

Summary Hospital-level Mortality Indicator (SHMI)

Users and uses statement

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Contents

Introduction	3
SHMI resources	3
Users of the SHMI resources	4
Assessment of user needs	6

Introduction

The Summary Hospital-level Mortality Indicator (SHMI) compares the actual number of patients who die following hospitalisation at a trust with the number that would be expected to die on the basis of average England figures, given the characteristics of the patients treated there.

For any given number of expected deaths, a range of observed deaths is considered to be 'as expected'. If the observed number of deaths falls outside of this range, the trust in question is considered to have a higher or lower SHMI than expected.

The SHMI includes deaths which occurred in hospital or within 30 days of discharge and is calculated using Hospital Episode Statistics (HES) data linked to Office for National Statistics (ONS) death registrations data.

The SHMI is published by NHS Digital as a National Statistic on a quarterly basis, with each publication reporting on a 12-month period.

The purpose of the SHMI is to compare mortality outcomes for hospital trusts to the England average at a fixed point in time. The SHMI can be used by hospital trusts to compare their mortality outcomes to this national baseline. Regulators (for example, the Care Quality Commission) and commissioning organisations can also use the SHMI to investigate mortality outcomes for trusts. To support the interpretation of the SHMI, various contextual indicators are published alongside it.

The purpose of this statement is to describe:

- The different SHMI resources available
- The users of the SHMI resources
- The different ways in which the resources are used
- How we assess and respond to user needs

SHMI resources

A number of different SHMI resources are available to users. On the NHS Digital corporate website there is a [SHMI homepage](#) providing supporting information on the SHMI including interpretation guidance, frequently asked questions (FAQs), a publication timetable, guidance for users in NHS trusts, and this users and uses statement. There is also a [SHMI research and development webpage](#) which brings together reports and ad-hoc analysis related to the SHMI methodology.

There is a [webpage for each quarterly release](#) including a one page summary of the publication (available from the July 2015 publication onwards), which aims to provide a 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.

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](#).

A SHMI Extract Service is available to trusts that have completed an application process and obtained the relevant approvals. Following the quarterly publication, trusts who have registered for this service receive an extract of the record-level data which have been used to calculate their SHMI to allow them to carry out quality assurance and further analysis and investigations into their SHMI. Trusts are only provided with access to their own SHMI data. As part of this service, NHS Digital also provides trusts with Variable Life-Adjusted Display (VLAD) charts for some of the individual diagnosis groups which make up the SHMI. VLAD charts are a type of statistical process control chart which make a visual comparison between an expected outcome and its associated observed outcome. They allow the monitoring of trends in outcomes over time and can highlight the specific clinical areas which have the most impact on a trust's SHMI.

Users of the SHMI resources

The SHMI is primarily used by analysts, clinicians and managers in hospital trusts to compare their mortality outcomes to the national baseline. The Care Quality Commission also use SHMI data to support their monitoring of mortality outcomes and are provided with copies of the VLAD charts to support this.

There is a wide range of other users of the SHMI resources including the Department of Health (DH), NHS England, Clinical Commissioning Groups (CCGs), NHS Choices, other healthcare organisations (e.g. HealthWatch UK, Nuffield Trust, The King's Fund), information intermediaries, journalists, academics, researchers, students and the general public.

In order to ensure that the SHMI publication is accessible to as wide an audience as possible, it is important that a range of different resources are available. In 2014, the Office for National Statistics (ONS) carried out a piece of research on the different types of users accessing information from the ONS website. As part of this research, three distinct *user personas* were identified¹:

Inquiring citizen – these users require simply-worded, high-level and visually engaging summaries, charts and infographics.

Information forager – these users look for data to make practical, strategic business decisions and require high-level summaries, narratives and charts.

Expert analyst – these users tend to download data to carry out their own detailed analyses and to create bespoke reports.

Table 1 illustrates how the various SHMI resources align to the three different user personas.

¹ Further information on this research is available at <http://blog.ons.digital/2014/04/02/the-persona-touch/>.

Table 1: User persona and SHMI resources

User persona	SHMI resources	Rationale	Examples
Inquiring citizen e.g. patients, the public, the media	One page summary Interpretation guidance	The one page summary aims to provide a more user-friendly introduction to the SHMI. The main findings and key caveats are explained, using non-technical language as far as possible.	Journalists can use the one page summary along with the interpretation guidance to summarise the main findings from the publication.
Information forager e.g. DH analysts, CCGs	Annual report Trust level data Interpretation guidance SHMI FAQs Interactive data visualisation	SHMI data at trust level can be used to identify repeat outliers. The annual report contains more detailed information compared to the one page summary. For example, analysis using the SHMI contextual indicators is included to provide more context and to guide the interpretation of the summary measure.	In 2013, fourteen trusts were selected for inclusion in the Keogh Mortality Review ² using SHMI data along with data published by Doctor Foster Intelligence.
Expert analyst e.g. analysts in hospital trusts	Data downloads Indicator specifications Guidance for trusts SHMI Extract Service data	The SHMI and contextual indicator downloads allow users to carry out further analysis. For example, the diagnosis breakdown data can be used to determine which clinical areas have the most impact on the overall SHMI. The publication of the indicator specifications and SHMI model coefficients allow expert users to apply these to their locally held data e.g. to allow trusts to monitor their SHMI in real time.	Some trusts use the SHMI diagnosis breakdown data to identify specific clinical areas requiring further investigation and then lead clinicians from that area carry out in-depth reviews of patient case notes to identify any areas for improvement such as the introduction of 'care bundles' ³ for specific conditions.

