Reviewer's report

**Title:** Cost-effectiveness of MRI compared to mammography for breast cancer screening in a high risk population

**Version:** 6  **Date:** 19 August 2008

**Reviewer:** Jeremy Goldhaber-Fiebert

**Reviewer's report:**

The evaluation of the effectiveness and cost-effectiveness of mammography compared to breast MRI for high risk women is interesting and timely. The study submitted addresses this question.

**Major compulsory revisions**

1. Regarding the response to previous comment #4 and in regard to the sentence added by the authors: “Neither costs nor outcomes were discounted since costs and benefits all occurred within the year that resources were utilized and each strategy required the recurring costs of screening.”: The Panel on Cost-Effectiveness in Health and Medicine recommends discounting of both costs and effects to account for the time in the future when costs and effects occur. If the model follows a 25 year old cohort for 40 years, it seems that by using a 0 discount rate, the authors suggest that payers should value the costs of treating cancer 40 years in the future the same as having to pay to treat a cancer today. It is important to properly discount costs and effects that occur differentially between strategies in future years back to present value.

2. Regarding previous comment #10, the model diagram is still quite confusing. Although the authors clarify this point in their response to reviewer comments, it is unclear from the diagram and legend itself that the model tracks each breast separately. A larger source of confusion is that the temporary health state of “False Positive” occurs for women with true node positive and node negative breast cancer. Positive test results for women with cancer would seem to be true positives. Finally, it is confusing to see the “false positive” temporary health state as a transition from screening back to the “no cancer” state.

3. The ending sentence of the results and conclusions sections of the Abstract in which $50,000/QALY is used as a threshold and the conclusion is that MRI is not cost-effective at this time appear somewhat at odds with the first paragraphs of the discussion section: “In this model, MRI screening approaches cost-effectiveness if a threshold of $120,000/QALY is used.” My reading of the authors’ results is that even at $120,000/QALY, MRI does not appear particularly attractive being more costly and less effective 42% of the time.

4. Though requested in previous comment #3, no description of how the model outputs were compared to observational or SEER data for face validity has been provided. If no such comparisons have been made, please state this in the discussion as an important limitation when the reader evaluates the policy.
analysis based on the model.

5. Regarding previous comment #8, it appears that the probabilities listed in the Tornado diagram do not match the table and also exceed 1.

6. Table 3 shows a range for the utility of undergoing screening that exceeds 1.0 (undergoing screening is better than living in perfect health). Is this a mistake or a consequence of using normal approximations of binomial distributions in the probabilistic sensitivity analysis? If the latter, would using beta distributions for the probabilistic sensitivity analysis be more appropriate?

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests