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DISCUSSION PAPER

BRAVE NEW WARD?

TOWARDS A NATIONAL PATHWAY FOR MEDICAL AI

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First published in August 2026 by Maxim Institute
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978-1-997348-02-3 | PDF
978-1-997348-03-0 | Hard copy

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This is Maxim Institute's seventh discussion paper on artificial intelligence (AI). Its focus is on the growing use of AI in healthcare and the pathway New Zealand should build to govern and adopt it well. It asks where AI can most usefully strengthen diagnosis, prevention, and administration, while also examining the risks created by weak regulation, poor or unrepresentative data, opaque systems, and unclear accountability. More fundamentally, it asks what happens to medicine when patients are increasingly understood through data and algorithms. Can AI relieve pressure on clinicians while strengthening, rather than diminishing, the doctor-patient relationship? And can New Zealand become a smart, selective adopter of medical AI while ensuring that innovation remains safe, transparent, locally appropriate, and firmly directed towards person-centred care?

About the author

Debora holds a master's degree in philosophy from Ludwig-Maximilians-University (LMU) in Munich. She specialised in ancient philosophy, ethics, and the concept of human dignity, with a particular interest in the ethical implications of emerging technologies such as AI. In addition to her work with Maxim, Debora works at the Institute for Bioethics and Medical Anthropology in Vienna (IMABE). She has also worked for the Austrian government and a MedTech startup.

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Artificial intelligence (AI) is no longer a future question for healthcare. It is already entering clinical practice and patient-facing care. For Aotearoa New Zealand, AI technologies may help relieve some of the pressures its health system is facing—such as workforce shortages and administrative burdens—but the benefits are not guaranteed. Without a national pathway, medical AI could exacerbate existing barriers to care and weaken the human relationships that good care depends on.

New Zealand's current approach to medical AI is still emerging. There is no AI-specific health legislation and no single regulator responsible for medical AI across the whole system. Oversight relies on a patchwork of existing health law, professional obligations, and guidance. These frameworks matter, but guidance alone may not be enough to govern adaptive technologies that can affect clinical decisions and care environments at scale. Without clearer national regulation, AI safety standards may vary across providers and settings. Regulation should not be seen only as a brake on innovation. Countries such as Singapore show that clear rules give developers certainty, enable pathways for responsible innovation, and build the public's trust.

Long-term accountability and lifecycle governance for AI tools are essential. Many medical AI tools are still new, with limited long-term evidence on their performance in real clinical settings. Some may change over time. Regulation should require monitoring across the full lifecycle of each tool. New Zealand needs clear responsibility for auditing AI systems to ensure that they remain accurate and worthwhile. Designated authorities should conduct periodic reviews and have the power to pause or withdraw unsafe or unsatisfactory tools. A national register could support this process by publicly identifying which AI systems are in use.

Medical AI should have a clearly defined public purpose before it is scaled. Decisions about general purposes and goals of the technology—for example, how time saved through automation will be used—should be made *before* the technology is implemented, so that *we* shape its impact on care and not the other way around. Leaders must decide whether that time is used for better consultations or absorbed into higher workload expectations. This is a policy choice. New Zealand should set standards that make the goal of AI explicit: better care that remains human-centred and person-centred.

Targeted medical AI use cases offer considerable potential for New Zealand. New Zealand should not try to lead in every area but focus on high-value uses that meet urgent local needs. The strongest opportunities lie in diagnostic support, targeted prevention, and administrative automation. Imaging tools such as diabetic retinal screening and mammography support are good candidates because they can be tested against clinical standards. Workflow tools such as AI scribes may ease pressure on clinicians, but should not be assumed to be low risk simply because they are administrative.

New Zealand has structural advantages. New Zealand's health data landscape remains fragmented, with legacy systems and uneven interoperability, which limit innovation. However, the country also has structural advantages: a relatively small public health system, a national health identifier, and the possibility of scaling digital improvements more efficiently than larger systems. If these foundations are strengthened with better and more secure digital infrastructure, New Zealand could become a valuable testing and training ground for AI tools that are designed to work across diverse populations. It could develop models that reflect its own population and clinical needs.

Good AI depends on good data. Imported models trained on overseas populations may carry biases and may not perform well for Māori, Pacific peoples, or other groups poorly represented in international datasets. Care must be taken to ensure that tools purchased from overseas vendors are suitable for use in New Zealand.

Medical AI raises deeper questions about the meaning of care. AI can improve data analysis, but it may also reinforce a narrow view of the patient as the sum of quantifiable data. Person-centred care depends on more than knowledge. It requires responding to patients' vulnerability and needs with respect and empathy, actively listening to their stories and offering consolation and reassurance. As healthcare becomes more digital, person-centred care should be deliberately protected and strengthened. AI should support clinicians by reducing burden and improving insight, without taking over central human roles in care. Clinicians must also remain responsible for decisions. They must have the training to understand the strengths and limitations of the tools they use.

Transparency matters because AI is not neutral. A tool may appear neutral, but its recommendations can reflect clinical choices such as reducing cost, avoiding risk, or favouring more intervention. Clinicians and patients should be able to understand what values and assumptions may be shaping recommendations. This makes AI literacy essential. Health professionals and students need time and training to work meaningfully with AI tools, recognise limitations, pose questions, and avoid automatically accepting AI outputs.

1. INTRODUCTION

Artificial intelligence (AI) has become a defining feature of public policy and private sector discussions over the last five years. Across sectors, governments and businesses are racing to adopt new forms of automation to improve efficiency, reduce costs, and increase productivity.

Healthcare is no exception. Aotearoa New Zealand's health system is under pressure from workforce shortages and administrative burdens, and algorithmic tools promise relief. Yet transformation on this scale also brings ethical, legal, relational, and governance challenges. In New Zealand, these questions have not been drawn together in the context of a comprehensive national policy conversation. This paper examines important components of a coherent pathway for medical AI in New Zealand to strengthen innovation and uphold good care.

What is artificial intelligence?

Artificial intelligence refers to a broad field of computer science concerned with the development of algorithmic systems that can perform tasks that normally require human intelligence. These tasks include learning from data, reasoning, problem-solving, prediction, pattern recognition, and language generation. Rather than following only fixed, pre-programmed rules, AI algorithms are designed to adapt their calculations based on probability and new information.[1]

AI encompasses a range of technical approaches and subfields, including machine learning (ML), deep learning (DL), and natural language processing (NLP). Some AI systems focus on perception, such as image and speech recognition, while others support decision-making or automate complex processes. Among the most prominent current applications are large language models (LLMs), which are trained on vast amounts of data and can analyse and generate text.[2]

AI's current function in the health sector

In addition to its many applications in industry, AI is increasingly being used in the health sector. Beyond pharmaceutical research and drug development, it has, broadly speaking, three main domains of application in patient care:

1. AI technologies that optimise administration and logistics
2. AI systems that are directly integrated into diagnosis, treatment, and clinical care through the analysis of patient data or through surgical support
3. AI applications in the areas of mobile health (mHealth), smart wearables, and prevention

A further distinction is important. Some AI tools are optional and discrete, such as AI scribes or patient-facing chat tools. Others may be embedded into health system infrastructure such as clinical workflows or medical devices. In embedded contexts, patients and clinicians may be unable to opt out of AI use.

1. Administration, management, and documentation

AI is used to automate administrative processes such as appointment scheduling, billing, staff rostering, and other organisational tasks. The aim is to make workflows more efficient and to reduce the administrative burden on healthcare professionals.

One recent application gaining uptake in clinical settings is the so-called "AI scribe." These systems capture conversations between clinicians and patients during consultations and automatically convert them into structured medical notes. This is intended to reduce the administrative workload while maintaining accurate documentation.

2. Patient data analysis, diagnostics, clinical decision support, and treatment

AI-based diagnostic tools are currently used primarily in medical specialties where image analysis is essential, such as radiology, oncology, pathology, ophthalmology, and dermatology. In these fields, AI systems support the evaluation of medical imaging data (for example, magnetic resonance imaging (MRI), computed tomography (CT), and X-ray scans) by identifying abnormalities more quickly and, in some cases, more accurately. The goal is to improve diagnostic precision and enable earlier disease detection, as well as to support clinical workflows by helping to triage cases for human review. AI systems are already capable of identifying certain types of blood cancer, cardiovascular diseases, osteoporosis, and early signs of skin cancer.

AI is also applied in genomics, where large volumes of whole-genome and related biological data are analysed to detect patterns across DNA sequences, gene interactions, and genetic variants, and to identify disease risks more rapidly than conventional methods. These analyses form an important foundation for targeted treatment in which therapies are tailored to a patient's genetic profile, environmental factors, lifestyle, and other biological data.

Clinical decision support systems (CDSS) have been used in medicine for many years to assist with tasks such as risk assessment, treatment recommendations, and drug interaction checks. Traditional CDSS are rule-based and do not modify their decision logic independently. In contrast, AI-based CDSS identify patterns in large datasets and generate recommendations in a more autonomous manner. They are intended to support clinician decision-making.

AI also supports surgical practice through preoperative planning and real-time, image-guided navigation during procedures.

3. mHealth, smart wearables, and prevention

Another rapidly growing area of AI application in healthcare is "mobile health" (mHealth) in combination with "smart wearables." Smart wearables include smartphone apps, fitness trackers, and medical sensors. These devices continuously collect health-related data such as heart rate, physical activity, sleep patterns, and blood glucose levels. AI algorithms analyse the data and detect patterns or anomalies at an early stage.

In the field of prevention, AI enables more individualised health guidance such as tailored nutritional feedback or early identification of disease risks. In addition, such systems support the long-term monitoring of chronic conditions and can help improve treatment adherence. Although many of these applications operate outside traditional clinical settings, they are becoming increasingly useful for "healthy" patients to support preventive care and patient self-management.[3]

2. AI GOVERNANCE LANDSCAPE IN NEW ZEALAND

2.1 Status quo: an emergent and distributed governance landscape

The rapid advancement of AI is reshaping healthcare systems globally. AI-enabled tools already show promise in improving patient outcomes and expanding access to care. They may also alleviate workforce pressures and save time. For Aotearoa New Zealand's health system, which faces access constraints and workforce shortages, medical AI represents a significant opportunity. Although medical AI is expected to enhance care, the pace of technological innovation has outstripped the development of governance frameworks and ethical guardrails, as well as technical infrastructure for data security and accessibility. Here, governance is understood broadly. It includes not only legislative regulation, but also non-legislative forms of regulation, such as professional guidelines and codes of conduct that guide deployment.

