcare circumstances in recent history, while accelerating recovery to return to near-normal levels. It is not currently feasible to split cancer

related diagnostic activity out from non-cancer related activity and as is the current reality, diagnostic facilities are shared across the NHS and need to tailor both cancer and non-cancer services. We have therefore included total diagnostic activity together when referring to endoscopy, MRI or CT scans in this paper and not cancer specific diagnostic activity.

**Figure 2. Changes in diagnostic activity services by month, compared to 2019 levels<sup>4</sup>**



Despite improvements in recovery, there is still considerable loss in activity that will need to be addressed. According to our analysis (see Table 1), the missed activity between the period of highest disruption, March 2020 and February 2021, meant a cumulative loss of approximately 40 million GP appointments, 370,000 urgent referrals, 913,000 Magnetic Resonance Imaging (MRI) scans, 654,000 Computerised Tomography (CT) scans, and 714,000 Endoscopy procedures compared to 2019 levels. Similarly, chemotherapy treatment episodes decreased by 7% and radiotherapy treatment by 13% compared to 2019 levels.

**Table 1. Cumulative loss in activity for the period of highest disruption, and equivalent proportion of full year activity<sup>2,3,4,5,6</sup>**

Activity	Cumulative Loss March 2020 – February 2021	Proportion of full year activity lost compared to previous year (%)
GP appointments	39,490,000	13
'2 week wait' referrals for suspected cancer	369,490	15
MRI scans	912,966	25
CT scans	654,583	10
Endoscopies	714,069	37
Chemotherapy treatment episodes	186,769*	7
Radiotherapy treatment episodes	14,683	13

\*Chemotherapy activity data only available up to December 2020

Indeed, the return to near pandemic levels is only the first step towards recovery. A compensatory effort will be required to make up for the missed activity, which includes not only patients on the waiting list, but also missing patients who have not presented due to fear of infection or from worry of burdening an already overwhelmed health system. Additionally, prior to the pandemic, historic activity across the patient pathway saw continuous annual growth. The pre pandemic 5-year average growth rate for MRI, CT, Colonoscopy activity was 106%, 107% and 107%<sup>4</sup> respectively whilst the 5-year average growth rate for two-week-wait was 109%<sup>3</sup>. This means the current figures are lower than what would have been expected had the pandemic not occurred as the proportion of activity lost is based on the 12 months pre-pandemic when in reality the demand was projected to have moved up. This implies that, there is still a considerable effort to be made to work through the waiting list and patients who have not yet presented.

A further issue is that less than two thirds of these “missing patients” are currently on the diagnostics waiting list (see Table 2). This means that they presumably have not been seen and referred for diagnosis yet. It should be noted that the diagnostics data refers to all diagnostics activity and does not refer to cancer alone. Not all of these patients will have cancer – but it is unclear which will and which won’t. Some may have died from cancer or COVID or something else. But it suggests that significant cohort of patients have not attended who may have cancer and not yet been seen.

**Table 2. Proportion of ‘missed patients’ who are on the diagnostics waiting list**

Activity	Cumulative Loss March 2020 – June 2021	Patients on the waiting list as of June 2021	Percent of missing demand on waiting list
MRI scans <sup>4</sup>	963,325	247,688	26%
CT scans <sup>4</sup>	459,536	303,706	66%
Endoscopies <sup>4</sup>	743,988	127,966	17%

## Recovery projections

We set out to explore how long it would take to clear the overflow of demand for different cancer services based on three different scenarios of projected activity: the first one assumes 105% of 2019 activity levels going forward, the second 110% and the third 115%. We have used a number of assumptions in our modelling, the first is that 75% of the missing patient demand for two-week-wait referrals or diagnostic appointments will need to take place and that 90% of the missed treatment activity, chemotherapy or radiotherapy, will need to take place.

Table 3 displays the output from our model, revealing some striking findings. Indeed, we found that, maintaining activity at 105%, which is the least ambitious of the three scenarios above, will mean that two-week wait referrals activity will only be recovered by 2030, Chemotherapy and Radiotherapy by 2028 and 2033 respectively, and more starkly still, MRI and Endoscopy by 2040 and 2050.

This means that, in order to clear the missed activity more quickly, a more ambitious scenario of activity will need to be maintained, which is a significant ask that will require some change in investment and/or policy. Looking at the figures above, it would seem that a 110% of normal activity levels would be required to clear waiting lists and demand of patients who have not yet presented by 2026. That is, however, a considerable further ask from current levels, and there are many barriers to achieving it. The model also assumes no further impacts of future COVID-19 waves or other significant disruption to the health system such as a bad winter flu season.

