

Health Scrutiny Panel Meeting

Thursday, 25 January 2018

Dear Councillor

HEALTH SCRUTINY PANEL - THURSDAY, 25TH JANUARY, 2018

I am now able to enclose, for consideration at next Thursday, 25th January, 2018 meeting of the Health Scrutiny Panel, the following reports that were unavailable when the agenda was printed.

Agenda No	Item
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9	<u>Patient Mortality Rates (report to follow) (Pages 3 - 12)</u>
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[Dr Jonathan Odum, Medical Director, RWHT, to present report]

If you have any queries about this meeting, please contact the democratic support team:

Contact Earl Piggot-Smith
Tel 01902 551251
Email Earl.Piggot-Smith@wolverhampton.gov.uk
Address Scrutiny Office, Civic Centre, 1st floor, St Peter's Square,
Wolverhampton WV1 1RL

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Health Scrutiny Panel

25 01 2018

Report title	Hospital Mortality Statistics
Report of:	Dr Jonathan Odum
Portfolio	Medical Director, The Royal Wolverhampton NHS Trust

Recommendation(s) for action or decision:

The Health Scrutiny Panel is recommended to:

Note the report and background to the elevated standardised mortality rates at RWT and to acknowledge the investigation work undertaken, which indicates that the elevated mortality statistics are data driven and do not reflect quality of care or “avoidable” mortality at the Trust.

1.0 Introduction

1.1 The report provides an introduction to hospital mortality statistics published in England together with a brief analysis of the hospital mortality statistics for the Royal Wolverhampton NHS Trust (RWT). The National Guidance on Learning from Deaths is introduced alongside the implementation plan for the RWT.

2.0 Background

2.1 The comparison of mortality rates between hospitals has proven a controversial and difficult topic due to the nature of the statistical models developed and the inability of the various models by themselves to identify genuine avoidable mortality. Research undertaken in England has demonstrated that whilst the standardised mortality rates can be useful to indicate variation in data across

organisations, a more qualitative approach is needed in order to confidently identify cases where deaths may have been avoidable and to enable meaningful learning to be gained. Hogan and colleagues, 2015, confirmed the lack of statistical significance in associating higher than expected SMRs with avoidable mortality. The National Guidance on Learning from Deaths was published in 2017, requiring providers to employ a consistent methodology for reviewing deceased patients care in order to facilitate learning.

3.0. Introduction to Standardised Mortality Rates (SMRs)

The standardised mortality rate is a ratio calculated by dividing the observed number of deaths in an organisation by the number of “expected” deaths which is calculated by an agreed process of standardisation.

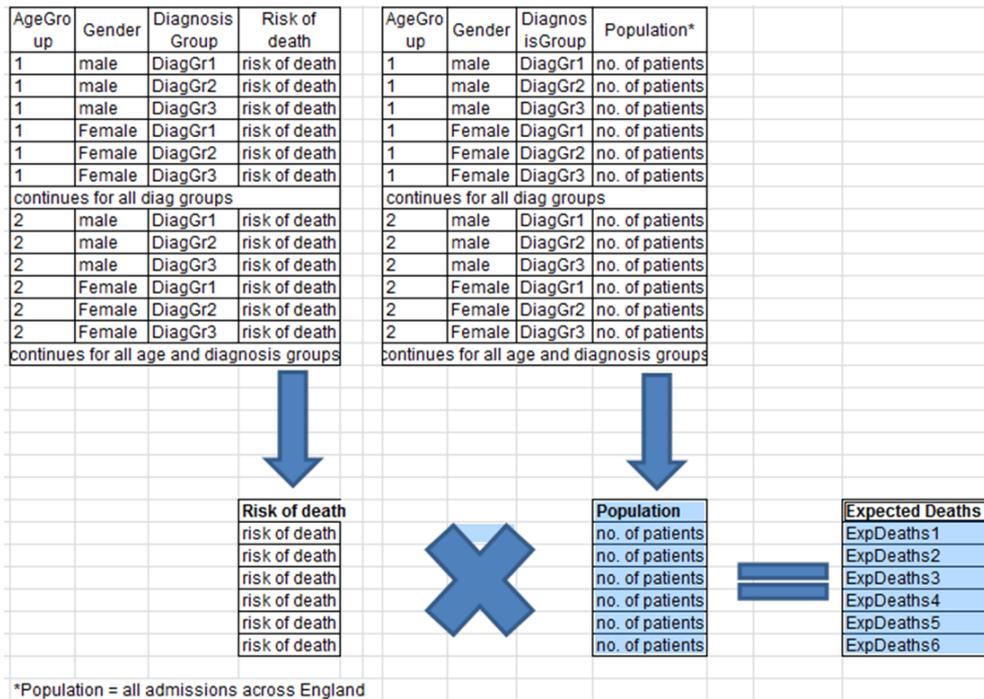
The expected number of deaths is calculated by adding the cumulative risk of patients dying during their admission for all “ordinary” admissions (which excludes day cases and regular attenders) for the period in question.

