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Using Artificial Intelligence in Clinical Practice

Royal Australasian College of Physicians Position Statement
August 2025

About The Royal Australasian College of Physicians (RACP)

The RACP trains, educates and advocates on behalf of over 23,200 physicians and 8,700 trainee physicians, across Australia and Aotearoa New Zealand. The RACP represents a broad range of medical specialties including general medicine, paediatrics and child health, cardiology, respiratory medicine, neurology, oncology, public health medicine, infectious diseases medicine, occupational and environmental medicine, palliative medicine, sexual health medicine, rehabilitation medicine, geriatric medicine, and addiction medicine. Beyond the drive for medical excellence, the RACP is committed to developing health and social policies which bring vital improvements to the wellbeing of patients, the medical profession and the community.

We acknowledge and pay respect to the Traditional Custodians and Elders – past, present and emerging – of the lands and waters on which RACP members and staff live, learn and work. The RACP acknowledges Māori as tangata whenua and Te Tiriti o Waitangi partners in Aotearoa New Zealand.

Executive summary

- The provision of equitable and sustainable services is increasingly under pressure in the Australian healthcare system. Artificial intelligence (AI) can be applied to a variety of tasks across the healthcare sector including administrative tasks, clinical decision-making support and patient education to improve efficiency, enhance accuracy and reduce costs. These benefits need to be weighed up against the risks related to AI use in clinical practice such as AI bias or hallucinations, the lack of transparency and accountability in testing and medicolegal liabilities.

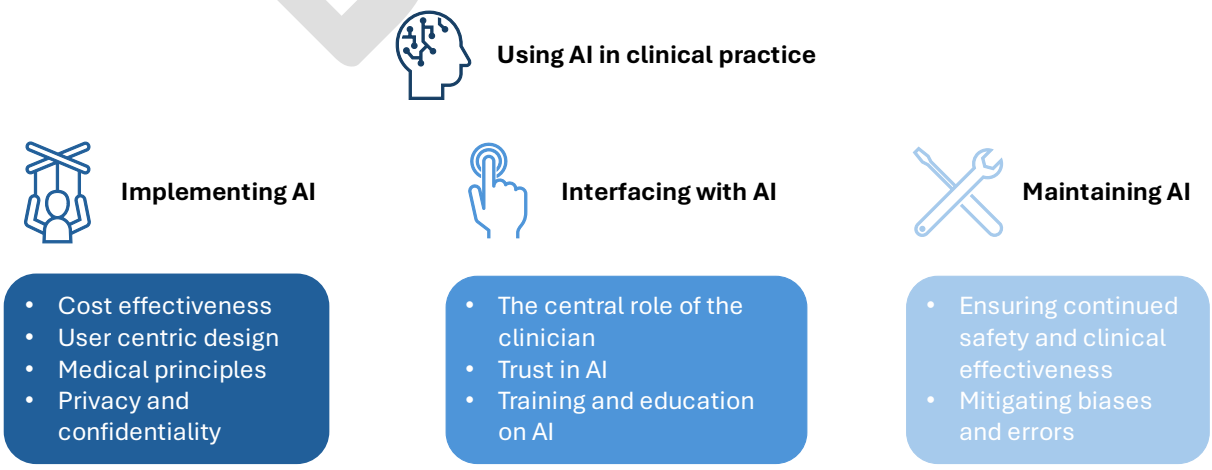
- The Royal Australasian College of Physicians (RACP) acknowledges that AI will transform health care, most likely in a staggered or phased way. The first phase, which we are currently in, is comprised of lower risk AI for automating routine administrative or clerical duties; the second phase will comprise assistive AI for routine, repetitive image-based interpretation tasks; the third phase will be augmentative AI for predicting disease risk and prognosis; and the fourth phase will be augmenting real-time clinical decision-making in regard to diagnosis and treatment.

- Over the coming years as trainees and Fellows of the RACP increasingly interact with systems that use AI, practising physicians will need to develop competencies and soft skills to understand and critique AI and actively participate in AI implementation, interaction and maintenance.

- Governance and regulatory frameworks at local, state and national levels need to be established and co-ordinated that protect both physicians and patients who choose to use AI applications in their clinical care. Physicians will continue to carry primary responsibility for patient safety through their duty of care and be held accountable in a court of law for patient harm, until such frameworks are established with binding legislation.

