Title: Urinary phthalate metabolites in relation to serum anti-Müllerian hormone and inhibin B levels among women from a fertility center: a retrospective analysis

Version: 0 Date: 10 Nov 2017

Reviewer: Anne Marie Jukic

Reviewer’s report:

Review of, "Urinary phthalate metabolites in relation to serum anti-Müllerian hormone and inhibin B levels among women from a fertility center: a retrospective analysis"

This paper presents a study of the correlations between urinary phthalate metabolites and biomarkers of ovarian reserve (AMH and Inhibin-B). The study is fairly large, and homogeneous in terms of race/ethnicity and smoking habits. The biggest limitations of the analysis are that a single spot urine sample was collected and that the collection seems to have occurred AFTER medical treatments. Specific comments are detailed below.

1) The Introduction is well-written, detailed, and clear.

2) Lines 127-128, "...or had oral contraceptive use before hormone measurement were excluded from the study, leaving 415 women eligible for participation." Please describe how long before hormone measurement women could have used oral contraceptives and still be included.

3) Which kit used in the AMH ELISA?

4) Line 142, urine was collected on the day of ovum retrieval, presumably after several days of hormonal treatments. Can the authors speculate to what degree medical interventions might have influenced phthalate levels in this urine specimen?

5) How much time was there between the day of blood collection for AMH and INHB assays and the day of the urine collection for the phthalate assays?

6) It would be interesting to see if the sum of DEHP metabolites is related to ovarian reserve biomarkers, in addition to, or instead of, the percent MEHP.

7) Line 166, "...were categorized into quartiles, and modeled as an ordinary variable" I think this should say "ordinal variable"? Also Table 3 looks like a categorical variable was used, and not an ordinal variable...can the authors clarify?

8) Linear trend p-values are presented in the tables, even where there does not appear to be a linear trend? I would recommend removing all the p-values from the table and only
showing linear trend p-values where there appears to be a linear trend. For example, the associations between MEOHP and INHB do not appear to be linear.

9) AMH can be classified as "low" or "high" to indicate diminished ovarian reserve (yes/no) and subclinical PCOS (yes/no), respectively. It would be interesting to see if phthalates are related to the probability of either of these clinically relevant dichotomous endpoints.

10) I really like the supplemental figures showing the shapes of the associations based on the restricted cubic splines analysis.

11) It appears that antral follicle count was measured in this study, can the authors present the associations between phthalates and antral follicle count in the paper?

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