Artificial Intelligence in Clinical Practice

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

Definitions

Artificial intelligence (AI): technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.[1]

AI-related hallucinations: the generation of content that is not based on real or existing data but is instead produced by a machine learning model's extrapolation or creative interpretation of its training data, [2] including any instance in which a model generates

---

[1] From IBM's "What is artificial intelligence (AI)?" (n.d.).
[2] From the National Library of Medicine's "A Call to Address AI 'Hallucinations' and How Healthcare Professionals Can Mitigate Their Risks" (Sep. 5, 2023).

misleading medical content,[3] highlighting the importance of being aware of AI's limitations and latest advancements.[2]

Black box: a term describing AI systems whose decision-making processes are opaque or difficult to interpret.[4]

Custodian: a health services provider who is designated in the *Health Information Regulation* as a custodian, or who is within a class of health services providers that is designated in the regulations in the *Health Information Act* (HIA).[5]

Health data-related harm: damage suffered by individuals, populations, or the health system arising from poor health data access, quality or use.[6]

Informed consent: a process by which a patient is given clear information about the nature, purpose, risks, benefits and alternatives of a proposed intervention, including AI tools where feasible, so they can voluntarily decide whether to proceed. Obtaining verbal or written consent is the physician's responsibility, and information pertaining to the consent process must be documented in the patient's record.[7] Refer to CPSA's *Informed Consent* standard of practice for more information.

Notification and explanation: the process of informing a patient, in clear and accessible language, that AI is being used in their care. This can include a basic description of the AI tool's purpose, how it contributes to their care (e.g., clinical decision support tool or creating chart notes) and any relevant risks or limitations. Notification and explanation are foundational to obtaining meaningful, informed consent and upholding patient autonomy in AI-assisted care.[8]

Privacy Impact Assessment (PIA): a formal process required under the HIA to identify and mitigate privacy risks when new technologies (including AI tools) are implemented in healthcare settings. PIAs must be updated with/submitted to the Office of the Information and Privacy Commissioner of Alberta (OIPC).[9]

---

[3] From medRxiv's "Medical Hallucination in Foundation Models and Their Impact on Healthcare" (Mar. 3, 2025).
[4] From IBM's "What is black box AI?" (Oct. 2024).
[5] From the Province of Alberta's *Health Information Act* (Aug. 27. 2025).
[6] From Networked Health's "Data Disarray: A root cause analysis of health data dysfunction in Canada" (Nov. 2024).
[7] From the National Library of Medicine's "Patient Consent and The Right to Notice and Explanation of AI Systems Used in Health Care" (June 6, 2025).
[8] From the Office of the Privacy Commissioner of Canada's "Principles for responsible, trustworthy and privacy-protective generative AI technologies" (Dec. 7, 2023).
[9] OIPC's "Privacy Impact Assessments" (June 2025).

Preamble

Advice to the Profession documents typically do not include commentary; however, given the evolving nature of AI, we have included more in-depth information to provide context in the current environment. A high-level summary can be found in "Key Points" (below).

Until more information is available about the accuracy, reliability and safety of AI applications in clinical practice, the full scope of the impact of this technology remains speculative. Regulated members are advised to proceed with caution and that they remain professionally accountable for all clinical decisions and documentation.

Key points

As AI becomes more commonly used in clinical practice, regulated members are encouraged to adopt a balanced approach that promotes patient health, well-being and health system function while minimizing potential harm. In summary, CPSA suggests regulated members be aware of the following:

- update/submit a PIA to OIPC when introducing any AI tool into clinical practice, including for documentation, decision-making or patient communication, in accordance with HIA requirements;

- implied consent is not recommended: when using any AI tool in patient care, including AI scribes and diagnostic tools, clearly inform patients and obtain and document meaningful informed consent. This includes being transparent about the benefits and limitations of AI use as well as the regulated member's responsibility for clinical decision-making;

  o for more information, please refer to the *Informed Consent* standard of practice;

- document how and when AI is used in the patient record, especially when it informs diagnosis, treatment or clinical notes;

