Reviewer’s report

Title: Meta-analysis of quantitative diffusion-weighted MR imaging in the differential diagnosis of breast lesions.

Version: 3 Date: 8 June 2010

Reviewer: Matthew DiFranco

Reviewer’s report:

Major Compulsory Revisions

1 Far too few citations to support claims in Background paragraph 1. In general, the manuscript needs a much stronger background and motivation with relevant citations.

2 In paragraph 1, it is unclear that the quoted numbers come from a meta-analysis.

3 Background paragraph 3 - "The patient..." very similar to Peters et al. Reword

4 Background paragraph 3 - "We consulted..." Make aim of paper much clearer, and make the role of "Road Map" more clear.

5 Methods: Literature Search paragraph 1 - "To avoid..." very similar to Peters et al. Reword

6 Methods: Literature Search paragraph 1 (and other places) - "(a)...(b)...(c)..." lists. Remove such lists and reword to be more narrative.

7 Methods: Selection of Articles paragraph 1 - See 6.

8 Methods: Selection of Articles paragraph 3 - Citation here for road map.

9 Methods: Quality Assessment and Data Extraction - No need for paragraph headings. Reword to be more clear and coherent. For example, it is unclear what "Common Study Characteristics" is talking about.

10 Methods: Meta-Analysis paragraph 4 - Last sentences with reference to NFS sound contradictory, and the citation is confusing. Need clearer description of NFS.

11 Methods: Meta-Analysis paragraph 6 - A much better description of sROC and how it is used and interpreted is required. In Figure 5, results show curves on the sROC plot, but no explanation of how they were generated is given.

12 Results: It is unclear how many of the 13 articles are Chinese and how many are English.

13 Results: Remove lists (see 6) and present results more narratively.

14 Results: It is unclear what is gained by including the results of the QUADAS evaluation.

15 Results: Meta-analysis paragraph 3 - Why b=1000s/mm2? You don’t mention this subgroup criteria until here. This should be explained in the background or
methodology. It seems to be covered in more detail in the Discussion.

16 Results: Meta-analysis paragraph 4 - It is unclear from this paragraph and Table 4 whether these two studies were excluded simultaneously or one-at-a-time.

17 Discussion paragraph 1 - "It was important to explore..." This point needs to be asserted more strongly and clearly.

18 Discussion paragraph 4-5 - It is not clear that these 2 paragraphs are referring to the same Peters paper. Also, Peters et al. report on contrast material-enhanced MR. Finally, paragraph 5 is important for the overall paper, yet it is confusing to read.

19 Figure 3 - Funnel plot quality is too poor for viewing.

20 Figure 5 - Source of sROC curves and accompanying data unclear.

Minor Essential Revisions

1 Background paragraph 2 - make it "allows".

2 Background paragraph 3 - make significant digits consistent

3 Methods: Literature Search paragraph 1 - add space after period "...May 2009. Other..."

4 Methods: Literature Search paragraph 1 - make it "...comments, case reports, and unpublished..."

5 Methods: Selection of Articles paragraph 1 - "...the most details or the most recent publication date...". Were these ever in conflict? If so, what did you do?

6 Methods: Selection of Articles paragraph 2 - Elaborate. This is described more towards the end of the manuscript.

7 Methods: Selection of Articles paragraph 3 - make it "...reviews and guidelines..." (remove punctuation)

8 Methods: Selection of Articles paragraph 3 - "...we applied the same criteria..." Make it clear what criteria you are referring to here (is it the inclusion/exclusion criteria?)

9 Methods: Selection of Articles paragraph 3 - The last sentence should be in the passive voice, just like the sentence above it.

10 Methods: Quality Assessment paragraph 1 - See 7 (remove punctuation)

11 Methods: Meta-Analysis paragraph 3 - make "...Differential threshold effects..." (remove "Such").

12 Various - "Spearman" should always be capitalized.

13 Methods: Meta-Analysis paragraph 3 - Use mathematical notation for "logit of sensitivity..." and "logit of 1-specificity".

14 Methods: Meta-Analysis paragraph 4 - make it "...Publication bias can be..." and "...NFS refers to the ..." and "...If NFS is relatively..."

15 Methods: Meta-Analysis paragraph 4 - "there is indeed cause for concern" is
too colloquial.
16 Methods: Meta-Analysis paragraph 5 - make it "...diagnostic odds ratios (DORs) or likelihood ratios (LRs)...", and remove apostrophes from plural abbreviations (DORs, LRs).
17 Methods: Meta-Analysis paragraph 5 - make it "...homogeneity. Otherwise an REM was chosen..."
18 Methods: Meta-Analysis paragraph 6 - make it "...from these analyses are presented..." (present tense).
19 Results: Meta-analysis paragraph 4 - reword "...due to the noted seemingly different sensitivity..."
20 Discussion paragraph 2 - make it "...Lack of "shoulder-arm"..."
21 Discussion paragraph 3 - "Expressed as the area under..." is not a sentence. reword.
22 Discussion paragraph 5 - "It was not sure that smaller..." needs to be reworded.
23 Discussion paragraph 6 - QUADAS citation is confusing here. Did it help you identify methodological shortcomings, or does that citation indicate that it helps identify methodological short-comings?
24 Discussion paragraph 6 - make it "...reporting of uninterpretable and/or intermediate test results, or explanation..."
25 Discussion paragraph 6 - "uninterpretable/indeterminate/intermediate" should be separated with commas and reworded.
26 Discussion paragraph 6 - Same sentence as 25: What is meant by "varying frequency"?
27 Discussion paragraph 7 - "Even though in the subgroup..." is not a sentence. Reword.
28 Discussion paragraph 7 - "It was still hard..." Poor phrasing. Reword.
29 Conclusion - "RCT" undefined here and in abstract. Include in Abbreviations.
30 References - Typos in 2 and 20. Also, spacing after reference numbers should be uniform.
31 Figure 3 Legend - Present tense
32 Table 1 - Remove "common" from caption.
33 Table 2 - Dash in the Mean ADC of normal for Li is confusing. Should it be "N"?
34 Table 2 - Unclear what the error measure is here.
35 Table 4 - Should not abbreviate SEN and SPE in headings.
35 Figures 1 and 3 - Forest Plots missing no-effect line.

Discretionary Revisions
1 Methods: Quality Assessment paragraph 1 - "discrepant" reads awkwardly. Suggest a change of wording here.

2 Methods: Quality Assessment paragraph 2 - make "...by two observers..." (use text for numbers below 10).

3 Results: Literature Search - Last sentence starts with a number...make it text "Thirteen".

4 Table 3 - QUADAS results don't seem necessary.

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

**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