

The potential legacy of the pandemic on mortality

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COVID-19 Actuaries Response Group – Learn. Share. Educate. Influence.

Summary

The impact of COVID-19 on mortality can be broadly split into three categories: direct impacts; indirect impacts; and wider social and economic impacts.

Indirect impacts represent excess deaths due to stresses on the health system or changes in the health-seeking behaviour of individuals. These are the focus of this bulletin.

At this stage of the pandemic, the mortality impacts are shifting from direct to indirect. Analysing emerging data can help to identify the magnitude of these impacts and the extent to which they are asymmetric across the population.

If care pathways do not rapidly return to pre-pandemic levels, then the COVID-19 pandemic will affect the standard of healthcare, morbidity and mortality across the UK for years to come.

How does the pandemic impact mortality?

The impact of COVID-19 on mortality can be broadly split into three categories: direct impacts; indirect impacts; and wider social and economic impacts.

Direct impacts represent individuals contracting the virus and dying from the disease. Most excess deaths in the first two years of the pandemic arose from direct impacts.

Indirect impacts represent excess deaths due to multiple stresses on the health system itself (as seen for instance in disrupted care pathways, workforce absence, ambulance waiting times and the ever-growing elective waiting list), or changes in the health-seeking behaviour of individuals.

The third potential impact of the pandemic relates to the effects that wider social and economic changes will have on health and mortality in the future. For example, following the 2008 recession, 900,000 more working age people developed chronic conditions than would have been expected in absence of the economic downturn¹. This is unlikely to impact mortality substantially today but is likely to have longer term impacts on physical and mental health in years to come.

Each of these three categories are likely to be felt over different time periods and vary across populations. Here, we focus on the potential indirect impacts, and highlight three aspects of national data that we will be monitoring over the coming months to provide insights into what, if any, the lasting mortality legacy of COVID-19 may be. These data are excess deaths by place, excess deaths by age, and chronic disease care.

What can excess death patterns by place tell us?

Data from the Office for National Statistics² has consistently highlighted the rise in excess deaths in private homes throughout the pandemic. This has continued at a rate of several hundred per week.

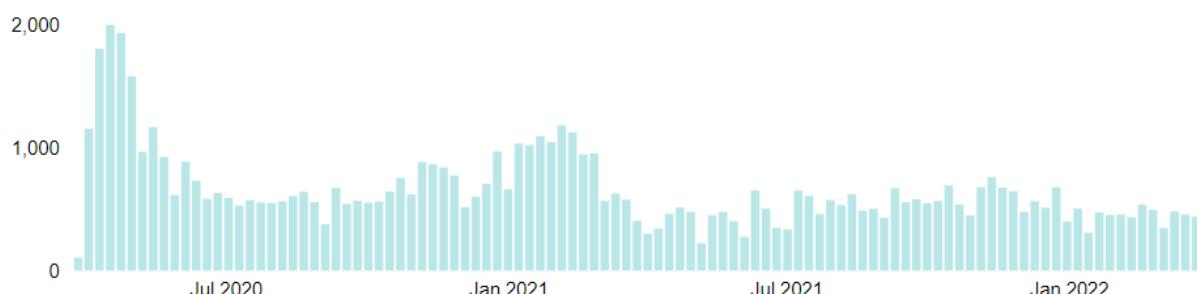
¹ [IFS - Recessions and health: the long-term health consequences of responses to the coronavirus](#)

² [Office for National Statistics – Deaths registered weekly in England and Wales](#)

Excess Mortality in England by Place of Death

Date Range (week ending): 27/03/2020 to 25/03/2022

Weekly Excess Deaths by Date of Registration, Home, England



At the same time, we have observed fewer deaths than we would expect each week in hospitals and care homes during certain periods, such as the summer following the first COVID-19 wave.

It is highly likely that some of the excess deaths at home reflect an increase in the number of patients towards end of life who make the pro-active choice with their families and clinical team to spend their final weeks and days at home. More patients spending their final days at home when appropriate is positive. However, this is unlikely to account for all excess deaths in private homes over the last two years.

We can observe that although there have been fewer excess deaths in elderly groups in recent months, excess deaths in middle-age groups and among those with cardiovascular diseases have persisted. This could indicate disruption to care pathways, preventing patients from receiving the best care in the most timely manner.

Data that helps us understand the patient cohorts and causes that account for excess deaths in the community are crucial for interpreting what it could mean for future mortality and for health systems. This is needed so that targeted approaches can be implemented to mitigate this issue.

Before the pandemic, the five leading causes of death were heart disease, dementia and Alzheimer's, lung cancer, breast cancer, and lower respiratory diseases. Many of these conditions were found to be leading causes of excess deaths in private homes during 2020³. For example, the number of deaths in women due to dementia and Alzheimer's increased by 75% at home and 32% in care homes, but fell by 41% in hospitals. This resulted in an overall 22% increase in dementia and Alzheimer's deaths, though the ONS have suggested⁴ that many of these deaths early in the pandemic may have been undiagnosed COVID-19. So while this provides useful insight into place of death we urge caution into attribution of cause.