It is perhaps helpful to view the scenario projections above against the activity thresholds set by NHS England for access to the elective recovery fund. NHS England have said they will pay integrated care systems at 100% of tariff for activity above 95% of 2019-20 activity, and at 120% of tariff above 100% of 2019-20 activity<sup>7</sup>. This appears to imply the operational activity in elective care is well off the 115% of 2019-20 activity we have set here in our most optimistic scenario.

**Table 3. Date of cleared backlog of cumulative missed activity based on projected future activity level scenario, by type of service**

		Current level	Projected future activity under different scenarios of recovery		
		June 2021* (or latest available)	105%*	110%*	115%*
Referrals	'2 week wait' referrals for suspected cancer	119%	August 2030	January 2023	April 2022
Diagnostics	CT scans	114%	December 2026	May 2022	December 2021
	MRI scans	101%	December 2040	September 2024	April 2023
	Endoscopies	101%	July 2050	May 2026	February 2024
Treatment	Chemotherapy treatment episodes	99% (Dec 2020)	February 2028	August 2022	February 2022
	Radiotherapy treatment episodes	86% (April 2021)	March 2033	June 2023	July 2022

\*Based on 2019 activity levels

### Methodology and limitations of this analysis

This analysis has used the latest data available at the writing of this article through the release of data by the NHS. The data for GP appointments, diagnostics, and cancer waiting times were up to June 2021, while the latest chemotherapy data was up to December 2020 and radiotherapy data up to April 2021.

We have focused on the concept of cumulative missing demand – this is based on monthly comparisons to the previous years' activity recorded for the 12 months before March 2020, which was before we saw an impact of COVID-19 on services. While the NHS typically focuses on activity and recovery compared to baseline and waiting times, it does not track cumulative loss of activity. In our analysis, we have focused on these figures because we recognise that cancer patients are distinct from other patient groups in that demand cannot be dealt with in another way such as with through self-help, pharmacy, 111 or the Emergency services (e.g., demand for a GP appointments).

In our recovery projections, the notion of time to clear the backlog is based on a projected throughput scenario compared to the sum of the cumulative backlog plus the ongoing expected future demand.

In our model, we have used the assumption that only 75% of the missing cumulative demand for two-week-wait and diagnostics appointments will return. This could be an underestimation and is a known unknown. Sadly, up to 25% of cases may not present either because they have passed away from another illness – such as COVID-19, or potentially due to an undiagnosed cancer. Demand for diagnostics and two-week-wait referrals may also have come through A&E as opposed to the primary care route. Another assumption used when looking at treatment activity is that 90% of the missed activity, chemotherapy or radiotherapy, will need to take place.

When modelling the future monthly demand beside the backlog figures we have assumed a 4% demand growth projection on the annual activity for 2019. This accounts for the known annual growth in demand on services as detailed above with diagnostics at 107% and two-week-wait at 109% for the 5 years pre-pandemic. The 4% growth is potentially an underestimate in the growth rate compared to a situation where COVID had not occurred, but it will take some time for effects on growth rates to become apparent. We have also used average monthly activity to calculate future activity, which means that seasonal effects have not been taken into account in our projections. This model assumes an unchanged model of care from the pre-pandemic period. Fortunately, there have been advances in clinical practice over the past year, such as the roll out of faecal immunochemical test (FIT)<sup>8</sup>, capsule endoscopy<sup>9</sup>, cytosponge<sup>10</sup>, GRAIL<sup>11</sup> and radiotherapy hypofractionation<sup>12,13</sup>, the impacts of which on diagnostics are not yet fully known and these have therefore not been modelled in the activity projections.

## Supporting recovery

Looking forward we see activity will need to be ramped up close to 110% of pre-pandemic levels to work through the cumulative number of patients awaiting services by 2026. This will be a significant undertaking, especially given the current difficulties that the health system is facing. We explore in more detail what are the most prominent challenges in achieving this ambition, and offer recommendations on how to address them.

## Challenges

There are a number of challenges that currently prohibit a significant and sustained increase in activity levels across the cancer pathway.

