Reviewer's report

Title: A Simulation Model Approach to Analysis of the Business Case for Eliminating Health Care Disparities

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Reviewer: Rebecca R Roberts

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NOTE: All comments and requests for clarification are discretionary except comment 4 – the headings and fonts should really be standardized between the two models.

1. Is the question posed by the authors well defined?
   Yes, the question is well-defined – “can a business case be made for eliminating minority health care disparities?” This important question will be even more critical as elements of health care reform go into effect.

2. Are the methods appropriate and well described?
   Yes, the methods are very thorough and go beyond what is usually expected for simulation models. In fact, the methods are innovative - an evaluation examining the economic trade off for an employer in reduced business costs as a result of improved quality promotion for minorities in healthcare by an insurance carrier. Improved business productivity from the employer perspective is not a commonly cited reason to lobby for quality improvements in employee health insurance. Health insurance is often cited simply as an element of high labor costs.

3. Are the data sound?
   Yes, the authors conducted a very extensive review of the relevant literature and data sources. They also conducted a thorough sensitivity analysis accompanied by a comprehensive review of the rationale for each decision in constructing the models.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes, the standards are very high in this manuscript. However, readers may benefit if the authors could standardize their headings for the two topics – breast cancer detection and asthma treatment. Elements in breast cancer that were minor subheadings were listed as major headings for asthma. This reader found it difficult to compare and contrast the methods, assumptions and data because the topic titles (mortality/survival vs. Deaths), (Values for health states, Utilities vs. QALYS) and even the heading fonts and table organization varied between
breast cancer and asthma. This may represent the merging of two projects into one. I applaud the authors if that is the case. The side-by-side reading really highlights the careful consideration and data review required to conduct such an analysis.

Standard Headings: Minor Essential Revision

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Yes, the discussion and conclusions are balanced and well supported by the data. In fact, an extended discussion of the business case to be made that compares the data elements important in eliminating disparities in three major healthcare endeavors: Disease Prevention, Disease Detection and Disease Treatment might be an important addition that the authors are well qualified to add.

6. Are the limitations of the work clearly stated?
Yes.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes, the literature and data source review is very comprehensive.

8. Do the title and abstract accurately convey what has been found?
Yes. For this subject, the title and abstract accurately convey what was done.

9. Is the writing acceptable?
There are a few areas where ideas were been duplicated. The major writing limitations were the different headings and organization structure in the breast cancer vs. the asthma simulation description, headings and tables. This limited reader ability to compare between them.

Additional General Comments:

Eliminating quality disparities in breast cancer detection and asthma treatment both resulted in positive economic gains from the employer business case perspective. Admirably, the authors went much farther in their analysis by quantifying each source of economic gain and performing sensitivity analyses. One goal for measuring beyond a simple “positive”, “negative” or “neutral” business effect is to use the relative magnitude for setting priorities in addressing disparities. There was an important difference in the magnitude of business benefits. It would help readers tasked with evaluating and setting these priorities to postulate specific reasons for the difference between the two programs. Also of interest to readers would be an additional discussion of eliminating disparities in disease prevention in addition to disease detection and prevention. This would be especially important given the new January 3, 2011 Medicare coverage for “Annual Wellness Visits Providing Personalized Prevention Plan Services – Section 4104 of the ACA. (available at medicare.gov)
This reviewer suggests that the greatest difference between the two models was due to the fact that cancer screening requires all 50-65 year old female employees to be screened to detect the few cancer cases – because no one knows who has cancer until after screening. The benefits are enormous for the cancer patient and her family when detected early enough for treatment to irradiate disease. In contrast, the asthma patients are already clearly self-identified, and so a much greater proportion of those receiving the intervention can directly benefit immediately from a simple improvement in ICS medication use targeted only to those with known asthma.

In addition, the asthma intervention presumed children of employees were directly gaining health benefits in school days attended that resulted in the parent employee (without asthma) missing fewer work days due to avoided child-care. In contrast, the only benefits in the cancer detection simulation were those gained by the cancer victim employee herself; not family members. For example, the end-stage cancer victim may very well have a spouse working for an employer with the same insurance carrier who will miss work and children missing school or who must be cared for by another relative. Again, these considerations likely reflect an underestimation of the potential employer gains and so strengthens the business case; a proof by contradiction.

These effect size differences are certainly expected due to the nature of detecting occult severe disease versus chronic disease treatment improvements. Placing these two medical problems adjacent in the same report really highlighted the diverse elements that must be considered in this new research direction. The side-by-side discussions will aid others as they undertake priority-setting based on this and future studies.

In the same vein, readers may be perplexed that the asthma model indicated that the prevented death rate among targeted asthma patients was extremely small. The prevented deaths among those with early breast cancer were larger. The paradoxical reversed difference in overall economic outcome is partially due to the fact that the asthma intervention only occurs in identified chronic asthma patients while the cancer screening must occur among all patients to detect an occult disease process that may result in a preventable death or reduction in productivity and quality of life. Also, the loss of life years prevented by cancer screening only occurs in those 50-65, while the deaths in asthma occurred at a younger ages with greater expected years of life.

The authors may want to cite a review by Cochrane, etal; (Inhaled Corticosteroids for Asthma: Patient Compliance, Devices, and Inhalation Technique. CHEST 2000; 117:542-550). They found failure to use a prescribed ICS, but also ineffective lung delivery based on faulty inhalation techniques. The model might need to include further expenses to increase patient ICS use education. This may be increasingly achievable because of the new Medicare allowances for reimbursement of clinician prevention services.
Level of interest: An exceptional article

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I declare that I have no competing interests.