CHKS

Insight for better healthcare

Insight report

Six things to know about the Summary Hospital-level Mortality Indicator (SHMI)

January 2015

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1. Introduction

Following the recommendations from the national review of the Hospital Standardised Mortality Ratio (HSMR)[1], the Department of Health commissioned the Health and Social Care Information Centre (HSCIC) to produce and publish the Summary Hospital-level Mortality Indicator (SHMI).

SHMI reports on mortality at trust level across the NHS in England using a standard and transparent methodology. It is produced and published quarterly as an official statistic by the Health and Social Care Information Centre (HSCIC).

The SHMI is a ratio of the observed number of deaths to the expected number of deaths for a trust. The observed number of deaths is the total number of finished provider spells for the trust which resulted in a death either in-hospital, or within 30 days (inclusive) of discharge from the trust. If the patient is treated by another trust within 30 days of discharge, their death is attributed to the last non-specialist acute trust to treat them.

The expected number of deaths is calculated from a model that adjusts for the mix of patients in terms of case-mix, age, gender, admission method, year index, Charlson Comorbidity Index and diagnosis grouping.

As with any indicator based on a ratio, the value of the SHMI can be affected by changes either in the numerator (in this case the observed number of deaths) or the denominator (the expected number of deaths). The expected number of deaths is calculated using the experience (or performance) of all the other acute hospital trusts in England. Thus, for an individual trust, the value of the SHMI can be adversely affected not only by the trust's performance but also by whether its practice differs from trusts generally. The following six sections highlight where differences in practice (rather than outcomes) can affect SHMI values.

2. Six factors that affect the SHMI

1 Ambulatory care

Ambulatory care is patient-centred care provided outside the acute trust setting. Ambulatory Care Sensitive Conditons (ACSCs) are those conditions where effective management and treatment should prevent admission to hospital. They can be classified as: chronic conditions, where effective care can prevent flare-ups; acute conditions, where early intervention can prevent more serious progression; and preventable conditions, where immunisation and other interventions can prevent illness.

Reducing emergency hospital admissions for ambulatory care-sensitive conditions (ACSCs) was listed as a key indicator for transforming care for people with long-term conditions in the Operating Framework for the NHS in England 2012/13. Many trusts have been working to convert emergency admissions into same day emergency attendances, reducing avoidable admissions.

However, this is by no means common practice across England and trusts that put time and effort into reducing admissions for ACSCs should be aware that it will inevitably have an impact on the SHMI. This is because patients who are not admitted as emergencies will be effectively excluded from the denominator. The risk score of these patients will not be included in the calculation. All patients have a risk in the model so removing any survivors will cause a change to the SHMI.

There is less of an incentive to reduce emergency hospital admissions for ACSCs in some trusts because treating these patients as outpatients and can have an adverse impact on the SHMI. These trusts are aware that the way they manage and record activity has an impact on this mortality measure.

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2 Diagnosis within the first two episodes of care

Each provider spell consists of one or more episodes of care. It is increasingly common for patients to have more than two episodes of care within a given spell, especially when they are emergency medical admissions. The SHMI model currently looks at episodes 1 and 2 of clinical care to determine the diagnosis group. If the first episode is a sign or symptom then it looks to the second episode for a diagnosis. If this too is a sign or symptom then it reverts back to the first episode.

Take the example of a patient who has been admitted for chest pain just before 5pm on a weekday. An echocardiogram and Troponin has been requested and in the meantime the first admitting doctor leaves the shift and another arrives. The patient is seen by the newly-arrived doctor, but nothing much has changed in the absence of the results so the diagnosis is still non-specific chest pain. The result is that diagnosis recorded in episodes one and two and therefore for the SHMI calculation is chest pain and the risk of death assigned on that basis.

Once the results are known a cardiologist assesses the patient and confirms an acute myocardial infarction (MI). This will have increased the risk associated with this patient, but this will not have been recorded in the first two episodes and the SHMI risk will not have changed. This means the 'expected deaths' in the denominator will be understated.