The current Government has placed a strong emphasis on technological innovation and investment in AI. In September 2025, it confirmed an investment of up to $70 million over seven years in AI research and development through the New Zealand Institute for Advanced Technology. The funding is intended to support AI research, accelerate commercial opportunities, and build capability within New Zealand's science and technology workforce. The Government's goal is to seize the health, economic, and societal benefits of integrating AI into the health sector. Expert teams estimate that AI-driven public health solutions could deliver between $80 million and $160 million in annual healthcare savings.[4]

The 2025 Health Digital Investment Plan (HDIP) sets out Health New Zealand's intentions for digital investment over the next 10 years. It highlights the importance of improved infrastructure and digital innovations, including AI-driven solutions.[5] A 2019 report by the Ministry of Health suggested that, if international evidence were scaled to the New Zealand context, AI could help address up to 20% of unmet clinical need and expand access to treatments in New Zealand.[6]

While momentum to integrate AI into the health system is growing, a legislative gap remains: New Zealand has no AI-specific legislation, nor a dedicated regulator for AI in healthcare. Instead, medical AI is governed through a mix of existing professional statutes, institutional governance arrangements, and non-binding guidance. Key legal frameworks include the Medicines Act 1981, the Health Information Privacy Code 2020, the Privacy Act 2020, the Code of Health and Disability Services Consumers' Rights, and relevant provisions of the Health Act 1956.

The Health Information Privacy Code, which came into force in 2020, is relevant because it applies specifically to health information held by health agencies and modifies how the Privacy Act's general information privacy principles apply in the health sector.[7] The Code of Health and Disability Services Consumers' Rights is also important, particularly Rights 6 and 7. They protect consumers' rights to be fully informed and to make an informed choice and to give informed consent before health services are provided.[8] Section 22H of the Health Act 1956 permits the sharing of anonymous health information where the information does not enable identification of the individual concerned.[9]

Alongside these legal instruments, medical AI is also shaped by non-legislative forms of regulation. These include, for example, the Algorithm Charter for Aotearoa New Zealand,[10] which commits government agencies to using algorithms in fair, ethical, and transparent ways; the Responsible AI Guidance for the Public Service: GenAI;[11] guidance from the Privacy Commissioner;[12] professional standards issued by bodies such as the Medical Council of New Zealand, which has recently published its first guidance on using AI in patient care;[13] and the work of Health New Zealand's National Artificial Intelligence and Algorithm Expert Advisory Group (NAIAEAG).[14] These instruments do not amount to a comprehensive statutory regime for medical AI, but they are important parts of the current governance landscape.

This distributed approach is broadly consistent with the current Government's wider position on AI regulation. New Zealand's AI strategy and related Cabinet material favour a "light-touch" and risk-based approach to AI policy.[15] Rather than developing a standalone AI act, the Government's approach is to rely primarily on existing, largely principles-based regulatory frameworks that address privacy, consumer protection, and human rights law. These frameworks are intended to be updated as needed to enable innovation and respond to emerging risks. Where further intervention is required, the preferred approach is to use agile tools such as voluntary guidance and audit requirements.

Legislative foundations and the limits of existing law

The Medicines Act, now more than 40 years old, was drafted for a world of physical medical products and does not explicitly address software-based, adaptive systems. As a result, many AI tools currently used in clinical and operational healthcare settings fall outside clear pre-market regulatory approval pathways and national oversight. Medsafe itself notes that by 1994 the Act was already seen as out of step with international trends in medicine and device regulation.[16]

The previous government's main attempt to modernise this framework was the Therapeutic Products Act 2023 (TPA). That Act was intended to create a comprehensive regulatory regime covering medicines, medical devices, active pharmaceutical ingredients, and natural health products across their lifecycle. Official briefing papers after the change of government confirm that the TPA was intended to replace the Medicines Act 1981 and Dietary Supplements Regulations 1985, and to establish a much broader therapeutic products regime.[17]

However, the TPA did not come into force and was repealed in 2024.[18] The repeal was driven in part by concerns from industry and other stakeholders that it would make approvals too difficult, especially for natural health products and lower-risk medical devices. The Therapeutic Products Act Repeal Act 2024 removed that reform pathway.[19]

The current Government is making a fresh attempt to replace the Medicines Act 1981 with the Medical Products Bill, expected to be introduced during the current parliamentary term. It aims to provide more timely, flexible, and risk-proportionate regulation. It would cover product approvals, higher-risk activities, post-market controls, and compliance. It would support innovation through flexible pathways for emerging technologies, including software as a medical device and AI.[20] In 2025, Cabinet also agreed on the role of Medsafe as the regulator.[21]

The Medical Products Bill is expected to be introduced in 2026, with implementation likely to occur around 2030. If passed, it will be implemented in stages with a longer transition period for many medical devices. In the interim, the absence of AI-specific legislation means that New Zealand's approach to medical AI governance remains fragmented and principles-based. Oversight is distributed across health, privacy, medicines, consumer rights, public sector, and professional accountability frameworks. This creates a flexible and adaptive governance environment, but one that is not yet fully coherent.

Institutional governance within the public health system

In the absence of binding AI-specific regulation, Health New Zealand has established the National AI and Algorithm Expert Advisory Group (NAIAEAG)[22] to provide expert advice on and endorsement for AI and algorithmic tools proposed for use within Health New Zealand.[23] NAIAEAG assesses AI proposals across eight domains: consumer perspectives, Māori engagement, equity, ethics, clinical safety, data guardianship, technical robustness, and legal accountability. It also maintains a register and review process for AI and algorithms in use within Health New Zealand.[24]

The institutional landscape is broader than NAIAEAG alone. For example, ACC has its own Ethics Panel. It was established to protect the rights and interests of ACC customers where customers are involved in projects or where their data is used in projects affecting services or entitlements.[25] Across government, the Centre for Data Ethics and Innovation, located within the remit of the Government Chief Data Steward, supports agencies with guidance and networks for ethical data use.[26]

However, the remit of these arrangements remains limited. NAIAEAG's formal role applies to AI proposed for use within Health New Zealand. Private providers and independent clinicians may not be subject to the same institutional review pathway unless they provide services under Health New Zealand contracts or interact with its systems. This creates the possibility of uneven governance across public and private settings. Private providers are not unregulated, however; they remain subject to general legal and professional obligations.

Data governance, privacy, and stewardship

Within the health sector, the Government Chief Data Steward operates in coordination with other government leadership roles, including the Government Chief Digital Officer, Government Chief Information Security Officer, and Government Chief Privacy Officer. Together, they set cross-government expectations for digital systems, cybersecurity, privacy-by-design, and responsible data use, which health agencies are expected to follow.

The Privacy Act 2020 and the Health Information Privacy Code (HIPC) 2020, administered by the Office of the Privacy Commissioner (OPC), are central to medical AI governance where AI systems process and store personal or health information. The HIPC applies specifically to health information held by health agencies and substitutes specific health information privacy rules for the general information privacy principles. However, these rules do not provide a comprehensive framework for assessing clinical safety. Where an AI system depends on patient or health information, compliance with privacy and health information rules is a legal condition for its use in care.

In partnership with the Government Chief Data Steward, the OPC has articulated principles for the use of data and analytics that include transparency, human oversight, proportionality, and accountability. While these principles are not legally binding, they form an important part of New Zealand's normative governance framework for algorithmic and AI-driven systems.[27]

Precision health stewardship and technology evaluation

The Ministry of Health's work on AI and genomics has developed largely through its precision health workstream. This sits within the Ministry's broader stewardship role in shaping conditions for safe and equitable uptake of emerging technologies. The Ministry's inaugural Long-term Insights Briefing—prepared to meet the Public Service Act 2020's requirement to publish such briefings at least every three years—focused on precision health, with particular attention to genomics and AI. However, precision health should be understood as one important use case for AI-enabled health innovation, rather than a comprehensive framework for all uses of AI in the health system.[28]

Through this work, the Ministry has identified key changes needed to realise precision health's opportunities over the next 10 years. Wider adoption will require stronger safeguards, including fit-for-purpose regulation, better data infrastructure, workforce capability, informed consent processes, and public trust. These issues are relevant to medical AI more broadly but are particularly pertinent to precision health because of its reliance on sensitive health, genomic, and lifestyle data.[29]

A related development is the proposed Health Technology Evaluation Pathway. It is being developed through the evolving work of Health New Zealand and Pharmac on medical device assessment and procurement through health technology assessments (HTAs). Although not AI-specific, it may provide a mechanism for scrutinising some high-impact AI-enabled devices and technologies before adoption in the public system.[30]

International context and unresolved tensions

Internationally, governance efforts are converging around risk-based approaches that distinguish between administrative applications (low-risk) and systems that affect clinical decisions (high-risk). The World Health Organization (WHO), the Organisation for Economic Co-operation and Development (OECD), and the European Union (EU) all emphasise transparency and human oversight in health AI governance.[31] New Zealand's practice broadly aligns with these principles, but it has not codified them in legislation. Cabinet has also identified the OECD AI Principles as a key direction for New Zealand's approach to responsible AI, describing them as a visible signal of the national approach and a high-level guide for work across government.[32]

New Zealand's wider AI strategy adopts a light-touch and principles-based approach, relying primarily on existing, largely technology-neutral frameworks.[33] The unresolved question is whether this approach will be sufficient for high-risk settings such as healthcare. Some New Zealand AI experts have called for stronger regulation, citing low public trust, possible harms, and the risk that existing legal frameworks may leave gaps in accountability, rights protection, and redress.[34] New Zealand's governance arrangements have enabled experimentation and early adoption, but they remain largely non-binding and dependent on institutional practice. Without a clearer national pathway, medical AI may advance faster than the structures needed to ensure safety and accountability, while key ethical and governance questions remain unresolved. The following section addresses some of these issues.

