

# Summary Hospital-level Mortality Indicator (SHMI)

## Frequently Asked Questions (FAQs)

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**Information and technology**  
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## Calculation of the SHMI

### What is the SHMI?

The Summary Hospital-level Mortality Indicator (SHMI) is an indicator which reports on mortality at trust<sup>1</sup> level across the NHS in England using a standard and transparent methodology. It is produced and published quarterly as a National Statistic by NHS Digital.

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.

It covers all deaths reported of patients who were admitted to non-specialist acute trusts in England and either die while in hospital or within 30 days of discharge.

SHMI values for each trust are published along with bandings indicating whether a trust's SHMI is 'higher than expected', 'as expected' or 'lower than expected'.

### What data are used to calculate the SHMI?

The data used to produce the SHMI are generated from data that trusts submit to the Secondary Uses Service (SUS). The data are processed by NHS Digital to create Hospital Episode Statistics (HES) data, which are then linked with death registrations data from the Office for National Statistics to allow deaths which occurred outside of hospital to be captured. Further processing and calculations are then applied to generate the indicator values.

A combination of finalised and provisional HES data is used in the calculation of the SHMI to ensure that the indicator is as timely as possible. Detailed information on the HES data used in the calculation of the SHMI is available in the document 'HES SHMI Data Guidance', which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### Why isn't the SHMI published at hospital level?

The SHMI is currently reported at trust level rather than site (hospital) level because of concerns around the accuracy of data on site of treatment in the HES dataset. NHS Digital will continue to review the feasibility of reporting the SHMI at site level as part of the longer term development of the indicator.

### How is the SHMI calculated?

Below is a brief guide to the methodology used to calculate the SHMI. For full details please refer to the methodology specification document which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

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<sup>1</sup> An NHS trust (or provider) is a legal entity which provides services on behalf of the NHS. Trusts may be located at multiple sites and may be responsible for one or more hospitals.

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.

$$\text{SHMI} = \frac{\text{Observed Deaths}}{\text{Expected Deaths}}$$

### Observed Deaths:

This is a count of the number of deaths which occurred in hospital or within 30 days of discharge for each trust. If the patient is treated by another trust within those 30 days their death will only be attributed to the last non-specialist acute NHS trust to treat them.

Specialist trusts, mental health trusts, community trusts and independent sector providers are excluded from the SHMI. A full list of excluded NHS trusts can be found in Appendix C of the SHMI methodology specification document, which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### Expected Deaths:

The risk of the patient dying in hospital or within 30 days of discharge is estimated from statistical models based on the following variables:

- the condition the patient is in hospital for
- other underlying conditions the patient suffers from
- the age of the patient
- the sex of the patient
- the method of admission to hospital (elective/non-elective/unknown)

The expected number of deaths is obtained by summing the estimated risks for all finished provider spells<sup>2</sup> for a trust.

The statistical models are derived using thirty-six months of data from trusts throughout England. The final twelve months of this period are used to calculate the SHMI for each individual trust. Details of the dataset used in the SHMI calculation can be found in the SHMI publication timetable which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### How often is the SHMI recalibrated?

The SHMI is recalibrated and rebased quarterly, at every publication. This means that the England average figures which drive the expected figures are updated at every quarter. Any improvements or otherwise to a SHMI for a trust compared to the previous publication will be relative to the England average for the publication period. Therefore, if the overall England

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<sup>2</sup> 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 one episode (a single period of care under one consultant). A spell is finished when the spell ends i.e. the patient is discharged or dies.

average has improved and the performance of a trust has also improved around the same scale, their SHMI would show little, if any, change.

## How are deaths attributed?

Patient activity data in HES can be used to identify if a patient died in hospital. Linking ONS mortality data and HES creates a richer dataset which captures deaths of people who have been admitted or treated in hospitals, irrespective of whether they died in hospital or not. For the SHMI a death is attributed to a trust if the patient dies in hospital or within 30 days of discharge. If the patient is treated by another trust within those 30 days, their death will only be associated with the last non-specialist acute NHS trust to treat them.

## How does the SHMI handle palliative care activity?

Patients who are coded as receiving palliative care are included in the calculation of the SHMI. The SHMI does not make any adjustment for patients who are coded as receiving palliative care. This is because there is considerable variation between trusts in the coding of palliative care. Details of further analysis on this issue can be referenced in the Palliative Care Coding Report which is available to download from <http://digital.nhs.uk/shmi-development>.

Two contextual indicators on palliative care (percentage of provider spells with palliative care coding and percentage of deaths with palliative care coding) are also published to support the interpretation of the SHMI.

## Does the SHMI include an adjustment for deprivation?

The SHMI methodology does not make any adjustment for deprivation. This is because adjusting for deprivation might create the impression that a higher death rate for those who are more deprived is acceptable, and has the potential to remove from the SHMI some of the differences that it is designed to measure. More detailed analysis can be found in the Report on the Impact of Deprivation on the SHMI, which is available to download from <http://digital.nhs.uk/shmi-development>.