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The situation can arise in other circumstances (such as pneumonias) where diagnosis on admission carries a lower risk than the later diagnosis based on test or scan results.

Trusts should therefore try to assign the correct diagnosis category in episode 1 (or episode 2 if episode 1 is a sign or symptom). Primary diagnosis must be as accurate as possible detailing the main condition the patient is being treated for and within this episode all the co-morbidities relevant to that patient's health need to be recorded. When looking at SHMI model, having detailed information recorded in episode 3 will not be used.

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3 End of life care

SHMI counts actual deaths up to 30 days after discharge. If a patient is in hospital for 100 days and dies up to 30 days after discharge this is included in the SHMI as is a patient in hospital for a zero length stay dying up to 30 days post discharge.

Some trusts have community beds or rehabilitation centres, whereas in other regions there will be good nursing home and hospice service provision within the community. In some areas, trusts will send patients home to die with agreement from family.

These regional variations will inevitably have an impact on the SHMI (this time by altering observed deaths in the numerator) and trusts should be aware of the impact and include in discussion with commissioners. Good practice is to respect patient's wishes on place of death which in some cases may well be the hospital.

There are differences in rates of in-hospital deaths across the country and even those areas with high nursing home provision may experience higher in hospital mortality due to risk-averse nursing homes.

4 Depth of coding

Increasing depth of coding ensures detailed information about the patient is captured and the trust is paid for relevant activity. It is important to ensure all co-morbidities are accurately recorded where applicable in the early episodes of the spell. Increasing the depth of coding within the Charlson co-morbidity condition groups will increase the risk associated with a given patient and therefore have an impact on the SHMI.

There are three Charlson bands and 17 condition category groups with respective weights applied to place the cases into each Charlson band.

Dementia is one of the Charlson condition category groups and research by CHKS has shown that it is being under recorded. In a study of all hospital admissions for people aged over 45 between 2010 and 2011, CHKS found 3.5 per cent of all patients had a diagnosis of dementia recorded for their latest hospital spell, yet further investigation into previous admission records uncovered around 30 per cent of patients actually had dementia, but it was not recorded in the most recent admission records.

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5 Deprivation

The SHMI model does not adjust for deprivation. This means trusts in areas where the Standardised Mortality Ratio (SMR) is higher than average because of factors relating to lifestyle and other socio-economic influences need to assess the impact this might have on the SHMI.

The SMR compares the observed number of deaths in a population with the expected number of deaths if age-specific death rates were the same as a standard population. It is expressed as a ratio of observed to expected deaths, multiplied by 100. In 2011, the North East had the highest SMR among the regions of England with mortality levels 12 percent above the national level. In contrast, mortality levels were lowest in London and the South East (7 percent below the national level).

The local authority in England with the highest SMR was Manchester (32 percent above the national level) while South Cambridgeshire had the lowest (26 percent below the national level).

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6 Acute Myocardial Infarction (AMI)

CHKS has reviewed deaths attributed to acute myocardial infarction (AMI) and found they have remained constant over last two years. However the number of admissions for people with AMI has increased from 5,500 to 6,500 per month. This has effectively reduced the risk of dying from AMI.

It is possible that some trusts have changed their recording of non-specific chest pain to AMI, thereby increasing the number of patients with AMI without a corresponding increase in deaths. Trusts should always code as accurately as possible and should review patient notes where chest pain/AMI is recorded to ensure coding is a complete record of diagnosis.

