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## AN OVERVIEW OF ARTIFICIAL INTELLIGENCE, AUGMENTED INTELLIGENCE, AND GENERATIVE INTELLIGENCE IN DENTISTRY AND PUBLISHING

Dr. Sarah Friend

Most of us regularly encounter the terms AI (artificial intelligence), augmented intelligence (Aul), and generative intelligence (gen AI). Do you know what these terms mean and how they work into our daily lives and dentistry?

According to IBM®, “Artificial intelligence, or AI, is the technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.”<sup>1</sup> Braidr, a marketing tech company, states that augmented intelligence, which is also known as intelligence amplification (IA), “is a type of AI that focuses on enhancing human capability rather than replacing it. It involves the development of intelligent systems that can assist and empower humans to make better decisions, perform tasks more efficiently, and improve their overall productivity.”<sup>2</sup>

Some common examples of AI we use daily are Google Maps™ and Netflix™. Netflix™ uses AI to identify our viewing patterns to recommend other movies and

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series we would probably enjoy watching. Additionally, Alexa™, Siri™ and Google Assistant™ are well-known AI assistants that have the capability to help us perform multitudes of tasks, including answering voice-commanded questions.<sup>3</sup>

In dentistry, the potential of AI is being harnessed by brands such as Pearl AI™ and Denti. AI™. These software programs, which combine AI and Aul, are aiding clinicians in diagnoses and efficiency. They are most widely recognized for providing assistance in radiological diagnoses. Denti.AI™, for instance, also offers features like automatically charting existing conditions and generating treatment plans, along with voice-controlled periodontal charting.<sup>4</sup> It's important to note that these programs are not replacing our clinical judgment and skills, but they are enhancing our decision-making. The American Dental Association's Standards Committee on Dental Informatics (SCDI) is working to ensure the safe and effective use of AI and Aul in dentistry. For more information, you can read their white paper, “ADA SCDI White Paper No.

1106-2022 Dentistry-Overview of Artificial and Augmented Intelligence Uses in Dentistry”.

As stated by IBM®, generative AI, sometimes termed gen AI, is artificial intelligence (AI) that can create original content-such as text, images, video, audio or software code-in response to a user's prompt or request.” Two commonly recognized programs are ChatGPT by OpenAi and Adobe Photoshop™.

It's important to understand the limitations of AI and genAI. When tasked with writing an article, for example, an author might use gen AI, such as Chat GPT, to generate ideas and content. Afterward, the author might use AI-powered editorial programs, such as Grammarly™ and Microsoft Editor™, which help with spelling, grammar, and writing tools, to groom the final submission. While the end product may look professional and accurate, it might not be. AI responses are based on the data that was input into the system to train the computer. The AI system you are using is only as good as the data it was trained on. Some

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“scientific” data might not be scientific at all and these results you are relying on might be heavily biased. Much of this information you receive on ChatGPT comes from the internet and might be from unverified sources. One cannot and must not assume that the content generated by ChatGPT is correct. While your computer-generated text may sound wonderful, you could be giving inaccurate advice.<sup>5</sup> This underscores the importance of human oversight in the publishing process, as AI should be used as a tool to enhance, not replace, human creativity and critical thinking.

The use of genAI in writing has raised ethical concerns in publishing. Many publications, including the Virginia Dental Journal, have their own policies towards the use of AI in publishing. It is generally acceptable to use AI-assisted programs to edit your own original content to eliminate grammar and spelling errors and to improve readability and citations. However, AI should not substitute for the creation of your own content, critical review of conclusions, scientific research, or data interpretation. Publishers also use

AI programs to check submitted content for plagiarism before publication. If you plan on publishing an article with any organization, I encourage you to review their AI policy before submitting your manuscript for review. It's crucial to be aware of the potential pitfalls when using AI in publishing.

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