- This position statement focuses on the use of AI in clinical practice. As such, it details the key considerations physicians must make when implementing, interfacing and maintaining AI in their clinical practice. Furthermore, this resource highlights likely barriers to using AI in clinical practice and provides practical solutions for physicians or practice providers to ensure physicians are able to work towards the quintuple aim in healthcare, better care at lower cost, greater professional satisfaction, improved patient experience, improved population health and guaranteed health equity.

Figure 1- Categories of expected interactions between AI and physicians and the key considerations of each.



Introduction

Trainees and Fellows of the Royal Australasian College of Physicians (RACP) will, over coming years, increasingly interact with systems that use artificial intelligence (AI) and machine learning (ML). Over the last few decades, AI/ML has transformed how we conceptualise, create and deploy technology. AI is an expanding field of scientific endeavour that seeks to create intelligent machines that mimic human cognitive abilities in regard to visual perception, decision making, and interpreting language. AI takes many forms which continue to evolve, operates within a hierarchy of functions, and has been, and is being, applied to an increasing array of human enterprises. In collaboration with the Policy and Advocacy team, the RACP Digital Health Advisory Group (DHAG) has formulated a position statement that clearly enunciates the key principles, barriers and strategies related to how physicians should interact with AI in their clinical practice. This statement was developed using the methodology outlined in **Appendix A**.

Need for AI in clinical practice

The RACP and its members are committed to the health and wellbeing of the patients they serve. The ability to provide equitable and sustainable services is under increasing pressure due to multiple factors: growing demand for healthcare services, driven by an ageing demographic and continuing increases in chronic disease prevalence; increasingly complex decision-making within the context of information overload and physician burnout; workforce shortages; limitations in healthcare resources and capacity; rising community expectations of best practice care; and increasing calls for greater patient empowerment in disease management.

These factors threaten the achievement of the quintuple aim in healthcare: better care at lower cost, greater professional satisfaction, improved patient experience, improved population health and guaranteed health equity. The advent of vast and unused data stores in electronic medical records (EMRs) and other digitised repositories (e.g. genomic data, clinical images, population databases, etc) and the advent of advanced computer programs, especially Generative Pre-trained Transformer-based technologies, have spurred the development of AI in ways not previously imagined. AI offers profound new opportunities to improve clinical processes and care, from both the perspective of physicians and their patients. AI has the potential to make healthcare a learning system that is more agile, adaptive, personalised, safe, effective and efficient.

In response to the rapidly growing interest and activity in developing and deploying AI/ML applications in healthcare, various professional colleges and societies, both in Australia and internationally, have issued position statements and roadmaps in how AI should be used safely, effectively and responsibly (**Appendix B**). All recognise AI will be increasingly embedded into clinical practice, and that training and professional development programs, practice accreditation standards and organisational procurement procedures must be developed and amended in a way that ensures AI is used responsibly and ethically.

Benefits and risks of AI

Benefits

The potential benefits of AI applications in the clinical practice of physicians range from automating administrative and clerical tasks, to providing sophisticated clinical decision-making support and risk prediction, to educating patients and using remote monitoring devices to assess disease progress and optimise management. While not all these applications may interact directly with physicians, they will have significant indirect impact in that radiology, pathology and other image-based disciplines, on whose reports much of physician decision-making relies, are adopting AI at scale. An increasing number of successful use cases, both clinician and patient facing, can improve efficiency by saving time and releasing it for direct patient care, enhance diagnostic and prognostic accuracy, enhance personalised care, empower patient self-management and reduce costs. The US Food and Drug Administration has, as of July 2025, approved more than 1200 AI-enabled devices and algorithms for use in clinical practice on the basis of robust clinical studies.[1]

Risks

Despite the putative benefits, adoption of AI into routine care has been slow as developers, vendors and users navigate technical obstacles, challenges of integration into digital systems, regulatory requirements, equity concerns and insurance and indemnity coverage.[2,3] Key concerns around the use of AI in clinical practice centre on amplification and propagation of bias in the datasets used to train AI models, model inaccuracies or

hallucinations, and lack of transparency and accountability in how the AI model is developed and tested and how it derives its outputs. Other sources of concern are physician medicolegal liability in the event of patient harm arising from physicians misusing AI or using inaccurate AI, automation bias whereby physicians become over-reliant on AI and deskilled in clinical decision-making, increasing overdiagnosis by applying screening tools to healthy individuals[4,5], data breaches and infringements on patient privacy (especially if commercial or third party AI is being used), and patient distrust of AI being used to inform or decide their care without their consent or sufficient physician oversight or control. All endanger trust in the physician-patient relationship. Disruptions to clinical workflows and opportunity costs incurred by AI training programs are risks that must also be considered.