The risk is derived statistically through a “case mix” adjustment model, taking into account factors such as age, sex, method of admission, primary diagnosis and secondary diagnoses recorded on admission. In other words, outcomes for patients presenting to hospital with similar characteristics across England are compared and a risk of dying during that admission is calculated using a statistical model.

The risk is derived at diagnosis group level therefore recording and coding definitive diagnoses is critical. In addition, a Trust’s expected mortality is also dependent on what happens during a given time period across all Trusts in England for every diagnosis group.

The diagram below shows an example of how the risk is derived and translated into the expected mortality.

Figure 1: Risk calculation model (adapted from the HED methodology manual)



Total observed deaths	x 100 = SMR
Total expected deaths	

In essence, it is the statistically calculated expected mortality rate, which determines the outlier status of a provider Trust. This measure is often misunderstood and miscommunicated. It is important to recognise the fragility of the measure and the fact that it is not capable of indicating good or poor clinical care.

The model assumes very little variation between hospitals, which in practice is not the case. Any changes in a hospital's data driven by different models of care or changes in pathways can lead to the hospital's SMRs becoming an outlier, negative or positive. The measure is very sensitive to data therefore data quality is of utmost importance as is the lack of variation in data between hospitals.

The mortality indicator published in England is the Summary Hospital-level Mortality Indicator (SHMI), produced and published quarterly as a National Statistic by NHS Digital.

The SHMI reports on mortality at trust (provider) level across the NHS in 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 particular characteristics of the patients treated at that Trust. It covers all deaths reported of patients who were admitted to non-specialist acute trusts in England and who either die whilst in hospital or within 30 days of discharge. The expected number of deaths is calculated from statistical models derived to estimate the risk of mortality based on the characteristics of the patients

