Artificial Intelligence: Practice Advice

Purpose

This practice advice provides guidance to registered nurses (RNs) and nurse practitioners (NPs), herein referred to as **REGISTRANT(S)**,[1] on the safe, ethical and professional use of **ARTIFICIAL INTELLIGENCE (AI)**. The College of Registered Nurses of Alberta (CRNA) AI practice advice document outlines ten principles to facilitate informed, evidence-based adoption and use of AI that aligns with regulatory standards, code of ethics and patient-centered care. AI, and all forms of **DIGITAL HEALTH**,[2] should enhance—not replace—the human connection at the heart of registrant practice and clinical judgment. The purpose of this document is to provide information and guidance in the use and adoption of AI through principles that will help ensure safe and responsible use of AI across practice settings.

"AI should enhance—not replace—the human connection"

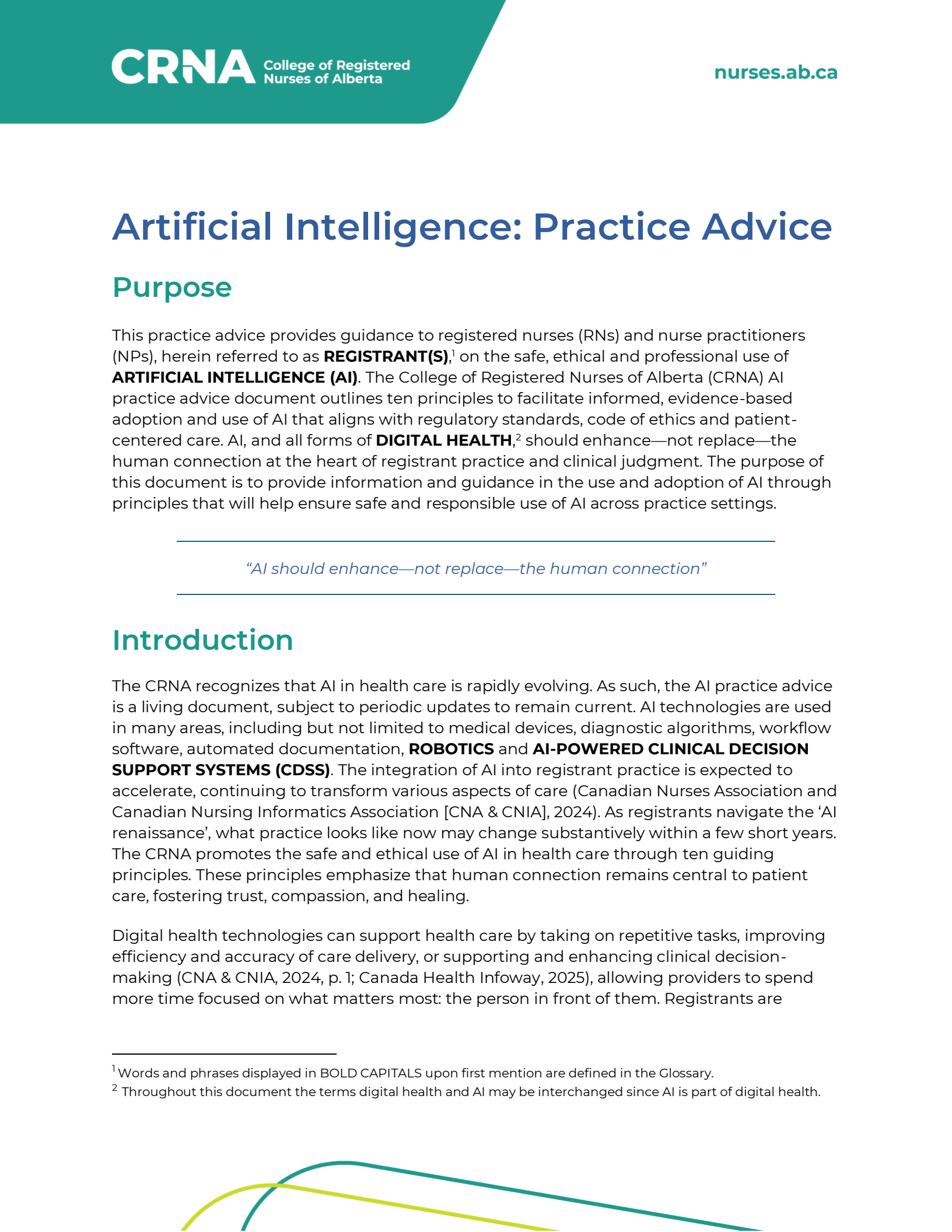
Introduction

The CRNA recognizes that AI in health care is rapidly evolving. As such, the AI practice advice is a living document, subject to periodic updates to remain current. AI technologies are used in many areas, including but not limited to medical devices, diagnostic algorithms, workflow software, automated documentation, **ROBOTICS** and **AI-POWERED CLINICAL DECISION SUPPORT SYSTEMS (CDSS)**. The integration of AI into registrant practice is expected to accelerate, continuing to transform various aspects of care (Canadian Nurses Association and Canadian Nursing Informatics Association [CNA & CNIA], 2024). As registrants navigate the 'AI renaissance', what practice looks like now may change substantively within a few short years. The CRNA promotes the safe and ethical use of AI in health care through ten guiding principles. These principles emphasize that human connection remains central to patient care, fostering trust, compassion, and healing.

Digital health technologies can support health care by taking on repetitive tasks, improving efficiency and accuracy of care delivery, or supporting and enhancing clinical decision-making (CNA & CNIA, 2024, p. 1; Canada Health Infoway, 2025), allowing providers to spend more time focused on what matters most: the person in front of them. Registrants are

[1] Words and phrases displayed in BOLD CAPITALS upon first mention are defined in the Glossary.

[2] Throughout this document the terms digital health and AI may be interchanged since AI is part of digital health.



responsible for AI-influenced decisions and must integrate their professional judgment and experience to ensure safe and effective care.

Registrants may use these principles by applying them sequentially or holistically when encountering overt AI or digital health technologies (recognizing some use of digital health now and in the future is covert, without user awareness). Start by assessing the tools alignment with the principles (e.g., Does it enhance the human connection? Is it compliant with privacy laws?), then monitor its use in real-time, and evaluate outcomes continuously throughout the nursing process to refine future decisions.