Using AI in clinical practice

It is expected that physician use of AI tools in clinical practice will fall into one of three categories: implementing AI, interfacing with AI and maintaining AI. These categories speak to the development and testing, the interaction with and continued evaluation of AI tools in a clinical practice setting. Each category has several related principles that the RACP feels should guide physicians in this area. Existing literature suggests, in each category, several major factors favour or hinder uptake of any new technology in clinical practice, but which need to be contextualized for the particularities of AI use.[6,7,8,9,10,11,12,13] As barriers are often stated upfront, they have been coupled with a counter enabling strategy. Related strategies are needed to enact the principles, overcome barriers and promote the use of AI tools in clinical practice.

Implementing AI in clinical practice

Implementation speaks to the development and integration of AI tools into workflow platforms or systems that physicians interact with. The principles that the RACP feel should guide the implementation of AI tools into the clinical practice of physicians are proposed as follows:

- RACP believes development, testing and use of AI must adhere to the ethical principles of beneficence (duty to act in the best interest of the patient), nonmaleficence (duty to do no harm to patients), autonomy (duty to protect and foster patients' free, uncoerced choices) and justice (equity in the delivery of care and its benefits).

- RACP believes that in all stages of development and use, AI tools must involve user-centred design and engagement in ensuring these tools reduce physician and patient burden in support of patient care and are seamlessly integrated into clinical workflows. This requires multidisciplinary collaboration between tool developers, data and information technology specialists, physicians and patients in defining the problem to be addressed by the tool and designing it in ways that render it easy to use so that more time can be given for direct patient care.

- RACP believes that AI developers, implementers and researchers must ensure, as much as possible, the privacy and confidentiality of patient and clinician data collected and used for AI model development and deployment. Privacy means no unauthorised access to data; confidentiality means respecting privacy of patients so that they are encouraged to seek medical care and discuss their problems candidly and preventing discrimination based on their medical conditions. Where possible, data should be de-identified/anonymised and aggregated, data is contained within protected firewalls, and techniques used that minimise risk of data breaches.

- RACP believes the resource use and cost-effectiveness of developing and using AI tools in routine practice should be assessed in terms of patient-centred outcomes and value achieved. Use of the tool needs to result in better or equivalent care for same or lower costs respectively. Funding arrangements and incentives for in-house tool development using local or open-source datasets or partnerships with commercial vendors using proprietary datasets will need to take account of opportunity costs incurred, including any licence fees, software/hardware maintenance charges, and personnel recruitment and training costs.

Implementation barriers and strategies

Implementation barriers and their related counter enabling strategies are listed below.

Barrier - *Limited access to data:* Constraints in accessing, sharing and integrating data due to convoluted governance processes and technical barriers consume large amounts of time and effort in overcoming them and delays model development and testing.

Strategies:

- Implement dynamic patient consent procedures with opt-out options.
- Allow multiple re-use of the same static, curated datasets.
- Use synthetic data when appropriate to do so.

Barrier - *Poor quality data:* Inaccurate, inconsistent, incomplete or biased datasets undermine AI model development and introduces bias into AI systems.

Strategies:

- Ensure application developers are explicit about the source of their training data and that such data are representative of populations to which an application will apply.
- Proactively identify and mitigate biases in datasets.
- Raise awareness among clinicians of the importance to AI of entering high quality data into EMRs for use in subsequent model development ('garbage in=garbage out'; 'bias in=bias out').
- Subject models to fairness evaluations.

Barrier - *Lack of leadership and expertise:* The absence of strong leadership and vision for AI adoption among senior leaders will hinder uptake at scale. AI projects will be delayed if there is a shortage of AI training, skills and expertise within healthcare organisations and teams.

Strategies:

- Recruit enthusiastic senior clinical AI champions and managerial leaders with both clinical and digital health experience who foster culture of innovation and advocate for AI adoption.
- Senior leaders to set and communicate a common vision of the role of AI in clinical practice to all stakeholders, aligned with organisational priorities, and which incorporates a sense of urgency.
- Provide dedicated time and resources for staff to be trained in AI and to participate in AI development and testing.
- Embed AI-motivated clinicians within interdisciplinary teams (comprising data scientists, data engineers, information technology personnel, implementation scientists) tasked to lead a program of AI development and implementation.