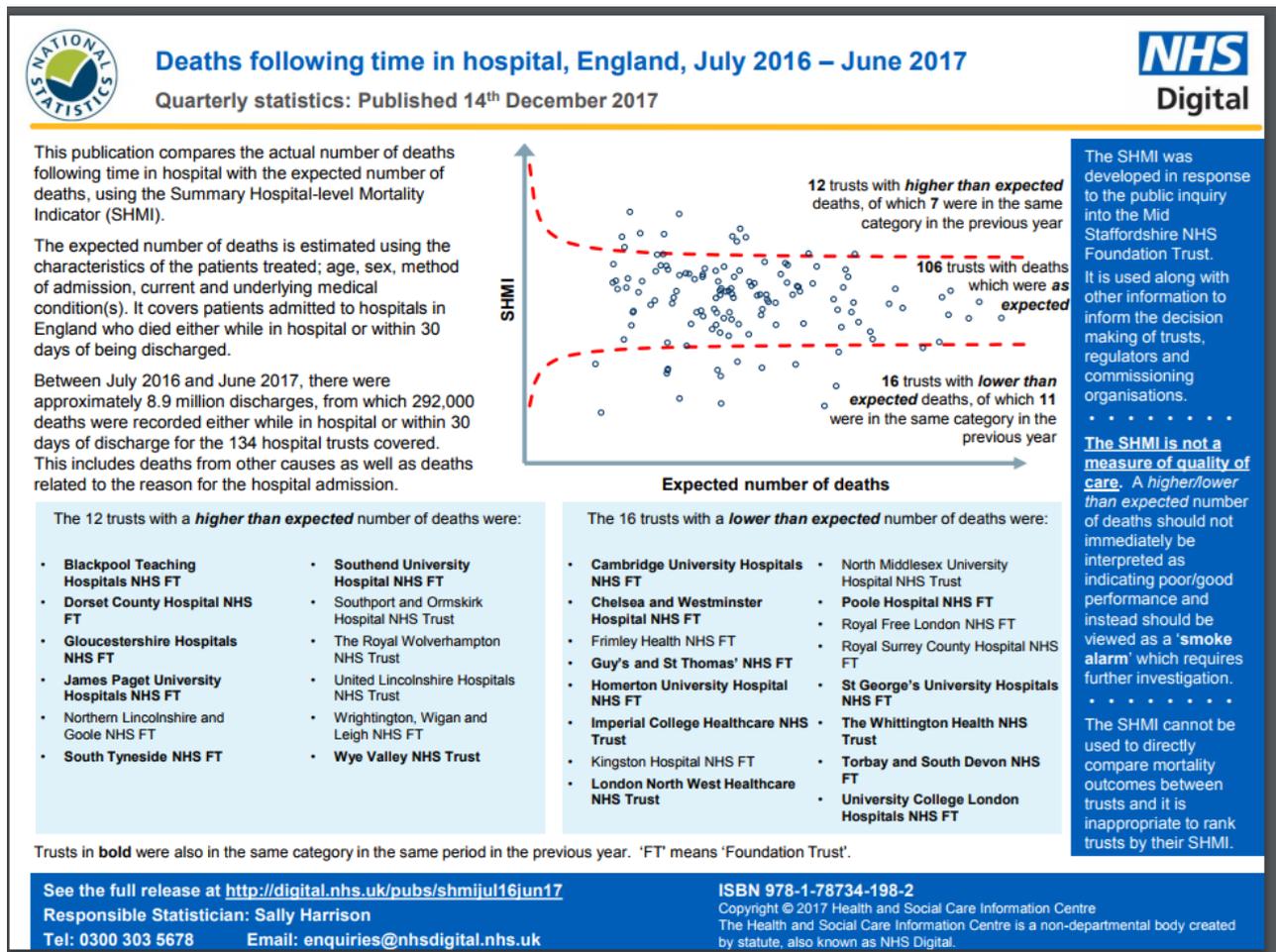
(including the condition the patient was admitted to hospital for, other underlying conditions the patient suffers from (recorded in the admission episode), age, gender and method of admission to hospital). The expected mortality is calculated using data from all admissions in the included category and not just that of patients who subsequently die.

To help users of the data understand the SHMI, trusts have been categorised into bandings indicating whether a trust's SHMI is “higher than expected”, “as expected” or “lower than expected”.

The SHMI is not a measure of quality of care. A higher than expected number of deaths should not be interpreted as indicating poor performance but should be viewed as a 'smoke alarm' which requires further investigation. Similarly, an 'as expected' or 'lower than expected' SHMI should not be interpreted as indicating satisfactory or good performance. The interpretation of higher than expected standardised mortality rates as “excess” or “avoidable” mortality is flawed but has potential to confusion in published information.

In simpler terms whilst a hospital's data might remain unchanged, if changes occur across England the standardised indicators will change because a trust's outcomes are compared with outcomes across acute trusts in England. The calculated risk model is heavily dependent on the primary and secondary diagnoses recorded and coded on admission. This is where practice varies between hospitals depending on different admission models employed, which can lead to significant variation in SMRs. Moreover there appears to be a significant difference between SMRs for providers in the South, mostly around London and providers in the Northern part of England. The cause for this apparent paradox is unclear.

Below is an example of the summary published in England by the HSCIC on a quarterly basis.



4.0 Brief analysis of SHMI for the Royal Wolverhampton NHS Trust (RWT)

The SMRs for RWT have increased from quarter 3 of 2015/16, coinciding with the implementation of the new admissions model following the opening of the new Emergency Department (ED). Whilst the number of deaths hasn't changed significantly, the "Physician A" (admission avoidance) assessment model in ED has meant that significantly fewer admissions of certain categories has been observed. At the same time in England, admissions for the same diagnoses had increased leading to a lower expected death rate.

