

The College of Physicians & Surgeons of Alberta (CPSA) provides advice to the profession to support physicians in implementing the CPSA Standards of Practice. This advice does not define a standard of practice, nor should it be interpreted as legal advice.

Advice to the Profession documents are dynamic and may be edited or updated for clarity at any time. Please refer back to these articles regularly to ensure you are aware of the most recent advice. Major changes will be communicated to our members; however, minor edits may only be noted within the documents.

## Contents

Preamble .....	2
Bottom line .....	2
Current research .....	3
Clinical considerations .....	3
Privacy .....	3
Consent .....	4
Bias .....	4
Data integrity .....	4
Data SOVEREIGNTY .....	5
Health system harm .....	5
Legal considerations .....	5
Summary .....	6
Glossary .....	6
Resources .....	7
Appendix A .....	8

**Note:** a glossary of terms can be found at the end of this document. Glossary terms are indicated in teal with a “G” throughout this document.

## Preamble

The use of large **language model (LLM)**<sup>6</sup> generative **artificial intelligence (AI)**<sup>6</sup> has exploded since the introduction of **ChatGPT (Chat Generative Pre-Trained Transformer)**<sup>6</sup> in November 2022. **Generative AI**<sup>6</sup> tools are being used in the provision of health services, largely in advance of studies to assess their impact on the quality of patient care. Third party tools that generate chart notes from text input or from recorded conversations are rapidly entering the market and being advertised to members.

The impact of LLM generative AI on the quality of health programs and services is rapidly evolving and because of the speed of change, there is currently limited research-based evidence to guide an approach to AI use by regulated members. CPSA will monitor developments in this field and make every effort to communicate them to members and update this Advice to the Profession as more information becomes available.

This Advice to the Profession aims to provide guidance to regulated members who are considering generating chart notes with the support of AI.

Note that Offices of Information and Privacy Commissioners of several provinces are currently investigating ChatGPT with respect to privacy concerns<sup>1</sup> and that a federal strategy with respect to AI use in health care is being developed.

## Bottom line

If using AI in clinical care, ensure that:

- the patient consents to the use of the technology/recording;
- patient privacy is protected;
- the quality of the chart note and suggested differential diagnosis is verified for accuracy and evaluated for bias before being included in the patient's record; and
- appropriate follow-up advice is given to the patient and adequately documented.

Until more information is available about the accuracy and reliability of AI-supported charting and clinical decision-making, this practice remains speculative. Members should exercise care to ensure that notes are accurate and that clinical decisions are medically sound and supported by evidence. For the time being, members utilizing AI in clinical practice are advised to proceed with great caution.

---

<sup>1</sup> [Announcement: Canadian Privacy Commissioners Investigating ChatGPT – Office of the Information and Privacy Commissioner of Alberta \(oipc.ab.ca\)](#)

## Current research

Although no systematic literature review was conducted, there are early studies of generative AI in health care published to date. In one, a group from the University of California found that licensed healthcare professional evaluators rated [Chatbot<sup>6</sup>](#) responses to medical questions on Reddit's r/AskDocs as superior<sup>2</sup> to those from verified physicians in quality (3.6 x higher prevalence of good/very good quality  $p < 0.01$ ), and empathy (9.8 x higher prevalence of empathetic/very empathetic  $p < 0.01$ ).

Another recent study, which evaluated principal and differential diagnoses produced by a generative AI tool (GPT-4) when presented with difficult cases drawn from the New England Journal of Medicine clinicopathologic conferences<sup>3</sup> found that GPT-4 provided the correct diagnosis in its differential in 64% of cases and correctly identified the true diagnosis in 39% of cases, comparing favourably to human alternates.

Notwithstanding this promising early research, legislation does not yet specifically support (nor prevent) the use of AI in health care.

## Clinical considerations

The use of data in health care should minimize potential data-related harm and promote the delivery of quality health programs and services. [Appendix A](#) contains a breakdown of the potential harms associated with using ChatGPT, but we have outlined some important considerations below which are technology-independent.

### PRIVACY

Members should take care not to expose a patient's personally identifiable information when using dictation services, LLM interfaces or [social media](#) to support their clinical care. Even without names or personal health numbers, a patient's privacy may be exposed by the clinical uniqueness of a case.

---

<sup>2</sup> JAMA Network's "[Comparing Member and Artificial Intelligence Chatbot Responses to Patient Questions Posted to a Public Social Media Forum](#)" (Apr. 28, 2023)

<sup>3</sup> JAMA Network's "[Accuracy of a Generative Artificial Intelligence Model in a Complex Diagnostic Challenge](#)" (June 15, 2023)

The use of AI-supported charting and clinical decision-making may require updating a privacy impact assessment (PIA) and filing it with OIPC.<sup>4</sup> If using commercial software, inquire whether the vendor has filed a PIA with OIPC.