- **Workforce constraints:** The healthcare workforce is exhausted and overstretched from the extremely demanding and taxing response to the pandemic, causing workforce fatigue and affecting staff well-being. An increase in activity above 2019-20 levels imply a need for either more staff, longer hours or productivity gains. Unfortunately, infection prevention and control (IPC) measures have meant a decrease in productivity, and rates of recruitment from abroad have been affected by both Brexit and the pandemic meaning increased pressure on the existing workforce.
- **Capacity gap:** An evident constraint is the low levels of physical capacity which would be required to increase activity to levels required, most prominently in MRI and Endoscopy equipment. This has been recognised in the recent Independent Review of Diagnostic Services by Prof Sir Mike Richards<sup>14</sup>.
- **Non-cancer demand:** The mounting elective care backlog has rightly become a key priority with the Secretary of State warning waiting lists could reach 13 million. This pressure, along with the ongoing rising rates of COVID-19 infections and hospitalisations, and the worry about other winter pressures all draw on the same resources needed to deliver cancer services.
- **Continued Infection Prevention and Control measures:** Thorough IPC measures are still in place for cancer services, including wipe down which is time consuming and therefore considerably reduces throughput.
- **Limited use of independent sector:** There has been successful use of independent sector capacity, although cancer treatments often require NHS facilities due to the complexity of the work whilst the staff based at private hospitals are often the same staff who work at NHS hospitals and often do not have the ability to dramatically increase their hours of work.

- **Complexity of the pathway:** The cancer pathway is one of the most complex to navigate, for both healthcare professionals and patients. Patient presentation typically happens in primary care or A&E, which often leads to referral to undertake one (or more) of a range of diagnostics tests. Patients will then need to be put on the right pathway based on their tumour type, with offers 3 to 4 different treatment modalities to choose from. Navigating the cancer pathway requires coordination across different disciplines and NHS organisations, and any improvement to services will require concerted efforts across the pathway as to not create bottlenecks.

### Potential solutions

We recognise that this is particularly challenging context and how hard the NHS has been working in its response to the pandemic while ramping up recovery efforts. We have therefore thought of a set of measures that could be done to consider further accelerating recovery by making optimal use of NHS resources.

- **Prioritise the waiting list:** Not all patients on waiting lists will have the same risk. The critical challenge is to identify patients with the highest risk of progression – in part related to tumour type (e.g., lung cancer has fast progression) and in part due to patient characteristics. Treating these patients as quickly as possible would minimise worse outcomes including decreasing survival rates and excess cancer deaths.
- **Cut Infection Prevention and Control measures to boost throughput:** The use of COVID-secure locations should mean that some IPC measures may be no longer required. Though the use of masks, gloves and other personal protective equipment will still be essential, it may be time to remove the wipe down requirements between patients, which would not only save time, but also releases additional capacity which ultimately improves throughput, and reduces the burden on staff whose time can be used more efficiently. This is especially in areas with low COVID-19 infections and high vaccination rates where these additional measures can create unnecessary bottlenecks. Our estimate is that cutting down on the wipe down requirements could release 20% of capacity.
- **Ring fenced cancer capacity:** Separating cancer activity from other non-elective and elective activity would allow staff and infrastructure to concentrate on dealing entirely with cancer patients. Cancer surgical hubs were established during the pandemic to good success and a similar model could be used for other aspects of the cancer pathway. Creating community diagnostic hubs as proposed in the Richards’ report would be a step in the right direction by separating non-emergency activity, such as diagnostics, away from acute hospitals. However, establishing cancer specific sites would take this further and truly ring fence the capacity.
- **Make use of digital to transform the pathway:** The typical pathway starts with a visit to a GP and then to a hospital consultant before any investigations can be performed, this usually means a wait between appointments and further delays to undertake diagnostic tests. The shift to digital consultations during the pandemic has, in some instances, enabled diagnostic investigations to take place before out-patient consultation. Continued use of digital would allow acceleration through the pathway for faster access to both appointments and diagnostics and would make it more straightforward for both healthcare professionals and patients to navigate.
- **Enhance predictive modelling:** Once digital has been embedded in the cancer pathway, this will allow for the use of Artificial Intelligence to risk stratify the population and send prompts to patients. Subsequently this would allow for more targeted interventions to address the waitlist and find the missing patients yet to present.
- **Incentivise the workforce:** Make use of new NHS settlement to support incentives in workforce targeted in critical areas, which would mean increasing overtime compensation for priority areas such as cancer services and diagnostics.
- **Targeted use of independent sector:** The independent sector offers greater capacity than what has been utilised thus far. Making use of private sector capacity in a more targeted and systematic way for cancer would allow to close the gap in infrastructure capacity and some staffing resources.

## About the authors

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