2.2 Considerations for future governance

Having outlined Aotearoa New Zealand's current medical AI governance landscape, this section examines the key issues that future governance reform will need to address.

Trustworthy technology is crucial for social licence

The National Ethics Advisory Committee (NEAC) points out that, as AI increasingly supports healthcare delivery, it must align with ethical standards and individual rights.[35] To ensure safe and reliable deployment of AI tools that are centred on individual wellbeing, governance must address risks associated with AI use in health and the wider social impact this technology could have on human relationships, medical staff, patients, and the healthcare system as a whole.

To fully harness the benefits of AI applications in healthcare, building social licence and general trust in AI technologies is crucial. For AI to be trustworthy, robust data security and transparency are essential. Failing to meet patients' expectations creates the risk that they will reject AI-supported diagnostics and treatments. This concern is particularly salient in rural and Indigenous communities, where trust in medical systems is often lower. AI safety is a foundational requirement for adoption.

Data representation and bias mitigation: good AI needs good data

There is strong consensus across the medical AI literature and among New Zealand's experts that bias in data is one of the most significant risks to safe and ethical AI in healthcare. AI systems learn patterns from historical data. If data reflects a structural lack of representation and uneven access to care, AI systems may reproduce and amplify biased or unrepresentative conclusions. As many experts put it, "good AI requires good data." This is not merely a technical issue but a social and ethical one, because data quality is inseparable from how different populations access healthcare.[36]

Robin Whittaker, chair of NAIAEAG, emphasises that bias mitigation cannot be a one-off technical fix; it requires ongoing monitoring and population-specific validation in order to be effective. Specifically:

> *"In order to address these risks, good model developers should employ strategies which mitigate bias during model development as well as testing for bias once developed. This can only be done with local understanding of the intent and processes for data collection, changes in clinical practice over time in our health services, and recognition of the existing inequities in access and health outcomes for Māori and other groups that may be reflected in the data."*[37]

"Equity" in this context does not mean "treating everyone the same." It is achieved by actively correcting for known underrepresentation in data and care. Ethnic minorities, especially Māori and Pacific peoples, are underrepresented in key datasets. Similar concerns apply to other groups, including older people and rural communities who may be less visible and poorly served by increasingly digital approaches to care.

How can this be done practically? According to NAIAEAG and international governance models, such as those in Singapore and the EU, bias mitigation must occur across the entire AI lifecycle, not only at the model and pre-market stages. This includes careful assessment of dataset quality regarding representativeness and risk of bias during data pre-processing; explicit choices about optimisation targets and excluded variables during model development; validation in populations representative of real-world use; and post-deployment audits to detect different impacts on groups.[38]

The Treaty of Waitangi and Māori data sovereignty

The adoption of artificial intelligence tools in New Zealand's health system is likely to reshape how services are planned, delivered, and evaluated. This raises important questions about how the Crown's obligations under the Treaty of Waitangi should be understood and applied.

As discussed, Māori are underrepresented in datasets used in health policy decision-making. This problem is not confined to the international data underlying AI models; it also affects the New Zealand Government's own data. Therefore, it is important to ensure that this lack of representation does not result in Māori experiencing lower standards of care.[39] Systems trained on these datasets may reflect biased representation, leading to outputs that are less accurate or even harmful for Māori patients. Even if an AI system is designed to be fair, its performance may diverge over time, becoming more responsive to groups that are well served rather than those that are not.[40]

A second important consideration is Māori data sovereignty in AI governance. Māori data sovereignty frameworks regard Māori data as a *taonga* (a treasured possession, not a neutral resource to be used freely) and therefore understand it as protected under Article Two's guarantee of *tino rangatiratanga* over *taonga* under the Treaty of Waitangi. Giving effect to this may mean that AI systems in health recognise Māori authority over how data is accessed, used, and governed.[41] Further consideration should be given to privacy, security, and cross-border risks—particularly when Māori data is stored or processed overseas, where it may fall under foreign laws. Some would further argue that Māori privacy is not only individual but collective, requiring protections that reflect shared cultural interests.[42]

In practical terms, these considerations could mean active Māori representation in governance bodies, transparency about algorithms and training data, active bias testing, ongoing monitoring, and mechanisms to prevent biased outcomes over time or extractive uses of Māori data.[43]

The precise extent of obligations under the Treaty, and the mechanisms by which they can be met, may be contested. However, adoption of AI tools and systems should include conversations about which values are embedded prior to the procurement process. Any Treaty obligations that apply should be identified and worked through before and during procurement and adoption.

Transparency of AI models and accountability

In addition to unbiased data, transparency is a foundational requirement for the ethical use of AI in healthcare. Transparency refers not only to which AI system is used and what data it relies on, but also to its limitations, how its outputs are generated, and what values are embedded in the system's decision-making process.

For example, a triage tool may be designed for different purposes, such as reducing the risk of overlooking serious illness or reducing unnecessary referrals. Each goal is reasonable, but each will shape the model and its outputs differently. A system optimised to avoid missed diagnoses may recommend more referrals and tests; a system optimised to reduce pressure on specialist services may set a higher threshold. These are not purely technical choices. They reflect different clinical priorities concerning risk, cost, and access to care.

In clinical settings, opaque or "black-box" systems raise concerns because neither clinicians nor patients may understand or challenge AI-informed decisions. The question of transparency around embedded values represents a specific intersection between ethics and engineering, described as the "values in the model" framework. This issue will be addressed in greater depth later in the paper.

Transparency is closely linked to trust. Without clear information about AI data sources and performance boundaries, both clinicians and patients may place either too much or too little trust in its outputs, increasing the risk of harm. Whittaker et al. highlight this:

> *A high level of transparency is required to build trust amongst clinicians ensuring any decisions based upon model outputs are well understood, safe and accurate. [...] clinical practice in Aotearoa NZ is not ready for fully 'black box' algorithms but rather clinicians, in general, require an understanding of the process and the important factors in any algorithm.*[44]

Clinicians are expected to retain responsibility for decisions, which requires at least a high-level understanding of how an AI tool functions. Transparency is also critical for public communication. Patient research in New Zealand shows conditional support for secondary data use and AI, provided there is clarity about purpose, governance, and benefit to the public rather than private interests.[45]

Accountability is closely intertwined with transparency. Experts warn that without clearly defined lines of responsibility, AI systems can create accountability gaps where it is unclear who is responsible for errors and harm: developers, vendors, clinicians, or health organisations. These gaps are magnified when AI systems adapt over time or are procured from overseas vendors. The NEAC stresses the need to identify accountability at every stage of the AI lifecycle.[46] Transparency about whether systems operate with human-in-the-loop oversight or automated decision-making is essential to maintaining professional responsibility and legal clarity.

Ultimately, transparency and accountability are prerequisites for social licence. In New Zealand, where public trust and clinician responsibility are central to healthcare delivery, AI systems must be explainable enough to be audited and governed over time. Without this, even highly accurate systems risk undermining patient trust, clinician autonomy, and the legitimacy of medical AI as part of the health system.

Data quality and protection of data in New Zealand

A key issue repeatedly highlighted by New Zealand digital health experts is the quality and suitability of health data available in New Zealand. To reduce reliance on overseas datasets with potential biases or hidden values, New Zealand will need to develop stronger domestic data resources. This includes building datasets that better reflect New Zealand's diverse population.

Currently, our digital infrastructure is constrained by regionally fragmented legacy systems inherited from the former district health board (DHB) model, where each board operated largely independent IT systems. This has resulted in siloed, non-interoperable data environments. Some 85% of Health New Zealand's digital systems do not support data sharing, and data standardisation is limited. This hinders seamless nationwide sharing and collection of data, from radiology reports to diagnostic data.[47] The HDIP describes this as part of a fragmented, ageing digital landscape that is driving inefficiency and making the adoption of new models of care difficult. It explicitly states that achieving a modern system will require significant new investment. In response, the HDIP proposes investment in core digital foundations such as a national electronic medical record system, stronger networks and cloud infrastructure, cybersecurity, and a data and interoperability layer built around common standards.

In terms of AI model development, poor data quality also significantly limits the development of New Zealand-based medical algorithms. If hospital datasets contain coding errors or inconsistent and fragmented documentation across regions and providers, algorithms will reflect distorted representations of patient care.

For example, a prevention tool that predicts avoidable hospitalisation would need more than one hospital record. It may need primary care history, prescriptions, laboratory results, previous admissions, and other information. If these data cannot be linked and are recorded using different coding practices, the AI tool may produce clinically weak predictions. This is how poor data interoperability affects the tool's quality.

> *"New Zealand is not short of ideas or data; the real problem is that we don't have the infrastructure and governance to implement. Unless you have good foundations, AI will fail."*
>
> *—New Zealand surgeon*

Health New Zealand has announced work on a National Data Platform intended to integrate health information for planning and delivery. It will primarily bring together health system information for planning and service delivery rather than create a full clinical dataset for all AI types. It could support later AI development by improving consistency and linking operational data, but it is not itself a fix for poor data quality or fragmented records. On its own, it would not contain the detailed, patient-level material needed to train tools such as a model that detects tumours on CT scans.[48]

If New Zealand imports algorithms trained on foreign datasets, it risks reduced accuracy and embedded bias in decision-making. The models reflect different population demographics, disease prevalence, and health systems. Treatments recommended overseas may not be accessible or funded in New Zealand. Risk predictions may not generalise to Māori, Pacific peoples, or other populations. Without local validation, New Zealand could become dependent on commercial tools that do not reflect its clinical context.[49]

The use of large quantities of data is also related to safeguarding and privacy issues. Data security is a central issue for the safe implementation of AI in healthcare. As the volume of health data grows and healthcare becomes increasingly digitised, robust data security and privacy safeguards are critical. Medical AI in New Zealand must be built on secure and resilient infrastructure. Recent breaches (for example, Medimap, ManageMyHealth, and Waikato DHB) demonstrate that weak IT architecture and insufficient oversight amplify risk, particularly in highly integrated data environments.[50] AI cannot be deployed safely on fragile legacy platforms. Implementation must prioritise cybersecurity and strong governance over scale, especially given New Zealand's small and diverse population.