Barrier - *Lack of buy-in from clinicians:* Clinician resistance to AI due to a lack of understanding, support and training, concerns about bias, accuracy, lack of transparency and alert fatigue, or fear of job displacement or dependence on AI can all limit clinician and patient engagement in AI.

Strategies:

- Prioritise AI solutions requested or initiated by front-line clinician champions in response to locally defined problems.
- Publicise well defined AI applications that have shown demonstrable benefits for patient care.
- Mandate that all applications provide a facts sheet containing explicit information about the training data (source, populations covered), performance metrics and conditions of deployment (similar to a food nutrition label).
- Ensure alert thresholds are set to minimise the numbers of false alerts.
- Educate clinicians and patients openly about how AI works, both strengths and weaknesses, to build trust and understanding.

- Show clinicians how AI can automate or assist with repetitive tasks, thus freeing up time for more direct patient care, higher order tasks and extended scope of practice.
- Establish mechanisms for clinicians to interact with AI applications (in a 'sandpit' environment), provide feedback and influence model optimisation.
- Reassure clinicians that AI solutions can be paused or turned off if performance or safety issues arise.
- Provide ongoing training and support for clinicians working with AI.

Barrier - *Risk of data breach, system outages and adversarial cyber-attacks:* Recent high-profile corporate data breaches, system outages and cyberattacks (some associated with ransomware) raise anxiety that sensitive private data can be accessed and used by unauthorised parties, digital systems on which AI relies may go down, and AI applications may be corrupted and rendered harmful by adversarial cyberattacks.

Strategies:

- Ensure back-up systems are in place to maintain high-risk, care-sensitive applications.
- Prioritise AI applications using data contained within firewall protected, health service-controlled servers over commercial or third-party software requiring data transmission to external servers.

Interfacing with AI in clinical practice

Interfacing principles refer to the varying strata of explicit interactions between physicians and AI tools. These principles aim to outline the safest and most applicable ways to enable physicians and AI tools to interact in a way that enhances physician practice and mitigates risks to patient safety. The interfacing principles are proposed as follows:

- RACP believes AI-enabled technologies should augment but not usurp the logic and decision-making of physicians. The training, observations and reasoning of physicians must remain the central tenet of patient care. This requires a commitment by physicians not to place too much reliance in their decision-making on AI-enabled applications.

- RACP believes that in building trust in AI on the part of both patients and physicians, the development, testing and use of AI for patient care must be transparent and accountable. Transparency means the ability, as much as possible, to know when AI tools are being used to inform care (with physicians and patients being given the right to opt out of using them), to know how personal information is being collected and used, and to know how the algorithm works in generating its outputs. Accountability means there is oversight of tool development and performance, existing and future AI-related policies and guidance are enforced, and mechanisms are in place for rapidly identifying and addressing errors or adverse events resulting from the use of AI.

- RACP believes physicians at all stages of training and professional development must be provided with the necessary education and support required to use AI tools safely, effectively and responsibly, and to fully understand their limitations.[14,15] Physicians must know when human intervention is needed, avoid over-reliance on tool outputs, guard against tool-induced overdiagnosis and overtreatment, and balance AI assistance against human action in providing optimal care to patients.

Interfacing barriers and strategies

Interfacing barriers and their related counter enabling strategies are listed below.

Barrier - *Public and patient concern about AI:* The lay public (who are or may become patients) may hold negative attitudes towards AI being used in health care which limits its use.[16]

Strategies:

- Mandate that people always be informed whenever AI is being used in their care and to seek their consent.
- Articulate clear outcome expectations that AI tools are to serve patients' interests and priorities.

Barrier - *Risk of legal liability:* Uncertainty around ownership of decisions and liability for error in using AI applications inhibit adoption of AI.
Strategies:

- Establish indemnity arrangements in which clinician, employers and model developers and vendors share the liability risk depending on the relative attribution of error to each party and the function (assistive, augmented, autonomous) of the application.
- Align liability and incentives so that the individual(s) or entity(ies) best positioned to know the AI system risks and best positioned to avert or mitigate harm do so through AI design, development, validation, and implementation.
- Withhold clinician liability when they do not know or have no reason to know the quality and safety concerns of an AI-enabled technology.