Two contextual indicators on deprivation (provider spells split by deprivation quintile and deaths split by deprivation quintile) are also published to support the interpretation of the SHMI.

## Does the SHMI include an adjustment for the severity of the condition?

No adjustment is made for the severity of the condition the patient is in hospital for, as this information is not captured in the HES dataset upon which the SHMI is based. This means that if a trust treats a high (or low) proportion of seriously ill patients with a particular condition compared to other trusts, the statistical models used to estimate the expected number of deaths will not take account of this.

## **Is the cause of death always the same as the condition the patient is in hospital for?**

The cause of death may be different from the condition the patient is in hospital for. For the SHMI, the estimated risk of death is calculated based on the condition the patient is admitted with, rather than the cause of death, as the SHMI is concerned with deaths associated with hospitalisation.

## **Why is the SHMI only calculated for non-specialist acute trusts?**

Specialist trusts, mental health trusts, community trusts and independent sector providers are excluded from the SHMI because there are important differences in the case-mix of patients and the SHMI has not been designed for these types of trusts. A full list of excluded NHS trusts can be found in Appendix C of the SHMI methodology specification document, which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

## **Does the SHMI include all in-patient activity for non-specialist acute trusts?**

When the SHMI was established, one of the principles was that it should include activity for all admitted patients (except day cases, regular attenders and still births). The Clinical Classifications Software (CCS) is a tool for grouping patients into a manageable number of clinically meaningful categories using the International Classification of Diseases (ICD-10) diagnosis codes. The SHMI includes all 260 CCS categories for ICD-10 diagnosis codes and this forms a wider coverage compared with some other mortality indicators. For example, the Hospital Standardised Mortality Ratio (HSMR) includes 56 of the CCS categories, accounting for approximately 80 per cent of deaths occurring in hospital.

Further information regarding the CCS categories for ICD-10 diagnosis codes can be referenced at:

[http://hcup-us.ahrq.gov/toolssoftware/icd\\_10/ccs\\_icd\\_10.jsp](http://hcup-us.ahrq.gov/toolssoftware/icd_10/ccs_icd_10.jsp)

## **How does the SHMI handle integrated acute and community trusts?**

The SHMI methodology has been designed for non-specialist acute trusts. Trusts which solely provide community or specialist services are excluded from the SHMI. However, integrated acute and community trusts (which provide both acute and community services) are included and some patients will transfer between acute and community care at these trusts.

For integrated acute and community trusts, the SHMI includes the time from the patient's admission until 30 days following discharge from the trust and does not account for any transfer between acute and community settings. This is different from patients who are first treated at a trust providing only acute services who are then transferred to a community trust. In these cases, the SHMI includes the time from admission to the acute trust until 30 days following transfer from the acute trust only. This difference has led to concerns that not all trusts are being evaluated on a like-for-like basis.

There is no way of identifying community activity in the HES dataset. Therefore it is not possible to quantify the number of trusts affected, or the potential impact on these trusts. The number of affected trusts may increase over time as more trusts transition to an

integrated model of service provision and the impact will vary depending on the nature of the community services being provided e.g. rehabilitation services compared to palliative care. Trusts which only provide community services in an outpatient setting will be unaffected as only inpatient activity is included in the SHMI.

NHS Digital is currently looking into a number of developments to help address these concerns. Reporting the SHMI at site (hospital) level rather than trust level may help to address this for trusts where inpatient community activity is provided at a separate site. However, the quality of data on site of treatment in the HES dataset is not currently sufficient to allow this; we are aware of a number of trusts with multiple sites who code all of their activity to one site. NHS Digital will continue to review site code recording and the feasibility of reporting the SHMI at site level as part of the longer term development of the indicator.

NHS Digital is also investigating the impact of a proposal to change the definition of an event from deaths occurring in hospital or within 30 days of discharge to deaths occurring within 30 days of admission. This change could help to reduce the impact of differing discharge policies and lengths of stay between trusts. If this change is recommended following further discussions with users and with agreement from the SHMI sponsor, a wider public consultation will be carried out on this significant change to the scope of the SHMI. Further information is available in the SHMI Methodology Development Log, which is available on the NHS Digital website at <http://digital.nhs.uk/shmi-development>.

## Development of the SHMI

### Why are we producing the SHMI?

Following the recommendations from the National Review of the Hospital Standardised Mortality Ratio (HSMR), the Department of Health commissioned NHS Digital to produce and publish the SHMI. As part of the review, the Department of Health also commissioned independent statistical modelling work, which was carried out by the School of Health and Related Research (SchARR) at the University of Sheffield.

Further information is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### How will the SHMI methodology be reviewed and developed?

