

Artificial Intelligence Q&A

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Q1: What is Artificial Intelligence (AI)? What are AI tools?

Artificial intelligence (AI) is a machine's ability to perform cognitive functions that are usually considered to be performed by human minds. It refers to the science and engineering required to build machines that mimic human cognition, including tasks related to perceiving, reasoning, learning, creating new content, and problem-solving. AI systems can perform these tasks by learning through algorithms, from large data sets on a wide variety of topics, and through use of neural networks inspired by human neurons^{1,2}. Artificial Intelligence tools or Applied AI are an application of artificial intelligence to real-world tasks and problems.

1. McKinsey and Company. [What is AI \(artificial intelligence\)?](#) April 3, 2024.
2. Kitsios F, Kamariotou M, Syngelakis AI, Talias MA. [Recent Advances of Artificial Intelligence in Healthcare: A Systematic Literature Review](#). *Applied Sciences*. 2023; 13(13):7479

Q2: How can I use AI in my dietetic practice?

AI is used in various ways to provide efficient client care. Integrating AI into practice can expand the ways you can help improve client care outcomes, but it is essential to use professional judgment and adhere to the Dietetic Standards of Practice.

Use of technology, including AI tools must be approached in a way that upholds human autonomy. That implies that individuals should retain authority over decision-making, especially concerning client outcomes.¹

Some ways you can use AI in the Nutrition Care Process include:

- **Dietary Assessment and Analysis:** AI tools can help you evaluate nutrition plans and identify nutrient deficiencies and imbalances, allowing for personalized client recommendations. You should review these recommendations and confirm that they are evidence-informed and a good fit for your client's specific needs.
- **Personalized Meal Plan:** AI software can make personalized meal plans to meet your client's diet requirements and preferences. You should review these plans.
- **Recommendations:** AI algorithms can generate nutrition plans with your client's specific needs, which you should further validate and refine.
- **Monitoring and Evaluation:** AI software can track dietary patterns and provide data that allows you to make necessary changes to ensure compliance with treatment plans. AI can support monitoring of nutrition intake and help predict health outcomes based on individual data.
- **Cultural Sensitivity:** You may use AI software to consider cultural and dietary preferences to better understand how to meet your client's needs. Examples might include:
 - AI-generated population/person-specific diet and culture content to give you context and background knowledge, and
 - AI-generated recommendations that are culturally relevant to your client.

To deliver personalized, client-specific care, it is essential to have an understanding of the diversity among clients. See the Indigenous Cultural Safety, Humility and Anti-racism

Practice Standard on the [CSH page](#) and [Equity, Diversity and Inclusion page, and the Cultural Safety section at the bottom of the Have a Practice Question? page](#). These Q&As have resources and CCP examples.

- **Interactions:** AI software can help flag interactions between foods, medications, and supplements, which you can further analyze for your client.
- **Education:** AI software can provide you with resources that you can recommend to your clients so that they can learn more about their health conditions.

Although these are ways that you can use AI in your daily practice, it is essential to verify the information obtained based on your professional experience and regulatory guidelines. Most AI models are still learning, and some have a bias towards generic information that will not be appropriate for clients and require you to prompt it with more specificity. If you are unable to obtain more specific individualized input from AI, you are responsible to provide nutrition care that is evidence-informed and meets the needs of your client. **Currently, it is a supportive tool for your practice rather than a substitute for your knowledge and experience.**

1. [WHO issues first global report on Artificial Intelligence \(AI\) in health and six guiding principles for its design and use.](#)

Q3: Does the College have a list of AI models that I can use?

The College cannot make recommendations about Artificial Intelligence models. PHSA currently has a [Digital Health Literacy course](#) available, accessible in a number of ways. Guidance on AI models for use in healthcare is likely to be developed and revised over the coming months and may come from PHSA in combination with Provincial/Federal legislation.

Q4: Will AI replace my dietetic expertise?

AI is meant to complement your skill, but it is unlikely to replace your role. This is because when AI is used in healthcare, registered dietitians with training and experience are still required to ensure that the AI output is correct and complete. In addition, dietitians provide human autonomy and empathy and have a deeper understanding of their client's needs, which AI cannot mimic. The use of AI outlines an important continuing education need for dietitians to refine their analysis and questioning skills, and to be discerning of the quality and validity of the information shared by AI models.

Q5: What are the benefits and risks of AI in practice?

AI software can offer many healthcare benefits, challenges, and risks.

