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ChatGPT: when artificial intelligence replaces the rheumatologist in medical writing

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ABSTRACT

In this editorial we discuss the place of artificial intelligence (AI) in the writing of scientific articles and especially editorials. We asked chatGPT « to write an editorial for *Annals of Rheumatic Diseases* about how AI may replace the rheumatologist in editorial writing ». chatGPT's response is diplomatic and describes AI as a tool to help the rheumatologist but not replace him. AI is already used in medicine, especially in image analysis, but the domains are infinite and it is possible that AI could quickly help or replace rheumatologists in the writing of scientific articles. We discuss the ethical aspects and the future role of rheumatologists.

THE PLACE OF ARTIFICIAL INTELLIGENCE IN MEDICAL PUBLICATION

'Artificial intelligence (AI) has made tremendous advancements in the medical field over the past few years, with applications in diagnosis, treatment planning and even in drug development. In recent years, there has been a growing interest in the use of AI in rheumatology and the possibility that it may eventually replace rheumatologists in certain aspects of their work.

While this notion may be unsettling for some in the medical community, it is important to acknowledge that AI has the potential to greatly enhance the field of rheumatology. The ability of AI to process vast amounts of data, analyse complex patterns and make accurate predictions could revolutionise the way rheumatologists diagnose and treat their patients.

In terms of editorial writing, AI has the potential to assist rheumatologists in the production of high-quality, well-researched articles that are free from bias and errors. AI algorithms can analyse large amounts of data and identify patterns and trends that may not be immediately apparent to human writers. This information could then be used to inform the content of editorials, providing readers with a more accurate and up-to-date picture of the state of the field.

However, it is important to note that AI will not be able to replace the critical thinking, expertise and experience of rheumatologists. While AI may be able to provide a wealth of information, it is the rheumatologists who must interpret this data and use it to inform their writing.

In conclusion, the use of AI in editorial writing has the potential to greatly enhance the quality of content produced in the field of rheumatology. However, it is important to recognise that AI will not replace rheumatologists, but rather serve as a tool to assist them in their work. As the field of AI continues to evolve, it will be exciting to see how it

will impact the way we practice rheumatology and produce high-quality, informative content'.

AN ETHICAL ISSUE

We have all dreamed of having a clone to do certain tasks for us, or of having software to write articles or reports for us, but in our own style. The science fiction of the 1990s and 2000s concerning AI is starting to become a reality in 2023, and it is just around the corner in medical publication. Indeed, the first part of this editorial (in quotation marks above) was obtained using AI software (namely, ChatGPT developed by openAI). To date, AI has been used in rheumatology to interpret imaging, for example, to search for erosions in RA¹ or vertebral fractures,² to identify sacroiliitis^{3,4} and to predict the progression of osteoarthritis.⁵ AI provides valuable clinical support⁶ in predicting response to therapeutics, identifying inflammatory diseases earlier⁷ and using Big Data.^{8,9} Now, with ChatGPT, AI is becoming a viable competitor in medical writing. ChatGPT stands for 'Generative Pretrained Transformer', which is a type of language model used to predict text based on input data. ChatGPT uses machine learning techniques to improve its prediction based on the training data it has received. Thus, the more the model has been trained on a large corpus of texts, the more it will be able to generate text autonomously and consistently. It is far from perfect, but AI managed to write an original, conventional and simple text on this subject. We are still in the infancy of this writing technology, but things are moving fast and this tool has the potential to evolve very rapidly. We gave ChatGPT the following instructions: 'Write an editorial for *Annals of Rheumatic Diseases* about how artificial intelligence may replace the rheumatologist in editorial writing'. Indeed, we did two tests to investigate, first, whether the resulting texts were different after doing the same request two times (to avoid plagiarism); and second, whether a slight change to the request (we further specified in the instructions: 'for the medical journal') could improve the resulting text (figures 1 and 2). And this was indeed the case, highlighting the programme's capacity to improve. It is already possible to ask the AI tool to write a poem in the style of the greatest French poets such as Verlaine, so it seems likely that we will be able to ask it to write an editorial in the style of an opinion leader, once AI has invaded PubMed.