- review, verify and remain fully accountable for all clinical decisions and documentation, regardless of whether AI tools are used (AI does not replace clinical judgement or transfer liability);

- minimize all potential forms of harm arising from the use of AI technologies, including:

  o protect patient health and wellbeing by critically reviewing all AI-generated content for accuracy, bias, hallucinations and clinical relevance, and making

necessary amendments before incorporating content into care or documentation;

- protect patient privacy by ensuring compliance with all applicable legislation (e.g., HIA), avoiding entry of identifiable information into non-compliant tools and submitting or updating PIAs when introducing AI into practice;

- ensure AI use supports quality of care and does not introduce unintended variation in care or outcomes. AI systems can reflect biases or gaps in the data on which they are trained and regulated members must remain vigilant to the potential for skewed or incomplete outputs and consider how this may affect individual patient care;

- ensure AI-generated information forms part of the patient record and remains accessible to patients; and

- understand that health information technology, including AI, is currently unregulated in Canada and Alberta. Regulated members remain accountable for clinical decisions and for the appropriate use of AI in supporting those decisions, including when reliance on AI contributes to adverse outcomes.

Introduction

The use of AI has grown rapidly in the health sector, with providers adopting AI tools to support documentation, diagnostic assistance, patient triage, research and prognostic analytics. Early evidence suggests AI has the potential to improve healthcare quality, efficiency and access; however, if not applied appropriately, AI tools may lead to diagnostic inaccuracies and potential risk to patient safety and health equities. Further, the rapid adoption of AI means its use has often preceded formal regulatory oversight and long-term outcome studies, leading to ethical, legal and clinical uncertainty, including questions about consistency and reliability of outcomes across patient populations.

PURPOSE OF DOCUMENT

This document provides an overview of the use of AI for **clinical purposes** and practical guidance for regulated members who are considering or are currently using AI for direct patient care. It outlines key principles grounded in CPSA's mandate to protect the public and support quality medical care. This document is framed around two foundational questions members should consider when using AI:

1. Does the use of AI support or improve quality of care?

2. Can harm result from the use or non-use of AI in clinical practice?

This document draws on the Health Quality Alberta's (HQA) "Alberta Quality Dimensions for Health" and the Health Data-Related Harm (HDRH) framework in the Networked Health (formerly Alberta Virtual Care Coordinating Body) "Data Disarray: A root cause analysis of health data dysfunction in Canada" document to address these foundational questions.

Understanding the regulatory context of AI

Both health information technology, including AI, and many aspects of health data use are currently unregulated in Alberta and Canada. While health data privacy and disclosure are regulated through the OIPC, the assurance that health data is used to foster core domains of health service, including the promotion of health and wellbeing, research, innovation and cultural wellbeing, is largely absent from public policy across the country.[10]

Consequently, while the privacy and disclosure of health data for the purposes of AI use is regulated, both the technology itself, or how the data is used to promote quality care in the context of AI, is not. This has potential implications both for regulated members electing to use AI tools for clinical care and for patient wellbeing.

AI's potential benefits to care

To ensure safe patient care and high-quality professional practice, the use of AI should not be employed as a clinical tool unless it supports and/or positively impacts quality of care. In alignment with the World Health Organization, HQA's "Alberta Quality Dimensions for Health" sets out seven dimension of quality care: people-centred, timely, safe, effective, efficient, equitable and integrated care. These dimensions provide a framework against which the value of clinical AI can be measured.[11]

IMPACT ON PEOPLE-CENTRED CARE

People-centred care respects and responds to each patient's preferences, needs, values and best interests. By analyzing massive datasets that predict individual health risks and enabling real-time adaptive treatment strategies, there are instances of AI tools possessing the capacity to deliver highly customized, patient-centric care.[12] One example is a study demonstrating a machine learning model that was able to use genetic information from patients to predict their response to chemotherapy with 80% accuracy.[13]

---

[10] From Networked Health's "Data Disarray: A root cause analysis of health data dysfunction in Canada" (Nov. 2024).
[11] Health Quality Alberta's "Alberta Quality Dimensions for Health" (n.d.).
[12] From AMII's AI-Powered Personalized Medicine for Targeted Therapies (2026).
[13] From Springer Nature Link's "Revolutionizing healthcare: the role of artificial intelligence in clinical practice" (Sep. 22, 2023).