### CONSENT

Informed consent should be obtained from patients according to CPSA's [Informed Consent](#) standard of practice. With a novel technology such as generative AI, it may be challenging to communicate the risks and benefits of the use of the technology to patients. At a minimum, patients should be asked to consent to record the clinical encounter (if applicable) and made aware of potential risks involving data integrity, bias and privacy.

### BIAS

Large data sets used to train LLMs may contain biased information, thus leading to incorrect interpretation of patient information. Regulated members should use particular caution in interpreting generated content, accounting for the demographics and health context of the patient they are assessing. OIPC identifies this issue as a concern in their 2020-2021 report, noting that “what personal information is being used and why decisions are being made often seem to take place in a ‘black box’, raising questions about transparency and ethics, including potential discrimination and bias”.<sup>5</sup>

### DATA INTEGRITY

The accuracy of AI-supported chart notes and differential diagnosis is not yet established. Clause 1(b)(i) of CPSA's [Patient Record Content](#) standard of practice requires regulated members “**must** ensure that the patient record is an accurate and complete reflection of the patient encounter to facilitate continuity in patient care.” Harm to patients may arise from an inaccurate note or incomplete differential diagnosis.

Best practice for charting includes recording the context in which a note is generated. This might include the author's identity (e.g., member, learner, scribe, allied healthcare provider) and any assistive technology used to generate the note (e.g., dictation software, template, generative AI model and version).

---

<sup>4</sup> OIPC: [Privacy Impact Assessments](#)

<sup>5</sup> OIPC's [Annual Report 2020-21](#)

### DATA SOVEREIGNTY

Members should consider whether their information management policy is respectful of data sovereignty for Indigenous peoples. The Canadian Institute for Health Information (CIHI) [provides some guidance](#) in this area.<sup>6</sup>

### HEALTH SYSTEM HARM

Cost overruns and system inefficiency arising from poor data design and use are a material source of harm in the healthcare system. The use of generative AI to support charting and clinical decision-making has the potential to improve efficiency and access to care while reducing costs. However, it must be carefully evaluated to avoid unintended harm to patients.

### Legal considerations

[OIPC's 2021-2022 Annual Report](#) states that “de-identification, open banking, synthetic data, biometrics and artificial intelligence, to name a few continuing and emerging trends – reinforce the need to modernize privacy laws to ensure they are fit for purpose. Modern, rigorous privacy laws are a required foundation to support innovation and to generate public trust in governments and private sector.” A similar observation was made in the OIPC's 2020-2021 report, questioning “whether existing privacy laws are fit for the purpose of regulating AI and machine learning when there are implications for individuals' rights. It may be that this technology demands a new and innovative legislative approach.”<sup>5</sup>

Further, the legislative approach to health information technology, including the application of artificial intelligence in clinical care, is largely silent with respect to the rights of Albertans to information technology that promotes their health and well-being while also assuring access to their personal health information. In alignment with the statement of the OIPC, a reimagination of health information legislation that achieves a nuanced balance between the respective health data rights of Albertans and mitigates all forms of data-related harm is prudent.

The [Canadian Medical Protective Agency](#) (CMPA) makes it clear that artificial intelligence is intended to complement clinical care. It is not a replacement for clinical judgement and assessment. Medical care should always reflect the member's own recommendations based on objective evidence and sound clinical judgement.<sup>7</sup>

---

<sup>6</sup> Canadian Institute of Health Information's “A Path Forward: [Toward Respectful Governance of First Nations, Inuit and Métis Data Housed at CIHI](#)” (Aug. 2020)

<sup>7</sup> CMPA's “[The emergence of AI in healthcare](#)” (May 2023)

Tools to facilitate charting, diagnosis and treatment planning are not new in clinical medicine and often improve efficiency. Regulated members already use dictation, in tandem with transcriptionists, or more recently with speech recognition software, electronic medical record macros or templates for common presentations or scribes who are present in the patient encounter to facilitate charting. Similarly, clinical decision support tools (pathways, protocols and clinical scores) are commonly used to facilitate clinical decision-making and ensure consistent care.

## Summary

Until more information is available, members utilizing AI to generate chart notes are advised to proceed with great caution and ensure all [Standards of Practice](#) are followed.

If engaging in such a practice, ensure that the patient consents to using the technology/recording and that their privacy is protected. Exercise care to ensure that chart notes are accurate before inclusion in the patient's record, that any suggested differential diagnosis is verified for accuracy and evaluated for bias, and that clinical decisions are medically sound and appropriately documented. Be aware that the regulated member remains responsible for the quality and integrity of their own assessments, documentation and recommendations with or without utilizing AI.

Additional factors to consider when using this form of information technology are as follows:

- [Standards of Practice](#)
- workflow efficiency
- access to care
- reduced system cost

[Appendix A](#) contains a fulsome breakdown of the potential harms associated with using large [language model](#) generative [artificial intelligence](#) such as ChatGPT.