The SHMI is a complex indicator which was developed using widespread expert input. However, there are a range of academic views on various aspects of the methodology and not all experts agree. All of the SHMI data is published, including a set of control limits generated using an alternative methodology, to enable trusts and users of the SHMI to understand the data further and produce their own analysis. The methodology is published in a fully transparent way to enable local replication, academic critique and future development. We welcome feedback and suggestions on any aspect of the methodology. These suggestions can be communicated using the contact details at the end of this document.

The SHMI is subject to continuous review and has been through the Indicator and Methodology Assurance Service (IMAS) process, which is hosted by NHS Digital on behalf of the wider health and social care system. Further information is available at <http://digital.nhs.uk/article/1674/Indicator-Assurance-Service>.

Known issues are kept under review and are detailed in the SHMI methodology development log, which is available on the NHS Digital website at <http://digital.nhs.uk/shmi-development>.

## Interpretation of the SHMI

### What does the SHMI banding mean?

For any given number of expected deaths, a range of observed deaths can be considered to be 'as expected'. If the observed number of deaths falls outside of this range, the trust in question will be considered to have a higher or lower SHMI than expected. The range, the extremes of which are called control limits, can be calculated in a variety of ways. For the SHMI, 95% control limits from a random effects model applying a 10% trim for over-dispersion are used to give a trust a banding of 'higher than expected', 'as expected' or 'lower than expected'. Further guidance on the interpretation of the SHMI is available to download from the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### Which factors can affect a trust's SHMI?

The methodology used to calculate the expected number of deaths for a particular trust takes into account the number of patients treated and their characteristics (including the condition the patient is in hospital for, other underlying conditions the patient suffers from, age, gender and method of admission to hospital) and so these factors should not influence a trust's SHMI. There are many other factors which have the potential to affect a trust's SHMI including (but not limited to) the quality of the data upon which the SHMI is based, other patient characteristics not listed above, the organisation of services and availability of resources e.g. staff, and quality of care.

This means that, unlike some other official statistics, it is not possible to give specific reasons for a trust having a 'higher than expected' or 'lower than expected' SHMI because many of the factors which can affect this and can be identified in the underlying data have already been adjusted for. Therefore, a 'higher than expected' SHMI should not immediately be interpreted as indicating bad performance and instead should be viewed as a 'smoke alarm' which requires further investigation by the trust. Similarly, an 'as expected' or 'lower than expected' SHMI should not immediately be interpreted as indicating satisfactory or good performance.

The SHMI includes admitted patients for all clinical areas within a trust and it is possible that mortality rates differ across these areas. For this reason, we advise all trusts to investigate their SHMI data in detail using the data broken down by diagnosis group, regardless of whether their SHMI is categorised as 'higher than expected', 'as expected' or 'lower than expected'.

A correlation between the SHMI and other variables of interest does not imply causation. Even if a correlation suggests that there is a relationship between the SHMI and another variable, it does not necessarily imply that one is causing the other. For example, other factors may be influencing both the SHMI and other variables, suggesting a direct relationship where there is none.

### How should I interpret the difference between the number of observed and expected deaths?

Where a trust has an 'as expected' SHMI, it is inappropriate to conclude that their SHMI is lower or higher than the national baseline, even if the number of observed deaths is smaller

or larger than the number of expected deaths. This is because the trust has been placed in the 'as expected' range because any variation from the number of expected deaths is not statistically significant.

The difference between the number of observed deaths and the number of expected deaths cannot be interpreted as the number of avoidable deaths for the trust. Whether or not a death could have been prevented can only be investigated by a detailed case-note review. The SHMI is not a direct measure of quality of care.

The expected number of deaths for each trust is not an actual count of patients, but is a statistical construct which estimates the number of deaths that may be expected at the trust on the basis of average England figures and the characteristics of the patients treated there.

## **Can the SHMI be used to inform patient choice?**

As explained above, the SHMI is not a direct measure of quality of care and a 'higher than expected' SHMI should not immediately be interpreted as indicating bad performance and instead should be viewed as a 'smoke alarm' which requires further investigation by the trust. Similarly, an 'as expected' or 'lower than expected' SHMI should not immediately be interpreted as indicating satisfactory or good performance. Therefore, the SHMI is not suitable to be used as an indicator to inform patient choice. When deciding which hospital to have treatment at, patients are advised to consider information that has been designed for this purpose e.g. surgeon outcomes data and the associated interpretation guidance<sup>3</sup> and to discuss this with their GP.

## **Can the SHMI be used to create a ranking of trusts?**

The SHMI can be used by hospital trusts to compare their mortality outcomes to the national baseline. Regulators (for example, the Care Quality Commission) and commissioning organisations can also use the SHMI to investigate outcomes for trusts. However, the SHMI cannot be used to directly compare mortality outcomes between trusts and it is inappropriate to rank trusts according to their SHMI. If two trusts have the same SHMI banding, it cannot be concluded that the trust with the lower SHMI value has better mortality outcomes.