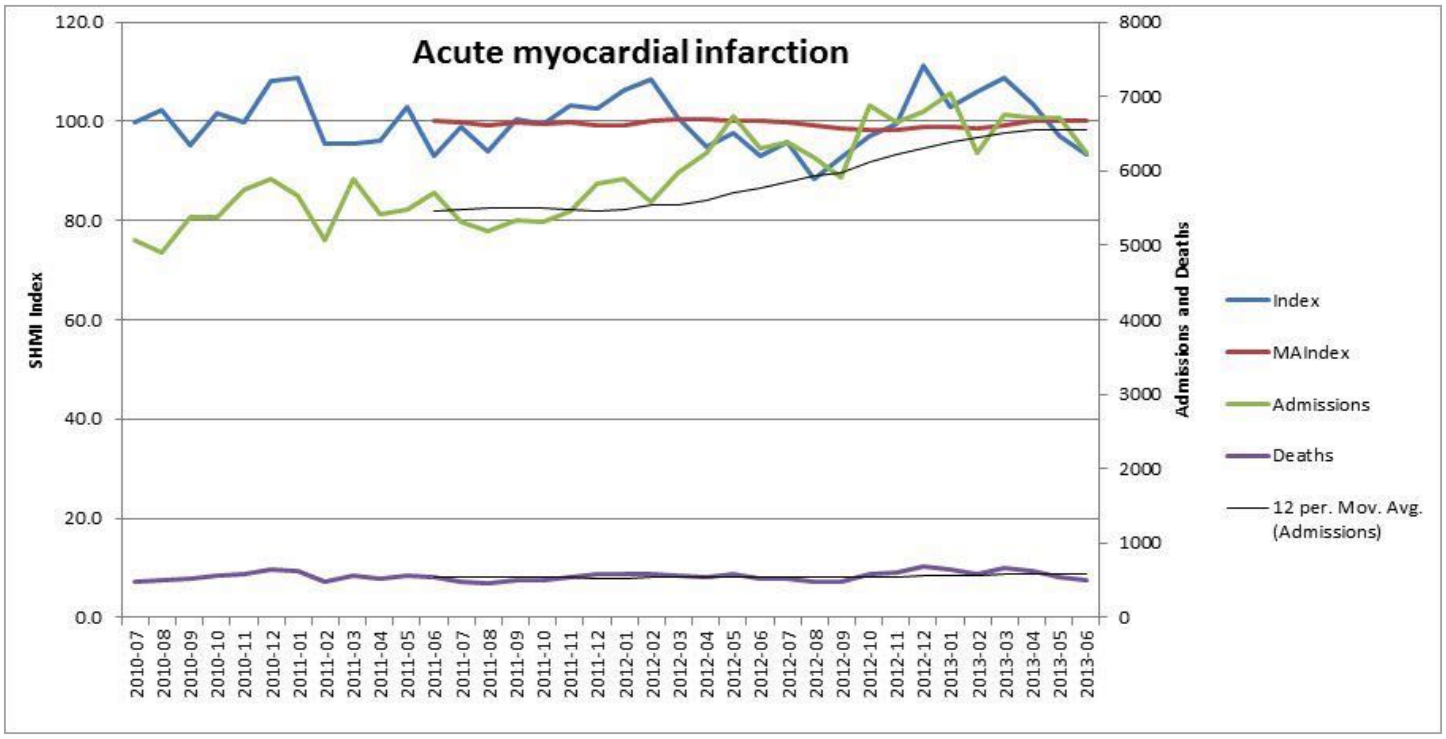

Chart shows acute myocardial infarction, admissions and deaths

Conclusion

"The SHMI can be used as a starting point in identifying potentially higher than expected mortality rates. It should also be an essential part of a wider quality assurance process where the aim is to focus on lessons learnt and spread good practice across the organisation. However, it is not a stand-alone measure and needs to be used in conjunction with other indicators covering safety, quality and performance."

References:

1. **National Review of the Hospital Standardised Mortality Ratio**
https://www.gov.uk/government/publications/report-and-consensus-statement-from-the-steering-group-for-the-national-review-of-the-hospital-standardised-mortality-ratio

To find out more, please contact us:

T: + 44 (0)1789 761600
E: info@chks.co.uk or visit **www.chks.co.uk**