Healthcare Ripple Effects of the COVID-19 Pandemic

How Significant Reductions in Screening, Diagnosis, and Treatment of Cancers, Cardiovascular Disease, and Mental Health Conditions Might Impact Mortality and Morbidity in the UK

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Executive Summary

In January 2019, the UK National Health Service (NHS) launched the NHS Long Term Plan, a 10-year strategy to expand and improve primary and community services, reduce health inequalities, and enhance care for people with major diseases. The NHS Long Term Plan was supposed to be a turning point for healthcare in England. Then came a global pandemic.

The pandemic severely disrupted hospital services, particularly in the first half of 2020. Waiting lists for hospital care are now longer than ever, with over 5.45 million waiting for care at the end of June 2021. Beyond immediate COVID-19 care, the pandemic has created demand for additional mental health services and treatment for chronic COVID-19 side effects. Meanwhile, it is estimated only two thirds of community services have been fully restored.

Two important reports published in March and September 2021 by the Institute for Public Policy Research (IPPR) have begun to gauge the pandemic's full impact across several major health conditions. The second of these reports proposes an ambitious recovery plan to clear the NHS backlog and improve cancer services and survival rates moving forward.

This paper summarises some of the key points from these reports, along with other studies, to derive insights for overcoming pandemic "ripple," or indirect, effects in three key areas:

- Cancer: Missed and delayed screenings, specialist referrals for suspected cancer, diagnoses, and treatments will have significant impact on cancer rates and mortality. It may take years to clear the backlog of patients needing treatment along the cancer care pathway.
- Mental health: Multiple pandemic-driven risk factors, such as social isolation, job loss, substance abuse, and bereavement, coupled with limited access to mental health services, have created a mental health crisis that will persist well beyond the pandemic.
- Cardiovascular disease: The pandemic's disruption of cardiovascular care services, from health checks to elective procedures, will result in thousands of heart attacks and strokes that could otherwise have been prevented.

A September 2021 Health Foundation report titled "The NHS Long Term Plan and COVID-19" concluded:

COVID-19 has been the biggest shock in the NHS's history and its impacts on people's health and the health service will be felt for many years … No part of the NHS's plan has been unaffected by the pandemic. Unsurprisingly, the overall picture is one of major delay, disruption, and increased demands on services. There have been delays to developing planned new services in primary and community care, and widespread disruption to elective care, cancer screening and treatment, mental health care, and other services, with serious consequences for people's health and wellbeing.

Cancer

Screening, Diagnosis, and Treatment

During the first wave of the COVID-19 pandemic in the UK, the NHS suspended breast, colon, and cervical cancer screening programmes, resulting in perhaps more than three million individuals missing their screening appointments, according to Cancer Research UK (2020).

The number of urgent referrals for suspected cancer symptoms under the widely recognised "two-week wait" (2WW) system fell significantly, with 280,000 fewer referrals than expected up to November 2020. Meanwhile, a combination of general practitioner (GP) reluctance to send patients to hospital and patients' own reluctance to go produced a 36% drop in accident and emergency (A&E) attendances for those with cancer symptoms.

Using data from March 2020 to February 2021, IPPR Report 2 estimates 369,000 fewer referrals for a suspected new cancer diagnosis compared to the previous 12-month period, which may have led to 19,500 missed cancer diagnoses.

During that same period, the IPPR analysis highlights a 10% year-over-year drop in CT scans, a 25% drop in MRI scans, and a 37% drop in endoscopies (including colonoscopy, gastroscopy, sigmoidoscopy, and cystoscopy). The significant drop in MRI and endoscopy is likely due to both pandemic-driven restrictions on invasive screening tests and productivity loss from new infection control procedures.

Data on COVID-19's impact on cancer treatment is starting to generate worrying statistics.

IPPR Report 1 suggests a 37% drop in the number of patients beginning treatment in May 2020 compared to May 2019. The second report goes further to confirm that, while the incidence rate of cancer has not changed, 187,000 fewer episodes of chemotherapy and 15,000 fewer episodes of radiotherapy were performed between March 2020 and February 2021 compared to the previous year, reductions of 7% and 13%, respectively. It should be noted with some optimism that these figures have improved compared to the initial analysis, which reported a year-over-year drop of 31% in chemotherapy treatments and 14% in radiotherapy treatments from March to November 2020. This shows the benefits of applying learnings from earlier waves of the pandemic to prepare for any subsequent waves.