Barrier - *Lack of integration in workflows:* AI applications that create additional work or disrupt clinical practice are unlikely to be adopted.

Strategies:

- Ensure clinician end-users actively work with AI developers in the initial design and testing of AI models and applications such that impediments to clinician use are identified and addressed before deployment.
- Undertake with clinician end-users a thorough mapping of current workflows and anticipated changes in workflows as a result of AI implementation.
- Select AI applications that generate actionable outputs and directly support clinical practice by reducing administrative workload.

Barrier - *Risk of harm:* High risk aversion related to potential for patient harm constrain the use of AI.

Strategies:

- Implement effective governance, quality management systems, risk assessment procedures and guidelines in responsible and safe use of AI.
- Ensure active involvement of physicians and end-users throughout the design, development, testing and deployment process.
- Establish robust checks and balances to ensure ongoing AI performance and address potential issues.
- For generative AI, reduce hallucination risk by lowering model temperature (i.e. permissible level of randomness in model outputs) and using retrieval-augmented generation with knowledge graphs.
- For generative AI, reduce risk of unreliable outputs by screening for jail-breaking prompts and inputting high quality prompts.
- Minimise unintentional misuse of AI by physicians by building in fool-proof design features and ensuring adequate clinician training.
- Minimise risk of physician automation bias by ensuring human-in-the-loop validation (i.e. human reviewers validating quality of outputs), use of transparent models where possible that allow users to understand decision-making process and identify potential biases, and user feedback mechanisms.
- Highlight high-risk areas of harm, including quantification of hallucinations, reproducibility of output, and bias.
- Enforce prospective and continuous stewardship and implement reliable support structures for model maintenance and troubleshooting.

Maintaining AI in clinical practice

The maintenance and monitoring of AI tools used by physicians refers to the continued evaluation of these tools once implemented and being used by physicians. Maintenance is critical to ensure the continued effectiveness and safety of the physician practice when using AI tools. The maintenance principles are proposed as follows:

- RACP believes that model developers and implementers must expect, monitor and mitigate biases and errors in AI algorithms that threaten patient safety and risk exacerbating inequities in health care delivery. The chief cause of such problems is training and validation of algorithms on datasets that are not diverse and representative of patient populations in whom the AI tool is to be used, particularly minority groups. Other systemic, implicit or cognitive biases that impact on who receives care from

whom and who, how and when data are collected and interpreted need to be considered and accounted for.

- RACP believes that any deployed AI tool must be subject to a process of continuous validation, feedback and optimisation over its life cycle in ensuring clinical safety and effectiveness, and which may involve independent researchers. The real-world performance of the tool must be closely monitored over time using standardised measures that can detect any drift in accuracy. Users of the tool must be able to report bias or errors that they perceive as degrading tool performance to developers and regulatory authorities. Tool developers working with users must also be able to either remediate suboptimal performance or decide if the tool needs to be retired.

Maintenance/monitoring barriers and strategies

A possible maintenance barrier and the related counter enabling strategies are listed below.

Barrier - *Failure to monitor and evaluate AI impact over time:* Ongoing physician support for, and organisational investment in, AI solutions will diminish if their impact on patient care remains uncertain or is perceived as adverse.

Strategies:

- Pilot studies which compare care processes and outcomes in a clinical setting in which an AI solution has been adopted with a control (usual care) setting, or a pre-post study within the same clinical setting, should be undertaken to demonstrate potential impact prior to full scale roll-out.
- Cost and benefit evaluations, time and motion studies, and qualitative studies (e.g. user and patient experience, feedback) should be performed concurrently.
- Systems should be established to track clinician use and impact of AI solutions, and to identify instances in which further optimisation of solutions is required.

Conclusion

AI has already and will continue to be integrated into healthcare systems across Australia and New Zealand. To realise the potential benefit of AI to physician practice, the implementation, interaction and maintenance of AI tools must be considered and evaluated. While risks and errors are impossible to completely erase it is critical to the quintuple aim that physicians educate and train themselves on the proper integration of AI tools into clinical practice to mitigate the risks. In publishing this position statement, the RACP emphasises the need for dynamism and agility of its members in dealing with and adapting to the incorporation of AI into their clinical practice. The position statement is intended as a resource for physicians, facilitating guidance and reflection when considering using and actively using AI tools and provides description of likely barriers that they will encounter in their practice and how best to overcome them.

