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To the Editor,

We read with interest the theoretical impact analysis of a screening tool for pediatric abusive head trauma[1], the third in a series of articles regarding the tool [2, 3].

We are concerned about the inherent circular reasoning associated with the application of the authors' a priori definitional criteria for abusive head trauma as a reference standard against which to compare the performance of their tool. Items in the screening tool (e.g. bruising of the ear, neck or torso) appear in the a priori definitional criteria (e.g. skin bruising, abrasions or lacerations in two or more distinct locations other than the knees, shins or elbows), thus potentially introducing incorporation bias [4].

No references are provided for the extensive list of extra-cranial injuries within their a priori definitional criteria "considered moderately or highly suspicious for abuse," for example 'dry contact burns' and 'intra-abdominal injuries'.

The authors estimate that 12/58 higher risk children not evaluated for abuse were abused. However it is a logical fallacy to assume that these 12 children must therefore have had positive findings on their skeletal survey and/or ophthalmology exams.

Probability estimates were calculated by implicitly fitting a saturated model, with one probability for each combination of features. These could have alternatively been estimated by fitting a simple logistic regression model. This would have improved estimation of the variance, by permitting information borrowing across categories.

References

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4. Worster A, Carpenter C. Incorporation bias in studies of diagnostic tests: how to avoid being biased about bias. CJEM 2008;10:174-5.