In the field of education, cases of AI being used to produce homework have been reported, and the question of identifying such cases has been raised and studied.¹⁰ In the field of medical publication, the use of AI would represent a formidable tool, particularly for conducting systematic reviews of



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Write an editorial for Annals of Rheumatic Diseases about how artificial intelligence may replace the rheumatologist in editorial writing

Artificial intelligence (AI) is revolutionising many areas of medicine, including rheumatology. As technological advances allow machines to analyse increasing amounts of medical data, it is increasingly likely that AI will replace rheumatologists in editorial work. It is true that AI can process large volumes of data quickly and identify trends and patterns that might go unnoticed by human doctors. In addition, it can also help improve the accuracy of diagnosis and treatment, which can have positive consequences for patients with rheumatic diseases.

However, it is important to stress that AI cannot completely replace rheumatologists. Human doctors have in-depth patient knowledge, clinical experience and an ability to understand social and emotional contexts that are simply irreplaceable. Doctors can also use their clinical judgement to make decisions that are best for patients, rather than relying solely on data. It is therefore important to see AI as a tool to improve patient care, rather than as a replacement for rheumatologists. Doctors and researchers must work together to develop AI systems that can be used effectively and ethically in medical practice.

In conclusion, AI is a powerful tool that can improve the practice of rheumatology, but it cannot replace rheumatologists in editorial work. Physicians and researchers must continue to work together to develop AI systems that can be used effectively and ethically in medical practice.

Artificial intelligence (AI) is revolutionising many medical fields, and rheumatology is no exception. Technological advances now allow algorithms to diagnose joint diseases and propose effective treatments. However, it is important to stress that AI cannot replace rheumatologists in writing editorials. AI algorithms are based on data and mathematical models, they cannot have the same medical expertise, clinical experience and ability to understand the nuances and particularities of each case. Rheumatologists have an in-depth knowledge of joint pathology and a comprehensive understanding of the different aspects of patient management. Moreover, AI cannot replace the human dimension of medicine. Rheumatologists are health professionals who have a special relationship with their patients and can accompany them through their care. They can listen to their suffering, answer their questions and reassure them. AI algorithms cannot replace this human dimension. Finally, it is important to stress that AI must be used as a complementary tool to improve the quality of care and not to replace health professionals. In summary, AI is a valuable tool to improve the quality of care in rheumatology, but it cannot replace rheumatologists in editorial work. Rheumatologists have medical expertise, clinical experience and a human dimension that cannot be replaced by algorithms. It is therefore important to continue to value and involve rheumatologists in the development and use of AI in rheumatology.

Figure 1 ChatGPT's answers to the same question at two different times.

the literature. This technology could greatly reduce the time needed to carry out such work. Thus, for researchers who are already prolific now, one can imagine that with AI, their output could be doubled or even tripled. It is easy to imagine the writing of abstracts by AI, such as a ghost writer, as has already been demonstrated.¹¹ Nevertheless, we have no visibility about AI architectures, and the sources it uses are never cited, thus limiting its use in the writing of reliable scientific articles.

However, there is also the issue of using AI to write editorials, and in this particular situation, the problem is more ethical and philosophical than when AI is used as a tool to assist in performing systematic reviews. Indeed, the first issue is one of

authorship. Reaping the rewards of an editorial that has been produced by a third party (in this case, ChatGPT) is a questionable work ethic for any author. The second issue is plagiarism. Although the AI programme enables the production of original texts, asking it to write a text in the style of a well-known person could be considered as plagiarism of that person. Finally, the last question that emerges is that of critical thinking. AI could produce editorials that would be robust in terms of scientific sources, as decided by the different algorithms, but there would be little, if any critical analysis of the data. Just like in the film 'Matrix', our medicine will be dictated by AI. We could thus imagine that in the near future, 'AI journals' would publish

Write an editorial for the medical journal "Annals of Rheumatic Diseases" about how artificial intelligence may replace the rheumatologist in editorial writing

Artificial Intelligence (AI) has been making rapid strides in various domains, revolutionizing the way we approach problems and finding solutions. Healthcare is no exception, and the field of rheumatology is no exception either. The use of AI in rheumatology has the potential to bring about significant changes, with one such change being the potential replacement of rheumatologists in the field of editorial writing.