## **What does a correlation between the SHMI and another variable mean?**

A correlation between the SHMI and other variables of interest does not imply causation. Even if a correlation suggests that there is a relationship between the SHMI and another variable, it does not necessarily imply that one is causing the other. For example, other factors may be influencing both the SHMI and other variables, suggesting a direct relationship where there is none.

## **Can the SHMI be used to investigate hospital discharge practices?**

No, the SHMI is designed to report on mortality at trust level and is the ratio between the actual number of patients who die following hospitalisation at the trust and the number that

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<sup>3</sup> Surgeon outcomes data are published by the Royal College of Surgeons and more information is available at <https://www.rcseng.ac.uk/patients/the-surgical-team/surgical-outcomes>.

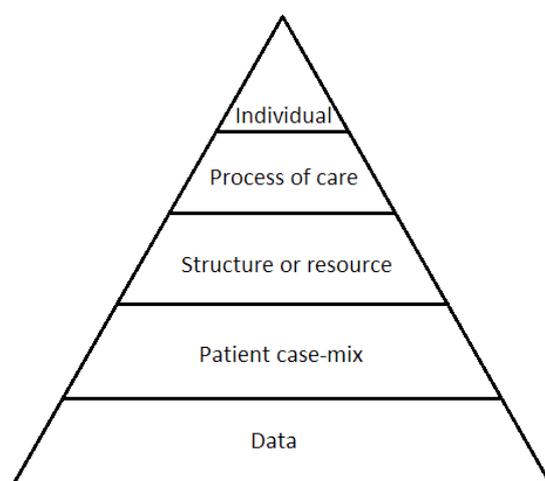
would be expected to die on the basis of average England figures, given the characteristics of the patients treated there.

Indicators reporting on readmissions may provide more information about hospital discharge practices, in particular the emergency readmissions within seven days of discharge indicator which is part of the Seven-day services publication.

Further information on the Seven-day services publication can be found on the NHS Digital website at <http://digital.nhs.uk/article/2021/Website-Search?q=title%3a%22seven-day+services%22&infotype=13367&sort=Most+recent&size=10&page=1&area=both#top>.

## How should trusts investigate their SHMI?

A 'higher than expected' SHMI should not immediately be interpreted as indicating bad performance and instead should be viewed as a 'smoke alarm' which requires further investigation by the trust. It is recommended that such follow-ups use a structure such as the pyramid of investigation for special cause variation<sup>4</sup> to further investigate the SHMI (see diagram below).



More likely explanations are listed towards the bottom of the pyramid, and so it is suggested that these are investigated first.

Similarly, an 'as expected' or 'lower than expected' SHMI should not immediately be interpreted as indicating satisfactory or good performance. The SHMI requires careful interpretation and should be used in conjunction with other indicators and information from other sources (patient feedback, staff surveys and other such material) that together form a holistic view of trust outcomes.

## Why are there no longer two bandings given for the SHMI?

For the first publication of the SHMI in October 2011, two different bandings were used to categorise trusts as 'higher than expected', 'as expected' or 'lower than expected'. These were based on the following control limits:

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<sup>4</sup> Lilford R., Mohammed M. A., Spiegelhalter D., Thomson R. Use and misuse of process and outcome data in managing performance of acute medical care: avoiding institutional stigma. *Lancet* 2004; 363: 1147-54.

- 95% control limits from a random effects model applying a 10% trim for over-dispersion
- 99.8% control limits from an exact Poisson distribution

From the January 2012 publication onwards we have moved to publishing only one SHMI banding, corresponding to the control limits which account for over-dispersion. This change is in response to concerns over the use of two sets of control limits.

Over-dispersion is the presence of greater variability in a data set than would be expected based on a given statistical model. This is a common feature in the analysis of applied data where populations are heterogeneous. For the SHMI data, there is a statistically significant level of over-dispersion and therefore the over-dispersion control limits are the more suitable of the two choices as they better reflect the uncertainty inherent in the model.

The other set of control limits (exact Poisson limits) will continue to be made available in the underlying data for transparency and to support those who wish to make use of them, but without the corresponding banding.

## What time series analysis is provided?

The SHMI is not designed to measure changes in mortality over time. Instead, its purpose is to compare trust level mortality outcomes to the England average at a fixed point in time.

The SHMI is recalibrated and rebased quarterly, at every publication. This means that the England average figures which drive the expected figures are updated at every quarter. Any improvements or otherwise to a SHMI for a trust compared to the previous publication will be relative to the England average for the publication period.

When looking at SHMI values over time, users should consider that the reporting periods may be overlapping. As part of each quarterly SHMI publication, trusts which have either a 'higher than expected' SHMI or 'lower than expected' SHMI for both the most recent reporting period and the same period in the previous year are identified. The rationale for this is that these periods do not overlap and, therefore, the observed values of SHMI do not contain correlated data.