National AI register

Other jurisdictions, including Singapore, Australia, and the United States, track new AI tools entering the health market through some combination of market authorisation or registration and post-market monitoring. Although public visibility regarding what is actually in use after authorisation remains imperfect, these systems at least make it harder for new tools to enter the market unnoticed.

In New Zealand, by contrast, the absence of an equivalent regulatory framework means that the picture of which AI tools are being trialled or used across the health system remains fragmented. There is no complete, publicly accessible overview of which systems are in place or currently under evaluation. That lack of visibility is a governance risk. If Health New Zealand cannot clearly identify which tools are in use, it becomes difficult to monitor their performance. Health New Zealand's NAIAEAG is working on the publication of its national register and formal review process. A national register is especially important in New Zealand given the current lack of regulation. It could support consistent technology assessment and enable a shift from isolated pilots to a national pathway.[51]

Who is auditing and monitoring?

In New Zealand's context, a central governance question remains: who holds the authority and responsibility for ongoing monitoring of medical AI once tools are deployed? Responsible innovation does not end at initial approval. AI systems used in clinical care—especially those that are updated over time, learn, and adapt to new information—require regular auditing for all the safety issues mentioned: accuracy, bias, and performance drift.

A real-world example comes from radiology AI. In breast screening, researchers recently found that an AI system deployed safely in one setting required adjustment once introduced into practice, because the deployment population differed from the population whose historical data was used to configure it. In practice, this meant that the AI flagged too many scans as suspicious, leading to more patients being recalled for further testing and reducing its ability to distinguish normal from abnormal cases.[52] At present, the responsibility for monitoring such changes remains diffuse.

A clearer framework, supported by a public national register, is needed to define the lifecycle roles of Health New Zealand and future regulators. The framework should include reporting requirements, periodic review, and the power to suspend or withdraw unsafe tools. Without clear institutional accountability for monitoring, New Zealand risks adopting AI without assigning explicit responsibility.

> *"It's not just about working with engineers, because they don't necessarily know the clinical risks of things that they're building."*
> *—New Zealand clinician-researcher*

This is where "governance gaps" become dangerous: a learning system can degrade quietly. If nobody is responsible for auditing and responding, harms accumulate before anyone notices. A national register will also support effective oversight of systems in use.

This does not mean that New Zealand should avoid adaptive systems. It means that higher-risk deployment should be matched with stronger monitoring mechanisms and clear accountability, especially in settings where AI influences patient care.

Interdisciplinary regulation

Finally, good governance should distinguish between predictive models, generative AI, and other tools. New Zealand could benefit from including experts from technical and clinical backgrounds in governance design. A key challenge is bridging interdisciplinary expertise between clinicians, engineers, and policy experts. If regulators do not understand the technologies they oversee, governance risks becoming a barrier to much-needed beneficial innovation. Not all AI tools carry the same risk. For example, generative AI raises different issues from diagnostic screening tools—especially hallucinations and patient-data handling. Governance should therefore be risk- and function-based.

2.3 Case study: AI governance in Singapore

In developing a governance framework for medical AI, Aotearoa New Zealand can learn from jurisdictions that have taken a measured, structured approach to regulation. Singapore stands out in this regard. Rather than legislating a comprehensive healthcare-specific AI regime, it has assembled a layered system that integrates a national AI strategy with healthcare guidance and sectoral controls. Singapore is known globally as a leading innovation and technology hub. It sets a useful benchmark for New Zealand as it considers a "fast follower" approach to medical AI governance.

The architecture of Singapore's AI governance model

Singapore's approach is best understood as resting on several interacting layers. First, clinical AI systems are regulated through existing product law. AI used for diagnosis or treatment is considered software as a medical device under the Health Products Act 2007 and overseen by the Health Sciences Authority (HSA). The HSA has statutory authority to require evidence of safety and performance, classify risk, impose post-market obligations, and withdraw products if necessary. AI is not given exceptional legal status; it is incorporated into a risk-based medical device regime.[53]

Second, Singapore has added a healthcare-specific layer through its Ministry of Health (SMoH) Artificial Intelligence in Healthcare Guidelines (AIHGle). These guidelines were co-developed by SMoH, HSA, and Synapxe (Singapore's national HealthTech agency) to support patient safety and trust in the use of AI in healthcare. They explicitly complement HSA's software medical device requirements. SMoH describes AIHGle as a "living document," and HSA has indicated that it is being updated as clinical AI adoption expands.[54]

Third, healthcare AI sits within a wider statutory data governance regime. Singapore's Personal Data Protection Act (PDPA) provides the legal framework for the use of personal data, and it is administered by the Personal Data Protection Commission (PDPC). In practice, this means AI deployment in healthcare remains subject not only to clinical safety requirements but also to data governance obligations.[55]

Fourth, Singapore has given AI a clear place in national policy through the National AI Strategy. The first strategy, launched in 2019, presented AI as part of Singapore's ambition to become a hub for the development and scaling of impactful AI solutions, while also learning how to govern and manage AI's effects. The National AI Strategy 2.0, released in 2023, updates that vision by presenting AI as "for the public good," a force that can uplift and empower people and businesses while contributing to wider national development. It positions AI as a matter of national necessity and names population health as one of the challenges AI should help address.[56]

Fifth, Singapore supplements sector-specific guidance and rules with broader governance frameworks for AI across the economy. The Model AI Governance Framework, originally developed by the PDPC and now embedded in the Infocomm Media Development Authority's (IMDA) AI governance ecosystem, provides practical guidance on fairness, explainability, accountability, and risk management across the AI lifecycle. Although non-binding, it is positioned as implementable guidance for organisations deploying AI systems. It requires organisations to clarify internal accountability, explain decision-making processes, manage bias risks, and implement monitoring mechanisms ("human-in-the-loop").[57] More recently, Singapore has extended this approach to generative and agentic AI systems through additional guidance, emphasising that accountability remains with human operators and deploying organisations.[58]

Crucially, Singapore's model assigns institutional responsibility. Oversight is distributed but coordinated. Product safety sits with HSA; healthcare-specific guidance sits with SMoH and its partners; data protection sits with PDPC; and broader AI strategy and governance sit within Singapore's digital policy architecture. The establishment of public authorities with defined remits results in less ambiguity about who is responsible and accountable.

Enabling responsible innovation: how safety and change coexist

This architecture also helps explain how Singapore has tried to enable innovation without relinquishing oversight. HSA offers a Device Development Consultation Scheme for developers of digital health devices, giving innovators an early route into the regulatory system. It has also introduced a controlled pathway for lower-risk AI software developed within the public healthcare system, with conditions including senior clinical oversight and continuing governance controls.[59]

The same pattern is visible at the level of state capacity and implementation. National AI Strategy 2.0 ties AI deployment to capability, infrastructure, and trusted use, and SMoH has backed this with funding for innovation and test-bedding in public healthcare. The significance for New Zealand is that Singapore's model not only regulates AI but also enables innovation: governance is being developed alongside investment and deployment pathways to scale selected tools.

This anticipatory governance approach contrasts with a reactive posture. It signals that innovation and precaution are not mutually exclusive. Governance should grow as capability grows.

What New Zealand can learn from Singapore

Singapore is not a blueprint that New Zealand can simply copy. Its model depends on stronger central coordination and a more consolidated digital strategy with greater implementation capacity than New Zealand currently has. However, it provides several practical lessons, especially if the goal is to become a fast follower of frameworks that make responsible innovation possible.

1. Healthcare-specific implementation guidance

Singapore complements its general AI governance framework with its Ministry of Health's AI in Healthcare Guidelines. These are aimed at developers and implementers in health, explicitly complement medical device regulation, and are treated as a living document. New Zealand already has ethical guidance and advisory structures, but it does not yet have a nationally endorsed health-specific operational guide of comparable specificity for clinicians, providers, and developers.

2. Clear institutional accountability

In Singapore, product regulation sits with the Health Sciences Authority, healthcare-specific guidance with its Ministry of Health and partners, and broader AI governance with the IMDA ecosystem. By contrast, New Zealand's current arrangements rely more heavily on advisory review and evolving local processes. NAIAEAG reviews proposals, while a national data platform, data-governance protocols, and post-implementation review remain under development.

3. Risk-based governance across the full lifecycle

HSA's software medical device guidance is explicitly lifecycle-based and includes ongoing requirements, while Singapore's broader AI governance emphasises internal accountability, monitoring, transparency, and risk management. New Zealand's guidance is moving in that direction, but these expectations are not consistently embedded in a national framework.

4. Controlled pathways for adaptive tools

Singapore has created early consultation and sandbox arrangements for lower-risk AI software as a medical device (AI-SaMD) in public healthcare, with defined safeguards and post-market controls. The lesson for New Zealand is that adaptive tools need a supervised route from pilot to scale, rather than a simple binary of full approval or no use.

5. Governance should be designed to be revised over time

Singapore treats AIHGle as a living document. It has updated its broader governance architecture from the Model AI Governance Framework to newer frameworks for generative and agentic AI. That is a useful model for New Zealand, where oversight should continue to evolve through experience over time.

3. HUMANS AND MACHINES: SOCIAL IMPACT OF AI IN PATIENT CARE

Discussion of AI often centres on efficiency and governance, so more fundamental questions about health and the values that underpin the healthcare system can be eclipsed by the push for innovation. Governance frameworks are important, but they rest on deeper assumptions about what health is and how good care can be provided to the individual. Examining models of health clarifies the values and assumptions that sit beneath technological adoption and, ultimately, policy decisions. Questions about the nature of health are also tied to medical AI's potential social effects on physician-patient relationships and wider social dynamics.