² Further information on the Keogh Mortality Review is available at <http://www.nhs.uk/NHSEngland/bruce-keogh-review/Pages/published-reports.aspx>.

³ 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.

Assessment of user needs

Feedback is routinely requested as part of each SHMI release and can be provided via a number of different mechanisms. All feedback received is regularly reviewed by the Clinical Indicators Team:

- Via the NHS Digital website at <http://digital.nhs.uk/haveyoursay>
- Via the Clinical Indicators customer satisfaction survey at <http://bit.ly/CustomerSatisfactionSurveyClinicalIndicators>
- Via the NHS Digital general enquiries email enquiries@nhsdigital.nhs.uk
- Via the NHS Digital general enquiries telephone number 0300 303 5678

We are in the process of creating a SHMI user forum to supersede the SHMI Technical Working Group (TWG). This will have a wider focus compared to the TWG (which was largely concerned with the SHMI methodology) including consideration of user engagement and the presentation of the statistics. This forum will be developed in line with the wider NHS Digital user engagement strategy. Any users who would like to express an interest in joining this group should contact enquiries@nhsdigital.nhs.uk quoting 'SHMI user forum' in the subject line.

A methodology development log is maintained by NHS Digital on the [SHMI research and development webpage](#) in order to document issues raised on the methodology used to calculate the SHMI. These feed into the continuous review process for the SHMI.

We have worked with several trusts to help them to further understand their SHMI and are working to improve the information available to them in light of this work. We are also keen to understand more about how trusts make use of their SHMI data and are working to develop some case studies on this.

We also assess user needs through surveys. For example, following the publication of the first edition of the SHMI one page summary, a user feedback survey inviting comments on this new format was set up and 90 responses were received. The majority of respondents stated that the one page summary was a useful addition to the existing resources on this topic and so this format is now routinely published as part of the quarterly publication. Further information on this survey, including a report summarising the feedback received, is available at <http://digital.nhs.uk/shmi-development>.

The SHMI was first published in October 2011. A summary of some of the main developments to the publication which have been made in line with stakeholder feedback is provided in Table 2.

Table 2: Summary of main developments for the SHMI publication

Date	Development
October 2011	<ul style="list-style-type: none"> • First publication of SHMI data on the Indicator Portal
December 2011	<ul style="list-style-type: none"> • New contextual indicators on palliative care coding published
April 2012	<ul style="list-style-type: none"> • New contextual indicators on admission method and in and outside hospital deaths published
October 2012	<ul style="list-style-type: none"> • New contextual indicators on deprivation published
January 2013	<ul style="list-style-type: none"> • Supplementary analysis on repeat outliers published for the first time
May 2013	<ul style="list-style-type: none"> • Launch of SHMI Extract Service
July 2014	<ul style="list-style-type: none"> • Main findings, supplementary analysis on repeat outliers and background quality report combined into a single SHMI quarterly report
January 2015	<ul style="list-style-type: none"> • SHMI data broken down by trust and diagnosis group published for the first time • SHMI interpretation guidance published • SHMI data on Indicator Portal reorganised so that SHMI and contextual indicator data are available to download from a single page • Interactive SHMI funnel plot published
July 2015	<ul style="list-style-type: none"> • First edition of SHMI one page summary published • SHMI research and development webpage created
January 2016	<ul style="list-style-type: none"> • More detailed information on the quality assurance of the administrative data used in the calculation of the SHMI provided in the quarterly report
March 2016	<ul style="list-style-type: none"> • New contextual indicators on primary diagnosis coding and depth of coding published • Publication schedule amended to improve the timeliness of the data • Format of excel files improved to include key metadata and more informative column headings
June 2016	<ul style="list-style-type: none"> • Excel data files published on NHS Digital website in addition to the Indicator Portal
August 2016	<ul style="list-style-type: none"> • SHMI awarded National Statistics designation by the UK Statistics Authority
November 2016	<ul style="list-style-type: none"> • Guidance aimed at users in trusts published
December 2016	<ul style="list-style-type: none"> • Following consultation with users, moved to producing the detailed report on an annual rather than quarterly basis
August 2017	<ul style="list-style-type: none"> • First edition of the interactive data visualisation published