

Reviewer's report

Title: Patient Complexity in Quality Comparisons for Glycemic Control: an Observational Study

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Reviewer: John Piette

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General

Overall, this is a well written, straight-forward analysis comparing risk adjusted to non-risk adjusted facility rankings for diabetes patients in VA. The concept of risk adjustment and the methods used here are well-established. Although the application to A1c is somewhat novel, the finding that risk adjustment changes rankings is not surprising. Given that, the authors should present a more nuanced analysis with careful consideration of what adjusting for "complexity" means, beyond simply adjusting for patients' likelihood of having a bad outcome.

In the current paper, the authors conflate conceptually different domains in their risk adjustment model:

1- Some patient characteristics make standard A1c thresholds less appropriate and even counter-productive to quality patient care. Specifically, very low A1c targets are probably not appropriate for patients with advanced age and/or a comorbid clinical problem that dominates their treatment (e.g., lung cancer or advanced heart failure). Clearly these patient characteristics should be taken into account when comparing quality across facilities, so that facilities with greater numbers of such patients are not unfairly penalized for their 'worse' glycemic control or are incentivized to push these patients to more aggressive targets.

2. Other characteristics such as patients' marital status do not necessarily justify a more relaxed outcome target, although they can make it more difficult to reach that goal. By adjusting away differences across facilities due to differential distributions of these sociodemographic risk factors, one may be 'throwing in the towel' on socioeconomically vulnerable patients rather than requiring health systems to step up to the challenge of providing them with patient-centered, chronic illness care. Should we relax a facility's A1c targets simply because more of their patients are using insulin? The answer is unclear but the question is critically important and should be carried through this paper.

With regard to patients' comorbid clinical illnesses, the current analyses provide an inadequate treatment of these cofactors by using a simple, unidimensional, unweighted score across 30 conditions. The ultimate rankings in the paper's analyses (and the fact that those change with risk adjustment) are less important than how/why rankings would change if different types of complexity were considered. For example, how much difference would it make if serious mental illnesses (e.g., schizophrenia or dementia) were added to a risk adjustment model? Do 'simple' comorbid conditions such as HTN and hyperlipidemia affect risk-adjusted scores? *Should* these CVD risk factors be adjusted for in a performance monitoring system aimed at improving diabetes care? By breaking the comorbidity count into meaningful, separate clinical domains, the authors would be much better positioned to say something important about how clinical complexity does and should affect the way policy-makers think about disease-specific, outcome-based quality indicators.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The authors should include at minimum two sets of analyses: (a) risk-adjusted analyses using a more comprehensive set of risk factors, and (b) analyses using a more minimalist set of cofactors that could be justified as representing reasonable/appropriate considerations when defining clinically meaningful, patient-centered targets for glycemic control.
2. The authors should clarify what they mean by 'complexity' as different from the well-established concept of 'risk adjustment.' The interaction term included for age by comorbidity score suggests that the authors do have a more thoughtful framework for understanding the factors that should be used to adjust expected A1c

goals, although that framework is vague in the current manuscript.

3. If the authors do use some type of count to characterize severity of illness, they need to let readers know what diseases were included in that count, and discuss if/why it makes sense to give equal weighting to (for example) hypertension and schizophrenia.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

None

Discretionary Revisions (which the author can choose to ignore)

None

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.