

Towards public reporting of standardised hospital mortality in Australia

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Background information

The National Health Performance Authority provides nationally consistent, locally relevant and comparable information about Australia's health system to inform consumers, empower clinicians and service providers to drive improvements, and increase transparency and accountability. The Performance Authority's work is guided by a Performance and Accountability Framework that lists nationally agreed performance indicators, including in-hospital mortality.¹

This paper is an update on the progress of work that began in late 2013 with the aim of publicly reporting in-hospital mortality indicators. A succession of difficult methodological issues have been encountered which, taken together, have led the Performance Authority to take the position that public reporting of these indicators would not be meaningful or helpful at this time. While work is continuing in an effort to find solutions to these issues, this paper summarises the achievements to date and the likely steps that should be undertaken from this point, with the ultimate goal of ensuring as a result these indicators can be reported publicly.

The Performance and Accountability Framework includes the following hospital mortality indicators:

1. Hospital Standardised Mortality Ratio (HSMR)
2. 'In hospital mortality rates' (also called condition-specific measures) for:
 - Acute myocardial infarction (AMI)
 - Stroke
 - Fractured neck of femur (also called hip fracture surgery)
 - Pneumonia
 - Heart failure
3. Deaths in low-mortality Diagnostic Related Groups (DRGs).



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The Performance Authority has, to date, only undertaken work relating to HSMR and condition-specific measures. In-hospital mortality ratios for heart failure was not reviewed as it was found in early work by the Australian Commission on Safety and Quality in Health Care (ACSQHC) to be an unsuitable indicator for monitoring quality and safety (and by implication for performance measurement and public reporting) in Australian hospitals.

Why measure and report in-hospital mortality?

Measuring the numbers of people who die in hospital is an important part of monitoring safety and quality in hospitals.

As hospitals treat large numbers of sick people, some of whom will unfortunately die even after receiving the best possible health care, the challenge lies in devising useful measures that can help indicate whether more deaths have occurred in particular hospitals than would ordinarily be expected. Statistical methods – called mortality ratios – have been developed that allow hospitals to be compared fairly, taking into account the different numbers and types of patients they treat, including the number of patients receiving palliative care, who are expected to be at the end of their life.

Like reports of other safety and quality indicators – such as waiting times or healthcare-associated infections – public reporting of in-hospital mortality makes the health system more accountable. It also helps health system managers and clinical leaders identify problems and make improvements to the safety and quality of health care in their hospital. Importantly, such measures are only ever a ‘flag’ or ‘signal’ that there may be quality and safety issues at a hospital that warrant further investigation. In some cases, an investigation may conclude that an apparently higher mortality ratio has in fact been caused by factors such as changes in patient mix, rather than deficiencies in care.

Many Australian hospitals have been using internal hospital mortality data for several years² and are using the results to improve their services as part of the standard cycle of ‘report–review–act’. As well as improving accountability, another strength of national public reporting is that it allows a larger number of hospitals across Australia to compare their mortality ratios with a national figure. By doing this, they can see whether they have more deaths than expected, fewer deaths, or whether they are within a range that is considered to be not significantly different than expected relative to other hospitals.

Experience from other countries clearly indicates that making information of this kind publicly available can accelerate the speed of improvements within hospitals.^{3,4} Extending this type of transparency to hospital mortality measures would give all Australians access to information that allows them to know more about the performance of their local hospitals and to compare them fairly against other similar hospitals.

What has been the international experience with these measures?

Public reporting in other countries has shown that risk of mortality varies across hospitals even after accounting for differences in the types of patients and services provided. Countries such as the USA, UK, Scotland, Canada and the Netherlands have had access to nationally consistent hospital mortality data for many years, which has allowed them to publicly report these measures for the past decade, and in some countries even longer.

In countries such as the UK and Canada, the introduction of public reporting has generated substantial media attention.^{5,6,7} This type of reporting can, however, be controversial. Some people argue that hospital mortality measures don’t capture the full complexity of safety and quality issues that face patients and hospitals, and that there is limited value in reporting them.^{8,9,10}



Others accept these limitations and consider that media and wider public attention create a powerful incentive to drive scrutiny and improvements where those are needed, and see it as a critical part of a health system's safety and quality framework.^{11,12}

Our progress to date

A new Australian model for measuring in-hospital mortality

In late 2013, the Performance Authority in partnership with Flinders University began a process of reviewing one type of hospital mortality measure, the Hospital Standardised Mortality Ratio (HSMR). This followed work undertaken by Flinders University and the Australian Institute of Health and Welfare in 2009¹³ to develop this measure for the Australian context, building on work by experts from the Dr Foster Unit at Imperial College, London.¹⁴

The work by Flinders and the AIHW was incorporated into a suite of measures (the core hospital-based outcome indicators – CHBOIs) by the Australian Commission on Safety and Quality in Health Care, which were endorsed by ministers in 2009. These measures are used by state and territory health system managers, private hospitals, and private hospital groups as part of ongoing internal processes to identify problems and make improvements to the safety and quality of health care in their hospitals.

One of the major challenges faced by state and territory health system managers when using the CHBOI HSMR is that it provides just one overall measure for a hospital, and therefore that it has the disadvantage that it cannot be disaggregated – that is, it cannot be broken down into its constituent clinical parts. It is therefore sometimes viewed as something of a 'black box' – a single number that offers no insight regarding the types of patients most at risk in a particular hospital.

Internationally, there have been advances since 2009 in hospital mortality methodology which allowed the diagnoses included in the HSMR to be explored more easily. Accordingly, the Performance Authority and Flinders University developed the 'Australian Composite Model' (ACM) between 2013 and 2015 to calculate HSMRs and, additionally, standardised mortality ratios for each of the 70 diagnostic conditions which account for 80% of deaths in Australian public and private hospitals.

