Emergency readmissions to hospital within 28 days of discharge: hysterectomy

Purpose:

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 that around 6% of patients discharged from NHS hospitals following elective hysterectomy are readmitted as an emergency within 28 days. There is wide variation between similar NHS organisations in rates of such emergency readmissions. 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.

Definition of indicator and its variants:

Proportion of emergency admissions to any hospital in England occurring within 28 days of the last, previous discharge from hospital after elective admission for hysterectomy.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Sex</th>
<th>Age group</th>
<th>Organisation</th>
<th>Period</th>
<th>Trend data</th>
<th>File-worksheet name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirectly age standardised percent (standardised to 2006/07-2008/09 pooled)</td>
<td>F</td>
<td>All Ages</td>
<td>E: GOR; ONS area (boundaries as at April 2009); SHA (boundaries as at July 2006); County; LA (boundaries as at April 2009); PCO (boundaries as at April 2011); NHS provider Trusts (as during financial year); provider clusters; deprivation group (5, 7 bands)</td>
<td>FYs 2009/10</td>
<td>FYs 2002/03, 2003/04, 2004/05 pooled</td>
<td>36D_534ISP4BFP1_12_V1</td>
</tr>
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<td>Indirectly age standardised percent (standardised to 2007/08)</td>
<td>F</td>
<td>All Ages</td>
<td>E</td>
<td>FY 2011/12</td>
<td>FY 2002/03, 2003/04, 2004/05, 2005/06 pooled</td>
<td>36D_534ISP4BFP2_12_V1</td>
</tr>
</tbody>
</table>
Numerator:

Numerator data – 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 (see denominator).

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 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 is the number of denominator CIP spells with the following fields and values:

- The first episode in readmission CIP spell has:
  - ADMIDATE minus last episode in discharge CIP spell DISDATE < 27 days inclusive (discharge date and admission date, includes negatives);
  - AND first episode in the readmission CIP spell ADMIMETH = 21, 22, 23, 24 or 28 (admission method).

Fields used from the first episode in a spell where there is a valid patient postcode allowing the derivation of the following organisation of residence codes include:
- SPELLRESPCTC, SPELLRESLADSTC, SPELLRESSTHAC and deprivation bands (based on IMD2007 scores). Other organisational levels (E, GOR, ONS Areas, Counties) are aggregates of the SPELLRESLADSTC field.

Fields used from the last episode in a spell include:
- PROCODETC (provider code, unmapped). Provider clusters are aggregates of the PROCODETC field.

Counts are by:
- age / organisation of residence in CIP spell (values for England are aggregates of these)

where:
- age bands are <1, 1-4, 5-9, … , 80-84, 85+;
- sex is 2 (female).

Source of numerator data – Hospital Episode Statistics (HES) for CIP spells intersecting the respective financial year, plus those up to 28 days in the next financial year, England, The Health and Social Care Information Centre.

Comments on numerator data – Individual finished consultant episodes are linked to other episodes where all are part of one continuous spell of care for a patient (see CIP spell construction sections in Annex 4 (Additional reading > Statistical methods > Methods section of the HSC IC Indicator Portal http://indicators.ic.nhs.uk) for details). A spell may contain HES data from another year only when one of its episodes spans years. For example, a spell which finished during April may contain admission information from an episode which started during the previous March.

The numerator (readmissions) consists of CIP spells (see denominator) 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 indicator includes discharges occurring after transfer to another Trust. For residence based aggregations, discharges are counted to the first valid organisation coded in the spell. For provider based aggregations (Provider Trusts and Clusters) discharges are counted to the organisation from where the patient was last discharged.
There is variation in the completeness of hospital records and quality of coding (see Data Quality sections in Annex 4 (Additional reading > Statistical methods > Methods section of the HSC IC Indicator Portal http://indicators.ic.nhs.uk) for details).