Similarly, the ONS found heart disease and stroke deaths to be the largest contributor to excess deaths in the community for men. For these two conditions, survival from acute events depends upon timely access to high quality care and treatment. The last 20 years have seen significant improvement in responsiveness, care, and treatment, coupled with improvements in risk factors such as smoking and blood pressure. This has led to large improvements in heart disease and stroke mortality. But this progress could be jeopardised if the care pathways were to be disrupted on an ongoing basis, which in turn could have impacts on existing unequal mortality rates across society⁵.

³ [Office for National Statistics – Deaths in private homes, England and Wales](#)

⁴ [Office for National Statistics – Analysis of death registrations not involving coronavirus](#)

⁵ [COVID-19 Actuaries Response Group – Mortality inequalities during the pandemic](#)

What can age-specific excess deaths tell us?

The direct impacts of COVID-19 on excess deaths were felt hardest in older age groups in absolute terms. However, all adult age groups from 50 years and above saw between 18-23% more deaths in the first year of the pandemic than would have been expected under normal conditions.

In the second year of the pandemic, we are seeing quite different patterns by age. Since the second wave, and after the administration of at least one dose of a vaccine to most adults, we have observed 12%, 10% and 5% more deaths in 50-64, 25-49 and 65-74 year olds respectively.

Excess Mortality in England by Age Group

Date Range (week ending): 26/02/2021 to 25/03/2022

Weekly Excess Deaths by Date of Registration, Persons (50-64), England

400



In contrast, there have been 1% fewer deaths in >85 year olds than expected over the same time period⁶. With so many deaths in the oldest groups in the first year of the pandemic, many of those deaths being brought forward by approximately two to five years, we may now be seeing fewer deaths in that age group for a period due to a relatively healthier older population.

While we know that the risk of direct impacts from COVID-19 were highest in the older populations, the indirect impacts may have less of a clear age gradient. Impacts on care pathways, such as for heart disease and stroke, may affect middle-age groups as much, if not more than, older groups. It will be important to monitor this and how it varies across age, geography and other demographic factors over the coming months to interpret how mortality may be impacted in the medium and longer term.

Impacts on chronic diseases

There are clear signs that the diagnosis, management and prevention of complication(s) in those with chronic conditions have been severely disrupted by the pandemic. This could have substantial impacts on mortality in the medium and longer term.

Cancer care, for example, has experienced substantial disruption and is yet to return to pre-pandemic levels. The number of patients waiting more than the six-week NHS target for diagnostic cancer tests has increased. Before the pandemic, 97% of patients were seen within six weeks. This dropped to 56% during the first wave and only picked back up to 71% afterwards⁷. There are an estimated 32,000 cancer patients that should have started treatment but are ‘missing’ due to delayed diagnosis. In recent weeks, an analysis of NHS England data has suggested that the number of missing cancer cases could be as high as 350,000⁸.

⁶ [Office for Health Improvement and Disparities – Excess mortality in England](#)

⁷ [Fetzer & Rauh, arXiv January 2022](#)

⁸ [The Times - ‘Shocking’ rise in cancer patients not being treated due to COVID-19 concerns](#)

Similarly, the proportion of patients beginning their cancer treatment within the NHS target of 62 days of referral has declined. Before the pandemic, 78% of patients were treated within 62 days. This fell to 75% during the first wave and dropped further to 66% at the end of 2021. This equates to an estimated 53,000 people having their cancer care delayed past 62 days. We know that with cancer, as with many other diseases, early diagnosis and early treatment improve the chance of survival. So these persistent trends are very worrying. We expect to see most of the impact of delayed diagnosis and treatment over the last couple of years impacting patients' longevity over the next two to five years.

Looking further ahead to 'non-urgent' health conditions, the substantial increase in elective waiting lists is indicative of the wider impacts of the COVID-19 pandemic on the health system. This is likely to result in millions of people living in poorer health for longer. Six million people are now on NHS waiting lists for elective, non-urgent care, a 38% increase nationally since before the start of the pandemic⁹. But our estimates suggest that the hidden need – those who haven't yet come forward to join the waiting list but would have done so in the absence of the pandemic – would make the total unmet need of the waiting lists twice as big¹⁰. By way of example, in January 2021, 58,000 people had to wait an average of 25 weeks for a hip operation and more than 60,000 people were waiting longer than one year for orthopaedic appointments generally by December 2021¹¹. This treatment delay results in reduced quality of life, increased sedentary periods and increased risk of falls, which in turn impacts mortality risk in the future.

As evidenced by recent very high infection levels, COVID-19 will be with us for many years to come. At this stage of the pandemic, the mortality impacts are likely to shift from direct to indirect and we must be forensic in analysing emerging data to identify the magnitude of these impacts and the extent to which they are asymmetric across the population.

The negative impacts on the healthcare system over the last two years may lead to a cohort of individuals living with chronic diseases with worse health outcomes than their predecessors. If care pathways do not rapidly return to pre-pandemic levels, then the COVID-19 pandemic may impact the standard of healthcare, morbidity and mortality across the UK for years to come.

⁹ [NHS waiting list tracker \(lcp.uk.com\)](https://lcp.uk.com/nhs-waiting-list-tracker)

¹⁰ [Hidden health needs – the elephant in the NHS waiting room - LCP](#)

¹¹ [Waiting for care - The Health Foundation](#)