Reviewer’s report

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

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Reviewer: Kevin Fiscella

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This is an important study. To my knowledge, this is the first paper to formally model a business case for addressing disparities. Mammography and asthma are reasonable disparities to model for the reasons the authors cite.

In general, the model, key assumptions and application of these inputs into the model are well described. I have only a few comments.

Compulsory: At the risk of making the mammography model even more complicated, I think that false positive mammography results need to be considered in the model. False positive tests result in additional medical costs, mild transient decrements in quality of life, and potentially additional time loss from work (for outpatient breast biopsies).

A related issue that could be added as a sensitivity analysis is the issue of unnecessary surgery. There is growing evidence that breast cancer screening (like prostate cancer screening) results in removal of both rapidly growing and slow growing (potentially inconsequential in some instances) tumors. Using best estimates of the prevalence of these different tumors, the authors could model the probability of having "an unnecessary" surgery that increases medical care costs and time loss from work and diminished quality of life (through direct effects e.g. having a mastectomy) or indirect through labeling (becoming a "cancer survivor" in American lingo).

Discretionary: Consider the impact of asthma deaths on employee work performance and absence. Give the low incidence of asthma deaths, I doubt that the impact of the child death’s on parental QALY, absenteeism, and productivity is great at a population level (though potential devastating at a personal level), but it might be worth considering - through modeling (or in the absence of sufficient data in the discussion). Finally, there is the debatable question as to whether controller medication (including steroids) alters the trajectory of asthma and affects long-term pulmonary function. If they do, then improved treatment could "bend the curve" of worsening symptoms, ED visits, and hospitalizations that a small portion of patients experience. This might be modeled in a sensitivity analysis.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

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