The overall impact of COVID-19 on cancer treatment may never be properly understood. Many individuals, including those who started treatment before the pandemic, have experienced changes to their treatment plans. For this reason, IPPR authors point out that it is hard to predict long-term impacts on patient outcomes as there is limited data currently available. This may become clearer over time.

"Even a four week delay of cancer treatment is associated with increased mortality across surgical, systemic treatment, and radiotherapy indications for seven cancers"

- Mortality due to cancer treatment delay: systematic review and meta-analysis, BMJ 2020

Backlog in Cancer Care and Mortality Impact

Both IPPR reports analyse the potential impact of a late diagnosis on cancer outcomes for patients impacted by the disruption in services. Their analysis concentrates on three leading causes of cancer death – lung, colorectal, and breast cancers – and assumes that the disruption between April and August 2020 led to diagnoses occurring one stage later than would otherwise have been the case. This is a very uncertain assumption and more research is needed to understand the impact on diagnosis.

Both reports estimate that for Stage 1 and 2 cancers, which are still considered to be highly curable, the anticipated rate of diagnosis in 2020 was at 41% compared to 44% in 2017 and very much below the NHS Long Term Plan 2028 target of 75%. Likewise, we can see that for Stage 3 and 4 cancers, the anticipated rate of diagnosis in 2020 was up to 59% compared with 56% in 2017 and against the NHS Long Term Plan 2028 target of 25%.

Modelling from IPPR and Carnall Farrar (CF), a health consultancy and data analytics company, found that even if stretched hospitals can maintain activity levels 5% above pre-pandemic levels, it will still take until 2033 to clear the cancer treatment "missing patients backlog" caused by the pandemic. However, if activity levels can be increased further and maintained at 15% above pre-pandemic levels, backlogs across the cancer care pathway could be cleared by next year. See Table 1.

TABLE 1: Estimates on how long it will take to address 'missing patient backlogs' across the cancer care pathway

		FUTURE ACTIVITY LEVEL RELATIVE TO 2019 ACTIVITY		
		105%	110%	115%
REFERRALS	Referrals for suspected cancer	2030	January 2023	April 2022
DIAGNOSTICS	CT scans	2026	May 2022	December 2021
	MRI scans	2040	September 2024	April 2023
	Endoscopies	2050	2026	February 2024
TREATMENT	Chemotherapy treatment	2028	August 2022	February 2022
	Radiotherapy treatment	2033	June 2023	July 2022

Source: CF modelling based on NHS England and National Cancer Registration and Analysis Service datasets 2021. Note: full methodology and technical description of the model can be found at ippr.org.

The treatment backlog will only fuel reduced cancer survival, which IPPR suggests could lead to an extra 4,500 cancer deaths observed this year alone. It should be noted that this shift is a result of disruptions from the first wave of the pandemic and, as the latest report by the IPPR show, cancer services have been substantially more resilient to the subsequent waves. The initial report also found that the pandemic has reversed improvements in cancer survival. The drop in five-year survival rates for lung, breast, and colorectal cancer equate to a loss in progress of two, six, and eight years, respectively.

TABLE 2: Five-year survival comparison by cancer type

Cancer Type	2017 Actual	2020 Anticipated
Lung	16.2%	15.2%
Breast	85%	83.1%
Colorectal	58.4%	55.5%

Mental Health

Pandemic's Impact on Mental Health

The impact of COVID-19 on mental health is a global concern. In the UK, mental health disorders were the leading cause of disability in working age adults even before the pandemic, and the NHS Long Term Plan had prioritised mental health, committing to provide mental health services to an additional two million people. The arrival of COVID-19 brought social isolation, job insecurity, and loss of businesses, as well as bereavement. This has led to increases in risk factors predisposing people to mental illness and in mental illness itself.

IPPR Report 1 suggests meeting the NHS Long Term Plan goal to prevent 50,000 alcohol-related admissions to hospital in the next five years will prove difficult. With alcohol- and drug-related deaths already at an all-time high, the pandemic produced a sustained increase in the number of people drinking alcohol at hazardous levels.

The report cites several studies showing increased stress levels among families with children – particularly those from minority ethnic backgrounds and those with low incomes. As unemployment rises, furlough schemes taper, and mortgage holidays end, unhealthy stress levels will only worsen.