## What are the SHMI contextual indicators?

To support the interpretation of the SHMI, various contextual indicators are published alongside it. The current list of contextual indicators is as follows:

- Percentage of provider spells with palliative care coding
- Percentage of deaths with palliative care coding
- Deaths within 30 days for elective<sup>5</sup> admissions
- Deaths within 30 days for non-elective<sup>6</sup> admissions

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<sup>5</sup> An elective admission is an admission which is either booked, planned or from a waiting list and the decision to admit was made at a separate time from the actual admission to hospital.

<sup>6</sup> A non-elective admission is an admission which is not booked, planned or from a waiting list, and includes transfers from other trusts and admissions with an unknown admission method.

- Deaths split by those occurring in hospital and those occurring outside hospital within 30 days of discharge
- Provider spells split by deprivation quintile<sup>7</sup>
- Deaths split by deprivation quintile
- Percentage of provider spells with an invalid primary diagnosis<sup>8</sup> code
- Percentage of provider spells with a primary diagnosis which is a symptom or sign
- Mean depth of coding<sup>9</sup> for provider spells with an elective admission method
- Mean depth of coding for provider spells with a non-elective admission method

For full details of the calculation of each indicator, please refer to the methodology specification documents, which are available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

## How does the SHMI differ from the HSMR?

The Hospital Standardised Mortality Ratio (HSMR) is developed and produced by Dr Foster Intelligence (DFI). Some of the main differences between the SHMI and the HSMR are:

- The HSMR is reported as a standardised ratio with a baseline of 100, while the SHMI has a baseline of 1.
- The SHMI includes deaths occurring in hospital and deaths occurring outside of hospital within 30 days of discharge, whereas the HSMR only includes deaths occurring in hospital.
- The SHMI includes deaths from all 260 Clinical Classification System (CCS) groups, while the HSMR includes deaths from 56 CCS groups which account for around 80 per cent of in hospital deaths (the CCS groups used by SHMI and HSMR were defined by the Agency for Healthcare Research and Quality and further details are available on their website at [http://hcup-us.ahrq.gov/toolsoftware/icd\\_10/ccs\\_icd\\_10.jsp](http://hcup-us.ahrq.gov/toolsoftware/icd_10/ccs_icd_10.jsp)).
- The variables used in the statistical model to calculate the expected number of deaths differ between the SHMI and the HSMR. For example, the HSMR includes an adjustment for palliative care whereas the SHMI does not.
- The final model selection method varies between the SHMI and HSMR.

Full details of the methodology used to calculate the SHMI are provided in the methodology specification document, which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

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<sup>7</sup> Patients are assigned to one of five deprivation groups (called quintiles) using the Index of Multiple Deprivation (IMD) Overall Rank field in the Hospital Episode Statistics (HES) dataset.

<sup>8</sup> Primary diagnosis is the main condition the patient is in hospital for.

<sup>9</sup> Depth of coding is defined as the number of secondary diagnosis codes for each finished provider spell in the SHMI dataset.

For further details of the methodology used to calculate the HSMR, please contact DFI.

## How does the SHMI differ from the RAMI?

The Risk Adjusted Mortality Indicator (RAMI) is developed and produced by CHKS. Some of the main differences between the SHMI and the RAMI are:

- The RAMI is reported as a standardised ratio with a baseline of 100, while the SHMI has a baseline of 1.
- The SHMI includes deaths occurring in hospital and deaths occurring outside of hospital within 30 days of discharge, whereas the RAMI only includes deaths occurring in hospital.
- The SHMI includes more activity compared to the RAMI. For example, zero length of stay emergencies and spells containing the palliative care diagnosis code (Z51.5) are excluded from the RAMI.
- The variables used in the statistical model to calculate the expected number of deaths differ between the SHMI and the RAMI.

Full details of the methodology used to calculate the SHMI are provided in the methodology specification document, which is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

For further details of the methodology used to calculate the RAMI, please contact CHKS.

## Are similar indicators published for Scotland, Wales and Northern Ireland?

- NHS National Services Scotland publishes Hospital Standardised Mortality Ratios (HSMR) (the methodology used to calculate the Scottish HSMR is not the same as that used by DFI to calculate the English HSMR).  
Link to Scottish HSMR data: <http://www.isdscotland.org/Health-Topics/Quality-Indicators/HSMR/>
- The Welsh Government does not currently publish any indicators on mortality associated with hospitalisation.
- The Department of Health in Northern Ireland does not currently publish any indicators on mortality associated with hospitalisation.

## How does the SHMI differ from the Scottish HSMR?

Some of the main differences between the SHMI and NHS National Services Scotland's HSMR are:

- The purpose of the SHMI is to compare trust level mortality outcomes to the England average at a fixed point in time, whereas the purpose of the Scottish HSMR is to monitor trends in mortality over time. This is why the statistical models used in the SHMI to calculate the expected number of deaths are recalibrated quarterly for every

publication, while the statistical model used in the calculation of the Scottish HSMR is not recalibrated.