Start by assessing the tools alignment with the principles

Principles

1. Human-centric

At the heart of the CRNA AI practice advice is the commitment to place people first.

- Registrants should evaluate if AI enhances (not replaces) direct patient interaction until a time where some AI and robotics can be automated, has proven to be safely managed and is trusted for more routine tasks.
- If it risks dehumanizing care (e.g., over-relying on AI alerts), stop and reevaluate. Registrants are educated, compassionate, think critically, apply judgment, can rationalize and empathize. AI should not replace these qualities or human oversight, ensuring that decisions remain grounded in professional expertise and respect for individual dignity.
- Robotics are tools. Care must always remain human-centered; the patient's dignity, autonomy, safety, privacy, and respect for culture and preferences come first.
- Digital health should not replace a registrant's assessment, clinical judgment/diagnostic reasoning, or prescribing; robotics and AI may assist but does not decide. For example: a pre-screening questionnaire that was conducted by AI should be verified as accurate and valid; an AI powered CDSS recommendation should be scrutinized for veracity, applicability and bias; use of a robot should be evaluated for appropriateness for the patient and situation.

2. Fair and Equitable

AI models are trained on large datasets that include information obtained in books, academic writing, news, public or internal sources and the internet. However, the quality and fairness of these responses depend on the data the model was trained on. If the training data contains biases—whether related to gender, ethnicity, culture or otherwise—the AI's outputs may reflect and even amplify those biases (Cross, Choma, & Onofrey, 2024). This highlights

the critical importance of human oversight: users should actively screen for potential bias and inappropriate outputs before applying them in clinical settings.

- Registrants should validate AI-generated responses/outcomes and screen against biases or unfairness that may lead to inequities and alignment with evidence-based care.
- Cross-check AI output against established clinical guidelines.
- Look for patterns that might systematically favor or disadvantage a patient group.
- Apply clinical judgment: assess whether the AI output aligns with your assessment, critical thinking, and patient-specific context.
- Registrants should ensure that the use of AI tools respect the dignity, values and preferences of patients, communities and providers.
- Wherever possible, registrants should support AI advances in health care for all population groups, ensuring AI deployment does not widen existing disparities.
- Use of automated systems, such as scheduling or triage systems, should be routinely assessed to protect against bias that may impact automated decision-making (Office of the Information and Privacy Commissioner, 2025, p. 17).