Although these AI tools face operational obstacles before they can be widely adopted in mainstream care, they demonstrate significant promise for the promotion of people-centered personalized care.

IMPACT ON ACCESSIBLE AND TIMELY CARE

AI tools have the potential to enhance the timeliness of care by reducing delays in scheduling, documentation and triage. For example, during the COVID-19 pandemic, many health systems deployed AI-assisted virtual consultations and workflow tools that supported care delivery when in-person visits were limited.[14]

IMPACT ON SAFE CARE

Studies demonstrate that AI shows promise in its ability to positively impact the safety of patient care, including the capacity to enhance diagnostic accuracy, predict patient outcomes and reduce medical errors.[15] CHARTwatch, an AI tool studied at St. Michaels Hospital in Toronto, demonstrated a 26% reduction of patient mortality on an internal medicine ward.[16] However, there are socio-technical and implementation barriers (e.g., lack of interoperable data, policy, governance, etc.) that stand in the way of broad application of these tools, and further research is required to ensure the integration of AI into clinical workflows optimize patient safety and does not result in unforeseen harm.

IMPACT ON EFFECTIVE CARE

One of AI's greatest potentials is its ability to support more effective care by quickly processing and analyzing large amounts of data to help regulated members make evidence-informed decisions. In this manner, AI has the potential to perform as a positive accelerator of care, amplifying diagnostic accuracy and alleviating administrative burden.[17]

IMPACT ON EQUITABLE CARE

The potential capacity of AI to foster equity of care is less clear than most domains of quality care. It is recognized that AI can have a paradoxical impact on equity of care, potentially serving both as a tool to bridge disparities in care, but also, by its very

---

[14] From the National Library of Medicine's "The Role of AI in Hospitals and Clinics: Transforming Healthcare in the 21st Century" (Mar. 29, 2024).
[15] From Frontiers in Medicine's Artificial intelligence in healthcare: transforming patient safety with intelligent systems (Jan.7, 2025).
[16] From Canadian Medical Association Journal's Clinical evaluation of a machine learning–based early warning system for patient deterioration (Sep. 16, 2024).
[17] From NIH's The potential for artificial intelligence in healthcare (Jun 2019).

dependence on antecedent data, possibly amplifying or exacerbating pre-existing, non-representative biases in care.[18]

IMPACT ON EFFICIENT AND SUSTAINABLE CARE

There are examples of AI tools reducing administrative burden and streamlining routine documentation, allowing healthcare providers to spend more time with patients. For example, AI scribes can reduce the time spent charting, which may increase service volume, opportunities for face-to-face encounters and decrease provider burnout.[19]

IMPACT ON INTEGRATED CARE

Studies demonstrate that AI can enhance healthcare efficiency and outcomes through its capacity to rapidly combine diverse datasets and produce precise recommendations from this integrated data.[20] In this manner, with properly integrated data, AI can support care coordination, improve communication between providers and reduce fragmented or siloed care. Integrated tools can optimize transitions, flag follow-ups and coordinate scheduling across services—functions that are particularly valuable in team-based and multidisciplinary settings.

Potential harms in the use or non-use of AI in clinical practice

Like other information technology, AI has the potential to harm individuals or the healthcare system if not used properly. It is important to identify and understand potential harm to avoid or mitigate it, while protecting patients.

At the same time, neglecting to use technology that can clearly enhance quality of care can similarly result in harm; for example, a refusal to use a defibrillator for a patient with a cardiac arrest can precipitate a negative outcome. AI should be considered through the lens of potential harm arising from both its inappropriate use or lack of use.

