Announcement of methodological changes to Seven-day Services, England: Mortality and emergency readmissions indicators

Background

The Seven-day Services indicators provide information on how we can effectively measure both improvement and variation in care provision across the week.

The mortality and emergency readmissions indicators are produced using logistic regression models which estimate the risk of mortality or an emergency readmission based on various patient characteristics e.g. age and the condition the patient is in hospital for. One of the patient characteristics used in these models is deprivation, measured by the Index of Multiple Deprivation (IMD).

The IMD is periodically updated by the Ministry of Housing, Communities and Local Government. The Seven-day Services mortality and emergency readmissions indicators are currently calculated using the 2015 version of the IMD, which was the most up to date version available when these indicators were developed.

The methodology for the Seven-day Services mortality and emergency readmissions indicators will be updated so that they use the 2019 version of the IMD. This change will mean that the adjustment for deprivation reflects the latest available data. Further information about the 2019 version of the IMD data is available at https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019.

No change will be made to the length of stay indicator because no adjustments for patient characteristics are applied.

This change has been agreed by the Department of Health and Social Care (who own and sponsor the Seven-day Services indicators).

Impact

The results for the Seven-day Services mortality and emergency readmissions indicators are presented as odds ratios. Odds ratios which are greater than one indicate an increased likelihood of mortality or an emergency readmission compared to the reference period (midweek for mortality and Wednesday for emergency readmissions) while odds ratios which are less than one indicate a decreased likelihood of mortality or an emergency readmission, holding all other characteristics constant.

The odds ratios are presented with confidence intervals. If the lower limit of the confidence interval is less than one and the upper limit of the confidence interval is greater than one then the indicator does not show a significantly different outcome compared to the reference period. Marginal national odds ratios are also presented.

The impact of the change is minor. The following analysis is based on data for April 2018 – March 2019.

- The impact on the marginal national results is negligible. All of the odds ratios change by less than 0.00003.
- The impact on the trust level results is also very small. All of the odds ratios change by less than 0.003, and whether or not the odds ratio is significantly different from one is unaffected for all combinations of trust and part of the week.
- The success of the case-mix adjustment in predicting the outcome is evaluated using the c statistic for each logistic regression model. For example, for the mortality model, the c statistic is the probability of estimating a lower risk of death for a randomly selected patient who survived compared to a randomly selected patient who died and can take values in the range 0.5-1.0. This change has a negligible impact on the c statistics for both the mortality and emergency readmissions indicators (less than 0.00003).

Timing

The first publication to be affected by this change will be the April 2020 release, which covers data in the period October 2018 – September 2019.

Further information

Questions and feedback on the publication are welcomed and should be sent to enquiries@nhsdigital.nhs.uk or alternatively call 0300 303 5678.