Hospital Episode Statistics, Emergency readmissions to hospital within 28 days of discharge - Financial year 2011/12

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Executive Summary

The indicators presented measure the percentage of emergency admissions to any hospital in England occurring within 28 days of the last, previous discharge from hospital after admission for selected conditions.

There are five 'emergency readmissions' indicators:

- Emergency readmissions to hospital within 28 days of discharge
- Emergency readmissions to hospital within 28 days of discharge: fractured proximal femur
- Emergency readmissions to hospital within 28 days of discharge: hysterectomy
- Emergency readmissions to hospital within 28 days of discharge: primary hip replacement surgery
- Emergency readmissions to hospital within 28 days of discharge: stroke

Data is presented for the latest 10 year period (2002/03 to 2011/12), and in separate tables for females, males, and persons. They are presented for all ages with the exception of 'Emergency readmissions to hospital within 28 days of discharge', which is presented in separate tables for age groups <16, 16-74, 16+, and 75+. The indicators are presented at the following health and local government geographies:

- England
- Region (aggregated from Local Authorities (LAs), boundaries as of April 2009)
- Office for National Statistics (ONS) Area Classification (aggregated from LAs, boundaries as of April 2009)
- Strategic Health Authority (SHA) of residence (boundaries as of July 2006)
- Local Authority (LA) of residence (based on postcode look-up, boundaries as of April 2009)
- Primary Care Organisation (PCO) of residence (based on postcode look-up, boundaries as of April 2011)
- Counties (aggregated from LAs, boundaries as of April 2009)
- Index of Multiple Deprivation 2010 Based data at England level - Based on 7 groups
- Index of Multiple Deprivation 2010 Based data at England level - Based on 5 groups
- Trust clusters
- Trust

These indicators were previously published on the Compendium of Clinical and Health Indicators and are now published on the Health and Social Care Information Centre’s (HSCIC) Indicator Portal as part of the continuing release of this indicator set.

Data, along with indicator specifications providing details of indicator construction, data quality, statistical methods and interpretation considerations, can be accessed by visiting the HSCIC’s Indicator Portal (https://indicators.ic.nhs.uk/webview) and using the left menu to navigate to Compendium of population health indicators > Hospital care > Outcomes > Readmissions.
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Key facts

• Emergency readmission rates (indirectly standardised percent) for persons in England are highest amongst patients admitted for fractured proximal femur (12.6%), followed by stroke (11.7%), all emergency readmissions (11.5%), hysterectomy (7.3%), and primary hip replacement (5.3%).

• Compared to the expected number of emergency readmissions for persons of all ages in England there were:
  • around 42,355 more readmissions for all emergency readmissions (ages 16+ only)
  • around 539 more readmissions for stroke
  • around 429 more readmissions for fractured proximal femur
  • around 327 more readmissions for hysterectomy (females only)
  • around 491 fewer readmissions for primary hip replacement surgery

• Over the latest ten year period (2002/03 to 2011/12), the readmissions rate for persons in England shows:
  - there has been an increase of around 36% in the readmissions rate for stroke (from 8.58% to 11.71%)
  - an increase of around 32% in the readmissions rate for fractured proximal femur (from 9.49% to 12.55%)
  - an increase of around 27% in the readmissions rate for hysterectomy (from 5.71% to 7.28%) (females only)
  - an increase of around 27% in the readmissions rate for all emergency readmissions (from 9.01% to 11.45%) (ages 16+)
  - a decrease of around 14% in the readmissions rate for primary hip replacement surgery (from 6.22% to 5.32%)

Considerations for interpreting these indicators:

A number of factors outside the control of hospitals may contribute to the variation shown by the indicators, and therefore the following should be considered:

▪ The socio-economic mix of local populations and events prior to hospitalisation.
▪ The patterns of providing care may vary between NHS hospital trusts in terms of whether patients are transferred elsewhere before final discharge. Planned transfers, for example for rehabilitation, may affect discharge destination figures and readmission rates.
▪ Variation between hospitals in average length of stay may lead to variation between hospitals in the proportion of complications occurring in hospital, as opposed to in the community after discharge from hospital.
▪ Readmissions may reflect self-discharge against medical advice, and levels of primary care and community resources available to manage care outside hospital.
▪ Readmissions may not be linked clinically to the previous spell and may be appropriate for the clinical care of the patient.
▪ There may be variation between trusts in the way emergency admissions are coded. Routine data do not allow for all of these aspects to be identified and removed from the indicator. However, this may be done through local audit.
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Introduction

These indicators are intended to help monitor National Health Service (NHS) success in avoiding (or reducing to a minimum) readmission following discharge from hospital, when readmission was not part of the originally planned treatment. Previous analyses have shown wide variation between similar NHS organisations in emergency readmission rates. Not all emergency readmissions are likely to be part of the originally planned treatment and some may be potentially avoidable. The NHS may be helped to prevent potentially avoidable readmissions by seeing comparative figures and learning lessons from organisations with low readmission rates.

