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Letter to the Editor

Enhancing infectious disease response: A demonstrative dialogue with ChatGPT and ChatGPT-4 for future outbreak preparedness

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Dear Editor,

The emergence of the Coronavirus Disease 2019 (COVID-19) had a significant worldwide impact, disrupting normal activities, business, mass gatherings, and economy. This unprecedented pandemic is very rich when it comes to learning from what happened and how the world could respond to future pandemics.

Recently, Chatbot Generative Pre-trained Transformer (ChatGPT) emerged and rapidly evolved as a significant artificial intelligence with the capability to simulate professional medical literature [1,2]. Thus, we explored an imaginary conversation between an infectious disease (ID) doctor, ChatGPT, and ChatGPT-4 about how healthcare professionals could use lessons learned from the COVID pandemic to better manage future infectious disease outbreaks. The participants' roles in the conversation were as follows: the infectious disease physician acted as a human expert sharing insights and ideas; default ChatGPT provided basic information, and the more advanced ChatGPT-4 offered more in-depth insights into the dialogue.

The imaginary conversation was on April 16, 2023 and was as follows:

ID Specialist: With the COVID-19 pandemic, we learned a lot about managing infectious disease outbreaks. How can we apply those lessons to prepare for future outbreaks?

ChatGPT: During the COVID-19 pandemic, global communication and information sharing were crucial. For future outbreaks, maintaining open channels of communication between healthcare providers, researchers, and the public can help manage and mitigate the impact.

ChatGPT-4: That's correct. Additionally, we can improve early detection and surveillance systems, as well as invest in public health infrastructure. Rapid diagnostic testing, contact tracing, and data-driven decision making are essential for timely interventions. Furthermore, we should enhance global cooperation in research and vaccine development to ensure a prompt response to emerging threats.

ID Specialist: I agree, preparedness is key. How can healthcare professionals specifically contribute to this preparedness?

ChatGPT: Healthcare professionals can stay informed about the latest research, guidelines, and recommendations to provide accurate information to patients and the community.

ChatGPT-4: In addition to staying informed, healthcare professionals can play a vital role in educating the public about the importance of vaccination and preventive measures. They can also advocate for more robust public health policies and collaborate with other experts to develop innovative solutions and share best practices.

ID Specialist: That's true. Now, how do you see AI-chatbots like ChatGPT and ChatGPT-4 helping healthcare professionals manage future infectious disease outbreaks?

ChatGPT: Artificial intelligence (AI)-chatbots can help by providing basic information about the disease, its symptoms, and prevention measures, as well as directing users to appropriate resources.

ChatGPT-4: AI-chatbots like ChatGPT-4 can go beyond providing basic information. They can support healthcare professionals by monitoring real-time data, identifying patterns, and providing insights for early detection and intervention. They can also assist with diagnostics, treatment planning, and public health messaging, ensuring healthcare providers have the most up-to-date information and resources to effectively respond to an outbreak.

ID Specialist: I appreciate the insights. It's clear that we have come a long way in terms of AI support, and it's exciting to think about how AI-chatbots can help us be better prepared for future infectious disease outbreaks.

The recent deployment of ChatGPT has expanded the era of AI especially in the field of medicine in general and the field of infectious diseases specifically. In a recent publication, ChatGPT was used to give suggestions about the multi-country outbreaks of Mpox [3]. Similar to the current perspective, ChatGPT offered general recommendations on how to deal with Mpox or future outbreaks. As shown in Fig. 1, the ChatGPT recommendations are general and could, however, be used as a framework. Since ChatGPT is in its infancy, it is possible that future development of ChatGPT or similar AI could provide more distinctive and

Abbreviations: COVID-19, Coronavirus Disease 2019; ChatGPT, Chatbot Generative Pre-trained Transformer; ID, infectious disease; AI, Artificial intelligence.

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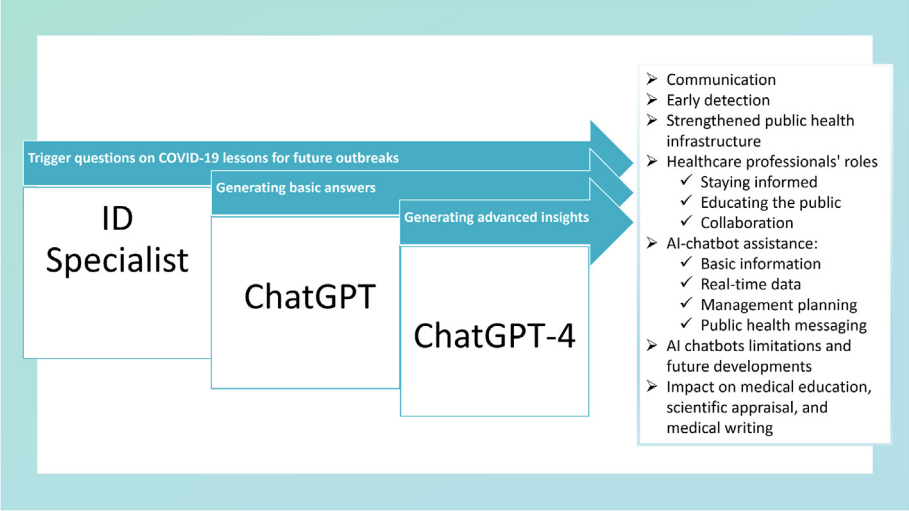


Fig. 1. Conversation between ID Specialist, ChatGPT, and ChatGPT-4 about COVID-19 pandemic lessons for future infectious disease outbreaks.

specific ways to deal with pandemics. However, time will tell when and how much science will be fundamentally changed by conversational AI. As healthcare workers utilize AI and ChatGPT, it is important to be more vigilant in this interaction and be open minded. The role of ChatGPT would be more appealing when dealing with complex and challenging clinical or population-based scenario in order to formulate an individualized and public health measures sieving through tons of data. As shown in the figure, the suggested interventions by ChatGPT and ChatGPT-4 were merely simple interventions and traditional in the broad sense of discussion. It is expected that as ChatGPT gets more advanced, it will suggest solutions that are more specific and be able to spot the emergence of epidemics or pandemics around the globe. The COVID-19 pandemic had no doubts about accelerated information technology and that, in a pandemic, it is crucial to provide accurate, evidence-based information, and overcome any conflicting recommendations from international and local authorities. Chatbots in general may help prevent disinformation, assist in symptom identification, encourage infection-limiting habits, and alleviate the strain of pandemic response on the user's mental health if they are developed well [4]. In dealing with new pandemics, it is important to have a new international public health security system to improve pandemic preparedness, prevention, and response [5]. How ChatGPT and ChatGPT-4 add to the international collaborative approach to dealing with future pandemics remains to be see. The role of ChatGPT and other AI in the response to future pandemics deserves further research as a priority in addition to other priorities in healthcare.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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