## Glossary

**Artificial Intelligence (AI):** the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.<sup>8</sup>

---

<sup>8</sup> From [Britannica.com](#) (Aug. 31, 2023)

**Generative AI:** a type of AI algorithm that uses deep learning techniques and massively large data sets to understand, summarize, generate and predict new content, including audio, code, images, text, simulations and videos.<sup>9</sup>

**Large Language Models (LLM):** a data set which can support generative AI software to produce text-based content.

**Chatbots:** software agents (may be based on LLMs) which converse in natural language with website visitors to determine their needs and address common requests.<sup>10</sup>

**ChatGPT:** proprietary software that allows a user to ask it questions using conversational or natural language. It was released on November 30, 2022, by the US company OpenAI. ChatGPT is a chatbot based on the GPT-3 and GPT-4 LLMs.<sup>11,12</sup>

## Resources

CPSA team members are available to answer questions by contacting [support@cpsa.ab.ca](mailto:support@cpsa.ab.ca).

## Related Standards

- CMPA's [Code of Ethics & Professionalism](#)
- [Informed Consent](#)
- [Patient Record Content](#)
- [Virtual Care](#)

## Companion Resources

- Advice to the Profession documents:
  - [Informed Consent for Adults](#)
  - [Informed Consent for Minors](#)
  - [Social Media](#)
  - [Virtual Care](#)

---

<sup>9</sup> From Tech Target's "[What is large language model \(LLM\)?](#)" (Apr. 2023)

<sup>10</sup> From [Britannica.com](#)

<sup>11</sup> From [Britannica.com](#) (Aug. 31, 2023)

<sup>12</sup> From National Cyber Security Centre's "[ChatGPT and large language models: what's the risk?](#)" (Mar. 14, 2023)

## Appendix A

Table 1: Health Data-Related Harm and potential impact of using LLM-generative AI to support note taking and clinical decision making. Note that this has not yet been studied systematically and **definitive evidence** is required to fully assess impact.

Policies concerning the use of AI/ChatGPT should consider these harms as well as any others arising from the use of such technology.

Individual Harm	Potential Impact of LLM-generative AI
Breach of personal health data privacy & security	<p><b>HARM</b> From privacy and security perspectives, potential location of servers outside of Canada is of concern.</p> <p>Lack of a Privacy Impact Assessment (PIA) filed with OIPC poses risk.</p> <p>Most LLM-generative AI is unregulated technology owned and operated by private companies that have a proprietary and financial interest in any data shared.</p>
Damage to physical or emotional health and well-being	<p><b>HARM</b> Incorrect or erroneous encounter documentation and/or diagnostic advice.</p> <p><b>BENEFIT</b> Anecdotal evidence suggests that LLM-generative AI can improve quality of chart notes, thus supporting high-quality clinical communication and care.</p> <p>Early studies suggest LLM-generative AI may support equivalent or improved diagnostic service.</p>
Breach of cultural rights to personal health data	<p><b>HARM</b> The use of this technology without express consent could be in violation of the First Nations</p>



	principles of Ownership, Control, Access, and Possession (OCAP) <sup>13</sup> ; Métis principles of ownership, control, access and stewardship (OCAS) <sup>14</sup> ; and Inuit principles of Qaujimajatuqangitdata <sup>15</sup> .
Breach of legal & ethical rights to personal health data	<b>HARM</b> Canadians are legally entitled to their health information. How this principle applies to health information that is being transferred to a private technology company with servers in the United States is unclear and untested in law. This raises red flags.
<b>Population Harm</b>	<b>Potential Impact of LLM-generative AI</b>
Failure to benefit from science and use health data for public good.	<b>BENEFIT</b> The potential for large volume natural language processing to provide powerful insights into population-based health questions is substantial. Curtailing use of this technology may obstruct the capacity to benefit from science and use health data for public good.
Use of data to promote population-based discrimination and/or inequities.	<b>UNKNOWN</b> Risk of this harm with this form of AI is not known. Further study is required.
<b>Health System Harm</b>	<b>Potential Impact of LLM-generative AI</b>
Cost overruns & system inefficiency arising from poor data design and use.	<b>BENEFIT</b> Early anecdotal evidence suggests that LLM-generative AI can improve the efficiency of health service, thus reducing system cost.

<sup>13</sup> First Nations Information Governance Centre: [OCAP and Information Governance](#)

<sup>14</sup> Canadian Institute for Health Governance: [Toward Respectful Governance of First Nations, Inuit and Métis Data Housed at CIHI](#)

<sup>15</sup> Nunavut Impact Review Board: [Inuit Qaujimajatuqangitdata](#)

<p>Damage to health workforce well-being from poor data design and use</p>	<p><b>BENEFIT</b> Early anecdotal evidence suggests that LLM-generative AI can offload note-taking burden from healthcare providers and promote wellness at work.</p>
<p>Failure to support health innovation through health data use.</p>	<p><b>BENEFIT</b> AI is a data-dependent health innovation. Innovation is an important means to improve health system function and render it sustainable. Further exploration of this technology supports health innovation.</p>