The potential value of the indicators is to stimulate discussion and encourage local investigation, and to lead to improvement in data quality and quality of care. Studies to assess the extent to which readmissions were linked to the previous episode, and therefore truly represent potentially avoidable adverse events, are recommended as potential follow-up actions leading to change.

Statistical Methods

The indicators present indirectly standardised rates (percentages). Indirect standardisation involves applying the age-specific rates of the standard population to the age structure of the subject population. This gives an expected number of events against which the observed number of events may be compared.

The expected number of events (readmissions), the percentage change in rates from a previous year (or previous set of pooled years), plus the statistical significance of this change, have also been calculated. For all indicators a positive percentage change represents improvement and a negative percentage change represents deterioration.

Methods used for indirect standardisation, expected number of events, calculation of improvement, estimation of confidence intervals, and banding of significance of improvement can all be found in Annex 3 ‘Explanation of statistical methods’ of the Health and Social Care Information Centre’s Indicator Portal (Compendium of population health indicators > Statistical methods and disclosure closure > Methods).

Data Sources

The indicators are derived from Hospital Episode Statistics (HES) data. Explicitly, the ‘Emergency readmissions within 28 days’ indicators report the number of finished and unfinished continuous inpatient (CIP) spells that are emergency admissions within 0-27 days (inclusive) of the last, previous discharge from hospital in the respective financial year.
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The date of the last, previous discharge from hospital, and the date and method of admission from the following CIP spell, are used to determine the interval between discharge and emergency readmission.

The indicators are based on CIP spells, which are constructed by linking individual finished consultant episodes to other episodes where all are part of one continuous spell of care for a patient. This linkage creates a dataset in which spells can contain data spanning more than one year and thereby allows analysis that would not be possible using standard HES (where data are in financial year blocks). For example, using the linked file, a spell which finished during April is able to contain admission information from an episode which started during the previous March. Further information on CIP spell construction is available in Annex 4 of the ‘Methods’ section of the Indicator Portal.

The numerator is based on a pair of spells - the discharge spell and the next subsequent readmission spell (this spell must meet the numerator criteria). The selection process thus carries over the characteristics of the denominator for the discharge spell and applies additional ones to the readmission spell.

The numerator (readmissions) consists of CIP spells that include both finished and unfinished (i.e. finished episodes from following years) episodes i.e. readmissions can be finished and unfinished CIP spells. Where there is more than one readmission within 28 days, each readmission is counted once, in relation to the previous discharge. Readmissions that end in death are included in the numerator.

The denominator consists of CIP spells that cover all continuous, consultant episodes for the same patient, including those following a transfer to another hospital. Denominator CIP spells must start with an admission episode and finish with a (live) discharge episode in the year of analysis. CIP spells with a discharge code of death are excluded from the denominator because readmission is not possible.

Patients within the mental health and maternity specialties as well as those with a diagnosis of cancer have been excluded because in these cases emergency readmission is often considered a necessary part of regular care.

There is variation in the completeness of hospital records and quality of coding (see ‘Data Quality’ sections in Annex 4 (Compendium of population health indicators > Statistical methods and disclosure control > Methods section of the HSCIC Indicator Portal for details).

Accessibility

These data were published by the Health and Social Care Information Centre through its Indicator Portal website (https://indicators.ic.nhs.uk) on 5th December 2013, and can be found by following the left menu to navigate to Compendium of public health indicators > Hospital care > Outcomes > Readmissions.

It is necessary to suppress some data to prevent the disclosure of information that might identify an individual. This has been done on the indicator spreadsheets which are publicly available. Figures have been replaced with an ‘X’.

Unsuppressed data is available to NHS users through an N3 connection only at http://nww.indicators.ic.nhs.uk. There are strict terms and conditions for the use of the...
unsuppressed data. In order to protect against the potential for disclosing the identity of an individual, no information about an individual that is not already in the public domain should be identifiable in official statistics. Even if you obtain permission to reproduce material you should not release any figures into the public domain that could identify an individual.

It should be noted that the confidentiality and disclosure rules still apply under the Freedom of Information Act 2000. Further information about disclosure control can be found in the ‘Statistical methods and disclosure control’ section of the Indicator Portal.

