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Synthesizing and communicating scientific evidence into treatment recommendations using artificial intelligence : the "case" of temperature control after cardiac arrest

Synthesizing and communicating scientific evidence into treatment recommendations using Artificial Intelligence: the "case" of temperature control after cardiac arrest.

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Dear Editor,

The pursuit of evidence-based medicine involves navigating a landscape rich in data, yet often muddled in interpretation. This complexity is highlighted by two recent systematic reviews and meta-analyses on the efficacy of hypothermia after cardiac arrest (CA). One systematic review was conducted by the International Liaison Committee On Resuscitation (ILCOR)[1] and translated into the European Resuscitation Council (ERC) and European Society of Intensive Care Medicine (ESICM) guidelines[2]. The other systematic review was conducted by the Cochrane Collaboration[3], and was subsequently supported by the European Society of Anaesthesiology and Intensive Care (ESAIC) and by the European Society For Emergency Medicine (EUSEM)[4]. Although both reviews addressed the same clinical question, their conclusions suggest a nuanced and not entirely congruent interpretation of the evidence. In a provocative approach to this issue, we asked ChatGPT-4 (OpenAI, San Francisco, US) and Gemini Advanced (Google, Menlo Park, US) for their perspective. On February 10th, we approached ChatGPT-4 and Gemini Advanced (GA) with a request to analyze the ERC/ESICM, Cochrane and EUSEM/ESAIC articles, to summarize their findings, review their statistical methodologies, and to give their "points of view". We approached them with three simple questions and compared their responses (Table 1). Based on the AI's responses, it's clear that ChatGPT-4 and GA offer nuanced perspectives on the efficacy of temperature control post-CA. Their analysis highlights the complexity of interpreting systematic reviews and underscores the potential of AI, including ChatGPT-4 and GA, in refining medical guidelines. This emphasizes the potential to combine AI with human expertise to advance evidence-based medicine and to develop

guidelines. AI might surpass traditional methods in processing data quickly and efficiently, ensuring consistent analyses. In our analysis, we have limited the application asking for its "point of view". The development of dedicated systems could, in the very near future, play a crucial role in managing complex scientific data, promoting a methodical evidence synthesis. However, AI's effectiveness hinges on accurate programming for correct methodology. Experts warn that AI could yield incorrect results from flawed assumptions in its database or programming. Therefore, current reliance on human oversight is essential for nuanced interpretation and critical thinking in complex data analysis. From the movie "I, Robot" in 2004; "I'm sorry. My responses are limited. You must ask the right questions."[5] Human researchers excel in integrating diverse data types, including qualitative data that AI may struggle to analyze effectively. Thus, the combined use of AI and human expertise is beneficial and necessary for synthesizing and communicating scientific evidence. This synergy enhances the quality, efficiency, and clarity of evidence synthesis, potentially leading to better formulated medical guidelines. Our example of the use of ChatGPT-4 and GA in evaluating a recommendation illustrates AI's potential in healthcare research. We are still remote from AI analysing original studies, including assessment of risk of bias and formulating comprehensive treatment recommendations autonomously. But even then, the "human touch" will remain essential in areas needing professional judgment and ethical consideration. Future research into the integration of AI and human intelligence is urgent and needed.

Conflict of interest statement

No relationship exists between any of the authors and any commercial entity or product mentioned in this manuscript that might represent a conflict of interest. No inducements have been made by any commercial entity to submit the manuscript for publication. All within 3 years of beginning the work submitted. FS is the Chair-Elect of the European Resuscitation Council, ILCOR BLS Task Force Emeritus member and Italian Resuscitation Council Foundation member. KM is the Chair of the European Resuscitation Council.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors utilized ChatGPT-4 and Gemini Advanced for analyzing the articles mentioned in the letter and for creating Table 1. Subsequently, the authors reviewed and edited the content as necessary, assuming full responsibility for the publication's content.

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