The NHS waiting list: when will it peak?

Technical appendix

Kathryn Marszalek, Melissa Co, Tim Gardner, Freya Tracey, Charles Tallack

The
Health
Foundation

Data

Data on referrals, completed pathways and the waiting list from April 2016 onward are taken from the Referral to Treatment (RTT) Waiting Times dataset. For new RTT periods, non-admitted RTT pathways and admitted RTT pathways, the number of pathways with estimates for missing values were used. Similarly, the measures for waiting times with estimates for missing values were used.

Data on industrial action is taken from the Potential industrial action in the NHS webpage. This provides the number of elective procedures and outpatient appointments that were rescheduled as a result of industrial action.

Approach

The size of the waiting list is dependent on both the number of people joining the list and those leaving the list. New joiners to the list come about from new referrals onto the list, usually from a GP. Leavers from the list are patients who have started a first definitive treatment, declined treatment or do not need treatment (for example following a negative diagnostic test). These are known as completed pathways.

Completed pathways consist of both reported completed pathways in the RTT data and unreported removals. Unreported removals are the number of completed pathways not captured in the completed pathways reported in the RTT dataset due to data quality issues. Completed pathways are calculated as the total number of removals from the waiting list from one month to the next, accounting for new referrals onto the list. Unreported removals are calculated as the difference between completed pathways less the reported completed pathways in the RTT data.

Referrals

We examine the trend in new referrals per working day following the pandemic from May 2021 to July 2023, in order to project forward expected new referrals. This is a longer period than we use for calculating the trend in completed pathways as new referrals are not expected to be impacted by strikes in hospital. Between May 2021 and July 2023, new referrals per working day increased by 5.0% per year.

We project forward the number of referrals per working day from August 2023 to December 2024. Our starting point for projecting referrals is the linear trend per working day in July 2023. We use 5.0% as our base assumption for the growth in new referrals per working day between August 2023 and December 2024. Alternative assumptions can be made about the expected future growth rate of referrals and tested in the interactive calculator. The annual growth rate is converted into a monthly rate and applied to the referrals per working day. This is then adjusted for total working days in a month and seasonality.

Completed Pathways

Similar to new referrals, we use the linear trend in completed pathways per working day from May 2021 to February 2023 to project forward expected completed pathways. We use data up until February 2023 to provide an indication of the growth rate in completed pathways before the start of industrial action by hospital doctors.

We project forward the number or completed pathways per working day from August 2023 to December 2024. Our starting point for projecting completed pathways is the linear trend per working day in July 2023. Our base assumption is that completed pathways per working day will continue to grow at a rate of 7.8% per year. Alternative assumptions can be made about the expected future growth rate of referrals and tested in the interactive calculator. The annual growth rate is converted into a monthly rate and applied to the referrals per working day. We then calculate monthly completed pathways by multiplying completed pathways per working day by the number of working days in a month and adjusting for seasonality.

Accounting for the direct impact of industrial action

In this analysis, we focus on the impact of walkouts by junior doctors and consultants because of the direct impact on the waiting list for consultant-led care.

The impact of rescheduled appointments or procedures on the waiting list is complex. A patient may have multiple appointments or procedures before receiving a diagnosis and starting a first definitive treatment. This means not all rescheduled appointments or procedures result in a decrease in completed pathways. Comparing data on total number of elective discharges, outpatient appointments and completed pathways, we estimate that 20% of cancelled activity would have resulted in a completed pathway. For every five rescheduled procedures or outpatient appointments, there would have been one missed completed pathway. We estimate that, in June 2023, the 17,624 procedures and 152,522 outpatient appointments cancelled due to strikes resulted in around 34,000 fewer completed pathways – around 2% of the total pathways completed that month. Since the start of industrial action by hospital doctors in March and up until the end of September, we estimate that around 189,000 fewer pathways have been completed.

We project forward the impact of industrial action, based on the expected number of months of strikes and expected number of appointments and procedures that have been rescheduled, adjusted for future strike intensity. We assume that for each month of industrial action, there will be 2 days of joint junior doctor and consultant strikes a month, with a further 2 days of strikes for junior doctors only. The actual cancellations for strikes held in August and September are used for the projections in August and September, while future cancellations are calculated based on the average number of cancellations per day during the August strikes, which are 38,800 for the days of joint strike action and 26,100 per day for junior doctor strikes. From the data it is clear that the intensity of strikes are decreasing over time with fewer appointments and procedures being rescheduled in successive strikes. Based on data so far, our best estimate for strike intensity is that the total number of procedures and appointments that are rescheduled will be 95% of the number in the previous month.

Limitations

Our model produces projections of the size of the waiting list under certain sets of assumptions. These are projections not predictions: they are about what would happen if these assumptions hold, not what we think will happen.

The choice of assumptions and their values are matters of judgment. In our base case, shown in scenario 1 and 2, our assumptions are based on past trends but, because the future is inherently uncertain, things may turn out differently. These assumptions have been made using openly

available data. Where possible, we have validated these through conversations with experts in the field.

We use a linear trend to project future expected number of referrals and completed pathways. While this is useful in the short run, this model should not be used for longer-term projections as a more dynamic approach would be required.