3. Privacy, Confidentiality and Security

At this point in AI development, not all AI tools are able to complement the health-care provider because the use of data-driven insights may end up in a breach of health information protection laws. Even if names or identifiers are removed, the distinct details of a clinical case can still reveal a patient's identity, which could result in unintentional privacy breaches. Privacy breaches might lead to professional misconduct, or even an unlawful act and violation of the CRNA privacy standards, which are reportable offences.

AI support for clinical documentation requires the AI tool to be compliant with the health information legislation and regulation such as the *Health Information Act* (HIA). Additionally, any agency that utilizes AI support for staffing, billing, or scheduling of healthcare services must ensure that the AI tool is compliant with the *Personal Information Protection Act* (PIPA). Public bodies that implement AI systems in healthcare delivery must also comply with the Freedom of Information and Protection of Privacy Act (FOIP, now called Access to Information Act [AITA]). Registrants are advised to contact Alberta's Office of the Information and Privacy Commissioner (OIPC) to better understand these requirements and regulations.

- AI systems that can be used in automated decision-making, such as scheduling or triage, must meet health information regulation requirements.
- Registrants must never place patient identifying data or information into a public-facing AI tool (such as ChatGPT or similar). Patient data must be used, stored, accessed and transmitted through AI tools that comply with PIPA, the HIA, and other health information legislation and regulation and CRNA standards of practice.
- Registrants who are custodians of health information are required to
    - implement reasonable safeguards, policies, procedures and training for staff (clinic owners are encouraged to review vendor contractual agreements and

protections with legal counsel, such as the Canadian Nurses Protective Society, or otherwise),
    - ensure adoption and implementation comply with regulation and legislation, CRNA privacy requirements and standards of practice,
    - ensure implemented AI tools are reasonably protected from cybersecurity threats,
    - know how adopted AI systems or tools are classified and meet Health Canada requirements for procurement and implementation, and
    - should know what clinical evidence supports the system or tool and what limitations it may have. It is important to educate employees on the proper use and any specific limitations a technology has.
- Additionally, clinically oriented AI scribes that are vetted by organizations such as OIPC are more likely to reliably comply with Alberta, Canada requirements.

4. Accuracy and Reliability

Although AI models are improving in reducing errors, such as hallucinations and factual inaccuracies (OpenAI, 2025), these issues remain hard to detect, and their prevalence is unknown. AI can also misinterpret or overgeneralize health conditions, potentially leading to incorrect diagnoses or influencing clinical decisions in harmful ways (Peters & Chin-Yee, 2025; College of Physicians and Surgeons of Alberta, 2023). To ensure patient safety, AI outputs must align with evidence-based care. While future systems may be vetted for accuracy by health-care authorities, current safeguards rely on responsible use and oversight.

- AI is a tool to augment clinical expertise and knowledge, not replace it.
- Registrants should use AI judiciously. Always combine AI outputs with professional judgment and critical thinking. Review, critically appraise and validate any AI outputs for veracity and against bias and error.
- Outcomes should be routinely monitored and assessed to ensure AI tools are delivering reliable results and supporting intended goals. (Outcomes may be patient satisfaction surveys, error reduction, bed sore reduction, outputs that align with current clinical practice guidelines, etc.)
- Registrants should seek to use clinically oriented AI tools for more accurate information in both clinical practice and research or training settings. For example, OpenEvidence is a language model designed for use by health care providers. The data it is trained on may be more reliable to models trained on other data.
- In a situation where a registrant cannot personally verify AI-outputs, it is recommended to seek guarantees from the employer or vendor to ascertain reliability. For example, if an AI research tool is launched in the workplace, it may be prudent to check with the employer that they have vetted the resource.

5. Effective and Appropriate

- AI tools should be selected for effectiveness and remain evidence-based to support desirable and meaningful patient or system outcomes.
- Registrants should be aware of the tool's intended purpose and its associated outcome, and assess whether it is the right tool, for the right setting, for the right care and the right purpose.
- Registrants who are employers should utilize a quality assurance process with digital health technologies.
- Use robots only for tasks validated for the right context (population, setting, workflow) and task.