Potential harm arising from the inappropriate use of health information technology has been outlined by the HDRH framework (p. 19). As a data-dependent technology, the improper design and use of AI can lead to one or more of the ten categories of HDRH. We

---

[18] From Frontiers in Public Health's Integrating health equity in artificial intelligence for public health in Canada: a rapid narrative review (Mar. 17, 2025).
[19] From JAMA's "Ambient artificial intelligence scribes: physician burnout and perspectives on usability and documentation burden" (Dec. 5, 2024).
[20] From NIH's The role of artificial intelligence for the application of integrating electronic health records and patient-generated data in clinical decision support (May 31, 2024).

examine six forms of harm that are most directly implicated in the use of AI for clinical purposes:

- harm to patient health and wellbeing
- harm to legal and ethical rights
- harm to privacy
- harm to social good
- harm to health system function
- harm to health workforce wellbeing

HARM TO HEALTH AND WELLBEING

Missing or incomplete health information can lead to inaccurate AI-generated conclusions and/or AI-related hallucinations, which can precipitate diagnostic inaccuracies and potential harm to patient health and wellbeing. For example, an AI-generated radiology report that misinterprets an image could result in a missed cancer diagnosis or a false positive diagnosis that causes significant distress and unnecessary interventions.

Harm to patients may also arise from the failure or non-use of AI tools when they can improve outcomes; for instance, neglecting an available decision-support or triage system could impair potential system efficiencies and deny patients timely or accurate care.

Mitigation strategies:

- Regulated members are responsible and accountable for the careful oversight of all AI-generated content to assure the accuracy of all diagnostic conclusions and documentation.

- Regulated members are encouraged to use AI tools that demonstrably support quality care and do not cause harm.

HARM TO LEGAL AND ETHICAL RIGHTS

Regulated members must be aware that the health data they create during clinical care belongs to the patient and that, as trusted custodians, they are managing this information on behalf of patients. This follows both a 1992 ruling by the Supreme Court of Canada and the Alberta HIA, which assures the right of patients to access their personal health information (except in rare and specific circumstances outlined in the HIA). To avoid violating legal rights, regulated members must ensure their patients have ready access to their personal health information, including that created using AI.

Informed consent is a cornerstone of safe, ethical and people-centred care. If there is any collection of health information where a device (e.g., an ambient AI tool) may not be visible to the patient, regardless of which technology is used, informed consent must be obtained in accordance with the HIA.[21] When AI is directly involved in shaping clinical decisions, documentation or patient interactions, regulated members must ensure patients demonstrate a reasonable understanding of its role in their care. Consent should be meaningful, not just procedural, and proportionate to the tool's use and impact. At a minimum, patients should be told the nature and purpose of the AI tool, how their privacy and confidentiality will be protected and the potential risks and benefits of the technology. As such, implied consent is not recommended, as there is no reliable way to document the patient's awareness, understanding or consent to use AI in their care.

Patients must also be made aware that their agreement to AI use is voluntary and that they have the right to decline or opt out, when feasible, in alignment with privacy legislation. Where opting out is not feasible, this should be explained to the patient. While administrative staff may assist in the consent process, it is ultimately the physician's responsibility to ensure that consent is obtained in accordance with CPSA's *Informed Consent* standard of practice.

Mitigation strategy:

- AI-related personal health information must be readily accessible to patients.

- Informed consent, verbal or written, for the use of AI tools must be obtained from patients.

HARM TO PRIVACY

Breaches of personal health data are a concern with the use of any information technology, including AI. Regulated members should use caution when entering patient information into AI platforms, particularly publicly available tools. As personal clinical details are frequently necessary to ensure the accuracy and usefulness of such tools, this may cause a conundrum. Regulated members should avoid divulging unique patient identifiers (e.g., names, addresses, personal health numbers or other direct identifiers) unless the tool meets all applicable privacy and security requirements as outlined in the HIA, *Personal Information Protection and Electronic Documents Act* (PIPEDA) and the *Access to Information Act* (ATIA). For more information, please contact OIPC.

---

[21] From the Province of Alberta's *Health Information Act*: s. 23 – Use of a device to collect health information (Dec. 2025).

When an AI tool is first introduced to a practice for use in documentation, decision-making or patient communication, a PIA must be updated to include the AI tool.[22] When using commercial AI tools, regulated members deemed custodians must file a PIA with OIPC.[23] Even seemingly de-identified or anonymized data can pose re-identification risks when clinical details are unique or shared online. Data security and confidentiality remain core professional responsibilities for regulated members.