Benefits:

- **Efficiency:** AI systems can help you save time on repetitive tasks, such as record keeping and updating educational resources, allowing for increased work productivity. This will enable you to focus more on client care.

- **Personalized treatment plans and improved client outcomes:** AI can help create customized recommendations to help provide culturally relevant food recommendations for clients you may not be familiar with.
- **Client engagement and education:** AI tools can help educate clients about their medical conditions, allowing for improved engagement and understanding.
- **Analyzing data:** AI software can collect and analyze a large amount of client data to help monitor progress. This can provide ways to adjust your client's nutrition care plan to meet their needs.
- **Clinical Support:** While you provide the final nutrition care plan, AI software can support informed clinical decisions. Note: Decisions should not be made solely using AI models.

Risks:

- **Privacy and Security:** AI software may collect and store client health data, which can raise ethical concerns about privacy, security, and incorrect use of information, including the risk of data breaches. As we all start using AI, it will be important to understand how, where, by whom, and for how long data shared with AI is saved, accessed, and stored.
- **Lack of Personalization:** AI software may not reflect the different needs of clients from other socio-economic classes, races, cultures, genders, comorbidities, etc. In addition, AI software is unable to respond to human emotions, show empathy, or resolve ethical dilemmas. This is where educated human input is needed to tease out the nuances of nutrition care plans. This ties to Dietetic Standards of Practice 13, 14, and 15, where it identifies the importance of providing quality professional services that reflect the goals, values, and unique circumstances for clients. In addition, you are responsible for delivering evidence-informed information and performing a thorough assessment and evaluation. AI cannot be solely relied upon without using clinical judgment and performing appropriate cultural considerations. In your role, it is important to provide individualized care which is catered to the client's needs.
- **Accuracy and Reliability:** AI software may not be accurate as it uses algorithms that rely on existing data to make predictions. If the input in data is inaccurate or incomplete, the output will be incorrect. A PEN study showed that ChatGPT had difficulty generating accurate nutritional diagnoses, including providing a nutrition care plan that was not unique to the circumstances of individual clients (reference at the end of the post).
- **Client Trust and Communication/Erosion of the Therapeutic Relationship:** Clients may not trust and feel comfortable with the services they receive if only provided by AI. This can lead to a complaint to the College. To learn more about Professional Boundaries and your role, more information can be found in the Dietetic Professional Boundaries – Where's the Line document.
- **Introduction of Bias:** AI models are based on data they've been trained on, which can introduce bias, and may not be able to correctly generate treatment plans that are sensitive to individual needs of different socio-economic races, cultures, genders, etc.

With any use of information, there is always a risk that can occur. Strategies to identify, manage, and mitigate these risks can be found on the [Dietetic Managing Risk in Practice Q&A](#).

Q6: Are AI dietary recommendations reliable?

AI applications are meant to mimic human cognition but not replace the client's unique experience with you. Although AI applications such as ChatGPT can be reliable, healthcare professionals must use AI as a support tool rather than use it exclusively. This is because it doesn't replace the knowledge and experience of dietitians and understand the factors that affect clients such as income, food literacy and cooking skills. In addition, AI software is still new and relies on algorithms and clinical data that may not represent the target populations, including factors like comorbidities, ethnic background, gender, and more. Therefore, dietitians play a crucial role in ensuring the reliability of their nutrition care plans, which should include a combination of AI recommendations and clinical judgement. Registrants should request the references that support the responses generated by AI and evaluate their relevance, quality, and currency.

Q7: What are the ethical implications of using AI in practice?

Using AI applications in practice can have ethical implications unless you take steps to ensure that you are using your clinical judgment and the information obtained from the AI software. More information about the Dietetic Standards of Practice.

Questions to ask yourself:

1. Is your feeling of competence inflated with the use of AI?

You may feel competent to practice outside of your legal and personal scope because of the scope and knowledge you gained from AI software, but the tasks likely require dietitian experience and judgement in combination with knowledge from reputable sources.

2. Are you relying heavily on AI software?

Relying on AI may:

- weaken your competence level in specific areas. This is because of overreliance on the software, which means that you may make less effort to gain knowledge and understanding to maintain your skills.
- limit your ability to offer recommendations of more than one option for service or product (including cost differences, regional availability, or conflict of interest – see below)
- recognize actual conflicts of interest, but not identify perceived conflicts of interest.
- not generate Marketing materials that meet the requirements of Dietetic Marketing Standards.