3.1 Exploring models of health

Historical development of the "medical gaze"

The rise of empiricism in the 19th century—the belief that reliable knowledge comes primarily from directly observable data and measurement methods—led to a new medical paradigm.[60] The interaction between doctor and patient shifted from a dialogue about the patient's narrative—illness as an aspect of individual experience—to what philosopher Michel Foucault called the "medical gaze": a focus on localised pathologies that separates the disease from the person.[61]

New technologies supported this focus on measurable aspects of the body, dividing it into ever smaller parts. While this analytical fragmentation enabled significant diagnostic and therapeutic advances, it also encouraged a systematic reduction of the patient to an aggregate of physiological processes, defined by quantifiable parameters. This led to an increase in the power of physicians and their clinical knowledge and a de-emphasis on unique patient narratives and experiences.[62]

The biomedical model of health

This approach to medicine remains prevalent today. What used to be the "medical gaze" now aligns with the "biomedical model of health" (BMH). This defines illness as a deviation from normal biological functioning, which can be explained in terms of physical and biochemical processes within the body. It has also been described as the "datafication of the patient" or "statistical personhood," understanding patients primarily as aggregates of data—sets of probabilities, risk factors, and statistical associations derived from large populations.[63]

The question is not whether this reductionist view of biology and health is good or bad, but whether it is sufficient. The underlying question is whether health can be fully defined by statistical metrics, whether those metrics capture all relevant aspects of illness, and what role unquantifiable information plays.

The biopsychosocial model of health and patient-centred care

Despite its successes, this purely biomedical view is not the only approach in medicine. The "biopsychosocial model of health" (BPSM) functions as a broader alternative to the biomedical model. It conceptualises health and illness as outcomes of dynamic interactions between biological processes (such as physiology and pathology), psychological processes (such as emotions, cognition, and behaviour), and social conditions (such as relationships, culture, and socioeconomic context).

In recent decades, so-called "person-centred care" has become increasingly prominent. It can be regarded as the practical and clinical application of the underlying BPSM in care and treatment. Although not always treated as such, it is often considered the gold standard of medical care. It incorporates objective biomedical diagnostics and treatment alongside a more holistic understanding of health. In person-centred care, health is understood as the result of an interplay between biological, psychological, social, and relational factors, which are not reducible to biological indicators alone. In contrast to the "medical gaze," this approach focuses on the whole person and seeks to integrate the patient's individual perspective, values, and narrative accounts of illness and social context into the treatment process.[64]

In patient-centered medicine, the patient's status is that of a person rather than an agglomeration of medical facts.[65] (...) That means that a person's health cannot be reduced to somatic or clinical aspects alone. The model rests on a view of the patient as a person that is defined by many non-medical determinants such as personality, socio-economic status, etc., which all may shape the patient's individual experience of illness. Therefore, the patient narrative is crucial in a patient-centered clinical encounter.[66]

Te Whare Tapa Whā, the Māori model of health developed by Mason Durie, offers a valuable perspective on AI in healthcare through its holistic emphasis on physical, mental, spiritual, and social wellbeing. The purely biomedical model might be too narrow to capture the fuller realities of health.

Value of the doctor-patient relationship

Person-centred care places a distinct value on the doctor-patient relationship. It rests on the assumption that an encounter between doctor and patient is more than a transactional exchange of data. It is valued as a relationship based on trust and care, shaped by responsibility and empathy. This relationship cannot be reduced to data analysis; trust is the cornerstone that enables successful treatment.[67] These elements of care are not just "nice-to-haves"; they promote better health and improve treatment outcomes. Research consistently shows that physician empathy and trust improve healing and pain management.[68] It also shows that patients disclose their medical history selectively to physicians whom they trust, and this depends on how emotionally empathic they perceive them to be.[69]

> *"From my perspective, a good chunk of healing is about having a human guide you through illness. If we highlight this as really important to implementing AI in New Zealand, we at least have those values to work with rather than going in blind."*
> *—New Zealand researcher and surgeon*

Statistics can provide insights, but without interpretation and personal treatment they cannot offer guidance on their own. Ultimately, physicians who interpret them draw on their clinical knowledge as well as an understanding of their patients as individuals. Physicians are uniquely positioned to balance data with personal circumstances and narrative forms of knowledge.

3.2 Social impact of AI in patient care

Datafication of the patient: how AI might reinforce the "medical gaze"

Against this backdrop, physicians and ethicists are concerned that the increasing use of AI—particularly in patient care—could reinforce the "medical gaze." As AI expands the possibilities for AI-based data collection and processing, this reductionist understanding of health may regain prominence. The tendency to see the patient through the lens of data-intensive technologies as the sum of their biodata could increase, undermining empathy and trust. Medical ethicist Giovanni Rubeis observes: "Following this view, MAI [medical artificial intelligence] technologies may enhance the reductionist clinical gaze. ... The focus on quantifiable health data could result in ignoring the patient's values and motivations as crucial factors in the clinical process."[70]

Introducing AI into the highly sensitive domain of human health makes it imperative to develop a health system and culture that does not neglect person-centred care. In the context of medical AI, this means not replacing key care roles and tasks that only humans should engage in—such as communicating with and caring for the elderly—with technology. Technology may generate new behavioural patterns. That is why we should be careful about what AI is used for.

> *"Once we introduce that as a solution to a problem, we're probably not going to try to improve that human side."*
> *—Expert interview participant*

This is highlighted in the Prime Minister's Chief Science Advisor (PMCSA) report: "Establishing an understanding of the crucial human elements of healthcare delivery will support decision-makers to deploy AI technologies in the appropriate supporting areas."[71]

These two paradigms are not necessarily mutually exclusive. Person-centred care aims to use the most advanced, precise technologies available while incorporating non-quantifiable information into clinical decision-making and treatment. These tendencies must be addressed when designing AI so technical benefits can be harnessed while maintaining a high quality of person-centred care.

Protection of the human-centred, doctor-patient relationship and physician autonomy

The therapeutic relationship between a patient and a physician, nurse, or therapist is regarded as the foundation of good care. An intentional therapeutic relationship enables respect for the patient's autonomy and values as well as collaborative decision-making. Excessive dependence on AI could reduce the patient to data and damage the doctor-patient relationship as AI-powered systems become third parties. This could undermine both patient and physician autonomy and facilitate "technical paternalism."[72]

AI could exert uncontrolled influence over medical decisions or be elevated to an "equal partner" in the consultation, transforming the doctor-patient dialogue into a trialogue and increasing reliance on algorithmic outputs.[73] AI systems may inadvertently shift decision-making authority away from clinicians, diminishing their confidence in their own judgement. In cases of "automation bias"—the belief that AI-generated content is always superior—doctors may feel pressure to follow AI recommendations and lose trust in their own clinical judgement. Patients, in turn, could lose trust in doctors and view systems as primary decision-makers.[74]

This risk is outlined in the PMCSA report and the recent WHO report on ethics and governance of medical AI.[75] Both flag the danger of overreliance on AI: "Generative AI tools create a real danger of automation bias, both in medical practice, and in medical education: both medical professionals and medical students might fall 'out of the loop,' through over-reliance on AI tools that are 'good enough most of the time.'"[76]

> *"If AI gets things right 99 times out of 100, you stop worrying that it's wrong. You're not even going to think, you're just going to trust."*
>
> *—New Zealand surgeon*

The limitations of AI tools must be understood and made clear. One of AI's main purposes is to identify patterns that are difficult for clinicians to see on their own. However, AI recommendations rarely point to a single solution for a patient. Rather, they present a range of probabilities based on different objectives and values.[77] To protect patient autonomy, physicians must contextualise AI outputs within the patient's own values and priorities. In medicine, there is not a "one-size-fits-all" solution for patients. Medical practice involves ambiguous choices shaped by complex trade-offs and individual priorities. All information provided by AI must be carefully and meaningfully integrated into the treatment of each person.[78]

The Medical Council of New Zealand's new guidelines emphasise that AI offers no reason to abandon the principles of medical responsibility.[79] It should not take over responsibility or override clinical judgement, but should support decision-making and augment the physician's ability to interpret the data. Physicians retain final responsibility for clinical decisions. Their key task is, and will increasingly be, to consider automated data outputs *and* non-quantifiable information such as context, values, preferences, emotional state, and the broader perspective of the patient. A useful guiding principle is to automate processes, not decisions, in order to improve patient outcomes.[80]

For the use of AI systems, institutional frameworks are needed to safeguard physicians' judgement and autonomy. AI must not be implemented in ways that indirectly pressure physicians into uncritically following its recommendations. Doctors must retain the freedom to make well-founded decisions even when these go against AI advice—without institutional coercion. This requires full transparency about how the systems work and their limitations, as well as sufficient time for medical review.[81]

Despite the many promising applications of AI, it is essential not to offload critical clinical tasks onto AI systems that must remain within the physician's responsibility. Leading publications highlight the risk of "de-skilling"—the gradual loss of essential competencies through underuse or diminished relevance as AI systems take on more functions. Both dependence on AI and any loss of the ability to think critically and diagnose need to be avoided.[82]

Personal care versus data-tailored care

When the use of AI in medicine is discussed, it is often framed as a pathway to more *personalised* healthcare. Why, then, do experts caution that an unbalanced use of AI could lead to neglecting the individual? In this context, "personalisation" typically refers to the incorporation of a greater volume and variety of individual patient *data* into diagnosis or treatment decisions. This does not necessarily result in more personal contact, deeper understanding of a patient's experience of illness, or care that is more relational and holistic. Rubeis emphasises this: "The technoscientific holism these technologies imply is holistic only in the sense that they enable the monitoring and control of the individual's whole life process. Standardizing this information implies to decontextualise it, meaning to ignore factors like the patient's preferences and values as well as the social determinants that shape their life situation."[83]

For this reason, it is more accurate to say that AI enables data-tailored treatment, rather than more personal care. AI systems can analyse large amounts of patient-specific information—such as imaging data, laboratory results, genomic profiles, medication histories, or patterns derived from electronic health records—to support more precise clinical decisions. This may improve targeting and efficiency, but it does not automatically enhance the human dimensions of care. Eric Topol, a leading physician-scientist who applies AI in healthcare, argues that while precision medicine relies on biological and clinical data, the core elements of trust, empathy, and human understanding remain the responsibility of clinicians.[84]

Ideally, AI supports care that is more human and less transactional. Much depends on the intentions embedded in the technology's design. If AI is designed to maximise profits and save time, its use in a real-life setting will reflect those goals.