- The SHMI includes deaths occurring in hospital and death occurring outside of hospital within 30 days of discharge, whereas the Scottish HSMR includes deaths occurring within 30 days of admission.
- The SHMI includes inpatient activity from all specialties, whereas the Scottish HSMR excludes the obstetrics and psychiatry specialties.
- The variables used in the statistical model to calculate the expected number of deaths differ between the SHMI and the Scottish HSMR.

## **How does the SHMI differ from Seven-day Services mortality indicator?**

NHS Digital's Seven-day Services publication includes an indicator on the topic of mortality associated with hospitalisation. This indicator compares the odds of mortality within 30 days of admission for patients admitted at the weekend to the odds of mortality within 30 days of admission for patients admitted midweek (Tuesday, Wednesday and Thursday). Further information on the Seven-day services publication can be found on the NHS Digital website at <http://digital.nhs.uk/article/2021/Website-Search?q=title%3a%22seven-day+services%22&infotype=13367&sort=Most+recent&size=10&page=1&area=both#top>.

The SHMI can be used to compare a trust's mortality outcomes to the national baseline, whereas the purpose of the Seven-day Services mortality indicator is to compare outcomes for patients admitted to a particular trust at the weekend with outcomes for patients admitted midweek at the same trust. The comparison is strictly within the same trust and is independent of the overall mortality rate for that trust.

Due to the distinct purposes of the two indicators, the methodologies used to calculate them are different. In particular, the adjustments made for various patient characteristics differ between the two indicators.

## Publication of the SHMI

### When is the SHMI data published?

The SHMI is published on a quarterly basis with the first publication in October 2011. The SHMI publication timetable is available on the NHS Digital website at <http://digital.nhs.uk/SHMI>.

### Where are the SHMI data published and what resources are available?

A number of different SHMI resources are available to users.

- There is a webpage for each quarterly SHMI release including a one page summary of the publication (available from the July 2015 publication onwards), which aims to provide a more user-friendly introduction to the topic, and detailed information on data quality. In addition, a more detailed report is produced annually as part of the September release, including analysis for trusts identified as repeat outliers and analysis of the SHMI contextual indicators. This page can be accessed at [https://digital.nhs.uk/pubsearch?q=%22Summary+Hospital-level+Mortality+Indicator+\(SHMI\)%22&p=1&s=r&mv1=485](https://digital.nhs.uk/pubsearch?q=%22Summary+Hospital-level+Mortality+Indicator+(SHMI)%22&p=1&s=r&mv1=485)
- The Excel and csv data files containing SHMI data at trust and diagnosis group level and contextual indicator data at trust level are also available to download along with methodology specification documents, files containing data definitions and files containing data on the statistical models upon which the SHMI is based. An interactive data visualisation is also provided (from the June 2017 publication onwards).
- The one page summary, data quality report, data files and an interactive funnel plot, which provides a visualisation of the SHMI data at trust level, can also be accessed from the NHS Digital Indicator Portal at <https://indicators.hscic.gov.uk/webview/>
- There is a SHMI homepage providing supporting information on the SHMI including interpretation guidance, frequently asked questions (FAQs), a publication timetable and a statement on users and uses of the SHMI. This can be accessed at <http://digital.nhs.uk/SHMI>.
- SHMI data are also available from the data.gov.uk portal: [https://data.gov.uk/dataset/summary\\_hospital-level\\_mortality\\_indicator\\_shmi](https://data.gov.uk/dataset/summary_hospital-level_mortality_indicator_shmi)
- SHMI data are also published on the NHS Choices website: <http://www.nhs.uk/Scorecard/Pages/IndicatorFacts.aspx?MetricId=96>
- SHMI data are also published on the MyNHS website: <https://www.nhs.uk/service-search/scorecard/results/1015>

More detailed guidance on which resources may be most useful to different types of users is available in the SHMI users and uses statement, which is available at <http://digital.nhs.uk/SHMI>.

## Why is the SHMI no longer published as an experimental statistic?

The SHMI was published as an experimental official statistic from its first release in October 2011 until the April 2014 release and its methodology was subject to review and change following feedback from users along with consultation with the SHMI Technical Working Group as well as other key stakeholders. While the SHMI methodology remains subject to continuous review and improvement, the experimental designation has been removed. Further details about the on-going development of the SHMI can be found on the research and development section of the SHMI website at <http://digital.nhs.uk/shmi-development>.

## Why is the SHMI published as a National Statistic?

The SHMI was designated as a National Statistic by the UK Statistics Authority (UKSA) in August 2016. National Statistics status means that official statistics meet the highest standards of trustworthiness, quality and public value.