The RACP would like to thank those divisions, faculties, chapters, advisory groups and individual members who provided their input to this position statement. Additionally, the RACP would like the especially thank DHAG for the seminal role they played in developing this resource.

For more information around AI use in clinical practice we encourage you to review the resources outlined in **Appendix B**. Additionally, for those interested in building their AI awareness and expertise, look to engage with verified and/or accredited short courses and training programs. To inform use of AI tools in clinical practice members should consider available checklists[17,18,19] and simulate AI tool use in 'sandpit' environments to develop familiarity and assess the tool's compatibility with your workflow where feasible.

Please contact Christian White, Policy & Advocacy Officer, for questions or comments about this submission via email: policy@racp.edu.au

Appendix A: Methodology used in formulating position statement

A literature search was undertaken of various databases to locate empirical studies and reviews of AI, using search terms including 'artificial intelligence', 'machine learning', 'health care', and 'physicians.' Organisational websites were scanned and references cited in retrieved literature were searched for additional relevant material. The draft paper, with proposed principles, was circulated to all DHAG members who suggested amendments in an iterative process involving a number of consecutive versions, with the final version endorsed at the September 2024 DHAG meeting. The draft was then distributed to RACP P&A team to adapt and amend in line with position statement guidelines. The draft was then distributed to RACP executive committees for further consideration and for feedback to be received by DHAG by August 2025. In response to comments received, the draft paper was subject to further amendment and finally signed off by the DHAG on [TBD] 2025. The position statement was then sent for review and endorsement by the RACP Policy and Advocacy Council in [TBD] 2025.

Appendix B: Organisational responses to AI

Table 1 Recently released position statements and roadmaps for AI use in healthcare

Australia and Aotearoa/New Zealand

Professional colleges

- Position statements listing principles and standards for AI have been released by the Australian Medical Association (AMA)[20], the Royal Australian College of General Practitioners (RACGP)[21],the Royal Australian and New Zealand College of Radiologists (RANZCR)[22],the Australasian College of Dermatologists (ACD)[23], and members of the Royal Australian College of Surgeons.[24]

AI bodies and associations

- The Australian Alliance for AI in Healthcare (AAAiH) issued a roadmap[25] in March 2024 which list the top 5 national priority areas: (i) safety, quality and ethics; (ii) privacy and security; (iii) governance and leadership; (iv) research and development; and (v) workforce.

- The Australian Institute for Digital Health (AIDH) is fostering discussions, guidelines, and frameworks related to AI implementation in healthcare, emphasising the importance of ethical considerations, patient privacy, data security, and governance frameworks in ensuring safe and effective use of AI technologies in the healthcare sector.

State health departments

- In Queensland, the Health Service Strategy within Queensland Health's Q32 vision statement promotes use of health information, AI and predictive tools to design, deliver, evaluate, and improve care and grow automation within health and support services.[26] The department has established a Statewide AI Project Reference Group tasked to produce an AI Action Plan by July 2024.

- At NSW Health, several AI initiatives are already in place related to better wound care, complex data analysis, automating repetitive processes and reviewing literature to aid clinical decision-making. A dedicated, multidisciplinary AI Taskforce has been established to help inform and guide the use of AI in the public health system and develop an AI Framework for release in 2025.[27]

- In Victoria, the government has taken steps to ensure the safe adoption of AI in various sectors, including health, through its AI Action Plan which focuses on fostering AI innovation while also prioritising ethical considerations and safeguards. Advisory boards or panels comprising experts in AI, ethics, and technology will provide guidance and ensure the responsible and transparent development and deployment of AI.

Federal government

- The Australian Government in 2019 published a report identifying three high potential areas for AI specialisation strategies to help boost industrial productivity of which health, ageing and disability was one.[28]

Other countries

- Guidance relating to use of AI in healthcare has been issued from the World Health Organisation.[29]

- In the US, the American Medical Association has released updated principles for the development, deployment and use of healthcare AI[30], and the American College of Physicians has released a policy position paper on the use of AI in the provision of healthcare.[31]

- In the UK, the Royal College of Physicians has released a position statement that urges industry to address real-world challenges, doctors to appraise the technology and regulators to develop guidance and evaluation methods.[32]

- In Canada, the Canadian Medical Association has submitted various recommendations to the House of Commons Standing Committee on Industry and Technology on how AI should be used in providing healthcare.[33]

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