NHS England

Announcement of methodological changes to the Summary Hospital-level Mortality Indicator (SHMI)

Background

The Summary Hospital-level Mortality Indicator (SHMI) reports on mortality at trust level across the NHS in England using a standard and transparent methodology. It is produced and published monthly as a National Statistic by NHS England.

The SHMI is the ratio between the actual number of patients who die following hospitalisation at the trust and the number that would be expected to die on the basis of average England figures, given the characteristics of the patients treated there.

The SHMI is currently composed of 142 different diagnosis groups, and these are aggregated to calculate the overall SHMI value for each trust.

It is a complex indicator which was developed using widespread input. However, there are a range of user and academic view on various aspects of the methodology and not all experts agree. The SHMI is subject to continuous evaluation and various aspects of the methodology are being updated following a review.

Methodological changes

Inclusion of COVID-19 activity

Activity related to COVID-19 is currently excluded from the SHMI. Although it was appropriate to exclude this activity from the SHMI for the initial waves of the pandemic, the death rate for COVID-19 has now stabilized and so it is now feasible to include the activity in the SHMI.

In future publications, COVID-19 activity with a discharge date on or after 1 September 2021 will be included in the SHMI. This date was chosen because the death rate for COVID-19 stabilised from mid-2021 onwards. Activity for the whole pandemic period cannot be included due to the rapidly changing mortality rate at the start of the pandemic.

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Provider spells[1] with a primary diagnosis of COVID-19 will be included in a new diagnosis group (group number 143). Spells where COVID-19 is a secondary diagnosis or where COVID-19 is recorded on the death certificate will be allocated to an existing diagnosis group using the same methodology that is applied to all other spells in the data.

Activity that is related to COVID-19 will continue to be monitored in the SHMI contextual indicator 'Percentage of provider spells with COVID-19 coding'. This includes spells where any episode has a COVID-19 diagnosis code, as well as spells where COVID-19 is recorded anywhere on the death certificate for a death linked to the spell.

The updated methodology results in approximately 666,000 additional spells (3% of the total) and 88,000 additional deaths (10% of the total) being included in the SHMI.

Of the 666,000 spells:

- 35% are included in the newly created COVID-19 diagnosis group.
- 5% are included in the pregnancy related conditions diagnosis group.
- 4% are included in the pneumonia diagnosis group.
- The remainder are included in other SHMI diagnosis groups, with less than 3% in each group.

Of the 88,000 deaths:

- 30% are included in the newly created COVID-19 diagnosis group.
- 9% are included in the pneumonia diagnosis group.
- 6% are included in the septicaemia and shock diagnosis group.
- The remainder are included in other SHMI diagnosis groups, with less than 4% in each group.

Exclusion of hospices

The SHMI includes activity for all non-specialist acute NHS trusts in England. This means that if a trust operates a hospice, data for this site is included in the SHMI.

The methodology will be updated so that hospice sites within non-specialist acute trusts are excluded from the SHMI. This is because most activity at these sites relates to terminally ill patients and including this distorts the SHMI value for the trust.

[1] A provider spell is a continuous period of time spent as a patient within a single trust (provider). A spell may be composed of more than 1 episode (a single period of care under 1 consultant). A spell is finished when the spell ends i.e. the patient is discharged or dies.

Hospices will be identified as those sites where the name of the site contains the word "hospice".

This change will result in 8 sites being excluded (see Table 1 below), with approximately 4,500 spells (0.02%) and 3,100 deaths (0.41%) being removed from the 3-year dataset used to calculate the SHMI.

Table 1: Hospices which will be excluded from the SHMI[2]

Site name and code	Trust name and code
Florence Nightingale Hospice (RXQFN)	Buckinghamshire Healthcare NHS Trust (RXQ)
Katharine House Hospice (I8P7R)	Oxford University Hospitals NHS Foundation Trust (RTH)
Salisbury Hospice (RNZ78)	Salisbury NHS Foundation Trust (RNZ)
Sobell House Hospice (RTH40)	Oxford University Hospitals NHS Foundation Trust (RTH)
St Benedict's Hospice (R0B0U)	South Tyneside and Sunderland NHS Foundation Trust (R0B)
St Elizabeth Hospice (RDE57)	East Suffolk and North Essex NHS Foundation Trust (RDE)
Walsall Hospice (RBK83)	Walsall Healthcare NHS Trust (RBK)
Woodlands Hospice (H5R4P)	Liverpool University Hospitals NHS Foundation Trust (REM)

Producing SHMI values for a subset of sites

Trusts may be located at multiple sites and may be responsible for 1 or more hospitals. From the May 2019 publication onwards, a breakdown of the SHMI data by site of treatment has been published as an experimental statistic[3].