RWT's data shows that whilst the actual mortality rates have remained stable, the expected death rate has decreased, and does not reflect the actual risk of the population admitted to hospital, with its' increased severity of illness, frailty and advanced age.

Our analysis, based on statistical data and on qualitative data from clinical audits, suggests that considering the profile of the admitted patients, such as increased admissions in the age band 75+, severity of illness together with frailty and comorbid conditions, the expected death rate should have increased year on year. Instead the

data show a decreasing expected death rate for RWT, suggesting the Trust is treating a population with higher survival expectancy than the national average, in contradiction with the actual patient profile at RWT.

RWT also has one of the highest rate of deaths occurring in hospital both regionally and nationally (the SHMI includes deaths occurring in hospital and within 30 days of discharge). This potentially highlights different arrangements in other health economies to avoid admission of certain groups of patients who otherwise die in hospital.

Crude mortality referred to in the report represents the unadjusted mortality calculated by dividing the number of observed deaths by the number of discharges, expressed as a percentage.

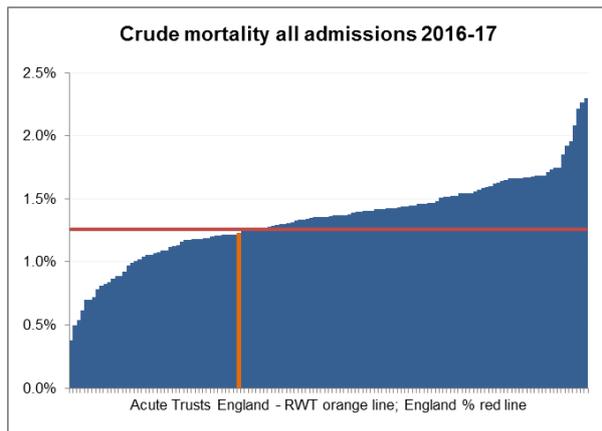
Historically, the SHMI for RWT has been within expected ranges and lower than the national benchmark prior to April 2015. From 2016-17 the Trust's published SHMI was classed as higher than expected at 115 and continued to be shown as higher than expected at the latest publication for July 2016 – June 2017. Table 1 below, shows the year on year figures for RWT and England.

Table 1: SHMI comparison RWT and England

Reporting period	SHMI RWT	RWT Crude death %	RWT Expected death %	England Crude death %	RWT No. discharges included in SHMI	RWT No. deaths SHMI	RWT No expected deaths SHMI
Apr14-Mar15	99	3.6%	3.6%	3.3%	66813	2372	2394
Apr15-Mar16	106	3.6%	3.4%	3.2%	69540	2528	2384
Apr16-Mar17	115	3.7%	3.2%	3.3%	69524	2572	2235
Jul16-Jun17	116	3.7%	3.2%	3.3%	68784	2566	2204

The expected mortality is calculated by summing the risk of dying during that admission for all admissions in the observed category. In 2015-16 and 2016-17 RWT has seen an overall increase in the admissions included in the SHMI calculations by almost 3000 admissions a year. The expected mortality however has decreased year on year, more pronounced in 2016-17. It is evident from these crude figures that RWT hasn't seen any significant increases in actual mortality and the reason for the higher than expected SHMI is the calculation of the expected mortality. If we look at mortality including all admissions, the Trust has had consistently one of the lowest crude rates in England, below England's rate decreasing from 1.2% to 1.1% in 2016-17 (figure 2).

Figure 2: Crude mortality England, 2016-17, all admissions



5.0 The National framework for learning from deaths

It is well known that the mortality statistics based on administrative data are not able to reflect quality of care in an organisation. Rather, they show variation in data.

Research in England particularly in 2015-2016, commissioned by the DoH, highlighted the need for a qualitative approach in assessing mortality in hospitals and enabling improvements in practice with an aim to eliminate avoidable mortality.

It was acknowledged that whilst most hospitals have implemented a system of reviewing deaths, there was variation in the methodology used.