Hidden values in the system

Harvard Medical School hosted the "Responsible AI for Social and Ethical Healthcare (RAISE)" symposium in collaboration with a group of scientists—many of them physicians. Participants highlighted that medical AI tools will increasingly be used to support clinical decision-making, embedding hidden value frameworks. These frameworks shape recommendations in ways neither physicians nor patients might anticipate. AI outputs may be based on different, sometimes conflicting, priorities: "maximizing revenue versus minimizing costs, respecting patient autonomy versus preventing harm, or favoring aggressive intervention versus conservative management."[85]

The group has identified a critical gap in current conversations about governance of medical AI: AI systems fail to disclose the clinical values embedded in their recommendations. Values influence clinical decisions, yet no existing framework systematically discloses which values an AI system prioritises or how it navigates conflicts between them. For example, a physician may consult an AI system for a 60-year-old man with lower back pain. One AI system recommends an MRI, reflecting a hospital's incentive to generate revenue while ruling out rare conditions, whereas another system aligned with an insurer suggests watchful waiting and physical therapy to minimise costs.

The experts advocate for transparency about the values embedded in models that will be used to support decision-making. Public debate about the most important values for medical AI, alongside carefully monitored pilot projects, will support the testing of models against diverse stakeholder perspectives. AI should not simply reinforce the interests of developers but be designed to serve patients in the best possible way.[86]

The manifold social impacts of AI in healthcare are often overlooked in current discussions. While this chapter cannot address all dimensions, it highlights the importance of considering not only the technical benefits of AI but also its broader effects on all people throughout the healthcare system. It also raises fundamental questions about priorities: what values should guide our healthcare system, and what goals do we, as a society, seek to pursue?

Workforce training

For the effective and appropriate adoption of AI in healthcare, adequate training for clinical staff will be crucial, alongside stronger digital literacy education for students. Training programmes across the health professions should include basic AI literacy, including an understanding of how these systems function and what their limitations are. This is essential for safe implementation. Health professionals must be able to interpret outputs critically and recognise where AI should support, rather than replace, human judgement. Capability building should form a central part of any national strategy.

4. MEDICAL AI OPPORTUNITIES FOR NEW ZEALAND

If AI is introduced in ways that keep the patient at the centre and protect the human element of care, it can significantly enhance healthcare without undermining the values at the heart of good care. On that basis, the question is not only what AI might disrupt, but where it could meaningfully improve care delivery and system performance.

Structural advantages for AI adoption in New Zealand

Aotearoa New Zealand has several structural characteristics that make it particularly well positioned to adopt medical AI responsibly and at scale. One clinician-researcher interview highlighted that New Zealand is especially well positioned because of its relatively small and connected public healthcare system. There are only 20 base hospitals, so national digital upgrades could be more achievable than in large, fragmented national health systems.

> *"Health New Zealand has a very unique opportunity relative to the rest of the world to lead on some of the digital innovation. We only have 20 hospitals, so it's a much smaller jump for us to upscale the whole nation from an infrastructure point of view."*
>
> *—Clinician-researcher*

The national health identifier, along with the data available in New Zealand, provides a foundation not only for implementing overseas AI tools but also for building and tailoring population-specific models for New Zealand patients using local datasets. This could also help New Zealand validate and retrain imported models, making New Zealand a capable partner rather than merely a dependent purchaser of overseas tools. New Zealand also has a chance to leverage its small-scale infrastructure to become an innovator: New Zealand's mix of populations, combined with its small and connected health system, could make it a strong setting for developing and testing AI that works across different groups.

At the same time, these opportunities are constrained by gaps in foundational digital infrastructure. Successful AI deployment depends on complete, interoperable electronic medical records that are accessible across the health system. While progress has been made, paper-based documentation and inconsistent digital maturity persist in some hospitals.

AI adoption should align with national health targets

The Government's five health targets provide a useful lens for identifying where medical AI may offer the most immediate value in New Zealand. With current priorities focused on (1) faster cancer treatment, (2) improved childhood immunisation, (3) shorter emergency department (ED) stays, (4) shorter waits for specialist appointments, and (5) shorter waits for elective treatment, AI adoption should target applications that support these goals. For example, AI in cancer imaging could help reduce delays and prioritise urgent cases. Radiology and triage tools can be linked to shorter waits for first specialist assessment and elective treatment. Some workflow tools may help with shorter ED stays.[87]

Opportunities for New Zealand: where AI could strengthen medical care

Medical AI is not the solution to every problem in healthcare, but it presents a great opportunity to improve targeted clinical areas that align with health targets. The goal should be to focus on a small number of concentrated use cases where AI, using high-quality data, can:

1. improve diagnostic quality (diagnostic models),
2. enable early prevention (diagnostic and predictive models), and
3. lighten the administrative workload (generative models).

These three applications—diagnostic support (particularly in imaging), prediction and prevention, and administrative efficiency—are likely to offer the greatest near- and long-term benefits for New Zealand's health system.

4.1 Improve diagnosis and screening

One of the most realistic near-term opportunities for AI adoption in New Zealand is in image-based diagnosis and screening. These applications use AI to find patterns in medical images such as X-rays, CT scans, retinal scans, and mammograms. These images are used for screening, diagnosis, monitoring, and prediction of patient outcomes. AI-driven image analysis—while not risk-free—is one of the most practical applications because image interpretation is time-consuming and amenable to performance testing against human interpretation.

The most developed New Zealand example is diabetic retinal screening. THEIA is a New Zealand-developed system commercialised from research at the Auckland Bioengineering Institute, that uses retinal imaging to support diagnosis and triage for diabetic retinopathy and related eye disease. The system could be used to expand access in remote or lower socio-economic areas, where specialist services are less accessible. The research base behind this is strong by New Zealand standards. A 2021 study reported that THEIA was developed using routinely collected retinal screening data from Auckland and Counties Manukau and was designed for implementation in the New Zealand national diabetic retinopathy screening programme. The authors found high sensitivity and concluded it could significantly reduce the manual grading load. A multi-centre prospective evaluation in the New Zealand screening programme found that THEIA did not miss referable disease, achieving 100% sensitivity for "more than mild" or "sight threatening" disease in the study sample.[88]

On 27 February 2025, the Government announced a South Auckland diabetic retinal screening pilot, explicitly framed as a way to reduce waiting times and reach people overdue for screening.[89] Technicians from seven general practices would take retinal images locally, with AI used for primary grading and ophthalmologist back-up review during the pilot. The rationale was to provide real-time screening results, increase access, shorten waits, and help address the more than 26,000 people in South Auckland who were overdue for screening. This is a good example of a realistic opportunity: not autonomous diagnosis, but clinically supervised AI use that increases access to screening and directs specialist attention to cases most likely to need it.

Breast screening is another major diagnostic domain where New Zealand activity is now increasing. In February 2026, Health New Zealand issued a request for information (RFI) for BreastScreen Aotearoa seeking information on AI "reading" of screening mammograms and breast density reporting. It asked about image-quality assistance, reporting support for recalled cases, and breast cancer risk prediction and stratification.[90] This exploratory work is part of a broader strategic review of AI use in national screening services and reflects growing demand to strengthen workforce capacity and early detection quality as screening participation rises. Health Minister Simeon Brown emphasised that this step was about supporting radiologists and reducing workload pressures. He highlighted that AI has already been used internationally to assist with medical imaging.[91]

A Breast Cancer Cure-funded project hosted by the University of Auckland will use AI on historical mammograms to better understand breast density patterns in Māori and Pacific women, with the aim of identifying which women may be at higher risk and validating the tools for accuracy across ethnic groups.[92] A recent review of the New Zealand breast screening programme argues that systematic screening improves outcomes, including for Māori and Pacific women, and identifies AI as one of the emerging tools for improving mammographic accuracy and risk assessment.[93]

Another sign that diagnostic AI in New Zealand is moving beyond isolated pilots came in October 2025, when Health New Zealand issued a Request for Information for a national "Radiology AI Orchestrator and Application Marketplace." The RFI states that its goal is to move from point solutions to an integrated national platform. This would allow scalable and secure integration of radiology AI, including governance for model validation, monitoring, and drift management. Health New Zealand is already trialling AI in stroke detection, bone age assessment, and chest X-ray triage. Reporting framed these moves as a response to workforce shortages, rising demand, and the limits of fragmented, isolated deployments of new AI tools.[94]

4.2 Enable early prevention

A second opportunity lies in using AI not just to interpret images, but to identify risk earlier and support targeted prevention. In its medium-term opportunity map, the Chief Science Advisor's report lists predictive analytics through technologies such as smart wearables, identification of high-risk groups, targeting of screening programmes, targeted health-promotion campaigns, and disease prevention as practical uses.

Diagnosis and prevention overlap, and retinal screening is a clear example. THEIA is fundamentally an image-interpretation tool, but its value lies in enabling the screening of a high-risk, asymptomatic population and triaging abnormal images for specialist review. In doing so, it supports earlier detection and intervention for diabetic eye disease before vision is affected, while also bringing screening into community settings rather than relying on hospital-based review. The South Auckland pilot fits this prevention logic, as it is aimed at people with diabetes who are overdue for screening. AI is not preventing diabetes, but it does enable earlier intervention. This reduces the chance that people present only once damage is advanced.

Breast screening follows the same pattern. AI-assisted mammography can improve not only the reading of an image, but also the stratification of women by breast density and cancer risk. This opens the door to more targeted screening. The PMCSA's Volpara case study identifies breast density as both a masking problem and a risk factor. Density can be fed into risk models to identify women who may benefit from additional surveillance or different imaging pathways. Health New Zealand's February 2026 BreastScreen Aotearoa RFI goes further, including breast cancer risk prediction and stratification as an area of interest alongside mammogram reading and breast density reporting.

