Author's response to reviews

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

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Author’s response to reviews: see over
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To

Dr. Melissa Norton,

Editor-in-Chief, The BMC-series journals

Dear Dr Norton,

Thank you for considering our MS: 1543760476185532 titled “Cost-Effectiveness of MRI Compared to Mammography for Breast Cancer Screening in a High Risk Population” for publication in *BMC Health Services Research* journal; and thank you for giving us the opportunity to revise and resubmit the manuscript and address the reviewer’s comments. In our revised draft, we have addressed all of the comments made by the reviewer. All the changes in the draft are underlined.

Below is the point-by-point response to the reviewer’s comments. Once again, thank you for your time and consideration. We hope that you find this revision of the manuscript acceptable for publication in the *BMC Health Services Research* journal. Please contact me at (404) 778-5554 or at Christopher.Flowers@emoryhealthcare.org if you have any questions.

Regards,

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Response to comments raised by Reviewer 2

We appreciate your detailed and thoughtful comments on the revised version of our manuscript. We have attempted to address all your comments and suggestions. We hope that you find that we have addressed your comments adequately in the revised manuscript. Given below is the detailed point-wise response to your comments. Changes made to the manuscript are underlined in the revised version.

1. **The paper reports net benefits. It seems that “net benefits” here is net health benefits. If so, then the willingness to pay threshold used to calculate these results should be reported whenever net health benefits are reported (abstract, results, discussion section where this appears). Also, the term “Net benefits” should be replaced throughout the text with “Net health benefits” if this is the case.**

We accept the reviewer’s comment. In this revision, we have replaced the term “net benefits” with “net health benefits” throughout the manuscript and in the title of Figure 4. Also, we have specified the willingness-to-pay threshold used to calculate the net health benefits in the methods section on page 9 ¶ 1 and in the revised results section on page 10 ¶ 2.

2. **It also appears that the net health benefits reported in the abstract are from the previous version and do not match the net health benefit results presented either on page 9 and 10. The first sentence of the discussion also appears to be referring to the old abstract as the net health benefit is negative in the new analysis.**

We thank the reviewer for bringing this to our attention and apologize for the oversight. In this revised version, we have rectified the results reported and the conclusion in the abstract (page 3). We have also modified the abstract and the discussion section to indicate that breast MRI may provide health benefits when compared to mammographic screening for some high-risk women; however, this approach does not appear to be cost-effective even at a willingness-to-pay threshold of $120,000/QALY.

3. **The last sentence of the results (page 10) suggests that the two strategies are comparable at $100,000/QALY. However, it seems that the net health benefit is still negative at this threshold. The exact threshold for equivalence should be reported instead.**
In the revised draft we have deleted the sentence, since it causes confusion. The abstract and results already state that the incremental cost effectiveness ratio for breast MRI compared to mammography is $179,599/QALY.

4. As discounting appears to shift the results rather strongly, discount rate of 0 to 5% should be included on the Tornado diagram and mentioned as a sensitive parameter in the analysis (It would be very illuminating to see 3% discounting as that is commonly used).

We appreciate the reviewer’s comment. We have included the discount rate of 0 to 5% in the Tornado diagram. Literature suggests a use of 3-5% discount rate (Levin HM, McEwan PJ, 2000; Brouwer W, van Hout B, Rutten F, 2000; Bonneterre J, Bercez C, Bonneterre ME, Lenne X, Dervaux B, 2005). Consistent with this, we used a 5% discount rate in our base case analysis. Using a 3% discount rate, the MRI strategy provided 17.0 QALYs at a discounted cost of $21,944 while mammography provided 16.9 QALYs at a discounted cost of $5,650 over 25 years of screening. The ICER of MRI compared to mammography was $157,539/QALY.

5. The tornado diagram should use as its upper cutoff a number smaller than $2Million (perhaps $500,000) so that the lower end (0-$200,000) can be more easily seen. This answers the important question: how much does a technology need to be improved in order for it to approach the WTP threshold?

In the revised draft, we have modified the Tornado diagram and used $600,000 as the upper cutoff.