Considerations when using these indicators

Type of indicator

This is a generic, cross-sectional annual comparative indicator of outcome. In the absence of an absolute standard, comparative data are useful for monitoring in relation to rates achieved in comparable organisations.

Quality of Indicator

Annex 12 (Compendium of population health indicators > Statistical methods and disclosure control > Methods section of the HSCIC Indicator Portal https://indicators.ic.nhs.uk/webview) describes the criteria that should be used to judge the quality of this indicator. The application of the criteria is dependent on the context (e.g. describing a single organisation, comparing several organisations) and the level (e.g. national / regional with large numbers of events, local with small numbers of events) at which the data are to be used.

Confidence Intervals

Some of the values and factors influencing the indicator may be chance occurrences, with values fluctuating at random between organisations and from year to year. Numbers of admissions may be small at PCO, LA and provider trust level. The results should therefore be interpreted with caution and with the aid of confidence intervals. The 95% confidence interval provides a measure of the statistical precision of the rate for an area or institution. It indicates a range which, with 95% confidence, will contain the underlying value of the indicator. If the confidence interval for an area’s rate does not contain the overall national rate, the difference between the two rates is considered statistically significant. If the confidence interval overlaps the national rate, in most cases the difference between the rates would not be considered statistically significant. 95% and 99.8% confidence intervals have been calculated.

Effect of case-mix/severity

A number of factors outside the control of hospitals, such as the socio-economic mix of local populations and events prior to hospitalisation, may contribute to the variation shown by the indicators. Differences in case-mix, severity of illness, comorbidities and other potential risk factors also contribute to the variation. The data available do not allow adjustment for any of
these factors. This may pose less of a constraint at geographical organisation level than at hospital level. We have tried to deal with this constraint by presenting the data in clusters that are similar with respect to institution or organisation type. An attempt has also been made to take into account differences between organisations in the mix of diagnoses within medical specialties and procedures within surgical specialties. No attempt has been made to assess whether the readmission was linked to the discharge in terms of diagnosis. A patient discharged after an operation may be readmitted into a community hospital with a wound or chest infection. There are many different possibilities and over-specifying may lead to readmissions being missed. Gender-specific data standardised to person rates are available. Analyses at England level by the Index of Multiple Deprivation are presented.

Other potential confounding factors

A continuous inpatient spell may include transfers to other hospitals, e.g. for rehabilitation. The patterns of providing care may vary between NHS hospital trusts in terms of whether patients are transferred elsewhere before final discharge. Planned transfers, for example for rehabilitation, may affect discharge destination figures and readmission rates.

Variation between hospitals in average length of stay may lead to variation between hospitals in the proportion of complications occurring in hospital, as opposed to in the community after discharge from hospital. Readmissions may reflect self-discharge against medical advice, and levels of primary care and community resources available to manage care outside hospital. Readmissions may not be linked clinically to the previous spell and may be appropriate for the clinical care of the patient. There may be variation between Trusts in the way emergency admissions are coded. Routine data do not allow for all of these aspects to be identified and removed from the indicator, however, this may be done through local audit.
Summary of data

- Emergency readmission rates for persons in England are highest amongst patients admitted for fractured proximal femur (12.55%), followed by stroke (11.71%), all emergency readmissions (11.45%), hysterectomy (7.28%), and primary hip replacement (5.32%).
- Over the last ten years emergency readmission rates have been broadly increasing, except those for primary hip replacements, which increased between 2002/03 and 2006/07 before decreasing to 2011/12.

Table 1: Comparison of emergency readmissions to hospital within 28 days of discharge: indirectly standardised percent, all ages*, annual trend, persons** (2002/03 to 2011/12)
* Ages 16+ for Emergency Readmissions (all)
** Females only for Hysterectomy

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<td>10.43</td>
<td>10.59</td>
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<td>11.95</td>
<td>11.77</td>
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<td>12.25</td>
<td>12.96</td>
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<td>Hysterectomy (female only)</td>
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<td>5.93</td>
<td>6.11</td>
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<td>Primary hip replacement</td>
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<td>6.35</td>
<td>6.60</td>
<td>6.72</td>
<td>6.08</td>
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<td>5.54</td>
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<td>Stroke</td>
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<td>10.15</td>
<td>10.78</td>
<td>10.85</td>
<td>10.81</td>
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<td>11.67</td>
<td>11.97</td>
<td>11.71</td>
<td>36.5%</td>
</tr>
</tbody>
</table>

Chart 1: Comparison of Emergency readmissions to hospital within 28 days of discharge: indirectly standardised percent, all ages*, annual trend, persons** (2002/03 to 2011/12)
* Ages 16+ for Emergency Readmissions (all)
** Females only for Hysterectomy
Emergency readmissions (all)