All official statistics should comply with all aspects of the Code of Practice for Official Statistics. They are awarded National Statistics status following an assessment by the UKSA's regulatory arm.

Further information, including a copy of the letter confirming SHMI's status as a National Statistic and a copy of the UKSA's assessment report is available at <https://www.statisticsauthority.gov.uk/publication/patient-outcomes-statistics-summary-hospital-level-mortality-indicator-shmi-england-2/>.

## Why is the detailed SHMI report now produced annually?

In 2016 NHS Digital carried out a consultation on changes to its Official and National Statistics products. One of the proposals was to publish the detailed SHMI report annually instead of quarterly. The consultation responses showed that reducing the frequency of this report would not have a high impact on the way in which the SHMI publication resources are used by the majority of respondents. Therefore, from the December 2016 SHMI publication onwards this report will be published annually as part of our September release. The data tables, one page summary and background quality report will continue to be published on a quarterly basis.

## Do trusts have to include SHMI data in their Quality Accounts?

The SHMI is one of a core set of indicators which must be included in a trust's Quality Account, which is an annual report produced by each NHS healthcare provider. Trusts are required to report on both the SHMI value and banding in their Quality Account and may also include further information on how they use the SHMI locally to monitor their mortality outcomes.

For example, some trusts use the SHMI data broken down by diagnosis group to identify specific clinical areas requiring further investigation. Lead clinicians from that area can then carry out in-depth reviews of patient case notes to identify any areas for improvement such as the introduction of 'care bundles' for specific conditions (care bundles are sets of evidence-based interventions which, when used together consistently by a healthcare team, have been shown to significantly improve patient outcomes). In other cases, such investigations may reveal problems with the quality of the data that trusts have submitted, such as errors in diagnosis coding.

Quality Accounts for individual trusts are available to download from the NHS Choices website at

<http://www.nhs.uk/aboutNHSChoices/professionals/healthandcareprofessionals/quality-accounts/Pages/about-quality-accounts.aspx>

## **Is SHMI data available at diagnosis group level?**

In response to user needs and requests, SHMI data broken down by trust and diagnosis group have been published routinely from the January 2015 SHMI release onwards. The following fields are published as part of this breakdown:

- Diagnosis group
- Trust code and name
- Finished provider spells
- Observed deaths
- Expected deaths

The data are suppressed where necessary for the purposes of disclosure control. As part of the January 2015 SHMI release, this breakdown was also made available for the previous four SHMI releases in addition to the latest release.

## **What is the procedure for making revisions to the SHMI?**

Any revisions or corrections relating to the SHMI publication will comply with the NHS Digital Revisions Procedure which is available on the NHS Digital website at <http://digital.nhs.uk/pubs/calendar>.

## **How will the SHMI be published for trusts which have merged, closed or have been acquired through direct succession?**

The SHMI and accompanying contextual indicators are published to reflect organisational structures at the time of publication processing. This means that if a merger or direct succession happened prior to publication processing (which is approximately two months prior to the publication date), combined data are published for the merged trust even though the merger may not have been completed during the reporting period covered by the publication. An example is given below:

Trust A and trust B merged in April 2012 to form trust AB. For the July 2012 SHMI publication, which has a reporting period from April 2011 to March 2012, the SHMI will be published for the merged trust AB using combined data submitted by trust A and trust B.

Similarly, for trusts which have closed, the hospitals which were previously run by the trust may have been taken over or acquired by different trusts. In this instance, data from the closed trust is attributed accordingly in the publications. An example is given below:

Trust X closed in April 2012. Hospital X1 (previously run by trust X) has been acquired by trust Y and hospital X2 (also previously run by trust X) has been acquired by trust Z. For the July 2012 SHMI publication, which has a reporting period from April 2011 to March 2012, the

SHMI published for trust Y will include data submitted by hospital X1 and the SHMI published for trust Z will include data submitted by hospital X2. A SHMI for trust X will not be published. Additionally, if either trust Y or trust Z is a specialist trust, community trust or mental health trust they (and any activity from trust X attributed to them) will be excluded from the SHMI.

To facilitate the quality assurance process of the SHMI, NHS Digital may be able to provide a site-level breakdown of the SHMI to recently merged trusts using the site of treatment field in the HES dataset.

## **Which trusts have been affected by organisational changes since the first publication of the SHMI?**

The table below lists the organisation changes affecting the SHMI that have occurred since its first publication in October 2011 (organisation codes are provided in brackets).

The mapping files that are used to map all activity to current trusts are available to download alongside the methodology for creating provider spells from the NHS Digital website at <http://digital.nhs.uk/SHMI>.