Prevention opportunities go beyond imaging. Better health data and predictive analytics can help identify people or communities at higher risk and improve the targeting of screening and health-promotion programmes. This includes identifying missed screening populations, stratifying risk, targeting outreach, monitoring changes earlier, and allocating limited clinical attention more deliberately. Some of the more data-intensive preventive applications remain a longer-term ambition in New Zealand. This is because developers can struggle to access and link sufficiently comprehensive datasets. Legacy systems, poor interoperability, and the absence of fully integrated national health platforms make it harder to assemble the kind of high-quality, connected data environments these tools depend on. At the same time, debates remain over how data should be governed. Some argue that overly restrictive access settings slow the development of AI tools that could improve health outcomes, while others stress that strong protections for personal and health information are essential to maintaining trust and safeguarding patients.

4.3 Automation of administration and clinical documentation

Administrative automation is often presented as the most immediate and least controversial application of AI in healthcare—the "low-hanging fruit" of AI-enhanced healthcare. Clinicians spend a substantial proportion of time on administrative tasks such as referrals, discharge summaries, and electronic correspondence. Tools that automate these tasks could return time to patient care.

AI scribes in New Zealand

Health New Zealand is trialling AI scribes. Heidi is one tool that has been introduced in several clinical settings, including emergency departments. It listens to consultations and generates structured clinical notes that clinicians are then expected to review and approve.[95]

A 2025 peer-reviewed study from early 2024 explored experiences of primary care providers using AI scribes in New Zealand. The tool saved time, but users raised concerns about the accuracy of the patient notes it generated.[96] Questions around consent, data security, oversight, and impacts on the dynamics of the doctor-patient relationship also remain unresolved.

AI scribes are now used internationally and can produce high-quality notes, alleviating the burden of administrative work.[97] One study found that, after 30 days of ambient AI scribe use, clinician burnout fell from 51.9% to 38.8%, note-related cognitive task load improved, and after-hours documentation time was reduced.

In New Zealand, RNZ reported that emergency department pilots in Hawke's Bay and Whanganui resulted in an 81% reduction in after-hours administrative work and about one extra patient seen per shift.[98] Seventy-one per cent of participants in the 2024 survey found AI scribes "helpful" or "very helpful," estimating that the tool saved them 30 minutes to 2 hours daily. There was consensus that the tool allowed for greater focus on the patient, more eye contact, and more active listening. Some noted that while they saved time during the consultation, they did have to review and edit the notes afterwards, screening them for errors.

AI scribes are not risk-free

One clinician said that the system missed important negative findings, which undermined their trust. Another reported discontinuing use of AI transcription because the hallucination rate was relatively high and often difficult to detect. Hallucinations—where tools generate plausible but false content, mishear, omit, or subtly reframe a patient's story—are well documented in medical AI literature. These errors affect clinical documentation systems as well as diagnostic tools.[99] An incorrect AI-generated note that passes unchecked may influence diagnostic decisions. The output may look plausible and go unnoticed.

For example, if the system records "no chest pain" when the patient actually described intermittent chest pain, or omits a medication allergy mentioned in conversation, the error may follow the patient into later care unless the clinician carefully reviews the output.

To reduce this risk, vendors such as Heidi consistently advise physicians to carefully review and verify all AI-generated notes before approving them. Legal and clinical responsibility for the record remains with the clinician.[100] These systems should be used as assistive drafting tools, not autonomous documentation systems. Human oversight remains essential.[101]

Mixed feedback from the relatively straightforward use of AI scribes shows that without comprehensive governance, health professionals lack guidance on how to employ tools safely and ethically. Only 66% of participants in the New Zealand survey read the terms and conditions before using the tool, and even fewer—59%—asked for patient consent before use.

This study raises questions about the impact that an ambient tool could have on doctor-patient social dynamics. For instance, patients might adapt their communication when they know an AI tool is "listening," especially if they do not trust the safety of data storage. The study encourages further research on the impact on clinician-patient-provider interaction. It concludes that "AI scribes are more than just transcription tools; they are changing the dynamic of clinical consultations in primary care."[102]

AI scribes are not the only route to administrative efficiency. Some clinicians interviewed in New Zealand suggested that improved speech-to-text dictation systems or better integration of electronic health record documentation tools may deliver similar gains without introducing external generative tools. Traditional dictation systems may produce transcription errors but do not invent clinical content, so they present a different governance risk.

What happens to the saved time?

The promise that AI will make healthcare "more human" by freeing up time spent on administrative work deserves closer scrutiny. The narrative is compelling: with documentation automated, clinicians will have more time for patients. But outcomes are determined by what goals and values the system prioritises and how it is implemented—not by the technology alone. If tools save time, that capacity could be invested in relational care, or it could be absorbed by performance targets that push more patients through the system, offsetting licensing costs and justifying investments. Who makes that decision?

AI is not guaranteed to "make medicine more human." One clinician described seeing an AI note-taking tool used in a way that removed the computer from the immediate consultation and allowed for a more direct history-taking conversation and physical examination. Yet the clinician also stressed that the broader outcome is not determined by the tool itself. Whether time saved translates into deeper patient relationships, higher throughput, or a mixture of the two is not a technical outcome. It is a matter of institutional priorities and policy choices.

> *"It's a question of values and what do we want to reach with the technology and the time that is being freed up."*
> *—Surgeon and researcher*

As noted, technology has the power to shape behavioural patterns in healthcare institutions. Once a technological solution becomes established, there may be less incentive to address the same issue through human skills. For this reason, major technological changes—like the AI scribes—should be introduced cautiously, with clear justification and a willingness to reassess or reverse them if unintended negative consequences emerge.

Scalability of cost, vendor lock-in, and scope creep

Cost is not a marginal issue. Licensing fees of approximately NZ$1,000 per user per year, as in the rollout of Heidi, raise questions about scalability.[103] System-wide adoption across thousands of clinicians would represent a substantial, recurring expenditure. The economic case must factor in all measurable improvements.

Another issue is vendor lock-in. Once a commercial AI tool becomes embedded in clinical workflows, documentation systems, and electronic health record structures, disengaging from that vendor becomes technically and operationally difficult. Updates and maintenance can bind a health system to a particular company. Over time, this could create structural dependence and reduce flexibility.

Transparency is a related concern. Many generative AI tools are developed offshore, with little visibility into how their outputs are produced or validated. That makes it difficult for New Zealand institutions to judge whether they reflect local clinical practice and can perform reliably in the local context.

Scope creep is another risk. Vendors have strong incentives to expand the functions of their platforms over time. A tool introduced as a documentation assistant may add features such as clinical decision prompts, referral drafting, coding assistance, or patient communication tools. The company that created Heidi has started advertising expanded features such as "Heidi Comms" and "Heidi Evidence."[104] While incremental improvements can be beneficial, each extension shifts the tool's role from passive transcription toward actively influencing clinical workflows. Without boundary-setting, what begins as an administrative aid may evolve into a decision support system, raising new accountability and oversight questions.

For these reasons, the deployment of AI scribes cannot be treated as a purely technical efficiency upgrade. It requires governance decisions about how time and funds are redistributed within the health system. If the goal is to strengthen person-centred care and reduce burnout, those objectives must be articulated explicitly *before* scaling such tools.

Economic opportunity and cost efficiency across the three areas

From a cost-efficiency perspective, administrative AI is most likely to add value by releasing time for clinical care rather than immediate savings. If clinicians spend less time typing and more time treating, capacity increases without additional staff. New Zealand evidence on the economic impact of AI scribes is still emerging. Careful evaluation is required to determine whether the productivity gains justify the licensing costs, and whether oversight requirements and potential errors offset anticipated gains.

The largest economic claims tend to be made around prevention. A government release tied to prevention-oriented use cases—such as advanced modelling and AI-driven public health solutions—projects annual savings of between $80 million and $160 million.

For diagnostic and screening tools, the main economic opportunity in New Zealand is less about immediate labour substitution than it is about earlier detection and better use of scarce specialist capacity. Official advice to ministers notes that precision-health tools such as AI could improve timely access and deliver net economic benefits if investment is guided carefully.[105] Health New Zealand's workforce analysis shows imaging demand is rising and that some public MRI machines are not operating because of workforce shortages; its response explicitly includes technologies such as AI to make radiology services more sustainable.[106] A recent New Zealand study estimated that, in breast screening, programme changes linked to AI-supported approaches could deliver cost savings of about NZ$3.1 million, or roughly 14%, alongside improved outcomes.[107]

5. CONCLUSION: A PATHWAY FOR AOTEAROA NEW ZEALAND

Medical AI has the potential to improve diagnostics, treatment, and prevention and to alleviate administrative and other workload pressures. The New Zealand Government has rightly identified AI in healthcare as a priority, and one that will require significant investment. Immediate opportunities lie in automating administrative work, strengthening diagnostic and imaging support, and improving prediction and disease prevention through better use of data.

However, New Zealand does not have the infrastructure needed to fully realise these benefits. Gaps remain in interoperable electronic health records, data access and quality, and the ecosystem needed to develop and safely deploy AI tools at scale.

Additionally, technological promise does not automatically guarantee that patients benefit. What AI delivers will depend on the purposes it is given and the way individuals deploy it. For that reason, governance is key. New Zealand's governance position is still emerging. Useful pieces are beginning to appear, including the prospect of medical device regulation for some applications. Yet the overall landscape remains fragmented, and international models cannot be imported without adjustment.

The question is not only how medical AI is governed, but how it serves health and care. The distinction between biomedical and person-centred models of health matters here. Technologies are never neutral. If efficiency and cost reduction become the dominant drivers, this may entrench a transactional form of medicine. If the health system treats care as person-centred and attentive to human vulnerability, AI might be used more selectively to support those values—reducing clerical burden to improve consultations and augment rather than displace clinical judgement.

