Author's response to reviews

Title: Sinus Versus Nonsinus Tachycardia in the Emergency Department: Importance of Age and Heart Rate

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PDF covering letter
Dear Ms. Veitch,

I have had the opportunity to revise this manuscript and will address each of the thoughtful criticisms and suggestions made by each of the reviewers.

**Reviewer 1:** We agree that correlating the reading of the ECG with our findings would be extremely interesting and would help to determine if this system were clinically useful. However, we sought to only draw attention to the fact that sinus tachycardia is quite uncommon in elderly patients with very rapid heart rates. The impetus for this study was the anecdotal observation that these tracings were frequently being misread and this study sought to alter pretest probability. As suggested by the reviewer, the logical next step in this project would be to see how often the clinicians at the bedside at “wrong” and to see if using this system alters diagnostic accuracy.

We agree that Table 1 adds little additional information and have stricken it. We have also reformatted the table into a more user-friendly 2x3 format.

**Reviewer 2:** It would be quite important and interesting to see if certain demographic trains, underlying illnesses or co-morbidities altered the probability of nonsinus tachycardia, but the sample size was quite small and as the reviewer points out, the reasons that the model was limited to age and heart rate intent was preserve simplicity and allow for a system to predict nonsinus rhythm that could be recalled easily.

It is true that among these rhythms, no VT was identified. This is likely because patients presenting in cardiac arrest or who required emergency cardioversion were excluded. The reason to exclude these patients was that the Advanced Cardiac Life Support guidelines would likely be more beneficial in managing these patients. It is likely a chance finding rather than ascertainment bias that no “stable” ventricular tachycardias were noted in this cohort.

We have now included the standard deviation of age as well as the time period of collection and how many tracings on average were collected each day. Unfortunately, no gender differences could be determined since this data was not collected since any identifying patient demographic data were purged except for the age, medical record number and the tracing itself.

We have clarified the reason for creating the derivation and validation sets was a statistical one so that the statistical model could first be generated using logistic regression and then validated.

We have modified the discussion to reflect the important and correct description that was suggested...
by the reviewer of why nonsinus tachycardias are more prevalent in the elderly. Finally, we have deleted Table 1 as suggested by Reviewer 1.

Thank you for further consideration of this manuscript at Biomedical Central.

Sincerely,

Duane S. Pinto, MD