

Artificial Intelligence in healthcare

POSITION STATEMENT

College position

ACRRM recognises the potential benefits of Artificial Intelligence (AI) in healthcare for patients and service providers in rural and remote areas. AI can offer advanced diagnostics, personalised treatment plans, and remote monitoring capabilities. It can also have a positive impact on the education, training and assessment of health professionals, leading to better assessment of training needs and improved program and exam design and evaluation.¹

The College recognises the importance of integrating AI in a safe, ethical, and responsible manner which prioritises patient-centred care and continuity, quality, and safety of care², and acknowledges the vital role of the patient-doctor relationship. It is essential that AI should support, not replace, clinical decision-making.³

It is important that expanding utilisation of AI does not lead to health services foregoing the provision of in-situ medical professionals in rural and remote areas.

As we navigate the rapidly evolving landscape of artificial intelligence (AI), we must recognise and address the unique perspectives and needs of First Nations communities. AI technologies have the potential to shape our societies, economies, and daily lives, but their impact must be equitable and respectful of cultural diversity.⁴

ACRRM is committed to supporting the development and implementation of AI applications that enhance the capacity of rural and remote healthcare providers to provide timely and high-quality care to patients. By fostering responsible AI adoption, ACRRM aims to ensure that the benefits of this technology are fully realised and accessible to all, particularly those in underserved rural and remote and Aboriginal and Torres Strait Islander communities.

AI applications should be developed and used in a transparent, ethical, and responsible manner consistent with the principles of medical professionalism.⁵

Artificial Intelligence (AI) denotes the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.⁶ AI in the healthcare sector presents itself in many ways, including utilising AI driven surgical robots, virtual assistants, supporting or confirming diagnosis, end-to-end drug discovery and development, improving communications between health practitioner and patient, transcribing medical documents such as prescriptions, medical image analyses and data gathering.

AI in the Rural and Remote Context

When used appropriately, AI can increase the accuracy and speed of diagnosis; facilitate management and advance care planning; and improve the development of personalised treatment plans for chronic conditions, ultimately enhancing patient care and streamlining healthcare processes.⁷

Rural and remote communities are characterised by their small local clinical workforce and geographic isolation from other communities. Any reduction in the local healthcare workforce is likely to have a significant impact on the access of people in these communities to in-person health professional care when needed. It is important therefore that these technologies do not become viewed as a low-cost substitute for personnel based in rural and remote settings.

ACRRM advocates for the development and implementation of AI applications which address the needs of rural and remote patients, carers and communities, and which recognise the unique circumstances and context in which healthcare is delivered. Within these settings, AI has the potential to assist healthcare providers in monitoring patients' health status, providing personalised recommendations, and alerting healthcare providers of potential health risks. By leveraging AI technology, rural healthcare providers can overcome geographical barriers and limited access to specialists, resulting in improved patient outcomes and better management of chronic conditions.⁸ AI can also assist practitioners working in rural and remote areas to interpret laboratory results and radiology images.

Patients and their families would benefit from the improved preventative and timely interventions that these services would provide, with better health outcomes and reduced need to travel and manage often lengthy waiting times for tests and appointments.

Quality and Safety

ACRRM is committed to supporting the development and implementation of AI applications that enhance the capacity of rural and remote healthcare providers to provide timely and high-quality care to patients through the development and maintenance of high standards of quality and safety which are appropriate to the rural and remote context.

Avoiding the Black Box - emerging AI technologies face serious ethical and epistemic challenges, such as the use of black box algorithms. These cannot be surveyed or closely examined by humans and are of concern due to their opaqueness and potential lack of trustworthiness.⁹ The use of AI as a black box in healthcare is concerning, as it can obscure the decision-making process and potentially lead to errors that could harm patients.¹⁰ As with the use of all technology in medicine, transparency and clear guidelines for AI design and implementation are essential.

AI-generated advice should be viewed as a guide rather than an authority in the process of clinical decision-making. AI cannot take into consideration every aspect of the patient's individual circumstances and preferences. Clinicians need to be given latitude to make decisions that are not the same as the advice provided through AI, where based on their clinically-informed judgement, they have deemed these in the best interest of their patient. There is also a need to maintain a point of ultimate accountability for patient care decisions. Patients should have the assurance that their clinicians will hold themselves personally responsible for their advice. Investment in AI healthcare systems should prioritise equity. This means addressing the digital divide affecting minority groups before implementing AI systems.¹¹ AI systems should understand the limitations of remote areas. They should avoid recommending referrals in every instance.¹²

The College recommends the use of a risk-based framework for assessing the safety and quality of AI applications in healthcare.¹³ This ensures that AI applications are held to rigorous standards and contribute positively to healthcare delivery.

Impact on College Selection, Training and Assessment

Separate from its use in healthcare delivery, AI also holds the potential to enhance educational outcomes for healthcare professionals. To ensure safe and effective use, AI in healthcare should be integrated into Rural Generalist and other medical programs selection, all levels of training, and ongoing professional development.^{14,15}

This educational purpose could be divided into two main groups:

1. Use by Trainees in Education/Training

AI significantly enhances the training and education of healthcare professionals. Through the use of simulations and adaptive learning technologies, AI helps trainees develop critical clinical skills in a supportive environment.

