Prioritising healthcare systems improvement

The Challenge

The Australian Council on Healthcare Standards routinely collates clinical indicator data (measures of performance in a clinical setting) in six-month periods across multiple healthcare organisations (HCOs) and generates individual reports which are provided to HCOs, along with de-identified reports which are provided to accreditation surveyors, national medical colleges and government bodies to assist with policy and system improvement.

The reporting of clinical indicators (CIs) in HCOs aims to detect suboptimal care either in structure, process or outcome, and can be treated as a tool to assess whether a standard in patient care is being met. HCOs select CIs to report upon that are relevant to them at that time and where there is a need within that clinical area; for example, high cost procedures, high patient thoroughfare, or a new clinical area to that HCO. For each CI, an HCO reports the number of cases (e.g., patients) at risk of an event of interest (e.g., adverse event) and the number of cases that incur the event of interest.

1. With so many and varied indicators, how may comparisons between HCOs and specialties best be made to assist policy surrounding prioritisation of resources and system improvement? Traditional approaches focusing on individual HCOs are sub-optimal and flawed, failing to address system issues.
2. Small data traditionally results in poor estimates. Sites reporting upon small numbers of patients or procedures in any given six-month period, will produce more extreme estimates than is truly the case. E.g., for an HCO having only 3 cases at risk of a particular event, the estimated proportion having the event of interest may only be 0, 33%, 66%, 100%...a difference of 1 event results in a change of some 33% in the estimated rate. How can we better estimate what is truly occurring, accounting for such issues surrounding small data and sampling variation?

The Solution

A measure was developed that uses the data arising from the *system* of HCOs, rather than simply focusing on each individual HCO, and reflects both the variation within and between sites as well as the specialty's volume (as a measure of system impact) for determining potential system gains.

Bayesian hierarchical models utilising information from the system of HCOs enable better estimates for each HCO, addressing variation due to sampling and issues surrounding small samples, and precluding overestimation of potential system gains.

The Benefits

Accounting for sampling variation through Bayesian hierarchical models reduces HCOs' concerns of being misrepresented as extreme as a consequence of a small sample size in a given period, or overestimating potential system gains. The latter enables a baseline comparison among the many specialties to consider the relative potential for improvement, taking consideration of the volume and hence impact (reduction in errors or costs) on the system. The approach shifts the focus towards the potential benefits from system-wide improvements of clinical areas rather than simply comparing individual HCO performances within a clinical area which occurs with other traditional approaches.

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