6. Transparency, Explainability, and Consent

Health literacy, among other factors, affects an individual's ability to provide consent (American Nurses Association, 2022, p. 4). Transparency and consent mean that a patient is informed of what AI tools will be used, for what purpose, how AI will use patient information, the benefits, risks and they should be aware of alternative options or the ability to opt out.

For example, if an automatic scribe is being used and the patient has consented at the beginning of the interaction, they may decide to refuse this automation during a clinical exam at the point where they feel the need to disclose sensitive information. At this point, another method of documentation will be used and the patient's rights honored. Always ensure consent is informed, documented clearly, and that AI use is transparent. Do not just write "patient consented" but capture what was explained.

AI chatbots and robots must not present themselves as human

- AI chatbots and robots must not present themselves as human; maintaining this distinction is essential to ensure transparency and protect public trust.
- Registrants must be able to disclose use of AI-assisted decision-making.
- AI itself should be transparent and be able to disclose the algorithmic thought process. Registrants should only utilize AI tools with built-in explainability features to enable AI output review.
- Registrants should clearly communicate how they are using AI in clinical decision-making and support and be prepared to explain to patients how the tool(s) function, including their limitations, and respect the patient's right to decline or opt out of AI-supported care where appropriate.
- Patients should retain the right to decline robotic use without this causing a hindrance to the quality of care.
- Registrants must obtain **INFORMED CONSENT** before each use of an AI tool, clearly explaining the purpose, potential benefits, limitations and risks involved. Patients

should understand their autonomy to opt out at any point, even after consent has been given.

- If obtaining informed consent is delegated to another health care provider the registrant should check to make sure these providers also know the purpose, benefits, limitations and risks.
- Robotics use should include documentation and traceability: chart when, how, and why robotics were used; any overrides, malfunctions, or adverse events.
    - Robotics documentation example: "Explained the use of a robotic assist device for transfer; patient understood the benefits and limits and gave verbal consent. The device operated under RN supervision; safety checks completed. RN verified positioning and skin integrity post-transfer, no issues. Override not required."
    - AI decision-support documentation example: "AI-powered CDSS suggested possible urinary tract infection based on patient symptoms, urinalysis and history. RN reviewed AI output against current assessment findings, patient history, and clinical practice guidelines. RN verified alignment with clinical presentation. Decision to initiate NP consultation for antibiotic management. AI supportive in decision process."

In these documentation examples the following elements are captured:

- The tool used
- Informed consent
- With AI—the suggested decision
- The verification process
- Professional judgment and oversight
- How the AI or robotic tool is described: supportive or adjunctive

7. Accountability and Oversight

Maintaining a human-centric approach to AI in healthcare means registrants remain fully responsible for decisions affecting patient care. AI tools can support—but never replace—clinical judgment, skill, and accountability (American Nurses Association, 2015, p. 1). Organizations using AI chatbots are legally responsible for the information these tools provide, underscoring the need for oversight. Before introducing AI or robotic technologies, they must be approved by Health Canada and meet provincial or CRNA standards. Owners must understand how the tool is classified, its supporting clinical evidence, and limitations. Only AI systems that comply with Health Canada's guidance and federal/provincial regulations should be used.

Additionally, AI may increase cybersecurity risks due to its data-processing capabilities. Clinic owners and custodians of personal health information must conduct privacy impact assessments and ensure they are compliance (Government of Alberta, 2023). They are also

responsible for implementing safeguards, policies, and staff training to ensure secure and responsible use of AI.

- The registrant holds primary responsibility for decisions related to patient care as AI should support, not replace, human judgment, critical thinking or clinical skills.
- If the registrant is the most responsible person to oversee the use of AI, who has adopted AI, they should ensure there is an established AI oversight and monitoring program of all AI tools, including those used by employees.
- Robots are tools. Registrants should maintain line-of-sight or effectively supervise robotics in healthcare.
- When robotics become safe to be included with autonomous tasks, registrants who are employers should aim to have safety stop protocols in place.
- Registrants retain accountability for assessments, decisions, and outcomes when AI or robotics are used. Verify AI and robotic output for accuracy and reliability: for example, look for discrepancies or anything that points to a bias or error, take time to double-check robotic assessments in a reasonable timeline to verify findings and validate personal trust in these devices. If your assessment consistently verifies that of a robot, this helps to enhance trust.

