NATIONAL DIGITAL HEALTH STRATEGY

2023-2028

Acknowledgement of Country

All partners acknowledge and respect Aboriginal and Torres Strait Islander peoples as the Traditional Owners of Country throughout Australia and their continuing connection to land, seas and community. We pay our respects to their cultures and to Elders past and present.

Aboriginal and Torres Strait Islander peoples should be aware that this document may contain images of deceased persons.

Thank you to partners and contributors

Thank you to the partners, organisations, healthcare providers and Australians from all walks of life who contributed to the National Digital Health Survey 2021 and broader consultations. We appreciate all who gave their time, experience and expertise to contribute to Australia's digital health transformation journey.

Role of the Australian Digital Health Agency

The Australian Digital Health Agency (the Agency) is a corporate Commonwealth entity supported by all Australian governments to accelerate adoption and use of digital services and technologies across the Australian health ecosystem, as set out under the *Public Governance, Performance and Accountability (Establishing the Australian Digital Health Agency) Rule 2016* (Agency Rule). The Agency Rule was created under the Public Governance, Performance and Accountability Act 2013. Under the Agency Rule, the Agency is charged with developing digital health strategy at the national level for Australia.

The Agency has a key role in delivering the *Intergovernmental Agreement on National Digital Health 2023–2027 (*Intergovernmental Agreement), which has been signed by all Australian governments. The Agency delivers cross-jurisdictional priorities, as set out in the Intergovernmental Agreement.

Along with our partners, the Agency is responsible for leading and coordinating the implementation of the strategy and maintaining a national view of its progress. The Agency is also responsible for some key elements of strategy, including the continued expansion of My Health Record and other platforms that support the secure and safe use of digital health systems across the nation.

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MINISTERIAL FOREWORD

THE HON MARK BUTLER MP

MINISTER FOR HEALTH AND AGED CARE

Australia's healthcare system is one of the best in the world, delivering safe and affordable care across all stages of life. We must build on this and ensure Australians continue to have access to a world class healthcare system - one that empowers them to manage their health journey and better supports health professionals to work to their full potential.

The healthcare of Australians is a shared responsibility between the Commonwealth, State and Territory and local governments. While responsibilities between primary care, hospitals, aged care and disability support services are distinct and funding comes from both public, private and not-for-profit sectors, care needs are becoming increasingly complex and so it is critical there is improved coordination going forward. Digital health technologies open up the possibility for better linkages across the health system, enabling cooperation and coordination across silos, regardless of which level of government or the private sector is responsible for funding or delivering those services.

All governments have a shared commitment to, and vision for, a healthcare system that is connected and delivers the best outcomes for all Australians. This means working together to build a stronger Medicare and embracing the opportunities that digital health brings. The Albanese Government has made historic investments to strengthen Medicare, with $6.1 billion invested at the 2023-24 Budget, including $950 million to improve digital health technologies. This will deliver a healthcare system that is easier to access, more convenient and delivers better outcomes, with the patient in control of their information. It will empower people to access their health information and participate in their care, support better diagnosis and treatment and provide insights for better planning and resourcing. Digital health technologies will also improve the sustainability of the healthcare system, by reducing costly duplication and facilitating faster diagnoses.

The National Digital Health Strategy 2023–2028 and accompanying roadmap has been developed in consultation with consumers, healthcare professionals and the software industry. The Strategy sets the vision and pathway that will strengthen Medicare and enable our health system to serve the needs of Australians today, and into the future.