One study in particular by Pierce et al (2020), found that the mental health of UK adults has worsened by almost 10% on average. This was measured using the General Health Questionnaire (GHQ-12), a widely used screening instrument to detect common psychological disorders such as anxiety and depression. Furthermore, the study found that young adults and women (22.5% and 13.3%, respectively) were particularly impacted, and that children's (age 5-16) mental health has declined sharply, likely due to school closures. It also highlights the disparity in both socioeconomic and regional circumstances.

Mental Health Services

Despite the increase in mental health challenges, the report found that between March and August 2020, 235,000 fewer people were referred for psychological therapies compared to the same period in 2019. While the volume of referrals to psychological therapies has partially recovered in the second half of 2020, it remains below normal levels, and it is still too early to know the impact the second and third waves of COVID-19 have had on this recovery.

For those with severe mental illnesses, such as schizophrenia and bipolar disorder, services have been seriously impacted. These individuals die 10 to 20 years earlier than the average person, with most of this premature mortality caused by physical illness, notably cardiovascular disease. The NHS Long Term Plan had aimed to increase health checks for people with severe mental illness by 2023-2024, but IPPR data reveals that by September 2020, the NHS had fallen below a third of its target.

IPPR Report 1 forecasts that over 1.8 million new referrals to mental health services will occur in the next three years as a direct result of the pandemic. On top of that, while the impacts of the second and third waves on mental health remain unknown, it is safe to assume COVID-19 will contribute to ongoing mental health issues for some time to come.

Life Satisfaction and Suicide

Further helpful data comes from the Office for National Statistics (ONS). The ONS conducts an online Opinions and Lifestyle survey, asking questions about well-being, including anxiety issues and overall life satisfaction. Anxiety was estimated to be at its highest in March 2020 and remains higher than pre-pandemic levels. The percentage of adults reporting depressive symptoms doubled for the year after the start of lockdown, from roughly 10% to 20%. More than a year and a half into the pandemic, estimated life satisfaction remains lower that its average score in February 2020.

The ONS also released a report in September 2021 on the rate of suicide deaths in England and Wales during the first lockdown. The report estimated that, between April and July 2020, 1,603 suicides occurred in England and Wales – equivalent to an age-standardised mortality rate of 9.2 deaths per 100,000 people. Contrary to speculation at the time, this is significantly lower than rates for the same period in previous years: down 18% from the same period in 2019 and 12.7% below the average for the previous five years. These findings are consistent with other UK studies and comparable with research in other countries, including the United States, Germany, Japan, and Australia.