8. Ethical and Legal Use

- Use of AI must align with the code of ethics and standards of practice.
- AI and robotic procurement must align with Health Canada device regulation requirements.
- All uses of AI and robotics in health care must comply with Alberta's HIA, FOIP/ATIA and PIPA, and any other legislation and regulation, to ensure the lawful collection, use, disclosure, sharing and safeguarding of health and personal information.
- AI and robotics should augment the registrant-patient relationship, not replace.

9. Competence and Education

In this era of digital transformation, enhancing AI literacy and informatics competency is key for safe and ethical practice in digitally enabled care environments (CNA & CNIA, 2024).

- At minimum, registrants should understand the foundations of AI and its nomenclature, and be informed of the benefits, risks, and limitations for practice and patient care. Furthermore, registrants should be more competent and proficient in AI tools that have immediate and direct impact to their day-to-day activities. This is the ability to bring a reasonable degree of skill and knowledge to any task related to practice (CNA & CNIA, 2024).
- Registrants who are clinic owners or employers should ensure adequate education and training is in place for employees to advance their AI literacy and informatics competency as it pertains to adoption and implementation.

- Organizations should have supports, policies and procedures in place to ensure that students utilizing digital health or AI technologies in their placements are compliant with CRNA standards and practice advice.
- Registrants must maintain entry to practice skills, such as dosage calculation, or looking for drug-drug interactions, to confirm reliability of AI outputs, not becoming over-reliant on AI tools.
- Use robotics only with training appropriate to the task; maintain competency and obtain support when outside of personal competency level.

10. Data Governance and Quality

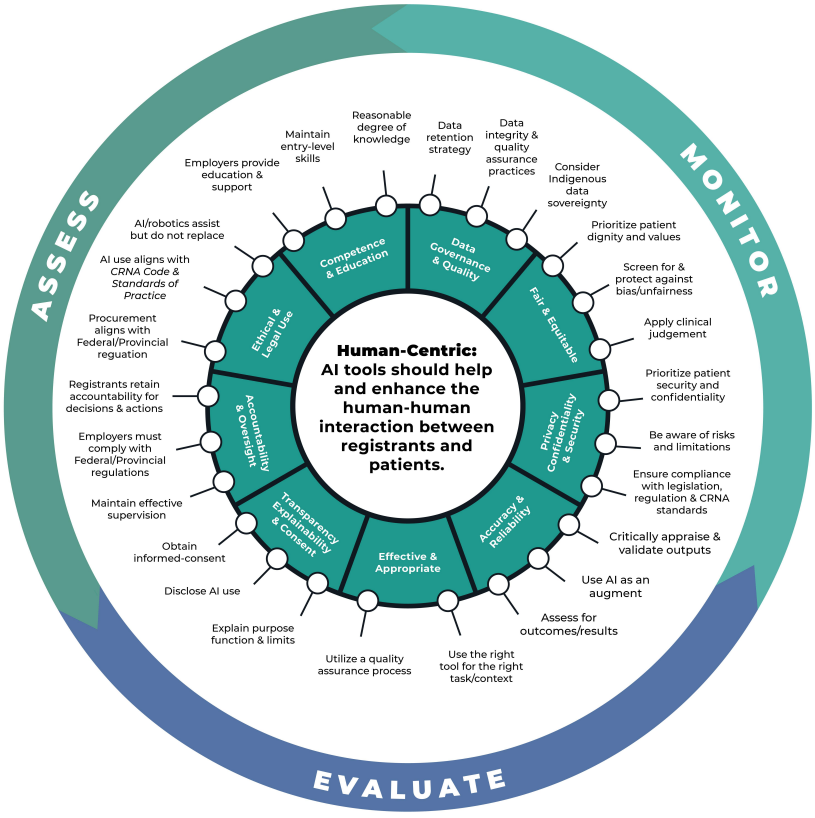
- Registrants who are employers should facilitate regular audits of data inputs and sources used in AI systems, ensuring they are accurate, ethically sourced and aligned with standards of practice and code of ethics.
- Employers should utilize a quality assurance program that tests AI outputs against error, bias and potential privacy threats.
- Registrants are encouraged to remain alert to indications of concern (e.g., incomplete information, unaddressed reports of malfunction or security issues) and notifying the appropriate persons as part of an interdisciplinary process.
- Registrants are encouraged to collaborate with health authorities, IT specialists and interdisciplinary teams to establish and maintain robust data governance practices, including clear stewardship roles for ongoing data quality management.
- Clinic owners should consider Indigenous data sovereignty (Canadian Institute for Health Information [CIHI], 2020). CIHI has helpful information to inform this.
- Registrants, employers, and clinic owners using AI for transcription services should have a data retention strategy. Once an AI transcription is validated for use in the patient chart, the original data source should be deleted, as AI generated content may contradict with the clinician's final documentation and may be used in legal cases. All registrants validate AI outputs; therefore, the final documentation should be superior to the AI output.