Key reforms will be needed to ensure policy and regulatory settings support digital health adoption, use and innovation. The healthcare workforce must be supported to be digitally ready. We must embrace the opportunities offered by digital technologies, including artificial intelligence, genomics, and other emerging technologies, to better use data to improve health outcomes and create a healthcare system that is more equitable and person-centred. The ability to discover and share information across care settings through a near real-time data exchange will facilitate multi-disciplinary team-based care, ease pressure on the workforce and improve sustainability by reducing fragmentation and duplication.
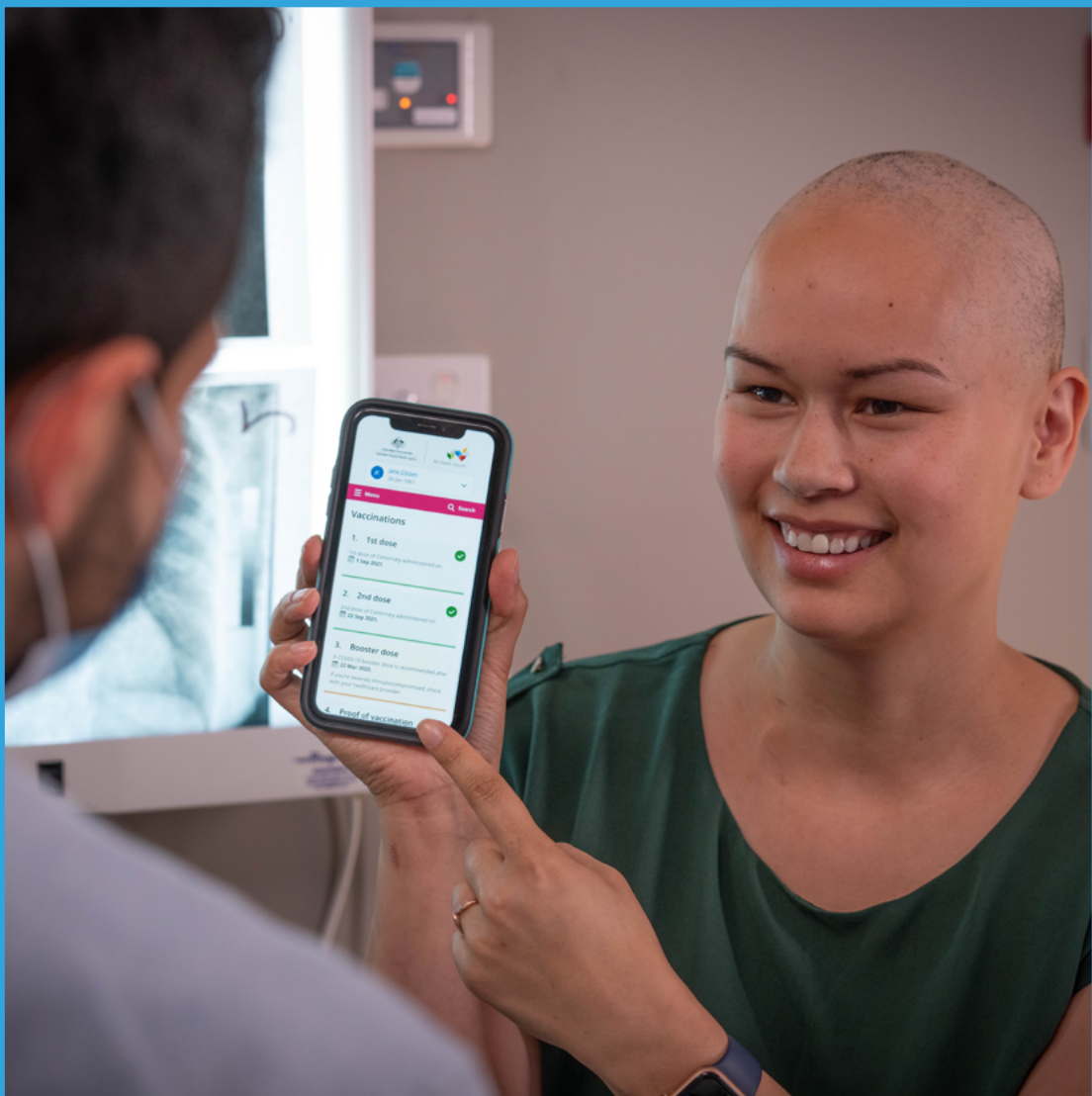
On behalf of all state and territory Ministers for Health, I'm pleased to present this *National Digital Health Strategy 2023–2028*. I acknowledge and thank all stakeholders for helping bring it to life.