Denominator:

**Denominator data** - The number of finished CIP spells for females of all ages where there was at least one mention of a hysterectomy coded anywhere in the spell (OPCS 4 codes Q07.1-Q08.9), with a discharge date up to March 31st within the year of analysis:

- Q07. - Abdominal excision of uterus
- Q08. - Vaginal excision of uterus

Day cases, non-elective admissions and spells with a discharge coded as death are excluded.

The following fields and values are used for the denominator:

Any episode in the CIP spell has a procedure in the valid list for this indicator (in any position);

The first episode in the CIP spell has:

- EPITYPE = 1 or 2 (episode type);
- AND SEX = 2 (sex);
- AND EPIORDER = 1 (episode order);
- AND ADMIMETH = 11, 12, 13, 81 (admission method);
- AND EPISTART is valid (episode start date);
- AND CLASSPAT = 1 or 5 (patient classification);
- AND STARTAGE is either 0-120 or 7001-7007 (age at start of episode);
- AND DOB not 01/01/1900 or 01/01/1901 (date of birth).

AND the last episode in the CIP spell has:

- DISDATE is valid and < 31/03/YYYY+1 (discharge date);
- AND DISMETH = 1, 2 or 3 (discharge method).

Fields used from the first episode in a spell where there is a valid organisation of residence code include:

- SPELLRESPCTC, SPELLRESLADSTC, SPELLRESSTHA (based on IMD2007 scores). Other organisational levels (E, GOR, ONS Areas, Counties) are aggregates of the SPELLRESPCTC field.

Fields used from the last episode in a spell include:

- PROCODETC (provider code, unmapped). Provider clusters are aggregates of the PROCODETC field.

Counts are by:

- age / organisation of residence in CIP spell (values for England are aggregates of these)

where:

- age bands are <1, 1-4, 5-9, ..., 80-84, 85+;
- sex is 2 (female).

Source of denominator data – Hospital Episode Statistics (HES) for CIP spells intersecting the respective financial year, England, The Health and Social Care Information Centre.

Comments on denominator data – There is variation in the completeness of hospital records and quality of coding (see Data Quality sections in Annex 4 (Additional reading > Statistical methods > Methods section of the HSC IC Indicator Portal http://indicators.ic.nhs.uk) for details).

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.

**Statistical Methods:**

The indicator is indirectly standardised by age using England age rates as standards. Indirect standardisation involves the calculation of the ratio of an organisation’s observed number of events and the number of events that would be expected if it had experienced the same event rates as those of patients in England, given the age mix of its patients. This standardised ratio is then converted into a rate by multiplying it by the overall event rate of patients in England.

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. A positive percentage represents improvement and a negative percentage represents deterioration.


Data on the NHS version of the Indicator Portal are unsuppressed and may potentially identify an individual. There are strict terms and conditions of use for unsuppressed data.

Data on the Public version of the Indicator Portal have had any required suppression applied: data that may potentially identify an individual have been removed (in cells marked by X).

Further information is available in the “Statistical methods and disclosure control” section of the website.

**Interpretation of indicator:**

**Type of indicator** - This is a procedure-specific, cross-sectional annual comparative indicator, acting as a proxy for 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 (Additional reading > Statistical methods > Methods section of the HSC IC Indicator Portal [http://indicators.ic.nhs.uk](http://indicators.ic.nhs.uk)) 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 Primary Care Organisation, Local Authority 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 (beyond that accounted for by standardisation), comorbidities and other potential risk factors also contribute to the variation. Current data do not allow assignment of the severity of the condition or seriousness of operations across continuous inpatient spells, nor do they 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. No attempt has been made to assess whether the readmission was linked to the discharge in terms of diagnosis. A patient discharged after a hysterectomy 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. 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 for rehabilitation and convalescence before final discharge. Planned transfers, for example for rehabilitation, may extend length of stay and 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 entirely 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.

Potential value of indicator:

To stimulate discussion and encourage local investigation, and to lead to improvement in data quality and quality of care.

Potential for follow-up action leading to change:

Studies to assess the extent to which readmissions were linked to the previous episode, and therefore truly represent potentially avoidable adverse events, are recommended.

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