The Royal College of Physicians (RCP) has been leading on the development of the National Mortality Case Record Review Programme, a standardised approach to mortality case record review for adult deaths in acute hospitals in England and Scotland. The method rolled out for reviewing deceased patients' care is called the Structured Judgement Review (SJR). In addition to providing a structured approach in reviewing deceased patients' care, guidance has been published to detail suggested approaches for clinical governance.

It is important to acknowledge that despite the mandate that Trusts will publish an avoidable mortality index, the RCP makes it clear that the SJR methodology is not designed for this. Moreover comparison between providers cannot be done accurately. It is highlighted both in the RCP guidance and in the Hogan, 2015 study that a judgement about avoidability of death is rarely clear-cut and even senior experienced clinicians often disagree about individual cases. The main aim of undertaking the SJR process is for clinicians to learn from aspects of care that could have been improved even when death was inevitable and to identify areas of good practice as well.

6.0 RWT's approach

The RWT has been developing for a number of years a mortality work stream with a focus both on understanding mortality data and on providing assurance (or otherwise) in relation to the clinical care provided to deceased patients. The Trust has a multidisciplinary Mortality Review Group, which oversees the mortality work with senior clinical representation from all specialties. In addition an executive mortality governance group meets regularly to oversee the work and take assurance particularly in relation to quality of care.

6.1. Mortality statistics

It is recognised that the mortality statistics, whilst not indicating poor care, may have an impact on the organisation's reputation and can trigger alarms with the regulators. The Trust has undertaken extensive internal analyses of deceased patients and also commissioned external audits in order to identify the cause(s) of the raised SHMI/SMRs, and to review quality of care delivered within the organisation to patients who subsequently die.

The opinion of the internal and external reviews is that the higher than expected SMRs are data driven, mostly due to changes in the admissions model. If the Trust admitted more patients who could be treated with ambulatory pathways the SMR would be lower.

Some areas of data quality were also identified and work is currently prioritised in order to reduce variation in data. An important aspect of this is the accurate recording and coding of the primary and secondary diagnoses on admission, for which the close collaboration between clinical coders and doctors is critical. It is anticipated that with the roll out of the current initiatives to improve data quality a positive results will be seen in the SMRs, by having a more accurate expected mortality.

6.2. Review of care provided to deceased patients

The Trust had previously implemented an internal method to review the care received by deceased patients. Additionally diagnosis led audits have been undertaken in order to identify learning opportunities and provide assurance in relation to the quality of clinical care. The mortality review policy was amended in 2017 to align the internal processes with the national requirements. The Trust was an early adopter of the SJR methodology developed by the RCP and a number of clinicians were trained in using this methodology for reviewing deceased cases. A roll out of the training to all specialties continues.

The main principles of the revised policy are as follows:

1. All deaths will continue to have an initial consultant led mortality review (peer review within directorate) called stage 1 review

2. A stage 2 review will be implemented for the cohorts of deceased patients listed below. This will be a review undertaken by two consultants (peer review across the division) with involvement from multidisciplinary professionals as appropriate. During this stage an assessment will be made as to whether the death could have been avoided had care provided been different.
3. Criteria for Stage 2 reviews:
 - a. Where problems in care were highlighted during the stage 1 review; an overall care score of 1 and 2
 - b. Where patients had a learning disability or severe mental illness
 - c. Where concerns were raised about the quality of care provision by staff, family or carers
 - d. Where a serious incident was identified and/ or an investigation was instigated

In addition, the Trust is considering the early introduction of the Medical Examiner, who would play a key role in the undertaking of the stage 1 mortality review.

Alongside internal mortality reviews, external audits were also undertaken for assurance. All reviews to date, internal and external, have not identified systemic failures and issues with care that would result in excess mortality at the Trust. Areas for improvement were identified and plans of action are in various stages of development.

References

Hogan et al. 2015, *Avoidability of hospital deaths and association with hospital-wide mortality ratios: retrospective case record review and regression analysis* BMJ. 351:h3239 doi: 10.1136/bmj.h3239

Hutchinson et al. 2013, *A structured judgement method to enhance mortality case note review: development and evaluation*. BMJ Quality and Safety 2013 doi:10.1136/bmjqs-2013-001839.

Summary Hospital-level Mortality Indicator (SHMI) – full methodology and data publications available at <https://www.digital.nhs.uk/SHMI>

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