

## Letter to the Editor

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# Reply to Letter: Predictive value of preoperative neutrophil–lymphocyte ratio predicts low cardiac output in children after cardiac surgery

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We greatly appreciate the response by Manuel et al to our manuscript entitled “Pre-operative neutrophil–lymphocyte ratio predicts low cardiac output in children after cardiac surgery” that describes the association between higher preoperative neutrophil–lymphocyte ratio and low cardiac output in children after congenital heart surgery. The Authors are correct in stating that we did not appropriately acknowledge the three recently published studies in the field that contribute data on the prognostic role of neutrophil–lymphocyte ratio in children after cardiac surgery.<sup>1–3</sup> However, this was not intentional and was merely the result of how the timing of the publication process progressed. We first presented our data in an abstract form in February 2019 (abstract # 280, Society of Critical Care Medicine Conference 2019, San Diego, USA) and we wrote our manuscript in late spring 2019. At the time of manuscript preparation, we did not come across any other similar publications in the paediatric cardiac population and it was correct, to the best of our knowledge, that this was the first study to indicate the association between higher neutrophil–lymphocyte ratio and outcomes in children after cardiac surgery. Between manuscript preparation, journal submission, response to reviewers' comments, typesetting, review of proofs, and final publication, several months passed, in which period the aforementioned studies were published. Nevertheless, we ought to have done a literature search at the time of the final submission and we sincerely apologise for this omission. Therefore, our statement that this is the first study in the paediatric cardiac population is inaccurate. We fully acknowledge the contribution of Xu et al, Savluk et al, and Manuel et al in the literature that highlights the prognostic value of elevated neutrophil–lymphocyte ratio in children undergoing congenital heart surgery. Both your letter and our response will certainly assure recognition of their contributions to this emerging body of literature.

Manuel et al correctly point out that our study cannot provide insights on the pathogenesis of an elevated neutrophil–lymphocyte count. As we discuss in the study limitations of our manuscript, we have a small sample size that was analysed post hoc based off data from a previously described dataset.<sup>4,5</sup> However, we are pleased that our data agree with the recently published literature in the paediatric cardiac population and we hope that will strengthen the base of evidence on which a large multi-center study can be designed to overcome the shortcomings of our and other studies.

Additionally, we agree with the Authors that significant questions remain with regards to the ideal cut-off value, pathogenesis of elevated ratios, and potential risk-modifying therapies.

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**Conflicts of interest.** None.

**Ethical standards.** All study procedures complied with the ethical standards of the Helsinki Declaration, and has been approved by Institutional Research Board of Cincinnati Children's Medical Center.

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