<b>Historic organisation structure</b>	<b>Updated organisation structure</b>	<b>SHMI publication updated structure used from (reporting period in brackets)</b>
Barts and The London NHS Trust (RNJ) Newham University Hospital NHS Trust (RNH) Whipps Cross University Hospital NHS Trust (RGC)	Barts Health NHS Trust (R1H)	July 2012 (January 2011 – December 2011)
Central Manchester University Hospitals NHS Foundation Trust (RW3) Trafford Healthcare NHS Trust (RM4)	Central Manchester University Hospitals NHS Foundation Trust (RW3)	July 2012 (January 2011 – December 2011)
Basingstoke and North Hampshire NHS Foundation Trust (RN5) Winchester and Eastleigh Healthcare NHS Trust (RN1)	Hampshire Hospitals NHS Foundation Trust (RN5)	July 2012 (January 2011 – December 2011)
Scarborough and North East Yorkshire Health Care NHS Trust (RCC) York Teaching Hospital NHS Foundation Trust (RCB)	York Teaching Hospital NHS Foundation Trust (RCB)	October 2012 (April 2011 – March 2012)
King's College Hospital NHS Foundation Trust (RJZ) Princess Royal University Hospital Bromley (RYQ30), run by South London Healthcare NHS Trust (RYQ)	King's College Hospital NHS Foundation Trust (RJZ)	January 2014 (July 2012 – June 2013)
Lewisham Healthcare NHS Trust (RJ2) Queen Elizabeth Hospital Woolwich (RYQ50), run by South London Healthcare NHS Trust (RYQ)	Lewisham and Greenwich NHS Trust (RJ2)	January 2014 (July 2012 – June 2013)

<b>Historic organisation structure</b>	<b>Updated organisation structure</b>	<b>SHMI publication updated structure used from (reporting period in brackets)</b>
Oxleas NHS Foundation Trust (RPG) - excluded from the SHMI Queen Mary's Hospital Sidcup (RYQ10), run by South London Healthcare NHS Trust (RYQ)	Oxleas NHS Foundation Trust (RPG) - excluded from the SHMI	January 2014 (July 2012 – June 2013)
Barnet and Chase Farm Hospitals NHS Trust (RVL) Royal Free London NHS Foundation Trust (RAL)	Royal Free London NHS Foundation Trust (RAL)	January 2015 (July 2013 – June 2014)
Ealing Hospital NHS Trust (RC3) North West London Hospitals NHS Trust (RV8)	London North West Healthcare NHS Trust (R1K)	January 2015 (July 2013 – June 2014)
Heatherwood and Wexham Park Hospitals NHS Foundation Trust (RD7) Frimley Park Hospital NHS Foundation Trust (RDU)	Frimley Health NHS Foundation Trust (RDU)	January 2015 (July 2013 – June 2014)
Stafford Hospital (RJD01), run by Mid Staffordshire NHS Foundation Trust (RJD) University Hospital of North Staffordshire NHS Trust (RJE)	University Hospitals of North Midlands NHS Trust (RJE)	January 2015 (July 2013 – June 2014)
Cannock Chase Hospital (RJD13), run by Mid Staffordshire NHS Foundation Trust (RJD) The Royal Wolverhampton NHS Trust (RL4)	The Royal Wolverhampton NHS Trust (RL4)	January 2015 (July 2013 – June 2014)
The Royal National Hospital for Rheumatic Diseases NHS Foundation Trust (RBB) –	Royal United Hospitals Bath NHS Foundation Trust (RD1)	July 2015 (January 2014 – December 2014)

<b>Historic organisation structure</b>	<b>Updated organisation structure</b>	<b>SHMI publication updated structure used from (reporting period in brackets)</b>
excluded from the SHMI Royal United Hospitals Bath NHS Foundation Trust (RD1)		
Chelsea and Westminster Hospital NHS Foundation Trust (RQM) West Middlesex University Hospital NHS Trust (RFW)	Chelsea and Westminster Hospital NHS Foundation Trust (RQM)	January 2016 (July 2014 – June 2015)
South Devon Healthcare NHS Foundation Trust (RA9) Torbay and Southern Devon Health and Care NHS Trust (R1G) – excluded from the SHMI	Torbay and South Devon NHS Foundation Trust (RA9)	January 2016 (July 2014 – June 2015)
Hinchingsbrooke Health Care NHS Trust (RQQ) Peterborough and Stamford Hospitals NHS Foundation Trust (RGN)	North West Anglia NHS Foundation Trust (RGN)	June 2017 (January 2016 – December 2016)
Central Manchester University Hospitals NHS Foundation Trust (RW3) University Hospital of South Manchester NHS Foundation Trust (RM2)	Manchester University NHS Foundation Trust (R0A)	December 2017 (July 2016 – June 2017)

## General queries

### **I have a question or comment about the SHMI. Who can I send this to?**

Please communicate your question(s) or comment(s) to the NHS Digital contact centre on 0300 303 5678 or alternatively email: [enquiries@nhsdigital.nhs.uk](mailto:enquiries@nhsdigital.nhs.uk) stating 'SHMI' in the subject line.