3. Is there a risk of privacy breach?

When AI software is used, information is entered, and there is a risk of personal health information being a part of the public data pool for future inquiries. This is important because for AI software to generate output successfully, it needs access to existing information, which can violate a client's confidentiality.

4. Is the nutrition care plan recognizing the unique needs of your client?

Using AI to complete tasks could mean that the client's circumstances (ex., Socioeconomic status, comorbidities, etc.) are not considered. Even though AI software can be reliable in finding **evidence-based** recommendations, they might need to meet the standards for **evidence-informed** approaches (ex., Information you know about the client's cultural preference, past nutrition care plans, traditions related to food in their culture, etc.).

5. Are you meeting the Dietetic Standards of Record Keeping?

If AI is used to generate documentation that is not edited correctly, there could be omission or emphasis on details that are minimally important and vice versa. AI software may not use correct workplace abbreviations with respect to the Dietetic Standards of Record Keeping.

Q8: What are the legal copyright implications of using AI in practice?

Currently, there is debate regarding the ownership and copyright of AI generated content. There are a lot of questions regarding ownership of data obtained by AI, and with increasing impact of AI on a wide array of daily activities, the Federal government is working on the regulation of AI for copyright protection. As more information is available, this section will be updated.

Q9: How can I stay updated on the latest AI developments? What training, education materials and tools could I use AI in my practice?

The following list includes examples of Learning Activities for a CCP Learning Report where the goal is related to AI. You can stay updated on AI developments with various online tools and resources. Some ways to stay updated include:

- Enrolling in online courses, certifications (ex., Courses, webinars, etc.), or participating in continuous learning opportunities related to dietitians and AI.
- Regularly review academic journals and publications related to AI and dietitians to allow you to learn the latest research.
- Attending conferences, workshops, and seminars focusing on dietitians and AI will allow you to gain more knowledge about developments in the field.
- Subscribe to online newsletters about AI to receive updates from reputable sources.
- Work with other dietitians in experimenting and analyzing software.
- Join online platforms such as discussion groups where you can participate and ask questions to learn about AI developments from peers and experts.
- Participate in additional training to properly use AI programs in practice.
- Stay up-to-date on pertinent provincial and federal legislation that may be developed to regulate AI use in healthcare. Understand any AI policies or guidelines that your workplace has in place.

To be better prepared to meet the needs of your clients using AI software, you can use the following as a basis to learn more about AI:

- Chatelan, A. et al. [ChatGPT and Future Artificial Intelligence Chatbots: What may be the Influence on Credentialed Nutrition and Dietetics Practitioners?](#) Journal of Academy of Nutrition and Dietetics, August 4, 2023. Government of Canada. Canadian Institutes of Health Research. [Building a Strategy for Artificial Intelligence in Public Health: Centering Partnership, Equity, and Interdisciplinarity](#)
- Healthcare Excellence Canada. [Implementing Artificial Intelligence in Canadian Healthcare: A kit for getting started](#)
- Innovate Healthcare. [AI In Healthcare](#)
- Healthcare Information Management Systems Society (HIMSS). [Resources and articles on healthcare technology, including AI in healthcare and dietetics](#) (fees may apply).
- [LinkedIn Learning for resources on AI](#)
- Queen's University. Health Sciences. [AI in Healthcare Course, Queens University \(please note there is a fee for this course\)](#)
- [Montreal Declaration for a Responsible Development of Artificial Intelligence, 2018](#)

Q10: References

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Naik, N. et al. [Legal and Ethical Consideration in Artificial Intelligence in Healthcare: Who Takes Responsibility?](#) *Frontiers in Surgery*. Mar 2022. Volume 9.

Norori N. et al. [Addressing bias in big data and AI for health care: A call for open science.](#) *Patterns* (N Y). 2021 Oct 8;2(10):100347.

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Royal College of Physicians and Surgeons of Canada. [Artificial intelligence \(AI\) and emerging digital technologies.](#)

Sak J, Suchodolska M. [Artificial Intelligence in Nutrients Science Research: A Review.](#) *Nutrients*. 2021 Jan 22;13(2):322

Thudia, P. [How AI Is Making It Easier For Healthcare Practitioners To Serve Up Nutrition To Patients.](#) *Forbes*. Dec 2019.

[WHO issues first global report on Artificial Intelligence \(AI\) in health and six guiding principles for its design and use.](#)