Assess, Evaluate, Monitor

Encompassing the principles is this iterative process: assess, monitor and evaluate. Registrants and employers should consistently engage in the assessment, evaluation and monitoring of AI tools in health care, being proactive to voice concerns and engage in quality improvement. When AI or more advanced digital health, such as robotics, are used in healthcare, the iterative process may be engaged before use, during use, and after use. For example:

- Before use: confirm clinical appropriateness, disclose overt AI/robot involvement; obtain and document consent. Check for safety aspects such as battery life, sensor functionality. Validate the AI is not public facing and will not risk patient privacy law, etc.

- During use: maintain supervision and critical thinking, validate outputs, verify AI suggestions and robotic use against clinical standards and your assessment. Watch for patient satisfaction or discomfort, cultural concerns, or otherwise.
- After use: consider the patient and ask about their experience. Ask yourself if you have trust in the AI or robotic output, and if not, report and contribute to quality reviews. Consider the patient-centered outcomes and how they were achieved.



CRNA AI Practice Advice Principles Infographic

The infographic highlights ten principles with human-centric values at the center. Each principle is paired with actionable statements that promote the safe and ethical use of AI and digital health. Surrounding these principles is an iterative process — assess, evaluate, and monitor — which ensures responsible implementation, ongoing safety, and alignment with standards of practice, legislation, regulation, and patient needs. This cycle strengthens accountability, safeguards patient care, and reinforces the profession's commitment to human-centered practice.

CRNA College of Registered Nurses of Alberta

Glossary

ARTIFICIAL INTELLIGENCE (AI) – A branch of computer science focused on developing systems that can reason, learn, and perform tasks traditionally requiring human intelligence.

AI-POWERED CLINICAL DECISION SUPPORT SERVICE (CDSS) – A software tool that assists healthcare providers in making evidence-based decisions by integrating patient-specific data (e.g., demographics, symptoms, lab results) with a clinical knowledge base (e.g., medical guidelines) to deliver tailored assessments or recommendations at the point of care. By incorporating AI these systems move beyond rule-based functions to detect complex patterns, generate predictions, and provide more personalized insights to support clinical judgment (Elhaddad and Hamah, 2024).

DIGITAL HEALTH — The field of knowledge and practice associated with the development and use of digital technologies to improve health. Digital health expands the concept of eHealth, with a wide range of smart-devices and connected equipment. It also encompasses other uses of digital technologies for health such as the Internet of things, artificial intelligence, big data and robotics (World Health Organization, 2021, p. 39).

INFORMED CONSENT — The process of giving permission of making choices about care. It is based on both a legal doctrine and an ethical principle of respect for an individual's right to sufficient information to make decisions about care, treatment and involvement in research (Canadian Nurses Association, 2017).

REGISTRANT(S) – Includes registered nurses (RNs), graduate nurses (GNs), certified graduate nurses (CGNs), nurse practitioners (NPs), graduate nurse practitioners (GNPs), and RN or NP courtesy registrants on the CRNA registry.

ROBOTICS – Healthcare robotics refers to the use of robotic systems—mechanical, electrical, and often AI-enabled—that autonomously or semi-autonomously support healthcare delivery.

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