The rise of AI in editorial writing is due to its ability to analyze vast amounts of data in real-time, identify patterns, and make predictions. AI algorithms can be trained to identify and analyze articles, summarize their content, and even generate new articles based on the data they have been trained on. This means that AI could potentially replace rheumatologists in the process of reviewing and writing editorials for medical journals. While the idea of AI replacing rheumatologists in editorial writing may seem daunting, it is important to consider the benefits that AI can bring. AI can analyze vast amounts of data and information, which would be impossible for a single rheumatologist to do in a reasonable amount of time. AI can also provide unbiased and consistent assessments, free from personal biases or human error. Furthermore, AI can assist in the generation of high-quality content, with the ability to provide evidence-based information that is up-to-date and relevant to the latest developments in the field. However, it is important to note that AI should not completely replace the role of rheumatologists in editorial writing. Rheumatologists bring a wealth of knowledge and experience to the table, which cannot be replicated by AI. They also bring a human touch to the editorial process, ensuring that the articles are written with the reader in mind and are engaging and accessible. Therefore, AI should be seen as a tool to augment the work of rheumatologists, not as a replacement. In conclusion, AI has the potential to bring about significant changes in the field of editorial writing in rheumatology. However, it is important to approach this development with caution and to ensure that AI is used as a tool to augment the work of rheumatologists, not as a replacement. AI should not completely replace the role of rheumatologists in editorial writing, as they bring a wealth of knowledge and experience to the table that is invaluable. By working together, rheumatologists and AI can bring about the best possible outcomes for the field of rheumatology.

Artificial intelligence has made tremendous advancements in the medical field over the past few years, with applications in diagnosis, treatment planning, and even in drug development. In recent years, there has been a growing interest in the use of AI in rheumatology, and the possibility that it may eventually replace rheumatologists in certain aspects of their work. While this notion may be unsettling for some in the medical community, it is important to acknowledge that AI has the potential to greatly enhance the field of rheumatology. The ability of AI to process vast amounts of data, analyze complex patterns, and make accurate predictions could revolutionize the way rheumatologists diagnose and treat their patients. In terms of editorial writing, AI has the potential to assist rheumatologists in the production of high-quality, well-researched articles that are free from bias and errors. AI algorithms can analyze large amounts of data and identify patterns and trends that may not be immediately apparent to human writers. This information could then be used to inform the content of editorials, providing readers with a more accurate and up-to-date picture of the state of the field. However, it is important to note that AI will not be able to replace the critical thinking, expertise, and experience of rheumatologists. While AI may be able to provide a wealth of information, it is the rheumatologists who must interpret this data and use it to inform their writing. In conclusion, the use of AI in editorial writing has the potential to greatly enhance the quality of content produced in the field of rheumatology. However, it is important to recognize that AI will not replace rheumatologists, but rather serve as a tool to assist them in their work. As the field of AI continues to evolve, it will be exciting to see how it will impact the way we practice rheumatology and produce high-quality, informative content.

Figure 2 ChatGPT's answers after a slight modification (underlined) of the question, to be closer to what was expected, at two different times.

editorials, reviews and even meta-analyses autonomously, with editors whose only role would be to provide themes. This could lead to an impoverishment of medical thinking, if we were to rely solely on the data rendered by AI. Yet, it is precisely this personal interpretation and the author's personal view that renders editorials interesting. These caveats notwithstanding, AI is a powerful tool that could be of invaluable help in writing editorials, with the ability to do fast and comprehensive bibliographic searches. It could be used as a source of inspiration, and, if used sensibly, as a writing aid.

In conclusion, AI represents a major step forward in helping to produce original scientific work. In his time, Einstein said that 'The problem of our time is not the atomic bomb, but the human heart'. We can paraphrase his words today as follows: 'The problem of our time is not artificial intelligence, but what humans do with it'. There are two major pitfalls that need to be avoided: first, taking the easy way out, and letting AI write articles without real prospects and critical thinking; and second, impoverishing our education and stifling our thirst for research.

If we push our imaginations even further, in a decade or so, AI could perhaps claim authorship of these articles, and we might yet witness an "uprising of the machines".

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