Artificial Intelligence: How Is it Relevant to Advanced Practitioners?

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We have all seen artificial intelligence (AI) being increasingly integrated into our daily lives, from how we communicate with others to the way we shop and manage our information. There are emerging examples of applications in health care as well, with profound implications for patients with cancer and advanced practitioners (APs).

Artificial intelligence is an umbrella term that describes the mimicking of human intelligence by computers, with machine learning (ML) and deep learning (DL) as two critical subdivisions of AI. The first layer is ML, which refers to training computer algorithms to make predictions based on one's own experience. This type of learning can be further divided into supervised learning (where the computer is allowed to see the outcome data through the process) or unsupervised learning (no outcome data are provided).

A further subset of ML under the umbrella term AI is DL, which involves algorithms inspired by the structure and function of the human brain, specifically artificial neural networks with multiple layers. Deep learning is evident in cancer care through genomics and histopathologic testing, drug discovery and development, and advanced radiologic interpretations. Each AI approach assesses patterns that emerge in the data to predict outcomes, such as the presence or absence of cancer, survival rates, or risk among groups (Hunter et al., 2022). This complexity presents a challenge and an opportunity for us, as APs, to engage with this technology and its potential in health care, highlighting our integral role in the health-care system.

APPLICATIONS

One example of AI through DL models can be explained through the intelligent-augmented breast cancer risk calculator (iBRISK). This decision tool was previously developed by applying DL to clinical risk factors and mammographic descriptors from 9,700 patient records at the primary institution and validated using another 1,078 patients. A study by Ezeana and colleagues (2023) sought to evaluate the performance of a biopsy decision support algorithmic model to assess the probability of malignancy using iBRISK on a multicenter patient dataset. The study found that with DL, the iBRISK score served as a continuous

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predictor of malignancy and yielded an impressive area under the curve of 0.97 (95% confidence interval = 0.97–0.98), with an estimated potential cost savings of more than $420 million. This technology has the potential to significantly impact patient lives, a prospect that should fill us all with hope and optimism.

What about AI as it relates to patient use? My colleagues and I were interested in the information generated by a free AI tool, ChatGPT, and sought to determine what content was provided to patients interested in learning more about multiple myeloma (MM). Therefore, we developed a comprehensive questionnaire with 21 questions encompassing various topics pertinent to MM, from diagnosis to treatment options and prognosis. We utilized OpenAI's ChatGPT version 3.5.0 to generate responses. Interestingly, in our study, ChatGPT provided accurate answers to the common questions that MM patients may have. We concluded that ChatGPT and other AI tools have the potential to provide accurate information to patients but with concerns about confidentiality and the risk of misinformation if this method is used consistently and as the only source of information (Saba et al., 2024).

CONCLUSION

Artificial intelligence currently has a profound impact on cancer patients across various stages of their journey, from early detection to personalized treatment and patient monitoring for ongoing care. While it offers significant advancements in cancer treatment, challenges such as data privacy with online forums, algorithm biases, and regulatory concerns must be addressed to ensure safe and ethical implementation in health care. Acknowledging and understanding these concerns is essential, as they are crucial to the safe and effective use of AI in health care. Nevertheless, AI is transformative in improving cancer patients' outcomes and the quality of life of patients and AP practice worldwide. Stay tuned for a live panel at JADPRO Live this November on how AI can help AP practice!

IN THIS ISSUE

This issue dives into fascinating data on the interactions between the gut microbiome and cancers and cancer therapies. Learn how a patient-reported outcome version of the CTCAE measurement system expedited symptom management. Carcinoid heart disease, a rare but potentially life-threatening sequelae of advanced neuroendocrine neoplasm, is highlighted in a case study.

Join us online to read about how a remote clinical oncology pharmacist nearly doubled average monthly clinical trial enrollment, along with how lung cancer patients and their support partners derived support, advice, and inspiration by engaging in a Facebook community. Get a primer on real-world data and its application, and an overview of oral CDK4/6 inhibitors in breast cancer. Finally, a call to action regarding diversity, equity, and inclusion in MM was written by a dear friend and colleagues from the International Myeloma Foundation Nurse Leadership Board.

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