What is a Hospital Standardised Mortality Ratio?

A Hospital Standardised Mortality Ratio (HSMR) is a measure of mortality adjusted to take account of some of the factors known to affect the underlying risk of death.

The HSMR used in Scotland is based on all Scottish acute inpatient and daycase patients admitted to all specialties in hospital. The calculation takes account of patients who died within 30 days from admission. It includes deaths that occurred in the community as well as those occurring in-hospital.

How is HSMR calculated in Scotland?

For a standard population (Scotland) during a three-year baseline period, the risk of dying for particular patient subgroups (e.g., age, sex, diagnosis, type of admission, number and severity of illness, etc.) is calculated.

This risk is then applied to the corresponding subgroups in different hospitals to calculate how many deaths would be predicted to occur in that hospital if the standard level of risk was applied.

This predicted figure is then compared with the actual observed number of deaths that did occur within the hospital to give the standardised ratio.

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\text{HSMR} = \frac{\text{Observed Deaths}}{\text{Predicted Deaths}}
\]

Example: If, using national data, we predicted 500 hospital deaths in Hospital Y, and the observed number of deaths was 450, then this would give Hospital Y an HSMR of 450 / 500, which equals 0.90.
How do I interpret HSMR results?

The HSMR value for NHSScotland for the baseline period is 1.00.

This allows hospital values to be compared to the baseline period for Scotland.

- If an HSMR value is less than one: This means the number of deaths within 30 days of admission for a hospital is fewer than predicted.

- If an HSMR value is greater than one: This means the number of deaths within 30 days for a hospital is more than predicted.

*Example: If a hospital HSMR is 0.90, this means it has 10% fewer deaths than predicted.*

If the number of deaths is more than predicted this does not necessarily mean that these were avoidable deaths (ie that they should not have happened), or that they were unexpected, or attributable to failings in the quality of care.

Similarly a lower than predicted HSMR should not immediately be interpreted as indicating good performance. The HSMR requires careful interpretation and should be used in conjunction with other indicators and information from other sources.

A single apparently high value of the HSMR is not sufficient evidence on which to conclude that a poor quality or unsafe service is being provided. It should instead be regarded as a trigger for further investigations.
How is HSMR used?

NHS Boards use these statistics to reflect on the quality of patient care, monitor local hospital mortality and report on their progress.

The Scottish Government use these statistics to monitor change in hospital mortality over time; inform policy decision making; respond to parliamentary and public business.

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