The new ACM represents a significant methodological improvement in the calculation of HSMRs. The main advantage of the ACM is that it allows hospital system managers and clinicians to more easily 'drill down' into HSMR mortality outcomes for each hospital to compare each institution's performance in relation to all hospitals nationally. This can be done in two ways: one, on the basis of overall relative risk of mortality (that is, HSMR), and secondly, on the risk of mortality for each of the 70 diagnostic conditions. The resultant specific mortality ratio outcomes for each diagnostic group can therefore be reviewed in detail. This enables interrogation at the local level to identify the types of patients most at risk.

A major departure in the ACM in its first iteration is that patients who were coded as receiving palliative care have been included, whereas in previous HSMR models in Australia they were excluded. This decision was reached due to the variation between states and territories in the coding of palliative care patients noted below. Including palliative care patients can work as a temporary solution to overcome the current inconsistencies in data, in turn allowing fairer comparison than would be possible with existing methodologies. Once these data issues are resolved, palliative care patients can be excluded.



What challenges have we encountered in Australia?

To ensure that a standardised mortality ratio for a hospital is valid and can be used by patients to understand the performance of their local health care organisations, it is important that the data used to calculate ratios are complete, accurate and nationally consistent across all hospitals reported.

Initial investigation by the Performance Authority, informed by technical and clinical experts, revealed variation in some aspects of the way hospitals record information about patients and procedures (known as coding). The reasons for this variation include, for example, differences in health information systems between some states and varying interpretations of national coding standards. Importantly, the Performance Authority has determined that this variation in the consistency of some data can have a substantial effect on a hospital's standardised mortality ratio. Issues the Performance Authority encountered and the potential solutions are discussed below.

1. Variation in hospital admission policies

In some states and territories, patients who attend emergency departments (including those who die) are recorded as admitted patients, while in others these patients are recorded in a different dataset for emergency department patients only. Different practices can distort results between hospitals and make fair comparisons problematic. To address this variation, administrative guidelines around admission coding require review by the relevant national coding and classification committees.

States and territories that have these administrative practices resubmitted data to the Performance Authority after removing these emergency department admissions, thus creating a nationally comparable dataset. While this allows a 'work-around', it also means that the Performance Authority holds a customised dataset that is different to that held by national agencies such as the Australian Institute of Health and Welfare (AIHW). Ideally, administrative practices around admission to hospital should be aligned across Australia. The AIHW has commenced a scoping project to develop a national admissions policy framework which will begin to address these issues.

2. Variation in palliative care coding

Palliative (or 'end-of-life') care is health care provided to people who have a progressing illness that will lead to death, and for whom pain management and maximising remaining quality of life, rather than cure, have become the main treatment goals. Palliative care patients have a greater likelihood of death than other types of patients. Decisions on whether to include or exclude palliative patients therefore have a material impact on hospital mortality measures. The Performance Authority found extensive variation between states and territories (and the hospitals in each) in the way that palliative care is coded.

To address this variation, palliative care coding requires review by the relevant national coding and classification committees. The Performance Authority plans to fund work in 2015–16 to investigate the appropriate identification of patients receiving palliative care in national administrative hospital data-sets. The Performance Authority has also notified the relevant national information standards committees.



3. Variation in transfer practices

There is also widespread variation across states and territories in the models of care around inter-hospital transfer of patients, in particular for conditions such as acute myocardial infarction (heart attack), hip fracture surgery and stroke.

Hospitals that have a high number of transfers to other hospitals of patients who subsequently die could 'dilute' their mortality ratio compared to hospitals who receive these patients. This is because these transferring hospitals add the patients to their admitted patient numbers while the deaths are recorded elsewhere – in the hospitals where the deaths later occur. Similarly, hospitals that receive a lot of patients from other hospitals who die after arrival could have higher mortality ratios, even though there might not be any meaningful difference in the quality of care provided.

To overcome these issues it is important to identify the transfer of patients between hospitals as well as the outcomes of patients that are discharged from hospital. This can be done by linking hospital records of patients whose episode of care takes them through several hospitals so that the entire episode of care is captured. Although a number of jurisdictions are already able to link these episodes of care, current national hospital data cannot easily be linked to track the transfer of patients between hospitals.

Further linking of hospital records to death registers would allow measurement of mortality that occurs up to 30 days after discharge from hospital. This method has been used successfully in New South Wales¹⁵ and has potential to be implemented across Australia, but would require substantial amounts of further work.

The way forward

Due to the need for more work in Australia to ensure more nationally consistent data, the Performance Authority is currently unable to publicly report in-hospital mortality ratios in a way that supports fair comparisons. In the meantime, the Performance Authority is working with states and territories using their internal mortality results to improve the utility of the data.

Substantial challenges remain to be resolved, especially with regard to the national consistency in classification and coding in relation to admission and palliative care. Resolving them will involve a concerted effort by agencies such as the Performance Authority, the ACSQHC and the AIHW working with national committees responsible for coding standards, and also with state and territory system managers to align coding practices with national standards. This process has commenced.

As soon as there is more nationally consistent data in the areas identified through this project, Australia now has a new approach that can be used to calculate HSMRs and risk of mortality for each of 70 diagnostic conditions.

Australia is following several other countries in reporting on standardised hospital mortality, which allows us to learn from their experience. The Performance Authority seeks to avoid the controversy seen overseas and maximise potential for this work to drive improvements, which is the object of the exercise.

It is paramount that the underlying data on which these measures are based are robust, thus allowing fair and defensible conclusions about the safety and quality of care in each of our hospitals. These measures must be based on consistent coding practices that accurately reflect the care provided to patients in Australian hospitals.



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Questions and comments are welcome:

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