- There were 42,355 more readmissions for persons than were expected in England (518,452 expected compared to 560,807 observed).
- The readmissions rate for males in England (11.88%) was around 7% higher than readmissions rate for females in England (11.08%).
- There is no significant change in the readmissions rate for persons in England; from 11.43% in 2010/11 to 11.45% in 2011/12. In the same period, there have been no significant changes in the readmissions rates for females (from 11.04% to 11.08%) or males (from 11.88% to 11.88%).
- Over the ten year period, there has been an increase of around 27% in the readmissions rate for persons in England; from 9.01% in 2002/03 to 11.45% in 2011/12. In the same period, the readmissions rate for females in England increased by around 28% (from 8.65% to 11.08%), and the readmissions rate for males in England increased by around 27% (from 9.39% to 11.88%).

Chart 2: Emergency readmissions to hospital within 28 days of discharge: indirectly standardised percent, 16+ years, annual trend, persons/ females/ males (2002/03 to 2011/12)
Emergency readmissions: fractured proximal femur

- There were 429 more readmissions for persons than were expected in England (6,464 expected compared to 6,893 observed).
- The readmissions rate for males in England (15.04%) was around 27% higher than readmissions rate for females in England (11.80%).
- There is no significant change in the readmissions rate for persons in England; from 12.96% in 2010/11 to 12.55% in 2011/12. In the same period, there have been no significant changes in the readmissions rates for females (from 12.31% to 11.80%) or males (from 15.14% to 15.04%).
- Over the ten year period, there has been an increase of around 32% in the readmissions rate for persons in England; from 9.49% in 2002/03 to 12.55% in 2011/12. In the same period, the readmissions rate for females in England increased by around 32% (from 8.96% to 11.80%), and the readmissions rate for males in England increased by around 33% (from 11.29% to 15.04%).

Chart 3: Emergency readmissions to hospital within 28 days of discharge: fractured proximal femur: indirectly standardised percent, all ages, annual trend, persons / females / males (2002/03 to 2011/12)
Emergency readmissions: hysterectomy

- There were 327 more readmissions for females than were expected in England (3,105 expected compared to 3,432 observed).
- There is no significant change in the readmissions rate for females in England; from 7.16% in 2010/11 to 7.28% in 2011/12.
- Over the ten year period, there has been an increase of around 27% in the readmissions rate for females in England; from 5.71% in 2002/03 to 7.28% in 2011/12.

Chart 4: Emergency readmissions to hospital within 28 days of discharge: hysterectomy: indirectly standardised percent, all ages, annual trend, females (2002/03 to 2011/12)
Emergency readmissions: primary hip replacement surgery

- There were 491 fewer readmissions for persons than were expected in England (3,913 expected compared to 3,422 observed).
- The readmissions rate for males in England (6.05%) was around 24% higher than readmissions rate for females in England (4.87%).
- There is no significant change in the readmissions rate for persons in England; from 5.54% in 2010/11 to 5.32% in 2011/12. In the same period, there have been no significant changes in the readmissions rates for females (from 4.95% to 4.87%) or males (from 6.53% to 6.05%).
- Over the ten year period, there has been a decrease of around 14% in the readmissions rate for persons in England; from 6.22% in 2002/03 to 5.32% in 2011/12. In the same period, the readmissions rate for females in England decreased by around 14% (from 5.66% to 4.87%), and the readmissions rate for males in England decreased by around 15% (from 7.15% to 6.05%).

Chart 5: Emergency readmissions to hospital within 28 days of discharge: primary hip replacement surgery: indirectly standardised percent, all ages, annual trend, persons / females / males (2002/03 to 2011/12)
Emergency readmissions: stroke

- There were 539 more readmissions for persons than were expected in England (6,463 expected compared to 7,002 observed).
- The readmissions rate for males in England (11.71%) was around the same as the readmissions rate for females in England (11.74%).
- There is no significant change in the readmissions rate for persons in England; from 11.97% in 2010/11 to 11.71% in 2011/12. In the same period, there have been no significant changes in the readmissions rates for females in England (from 12.18% to 11.74%) or males (from 11.81% to 11.71%).
- Over the ten year period, there has been an increase of around 36% in the readmissions rate for persons in England; from 8.58% in 2002/03 to 11.71% in 2011/12. In the same period, the readmissions rate for females increased by 41% (from 8.32% to 11.74%), and the readmissions rate for males increased by 32% (from 8.84% to 11.71%).

Chart 6: Emergency readmissions to hospital within 28 days of discharge: stroke: indirectly standardised percent, all ages, annual trend, persons/ females/ males (2002/03 to 2011/12)