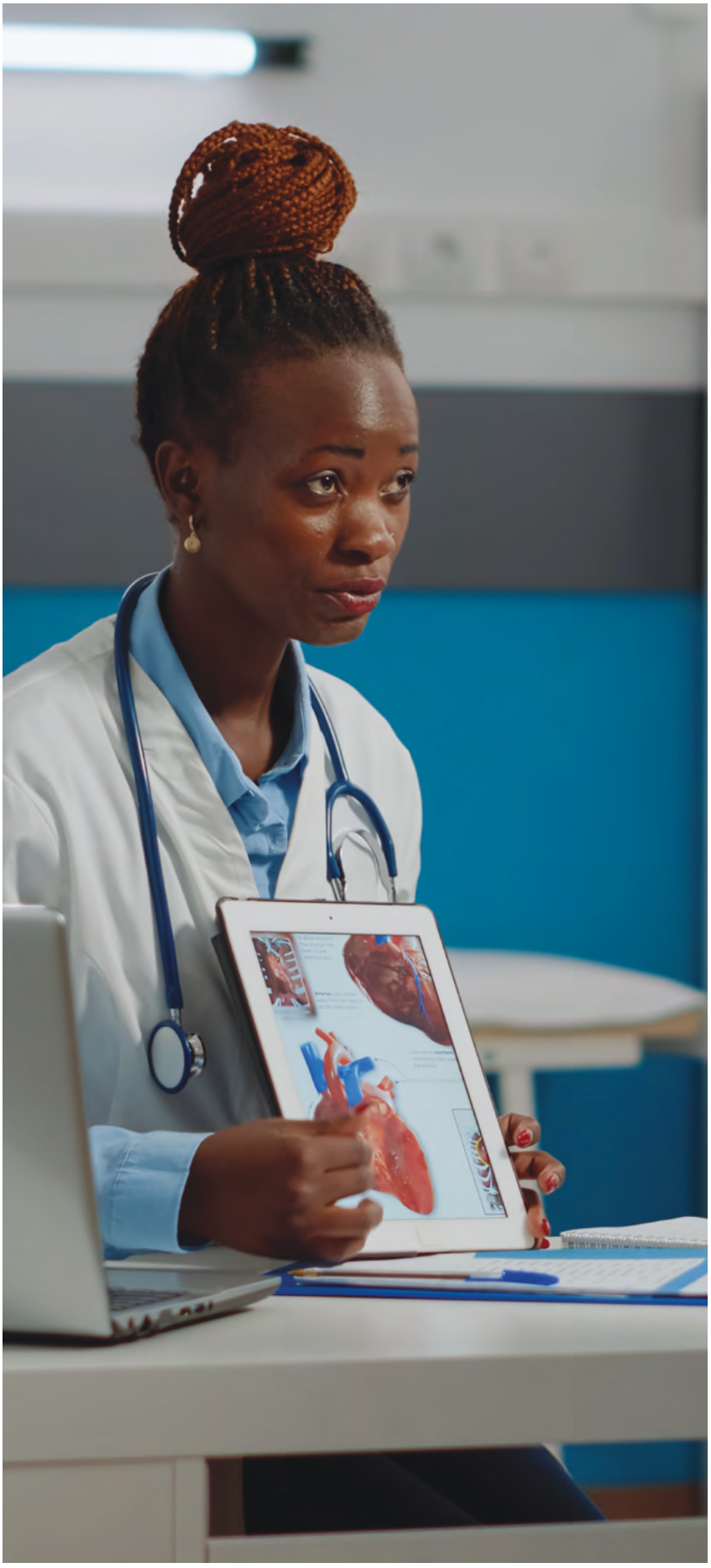
Cardiovascular Disease

Approximately 7.6 million people in the UK are affected by cardiovascular disease (CVD), which accounts for approximately 164,000 deaths per year. Mortality figures from 2019 already showed an increase in CVD deaths among people under age 75. The NHS Long Term Plan made this an area of focus, aiming to prevent up to 150,000 heart attacks, strokes, and dementia cases over the next 10 years. Key strategies included:

- Increased access to prevention services to reduce rates of smoking, alcohol consumption, and obesity
- Early detection of cardiovascular disease risk factors, such as high blood pressure, abnormal cholesterol, and abnormal heart rhythms
- Improved best practice treatments, including specialist stroke care and rehabilitation services across the NHS

Disruption of CVD Services

The first IPPR report found that COVID-19 has substantially impacted CVD management, including prevention measures, referrals, diagnosis, treatment, and rehabilitation. Of particular importance is the reduction in health checks by 97%, indicating a significant downward shift in screening and therefore prevention. The gravity of this statistic is compounded when considering that primary care is the basis of CVD prevention and almost 80 million fewer in-person GP appointments took place between March and December 2020 compared to the year before.



In addition to the 97% drop in health checks, the report cites a 42% drop in "in-person" primary care (GP) appointments. CVD referrals to specialists have also dropped by 43%, leading to widespread disruption in CVD services:

- 19-45% reduction in elective procedures
- 41-44% reduction in elective imaging
- 53% reduction in emergency admissions
- 12-17% reduction in emergency procedures
- 36% reduction in cardiac rehabilitation

Table 3: Falls in elective cardiovascular disease procedures and operations during the first wave of COVID-19 compared to the same period the year before

Procedure/operation	Significance	Impact of COVID-19
Elective percutaneous coronary interventions (PCI)	Heart attack prevention (cardiac reperfusion)	25% reduction
Coronary artery bypass graft (CABG)	Heart attack prevention (cardiac reperfusion)	31% reduction
Carotid endarterectomy	Stroke prevention (cerebral reperfusion)	31% reduction
Cardiac pacemaker and/or defibrillator implant procedures	Cardiac arrest prevention	19% reduction

Source: CF analysis of NHS Digital 2020d

The IPPR also found that referrals to diabetes specialists fell by 22%. While they have recovered somewhat, along with CVD referrals, they remained a quarter below expected volumes.

On the positive side, while some CVD-related habits such as alcohol consumption have increased, the pandemic has also had some beneficial effects: Studies have found more adults engaging in physical exercise and attempting to give up smoking.