None of this is an argument for caution without ambition. New Zealand has genuine opportunities to be a smart, selective adopter and an innovator—using local data to reflect minority populations, targeting areas of unmet need, and building partnerships between government, industry, and research within a small healthcare system.

5.1 Transparent governance and enforceable standards

Recommendation 1: The Ministry of Health should establish a public national register of medical AI systems

If the Ministry cannot clearly identify the systems being used in clinical care, monitoring their accuracy, bias, and performance over time is difficult. The current lack of visibility creates a governance risk that undermines patient safety. A register that records which tools are used and who is responsible for procuring, using, and monitoring them will support periodic reviews and, if required, the suspension, withdrawal, or replacement of tools.

The Ministry of Health should begin by completing an audit of all AI systems currently in use, under evaluation, or being trialled across the health system. The register should record who is responsible for monitoring those being used. It should also record the intended purpose, relevant training data, known limitations, embedded optimisation goals, validation checks, and the level of explainability available to clinicians and patients.

Recommendation 2: Make AI guidelines enforceable by a named authority

New Zealand's current reliance on best practice guidelines that are not mandatory for procurement and adoption does too little to mitigate risks. Compliance should be mandatory and enforceable. AI procurement is a government concern, not simply one for the health sector, so this authority should be independent of the Ministry of Health.

Ongoing Government Digital Delivery Agency reforms should establish a set of standards that the adoption of health and medical AI should be accountable to.

5.2 Governance for the whole AI lifecycle

AI governance standards must consider the entire lifecycle of AI tool use, including validation before use, periodic review, and withdrawal where systems no longer meet required standards.

Recommendation 3: Require pre-deployment validation for New Zealand populations

There may be significant differences between populations receiving care in New Zealand and the populations whose data inform the training of digital models. These differences must not embed bias in local application.

AI healthcare governance frameworks developed by the Ministry of Health and Health New Zealand should include reporting on demographic groups at risk of underrepresentation in training data and require specific validation of digital tools for these populations prior to widespread adoption.

Recommendation 4: Require ongoing blind evaluation against human controls

Decisions made by AI systems are often difficult to parse or understand. Where AI recommendations are visible, human decision-makers may favour algorithmic evaluations. Ongoing checks against human-only decisions can provide assurance that decisions by AI tools continue to reflect human directed policy choices.

Ministry of Health AI governance rules should mandate regular blind human comparisons with representative samples of AI outputs and require evidence that AI systems are both aligned with agreed policy directions and perform at least as well as human practitioners.

Recommendation 5: Require specific liability and clear lines of responsibility during procurement and during clinical use

Where new systems are adopted at scale, there is a risk that no person, agency, or institution is directly responsible for ensuring patient safety. Before implementation, procurement processes must specify who among developers, vendors, health organisations, and clinicians is responsible for guarding against system failure or patient harm.

AI procurement guidelines by the Ministry of Health must include specific accountability, liability, and indemnity decisions that clearly state the responsibilities of each party involved.

Recommendation 6: Require data portability, interoperability, and withdrawal mechanisms

Widespread adoption of digital technologies creates significant privacy and dependency risks. New Zealand's health system must never become dependent on any single provider of digital systems.

The Ministry of Health should require data portability and interoperability clauses in every digital contract. It should also require an exit strategy for every digital procurement to ensure such products can be replaced or discontinued.

5.3 Build capability and infrastructure

Recommendation 7: Invest in the foundations for safe adoption

In the near term, policy focus should be on the necessary foundations of digital health provision—interoperable health records, a usable national data platform, high-quality local datasets, and strong privacy and cybersecurity safeguards. Furthermore, Health New Zealand, professional colleges, universities, and training providers should build AI literacy across the health system so that clinicians, nurses, students, managers, procurement teams, and regulators can use AI effectively, understand its limitations, question its outputs meaningfully, and oversee deployment responsibly.

This investment will necessarily involve upfront costs. Cost savings, therefore, may be disappointing in the short term. However, the focus must be on improving capability, recognising that cost savings will only be realised in the medium to long term.

Recommendation 8: Promote responsible innovation in medical AI

Capability and safeguards can be developed in tandem. Strategic investment in AI capability can help build AI literacy across New Zealand's health sector and strengthen its ability to develop safeguards and governance processes. Implementation strategies should be a core part of innovation, requiring funded AI projects to include workflow redesign, staff training, and patient and clinician engagement. Health New Zealand and other health institutions and research bodies should leverage our relatively small and connected health system to develop AI tools that reflect our population and clinical needs.

Health New Zealand should make selective investments in medical AI where there is a clearly defined clinical or operational need, a strong local data foundation, and a credible pathway from pilot to wider deployment. Near-term priorities should include diagnostic and screening support, targeted prevention, and administrative automation.

5.4 Be explicit about values and purpose

Healthcare is unavoidably shaped by value judgements; no technological development can remove the need for moral and political choices.

Recommendation 9: AI adoption should be values-led

The adoption and implementation of AI tools in healthcare is not value neutral. To avoid an efficiency-driven "technology push," the Ministry of Health should clearly articulate the public-purpose goals and values that will guide medical AI in New Zealand—ideally, before tools are deployed. While public sector agencies have a critical role in clearly articulating why specific tools are adopted in clinical settings, the public health sector in New Zealand is democratically accountable. Therefore, public and political engagement with the purposes of healthcare is good and proper.

The Ministry of Health should develop clear values statements, in consultation with the public and subject to ministerial direction, about the purpose of adopting AI in clinical settings.

Recommendation 10: Healthcare should remain person-centred

A core value that should underpin New Zealand's health system is person-centred care. Humans are not simply bodies to be fixed, but persons to be cared for. If AI tools are adopted with an excessive focus on "efficiency," metrics used to evaluate them will emphasise patient throughput. Medicine that is truly person-centred will assess whether AI tools create more time for patients, strengthen clinician-patient relationships, reduce administrative burden, improve access to specialist care, and reduce staff burnout. Healthcare providers should evaluate AI tools' impact on the quality of communication with patients and on the clinician-patient relationship—particularly where tools are used in direct patient care or clinical documentation.

Where AI tools claim to save clinical time, Health New Zealand should evaluate whether that time is being used for the stated purposes.

Evaluations of AI tools should include quantitative and qualitative measures of time spent with patients and the quality of clinician-patient relationships.

GLOSSARY

Adaptive Systems
AI systems that can change or update their behaviour or outputs over time in response to new data or information.

AI (Artificial Intelligence)
A broad field of computer science concerned with developing algorithmic systems that can perform tasks that normally require human intelligence, such as learning from data, reasoning, problem-solving, pattern recognition, and generating language.

AI Governance
The collection of laws, regulations, professional standards, ethical guidelines, and institutional practices used to oversee the development and deployment of AI systems.

AI Literacy
The ability to understand, critically evaluate, and appropriately use AI systems, including awareness of their strengths, limitations, and risks.

AI Scribe
An AI-powered documentation tool that records clinician-patient conversations and automatically generates structured clinical notes.

Algorithm
A set of computational instructions or rules used to process data, make predictions, or generate outputs.

Algorithm Charter for Aotearoa New Zealand
A New Zealand government framework that commits public agencies to using algorithms in fair, ethical, and transparent ways.

Automation Bias
The tendency for people to over-trust AI-generated recommendations or outputs and rely on them uncritically.

Biomedical Model of Health (BMH)
A model of health that defines illness primarily as a deviation from normal biological functioning and focuses on measurable physiological processes.

Biopsychosocial Model of Health (BPSM)
A broader model of health that understands illness and wellbeing as the result of interactions between biological, psychological, and social factors.

Black-Box System
An AI system whose internal reasoning or decision-making processes are not transparent or understandable to users.

Clinical Decision Support System (CDSS)
A system that assists clinicians with tasks such as risk assessment, treatment recommendations, or drug interaction checks. Traditional CDSS are rule-based, while AI-based systems identify patterns in large datasets and generate recommendations more autonomously.

Datafication
The process of reducing people, behaviours, or experiences into quantifiable data points or measurable variables.

Explainability
The degree to which the operation and outputs of an AI system can be understood by clinicians, regulators, or patients.

Generative AI
AI systems capable of generating new content such as text, images, summaries, or recommendations based on patterns learned from large datasets.

Health Information Privacy Code (HIPC) 2020
New Zealand's privacy framework specifically governing health information held by health agencies.

Human-in-the-Loop
A governance or operational model in which humans retain oversight, review, or final decision-making authority over AI outputs.

Large Language Model (LLM)
An AI model trained on large amounts of text data that can analyse and generate human-like language.

Machine Learning (ML)
A subset of AI involving algorithms that learn patterns from data and improve performance without being explicitly programmed for every task.

National AI and Algorithm Expert Advisory Group (NAIAEAG)
A Health New Zealand advisory group that reviews and provides guidance on AI and algorithmic tools proposed for use within Health New Zealand.

National Ethics Advisory Committee (NEAC)
New Zealand's National Ethics Advisory Committee, which provides ethical advice and guidance on health and disability issues, including the ethical implications of AI in healthcare.

Person-Centred Care
A model of healthcare that treats patients as whole persons rather than collections of symptoms or data, integrating their values, experiences, relationships, and social context into care decisions.

Precision Health
An approach to healthcare that uses detailed biological, genetic, environmental, and lifestyle information to tailor prevention and treatment to individuals.

Social Licence
The level of public trust and acceptance required for a technology or institution to operate legitimately within society.

Software as a Medical Device (SaMD)
Software intended for medical purposes that performs clinical functions without being part of a physical medical device.

Te Whare Tapa Whā
A Māori model of health that emphasises the interconnected importance of physical, mental, spiritual, and family and social wellbeing.

THEIA
A New Zealand-developed AI system commercialised from the Auckland Bioengineering Institute that uses retinal imaging to support diagnosis and triage for diabetic retinopathy and related eye disease.

Transparency
The ability to understand how an AI system works, what data it uses, what limitations it has, and what values or assumptions shape its outputs.

Vendor Lock-In
A situation where a healthcare provider becomes dependent on a particular technology company or AI platform because switching systems becomes technically or operationally difficult.

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