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ChatGPT & Doctors: The Medical Dream Team

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With the release of ChatGPT, which the New York Times praised as the best AI chatbot ever publicly released, the incorporation of artificial intelligence (AI) in medicine appears inevitable. ChatGPT (GPT stands for Generative Pre-trained Transformer) uses a GPT-3.5 large language model and machine learning algorithm to generate a response. What sets this AI apart from others is its organic responses and ability to remember prior input, allowing for more relatable and appropriate responses. OpenAI, the parent company for ChatGPT, discloses that the software is only in the research review phase and that a significant improvement in output accuracy will likely come as early as 2023. What remains unknown is how implementing advanced AI, like ChatGPT, will affect the future of healthcare.

In the last decade, many physicians have complained that their extensive use of electronic medical records (EMRs) have created barriers and distance from patients. Emerging AI technology could improve the physician-patient relationship by decreasing time spent on charting and other loathed administrative work, increasing the time spent with patients. Despite its potential benefits, skeptics are rightfully concerned that increased technology use will continue to interrupt workflows and create distance between providers and their patients. Aside from this controversy, what seems inarguable is that medical AI will improve diagnostic efforts.

Dr. Keith Horvath, from the Association of American Medical Colleges, believes that "Humans and machines together can excel in different ways that individually they cannot." For example, pre-trained AI and pathologists were tasked with identifying images of metastatic

breast cancer. Through 130 novel images, AI improved upon pathologist image classification and tumor localization scores while also reducing the human error rate by 85%. Another experimental AI program, Glass Health, can generate a list of differential diagnoses within seconds by simply entering a patient's history and symptoms. With the current trajectory of this technology, the healthcare field can expect to evolve through the collaboration of humans and AI.

The clinical knowledge that ChatGPT and other AI platforms possess is already available as a digital tool for physicians. Proving its ability, ChatGPT recently passed the U.S. medical licensing exams (USMLE), considered the most challenging exam during a physician's early career. The AI system demonstrated that it could obtain a passing threshold without additional specialized training. In a segment for CNN, Jack Po, CEO of Ansible Health, claimed that he and a team of 30 doctors have already used AI to help treat patients with COPD. When asked about the value of ChatGPT AI, Po states that the "technology already enables his team to suggest ideas they might not be thinking of at all. …[i]t will absolutely save lives."

For underrepresented patients, medication non-adherence is a major global obstacle, with some reporting non-adherence rates of up to 60%. A contributing cause of medication non-adherence is a lack of patient understanding. ChatGPT's ability to quickly answer questions (and follow-up questions) related to a medication's use, dosage instructions, side effects, and drug-drug interactions without the added effort of contacting a provider could hypothetically add clarity, improve patient satisfaction, and even improve adherence.

With the growing popularity of speech-to-text technology, ChatGPT can be fed broad medical questions resulting in templated notes and complex differential diagnoses that support medical decision-making. There could be a future of AI Medical scribes which decrease costs

and increase efficiencies. Programs like Tali, can complete notes up to three times faster than manual data entry. Like standard practice with human scribe-written charts, physicians would still be responsible for the accuracy of their charts, but AI could suggest improvements to charting during the review process. By streamlining these tasks for providers, AI could facilitate more time in front of patients rather than on computer screens.

According to Forbes, ChatGPT will soon revolutionize the immigration services industry by providing innovative translational services that implement advanced language/dialect. Similarly, AI advancements could translate for foreign-speaking patients, especially in marginalized groups who present to under-resourced hospitals. The digital divide is a well-described healthcare topic affecting lower socioeconomic classes. While much of the digital divide is attributed to infrastructure, ChatGPT could help with identified aspects, including communication, data, and computing. It could also educate the underserved about insurance, complex diagnoses, discharge instructions, and appropriate follow-up care. These services could save hospitals and clinics valuable time while ensuring disadvantaged patients are discharged with the knowledge needed to make informed decisions about their health.

Referring to the healthcare disparities faced by patients from marginalized backgrounds, the issue of systematic racism cannot be ignored. Studies have illustrated the pervasive implicit biases that providers bring to work daily. Nevertheless, it will take generations before these biases are eliminated. AI, unlike humans, cannot tell the difference in race, ethnicity, or background. Responses are pulled in a manner that provides relatively consistent answers to medical questions, providing a resource to those with accumulated distrust for healthcare. However, one could argue that AI will continue to carry bias as it pulls information from published, biased medical content.

Finally, and probably the most discussed use of ChatGPT is its role in research and publications. There is no doubt that ChatGPT could improve writing, save time producing research, and applying/writing for grants. Some fear rampant plagiarism, but another complex AI technology, GPTZero, can verify whether an AI or a human wrote an article. ChatGPT's unbound creativity can provide outlines, templates, and examples to help initiate writing. Inputting commands such as, "write me a good introduction about the cardiac conduction system" or "what are research topics centered around hyperkalemia?" is something that ChatGPT does with ease. When asking junior faculty, residents, and medical students about their challenges with scientific writing, they often cite that they don't know where to start. Introducing AI to scientific writing could help break down traditional barriers, enticing participation from clinicians and students.

The scientific writing provided by ChatGPT has caused some medical researchers to list the program as a co-author on their published work, much to the disapproval of others. The validity of intellectual property created with the assistance of ChatGPT is still up for legal review and precedence. The continuing medical education (CME) industry could change with more focused educational content driven and tracked by AI. ChatGPT can keep up with the most current medical guidelines and synthesize recommendations through concise explanations. Simply put, the future of AI offers clinicians support in ways that UpToDate, Rosh Review, and Tintinalli's cannot.

Overall, the integration of ChatGPT and the movement towards AI is inevitable in medicine, whether it be through charting, patient education, research, or direct clinical care. While this technology has enormous potential, it is crucial to recognize that the optimal utilization relies on the collaboration between humans and machine learning. While some fret

that additional software platforms will increase time at the computer, many are hopeful that this technology will improve healthcare and lead to greater efficiency allowing physicians to spend more time in front of the patient.

Disclaimer: This article was written and edited by humans, not ChatGPT!

The authors have no conflicts to report.