The first IPPR report estimates that up to 470,000 patients, who otherwise would have received these treatments, will not have been started on statins, anticoagulants, other cardiovascular drugs, or diabetes drugs. As a result, approximately 12,000 future heart attacks or strokes may occur that could have been prevented. Delays in diagnosis could also result in:

- 23,000 missed heart failure diagnoses
- 16,000-57,000 missed atrial fibrillation diagnoses
- 26,000-90,000 missed coronary heart disease diagnoses

The report further states that the pandemic disruption has increased excess CVD mortality by 6%, equal to more than 5,600 excess deaths between March and December 2020. This represents the highest level of cardiovascular mortality seen in a decade.

It is worth bearing in mind that CVD is usually a long-term condition, and since the pandemic has mostly affected early detection and prevention, the full impact of COVID-19 may not be realised for some time to come.

Furthermore, many other short-term, medium-term, and long-term factors – both positive and negative – should be carefully studied as (re)insurers attempt to estimate COVID-19's current and future morbidity, mortality, and longevity trends.

Table 4: Potential factors affecting COVID-19 impacts

Short-term and medium-term factors	Long-term factors
• Geographic location • Emerging experience and new variants • Public attitude and government actions • Vaccine supply, uptake, and effectiveness • PASC, or "long COVID" • Age and gender • Demographical and physiological risk factors • Accelerated deaths and survivorship bias • Underwriting and medical conditions • Influenza • Economy, recession, and unemployment • Delayed screening and medical intervention • Wider health impacts	• Leveraging research and mRNA vaccines to improve life expectancy • Quality and access to healthcare and social care • Pandemic risks, ecological changes, and "the big one" • Preparedness for future pandemics

Conclusion

COVID-19 has impacted services across all care pathways, and both IPPR reports highlight stark figures the pandemic has left in its wake. Rebuilding medical services will take a substantial and sustained effort from both policymakers and government officials alike. Regardless, the repercussions of delays and limitations on NHS services will continue to affect healthcare in the UK for some time to come.

While the extent of the fallout from COVID-19 has yet to emerge fully, important studies such as these from the IPPR provide a clearer picture of some of the "ripple effects" the pandemic is having on life and health insurance in the post-pandemic era. Indeed, delayed screening and medical intervention is just one such "ripple" the insurance industry needs to understand.

In underwriting, delays in treatment are likely to cause increases in both average ratings and the number of cases postponed and declined. This effect will be widespread across many conditions, but cancer and cardiovascular disease specifically will see individuals presenting at the more serious end of their diagnoses. Limited access to primary care and disruption to healthcare services, from routine health checks to specialised treatments, will result in more lives requiring underwriting. Mental health will likely see similar increases, with more lives requiring underwriting and more postponement periods while awaiting assessment.

Post-acute sequelae of SARS-CoV-2 (PASC), commonly known as "long COVID," creates additional concerns for underwriters. Many sufferers report significant ongoing health problems, including breathing difficulties, chronic fatigue, joint pain, and depression and anxiety akin to post-traumatic stress disorder, among other symptoms. As researchers and scientists race to find answers surrounding both the virus itself and the effects of PASC, it remains to be seen whether COVID-19's negative health impacts will persist long after high levels of SARS-CoV-2 infection have subsided.

It is important to remember that the pandemic is not over. Health officials remain hopeful that the current vaccines will provide at least some protection against new virus variants, but with a new virus such as SARS-CoV-2, new strains and variants are always a possibility, which may set back efforts to regain control of healthcare systems.

At the time of writing, a significant upturn in insurance claims due to COVID-19's ripple effects has yet to occur. The extent to which this may change over the months and years ahead could largely depend on how quickly and effectively health systems are able to catch up. It may be inevitable, however, that the delays in disease diagnosis will begin to produce an increase in terminal illness and death claims that might otherwise have been critical illness claims.

The IPPR reports have noted, despite the very palpable adverse impact of the pandemic, that some positives have emerged, such as more people trying to stop smoking, exercise daily, eat a healthier diet, and reduce stress levels through improved work arrangements. While this may help mitigate some of the negative impact on claims, only time will tell whether this influence will be at all significant.

The global pandemic has transformed healthcare and challenged insurers to adjust accordingly. As the world enters the next phase of the crisis, the right actions now could make all the difference for the years to come. ■

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