It is also important for regulated members to assess whether use of AI tools is legally authorized under the HIA: please refer to OIPC's "Guidance for Small Custodians on the use of Artificial Intelligence" for more information.

Mitigation strategy:

- When using AI for clinical purposes, regulated members must comply with all applicable privacy and security requirements outlined in provincial privacy legislation.

- Regulated members must complete a PIA when an AI tool is first introduced to a practice for use in documentation, decision-making or patient communication.

HARM RELATED TO DATA QUALITY AND SYSTEM PERFORMANCE

AI-generated bias can arise from the use of non-representative or inaccurate data that can perpetuate historical inequities, including differences in performance or outcomes across patient populations or clinical contexts.[24] Regulated members should be especially cautious when applying AI-generated outputs to patient groups that may be underrepresented in the data used to develop or inform the AI, and consider whether the underlying data is sufficiently representative and reliable for the patient being assessed. AI tools trained on non-representative data carry the risk of reinforcing pre-existing biases and disparities in health outcomes. For example, some dermatology AI tools have been found to perform poorly on patients with darker skin tones, leading to missed or inaccurate diagnoses.[25]

Regulated members must be alert to these limitations and consider whether AI tools perform consistently and reliably across different patient populations and clinical scenarios. Equitable use necessitates monitoring outcomes over time to identify

---

[22] From OIPC's "Artificial Intelligence (AI) Scribe Privacy Impact Assessment Guidance" (Sept. 2025).
[23] From the Province of Alberta's *Health Information Act*: s. 64 – Duty to prepare privacy impact assessment (Dec. 2025).
[24] The Federation of State Medical Board's "Navigating the Responsible and Ethical Incorporation of Artificial Intelligence in Health Care and Biomedicine" (Apr. 2024).
[25] From Science Direct's "Understanding skin color bias in deep learning-based skin lesion segmentation" (Mar. 2024).

unintended biases and adjusting care when disparities are detected. Ultimately, AI should be guided by the goal of supporting consistent, high-quality care and minimizing unintended variation in outcomes.

Mitigation strategy:

- Regulated members must assess AI outputs for accuracy, reliability and potential limitations, and use clinical judgment to address any identified issues before incorporating them into patient care.

HARM TO HEALTH SYSTEM FUNCTION

At the system level, fragmented or non-interoperable data systems, including AI platforms, can compromise efficient healthcare function, lead to delays in service and adversely impact patient outcomes. For example, failure to integrate an AI tool into an electronic medical record (EMR) may introduce workflow redundancies, disrupt continuity of care, create new documentation burdens and drive system costs and provider workload.

Mitigation strategy:

- Regulated members should reflect on and consider whether the AI tool integrates with other tools and workflows in accordance with privacy legislation.

HARM TO HEALTH WORKFORCE WELLBEING

Administrative burden is now recognized as a significant problem for the health workforce and can contribute to wasted time, burnout and unsafe care. AI tools have emerged as a promising means to address this challenge through the automation of routine tasks, including the documentation of patient encounters.[26] Studies demonstrate that AI scribes can reduce administrative time and professional burnout, and by association improve the safety of care.[27]

Mitigation strategy:

- When possible, regulated members should adopt proven, secure and safe AI technologies that can reduce burnout, improve health service efficiency and foster the safety of care.

---

[26] From McMaster University's "Artificial intelligence tools for reducing administrative burden among front-line healthcare providers" (May 2025).
[27] From JAMA Network's "Use of Ambient AI Scribes to Reduce Administrative Burden and Professional Burnout" (Oct. 2025).

SUMMARY

The potential for AI to foster improved clinical care is significant across virtually all domains of quality care. However, the use of AI in health service can result in harm to individuals or the healthcare system if not deployed and used in a responsible and informed manner. Unfortunately, the capacity of research and regulation to remain abreast of the relative value and risk of AI use in healthcare is inadequate, rendering the ability to use this technology in a fully informed manner challenging. Consequently, there remain significant governance, policy and technical barriers to the broad operationalization of safe, high-functioning AI tools in clinical service.