The range of SHMI values is considerably greater at site level than at trust level. There are several factors which contribute to this. These include some sites having different

[2] This document was updated on 24 April 2024 with the addition of Florence Nightingale Hospice to the list of excluded sites. The number and percentage of excluded spells and deaths was also updated.

[3] Experimental statistics are official statistics which are published in order to involve users and stakeholders in their development and as a means to build in quality at an early stage.

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specialisms and service models (for example, dialysis, maternity, and paediatrics) and also some inconsistencies in how trusts have defined their ‘sites’.

This has led to concerns from users around whether SHMI values are calculated on a like for like basis across all sites. Therefore, the methodology is being changed so that a SHMI value and the corresponding control limits and banding (indicating whether the SHMI is ‘higher than expected’, ‘as expected’ or ‘lower than expected’) will only be calculated for a subset of sites. A site level SHMI value will not be calculated if:

- The site has fewer than 1,000 spells in the 12-month reporting period.
- The name of the site indicates that it is a specialist site (for more details, see the flowchart at the end of this document).
- Over 35% of spells in the 12-month reporting period are in a single diagnosis cluster[4], indicating that it is a specialist site.

The number of provider spells, the observed number of deaths and the expected number of deaths will continue to be published for each site.

Based on data for the period November 2022 to October 2023, there were 776 sites (not including hospices) included in the SHMI. Of these sites:

- Using the current methodology, a SHMI value is calculated for 255 of these (a SHMI value is currently not calculated if there are fewer than 30 spells or fewer than 8 observed deaths or less than 7.5 expected deaths in the 12-month reporting period).
- Of these, 28 will not have a SHMI value calculated using the new methodology because they have fewer than 1,000 spells in the 12-month reporting period.
- Of the remaining sites, 9 will not have a SHMI value calculated using the new methodology because the name of the site indicates that it is a specialist site.
- Of the remaining sites, 23 will not have a SHMI value calculated because over 35% of spells in the 12-month reporting period are in a single diagnosis cluster.

Updates to the methodology for spells consisting of multiple episodes

The diagnosis group is determined from the primary diagnosis for the first episode of each provider spell, unless the primary diagnosis for the first episode is a symptom or sign. When

[4] There are 19 diagnosis clusters, which are a further aggregation of the 144 SHMI diagnosis groups. These correspond to broad clinical areas e.g., cancer, respiratory. The mapping from diagnosis groups to diagnosis clusters is based on that used in the calculation of the Dutch Hospital Standardised Mortality Ratio (HSMR). Further details are available in the methodology specification which is available to download from https://digital.nhs.uk/SHMI.

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this is the case, the primary diagnosis from the second episode is used, unless this is also a symptom or sign in which case the primary diagnosis from the first episode is used.

The methodology will be updated to use the first primary diagnosis which isn't a symptom or sign. This is because increasingly, trusts have models of care where there may be several short episodes at the beginning of the spell, meaning that the diagnosis may not be known until the third episode (or later). If all of the episodes in the spell have a primary diagnosis which is a symptom or sign, then the first episode in the spell will be used.

As in the current methodology, the Charlson comorbidity index (which is used to take account of other long-term conditions the patient may have) will be calculated using the secondary diagnoses from the same episode used to assign the diagnosis group.

The change will have a small impact, with around 0.3% of spells having the primary diagnosis taken from the third episode or later.

New diagnosis group for spells with an invalid primary diagnosis

Provider spells with an invalid primary diagnosis (identified as those spells where the primary diagnosis is given by the ICD-10 code R69X) are currently included in SHMI diagnosis group 140. This group includes a variety of other activity that doesn't belong in any other group (including allergic reactions, rehabilitation care and records where the primary diagnosis is a symptom or sign).

This activity will be moved to a new separate diagnosis group (diagnosis group 144) which will only include records with an invalid primary diagnosis. This will allow the impact of these data quality issues on the SHMI to be more easily identified.

The adjustment for the Charlson comorbidity index will not be included for this new diagnosis group because only a very small number of records have secondary diagnosis codes.

In the 3-year dataset which is used to calculate the SHMI, around 1.0% of all spells have an invalid primary diagnosis, though this varies considerably between individual trusts from 0.0% to 23.8%.

Changes to diagnosis group labels

The labels for the following diagnosis groups will be updated in response to user feedback so that they no longer use outdated terminology:

- Diagnosis group 42 will refer to “disorder of intellectual development” rather than “mental retardation”.
- Diagnosis group 106 will refer to “uncomplicated pregnancy”, rather than ”normal pregnancy”.

Timing

The first publication to be affected by this change will be the May 2024 release, which will cover discharges in the period January 2023 – December 2023.

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.

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Site level SHMI flowchart