Reviewer A

1. **ML study is a big trend, and we cannot go against it. The authors well summarized ML and suggested the inevitability. I agree with their suggestions. Adding to their suggestions, I think that ML is essential to the personalized medicine. I can provide not only the general risks and values but also expected values for the patient. In addition, I think that the surgeon can be an attribute for outcomes after surgery in ML. This can provide the "performance of surgeons". This study is clear and easy to read. I really enjoyed this paper.**
   Thank you for your thoughtful response. The authors agree with the reviewer, particularly with regards to the utility of machine learning in providing personalized medical care. In response, we have made amendments to the revised manuscript emphasizing this capability.
   Change in text: "Development of real-time, dynamic models resulting in personalized, data-driven risk profiles represents an innovative opportunity to enhance clinical decision making."
   [Page 6, lines 211-212]

Reviewer B

1. **Delete the s from "demands" in line 52**
   We appreciate the reviewer's attention to detail. All grammatical and syntax errors have been revised as suggested.
   Change in text: We have modified the text as advised (see page 3, line 64)
2. **Delete the s from "computers" in line 55**
   We have modified the text as advised.
   Change in text: See page 3, line 67.
3. **Consider rephrasing "has led many…medical care" [lines 62-63] for more clarity.**
   We agree with this insightful point and have amended the sentence for clarity. The sentence now reads, "The advent of the electronic health record (EHR) and subsequent digital transformation of healthcare have prompted an increased interest in leveraging data science and ML to enhance quality of medical care."
   Change in text: See page 3, lines 74-76].
4. **"Resulted in 1009 studies" [Line 83] normally belongs in the results section. Since you are not presenting a systematic review with clear and "strict" methodology, it could just be deleted."**
   We agree with the reviewer and have amended the manuscript accordingly.
   Change in text: The phrase "resulted in 1009 studies" was replaced with "was performed" on line 95 of page 3. The sentence now reads, "A PubMed literature search using the MeSh terms "Machine Learning", "Supervised Machine Learning, "Deep Learning," or "Artificial Intelligence" and "Cardiovascular Surgery" or "Thoracic Surgery" was performed.
5. **On line 85, you mention "additional exclusion criteria" but no other exclusion criteria were mentioned before.**
   Thank you to the reviewer for pointing this issue out. We have amended the language regarding exclusion criteria to better clarify.
   Change in text: See Page 3 lines 96-100. The sentences now read, "This review exclusively considered studies published in English. Further exclusion criteria included studies concentrating on congenital heart surgery, general thoracic surgery, minimally invasive surgery, or cardiac transplant."

6. **Abbreviate "machine learning" in line 93**
   Thank you to the reviewer for pointing this issue out. We have modified the text as advised and reviewed the entire manuscript for similar inconsistencies.
   Change in text: See page 4, line 105
7. **Please provide references for the corresponding text in lines 93-99**
   Thank you to the reviewer for pointing this issue out. The text has been amended to include several references on fundamentals of machine learning.
   Changes in text: References 19-22 and 24
8. **The phrase "The primary metric reported in this review will be the C-index" [Lines 126-127] should be added to the methods section.**
   We agree with the reviewer that this phrase is more appropriate for the methods section and appreciate the reviewer bring this detail to our attention. The methods section has been expanded to include, "The Concordance-Index (C-index) was the primary performance metric reported in this review." Redundant phrasing has been removed from the main body.
   Change in text: See page 3 lines 99-100 and page 4 lines 133-138.
9. **The paper perhaps would benefit from addition of some extra relevant literature. What new is presented, what else is expected, are there any improvements in the cardiology field, which could also benefit cardiac surgery? What about ethics?**
   Thank you for this suggestion. We have expanded the future directions section to discuss implications of recent advances in large language models, expected challenges to implementation, factors associated with trust in AI and their role in implementation science, and the ethical considerations associated with AI in healthcare. All recommended references were included in the revised manuscript. Moreover, additional references were added to the revised manuscript to address comment 8 and to support points elsewhere in the text.
   Change in text: See page 3, lines 77-79; page 7, lines 244-246, 260-262, 275-278; and page 8 lines 279-281. References 4-5, 8-12, 16-22, 24, 27-30, 45, 54, 56, 58, 60, and 62-66.