Ultimately, AI should not be seen solely as a risk to manage, but a tool that, when responsibly applied, can improve care across all dimensions of quality care, while safeguarding individual, population-based and health system harm.

Regulated members are encouraged to remain informed, proactive and collaborative in ensuring AI serves the best interests of patients and the welfare of the healthcare system.

CPSA will continue to monitor developments in this field and will update or develop new Advice to the Profession documents as literature, regulation and best practices evolve.

Responding to patient concerns about AI use

Patients may have questions or reservations about the use of AI in their care. Clear, respectful communication can foster trust and support shared decision-making. Regulated members may find the following approaches helpful:

- Clarify roles: explain the relative function of the AI tool and the physician. Example: *"This tool reviews imaging patterns to help me focus on areas of concern. I will still interpret the results and make the final call."*

- Acknowledge limitations: be transparent about known uncertainties or "black box" features of the AI. Example: *"AI systems don't always explain how they reach their conclusions. I'll review all findings to ensure they are appropriate for your symptoms and history."*

- Discuss benefits and risks: provide plain-language explanations of evidence, validation status and limitations of the AI tool. Validate feelings by addressing concerns and respond with empathy. Example: *"What worries you most about this tool? I want to make sure you're comfortable with how we proceed."*

- Reinforce accountability: emphasize that, regardless of AI use, the physician remains fully responsible for care provided. Example: *"No matter what the tool says, I am responsible for all of your care."*

To support these conversations, CPSA has published an [Advice to Albertans on AI](#) that can be shared with patients.

Conclusion

This is the second edition of CPSA's AI Advice to the Profession, reflecting our commitment to keep abreast of Alberta's evolving digital health landscape. As evidence and regulatory frameworks mature, CPSA will continue to update this guidance to reflect emerging best practices and research.

While AI holds promise for improving diagnostic accuracy, enhancing documentation efficiency and supporting clinical workflows, its use also introduces new ethical, legal, equity and safety challenges that require careful oversight.

When used responsibly, AI can serve as a powerful tool to enhance, not replace, human insight, compassion and clinical expertise. Regulated members remain responsible for the quality, accuracy and integrity of care provided to their patients.

Resources

CPSA team members are available if you have questions or concerns. Please contact support@cpsa.ca or 1-800-561-3899.

Related Standards of Practice

- CMA'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](#)
- [AI, big data, and the future of consent](#)

- [Alberta Quality Dimensions for Health](#)
- [Ambient artificial intelligence scribes: physician burnout and perspectives on usability and documentation burden](#)
- [AMA Journal of Ethics: How Should Clinicians Communicate with Patients About the Roles of Artificially Intelligent Team Members?](#)
- [Canada Health Infoway: AI Scribe Program](#)
- [Canadian Institute for Health Information (CIHI): Path Toward Respectful Governance of First Nations, Inuit and Metis](#)
- [CMPA: The emergence of AI in healthcare](#)
- [Coalition for Health AI (CHAI): Responsible AI Guide](#)
- [Ethics of large language models in medicine and medical research](#)
- [FSMB – Navigating the Responsible and Ethical Incorporation of Artificial Intelligence into Clinical Practice](#)
- [Human Factor Health Data Interoperability](#)
- OIPC:
  - [Comments from the Office of the Information and Privacy Commissioner Regarding Responsible AI Governance in Alberta](#)
  - [Guidance for Small Custodians on the use of Artificial Intelligence](#)
  - [Privacy Impact Assessments](#)
    - [PIA Submission Assessment Tool](#)
    - [Privacy Impact Assessment Requirements Guide](#)
- [Patient Consent and the Right to Notice and Explanation of AI Systems Used in Healthcare](#)
- [The Role of AI in Hospitals and Clinics: Transforming Healthcare in the 21st Century](#)
- [Understanding skin color bias in deep learning-based skin lesion segmentation](#)
- World Health Organization:
  - [Ethics and Governance of Artificial Intelligence for Health (2021)](#)
  - [Quality of Care Framework](#)

Review Date	Revision/Change
Mar. 23, 2026	Complete update with additional context, commentary and resources.