Topic: Involvement of AI in Predicting Sepsis Outcomes
Our group supports the involvement of AI in healthcare and all the benefits that come with it.

Final Research Question:
How effective are artificial intelligence models in predicting sepsis outcomes, and what impact do they have on early detection and patient survival rates?

3-4 page paper MAX, Poster presented first, could be on zoom etc.

Abstract:

Intro:

Sepsis is a life-threatening medical emergency that requires prompt diagnosis and treatment. Despite advancements in critical care, early diagnosis remains a challenge, frequently resulting in delayed treatment and higher mortality. Artificial intelligence (AI) has emerged as an effective technique for forecasting sepsis outcomes by evaluating complex patient data in real time. This study investigates the effectiveness of AI-driven models, such as machine learning (ML) and deep learning approaches, in predicting sepsis onset and death. We look at recent breakthroughs, major difficulties, and the possible integration of AI into healthcare operations to enhance patient outcomes.

Methods:

We conducted an extensive literature evaluation utilizing databases such as NIH, JAMA, and PubMed, as well as AI research archives (e.g., arXiv). Studies on machine learning, in-depth learning, and ensemble modeling strategies for sepsis prediction were reviewed. Sensitivity, specificity, and prediction accuracy were among the key performance indicators assessed. The study also examined AI models used in real-world healthcare settings to determine their efficacy in early sepsis identification and patient outcome prediction.

Results:

The review discovered that AI models, particularly deep learning and ensemble-based approaches, offer a high prediction accuracy for sepsis onset and death. According to studies, AI-driven techniques such as recurrent neural networks (RNNs), random forest classifiers, and meta-ensemble models can detect sepsis beginning hours before clinical diagnosis. AI-based early alert systems in intensive care units have been found to reduce fatality rates by allowing for prompt treatments. However, issues such as data bias, integration with electronic health record systems, and regulatory concerns persist.

Conclusion:

Artificial intelligence can potentially change sepsis prediction by increasing early detection and clinical decision-making. While machine learning models show promising outcomes, further study and validation are needed before widespread clinical application. Addressing data standards, ethical concerns, and clinician trust will be critical to ensure AI's

smooth incorporation into healthcare systems. Future research should focus on increasing model interpretability and enhancing AI-powered treatments to improve patient outcomes.

Interview Information:

INTRO:

BODY1

BODY2

BODY3

REBUTTAL

CONCLUSION

Storyboard for Poster?:

Plan a creative, interactive way to present your findings. This can be through a demonstration, simulation, interactive posters, multimedia presentations, digital presentations, a role-play scenario, etc.

Engage your audience through a demonstration or simulation in a way that makes the AI concept tangible and understandable.

- Begin a rough draft of the storyboard for your presentation

References:

https://www.ncbi.nlm.nih.gov/books/NBK596676/#:~:text=AI%20algorithms%20for%20the%20prediction,electronic%20health%20records%20(EHR).&text=The%20use%20of%20AI%20predictive,prediction%20in%20a%20clinical%20setting.

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Bates, David W, and Ania Syrowatka. “Harnessing AI in Sepsis Care.” *Nature medicine* 28.7 (2022): 1351–1352. Web.

https://www.proquest.com/scholarly-journals/harnessing-ai-sepsis-care/docview/2692913087/se-2?accountid=10003

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