Reviewer's report

**Title:** Body Composition and Arsenic Metabolism in the Strong Heart Study

**Version:** 1  **Date:** 23 August 2013

**Reviewer:** Brandon Pierce

**Reviewer's report:**

This is a very well-written paper examining the cross-sectional associations between body size/composition variables and arsenic methylation capacity. Overall, this is a scientifically sound work. I have only a few minor comments.

Minor essential revisions

1. Age was modeled as a binary variable, which is somewhat unusual. Was this because the age range was very narrow? It's hard to tell from Table 2. Can you justify this decision? Age could be an important confounder, so consider additional age categories if the age range is broad.
2. Table 1: include sample size
3. You state in the discussion that the direction of association is uncertain and that additional studies could address this issue. Are there prior studies on the association between arsenic exposure and BMI? If so, those results may shed some light on the possibility that metabolism affects BMI.

Discretionary Revisions

4. From the abstract alone, the meaning of “joint linear regression” is unclear.
5. To be more explicit, I recommend using terms like “unadjusted”, “covariate-adjusted”, and “multivariate models including all body composition” throughout the paper, instead of terms like “simple”, “crude”, and “joint”
6. Table 2: consider presenting BMI in the same categories used for modeling.
7. Table 3 and 4: same comment as above about simple/adjusted/joint

**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