2. Use by ACRRM in Administering Education/Training

In the administrative arena, AI streamlines processes within the Australian College of Rural and Remote Medicine (ACRRM). From the selection of candidates to the ongoing assessment and evaluation of trainees, AI offers tools that enhance efficiency and accuracy. This includes automated systems for tracking progress, evaluating performance, and providing feedback, which is essential for maintaining the high standards required in medical training.¹⁵

However, it is imperative to avoid unethical use of AI that may compromise the educational process. Trainees should not solely rely on AI for their responsibilities but must actively engage in educational activities, ensuring a balanced approach between leveraging AI tools and personally completing assignments. The use of AI should complement, not replace, the essential learning experiences and critical thinking skills that trainees need to develop.

Funding Models and Infrastructure Support

AI must be supported by funding models and infrastructure that facilitate its safe and effective implementation, including:

- funding models that support the development and implementation of AI applications in healthcare that meet the needs of patients and healthcare providers in rural and remote areas;
- Infrastructure support that ensures equitable access to AI applications in healthcare for patients and healthcare providers in rural and remote areas; and
- access to reliable network connectivity and medical record systems that support integrated care across the healthcare team.

Key principles for integrating AI in Rural and Remote healthcare

- **Patient-centred care:** AI design should prioritise patient needs, preferences, and values while enhancing the quality and safety of care.
- **Safe, ethical, and responsible integration:** AI applications should be developed and implemented with a focus on safety, transparency, clinical accountability, and adherence to ethical guidelines and medical professionalism.
- **Complementary role in clinical practice:** AI should support, not replace, clinical decision-making, and should be integrated into healthcare provider education and professional development.
- **First Nations Considerations:** AI integration in rural healthcare must respect and address First Nations communities' unique needs and cultural sensitivities, involving their perspectives to ensure equity and avoid worsening disparities.
- **Addressing unique needs of rural communities:** AI applications should be designed to address the specific challenges and contexts of rural and remote healthcare, such as overcoming geographical barriers and limited access to specialists.
- **Risk-based assessment framework:** AI applications should be subject to rigorous standards and contribute positively to healthcare delivery, with ACRRM recommending a risk-based framework for assessing their safety and quality.
- **AI in medical education and training:** AI should be utilised in the selection, training, and assessment of General Practitioners (GPs) within the College to enhance the effectiveness of medical education and produce well-prepared healthcare professionals.
- **Quality and safety and the black box problem:** The use of AI in healthcare should be transparent, with clear guidelines for implementation to prevent errors and potential harm to patients.
- Education needs to be embedded as part of any implementation.

Endnotes

- 1 Najjar, Reabal. 2023. "Redefining Radiology: A Review of Artificial Intelligence Integration in Medical Imaging" *Diagnostics* 13, no. 17: 2760.
- 2 Price, W.N., Gerke, S., Cohen, I.G. (2019). Potential Liability for Physicians Using Artificial Intelligence. *JAMA*, 322(18), 1765-1766.
- 3 Topol, E.J. (2019). High-performance medicine: the convergence of human and artificial intelligence. *Nature Medicine*, 25(1), 44-56.
- 4 Creating an equitable AI policy for Indigenous communities <https://policyresponse.ca/creating-an-equitable-ai-policy-for-indigenous-communities>
- 5 Watters C, Lemanski MK. Universal skepticism of ChatGPT: a review of early literature on chat generative pre-trained transformer. *Front Big Data*. 2023 Aug 23;6:1224976. doi: 10.3389/fdata.2023.1224976. PMID: 37680954; PMCID: PMC1048204
- 6 Oxford Languages definition of artificial intelligence, January 2024 <https://languages.oup.com/google-dictionary-en/>
- 7 Paranjape, K., Schinkel, M., Nannan Panday, R., Car, J., Nanayakkara, P. (2019). Introducing Artificial Intelligence Training in Medical Education. *JMIR Medical Education*, 5(2), e16048.
- 8 Preiksaitis, C., & Rose, C. (2023). Opportunities, Challenges, and Future Directions of Generative Artificial Intelligence in Medical Education: Scoping Review. *JMIR medical education*, 9
- 9 Durán JM, Jongsma KR Who is afraid of black box algorithms? On the epistemological and ethical basis of trust in medical AI *Journal of Medical Ethics* 2021;47:329-335
- 10 Char, D.S., Shah, N.H., Magnus, D. (2018). Implementing Machine Learning in Health Care — Addressing Ethical Challenges. *The New England Journal of Medicine*, 378(11), 981-983
- 11 Crawford, K., & Calo, R. (2016). There is a blind spot in AI research. *Nature*, 538(7625), 311-313. This paper discusses the importance of considering social and cultural factors in AI research and development.
- 12 Mittelstadt, B., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the 13 debate. *Big Data & Society*, 3(2), 2053951716679679. This paper explores the ethical implications of algorithms, including issues related to equity and safety.
- 13 Price, W.N., Gerke, S., Cohen, I.G. (2019). Potential Liability for Physicians Using Artificial Intelligence. *JAMA*, 322(18), 1765-1766.
- 14 Wartman, S.A., Combs, C.D. (2018). Reimagining Medical Education in the Age of AI. *AMA Journal of Ethics*, 20(2), 146-152.
- 15 Topol, E.J. (2019). High-performance medicine: the convergence of human and artificial intelligence. *Nature Medicine*, 25(1), 44-56

Find out more

If you have any queries relating to this Position Statement, please contact us by:

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ACRRM acknowledges Aboriginal and Torres Strait Islander peoples as the custodians of the lands and waters where our members and staff work and live across Australia. We pay respect to their elders, lores, customs and Dreaming. We recognise these lands and waters have always been a place of teaching, learning, and healing.