The Hon Mark Butler MP
Minister for Health and Aged Care

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

AN OPPORTUNITY TO TRANSFORM HEALTHCARE

Australia is taking the next steps towards the digital transformation of healthcare, embracing new opportunities and ways of managing our health and wellbeing.

This National Digital Health Strategy places people at the centre of a modern, connected and digitally enabled healthcare system. It is a strategy inclusive of all who live and receive healthcare in Australia, from Aboriginal and Torres Strait Islanders to people newly arrived on our shores. It works to increase data and digital progress, access and inclusion and also takes into consideration the aims and activities of other plans and strategies, both across governments and the broader digital health ecosystem.

Digital health is helping us meet challenges such as health inequity, increasing levels of chronic disease, rising healthcare costs and global health threats. It is enabling a person-centred healthcare model that improves access to coordinated multidisciplinary care and management of complex and chronic conditions.

Digital technologies are easing pressure on hospitals and, through the sharing of quality data, helping to inform evidence-based decision making and the transition of care between healthcare settings. Australians, including the more than 23.7 million people with an active My Health Record, are better equipped with the information and tools they need to understand their health status and risks and manage their health and wellbeing.

This next phase of digital transformation will drive information sharing and advance real time data exchange to make information available when and where it's needed, in line with consumer consent and strong privacy and cyber security standards. People should not have to retell their health story. Their key information should follow them and, should they wish, be available to the whole care team across primary care, allied care, hospital care and aged care. The resulting reduced duplication and waste will also decrease workforce and budget pressures and increase safety, quality and productivity.

A thriving, collaborative digital health ecosystem is founded on a common understanding of priorities and direction and relies on settings that support innovation and build confidence and trust. To achieve this, digital health technologies should be developed through partnerships between industry, technology vendors, healthcare providers, researchers, governments and consumers, supported by agile funding solutions to respond to the rapidly changing digital environment. Strong leadership, cyber security and governance, including clinical governance, are essential when forming a nationally coordinated approach to the collection and sharing of critical health information, and when creating policy and regulatory settings that encourage partners and collaborators to share cross industry digital expertise.

For successful adoption of digital and other health technologies, confidence and trust from within the health ecosystem and across the community is required. Stakeholders need to be certain that the use and regulation of digital health is in line with social expectations, and that it will deliver benefits to both individuals and the community, while allowing risks to be managed appropriately.

Modernisation of Australia's national digital health infrastructure is required for a contemporary, data-rich digital health ecosystem that can safely support emerging medical science and technologies such as genomics, artificial intelligence and sensor technologies. This data-rich environment will also provide improved data analytics to inform self-care, clinical decision making, public health policy and health research.

Building on the achievements of the previous National Digital Health Strategy released in 2017, this strategy acknowledges the efforts, planning and investment to date towards digital enablement and the uplift in digital health maturity. It is on this foundation that the potential of a more connected, person-centred digital health system, and the benefits it offers individuals, the community, healthcare providers, governments and industry, can be realised. The vision of the National Digital Health Strategy is *'an inclusive, sustainable and healthier future for all Australians through a connected and digitally enabled health system'*. Working together, we can achieve this vision to 2028 and beyond.

STRATEGY AT A GLANCE

The vision of the National Digital Health Strategy is '*an inclusive, sustainable and healthier future for all Australians through a connected and digitally enabled health system*'.

CHANGE ENABLERS

Policy and regulatory settings that cultivate digital health adoption, use and innovation	Secure, fit-for-purpose and connected digital solutions
Digitally ready and enabled health and wellbeing workforce	Informed, confident consumers and carers with strong digital health literacy

HEALTH SYSTEM OUTCOMES ENHANCED BY DIGITAL HEALTH

1. Digitally enabled: Health and wellbeing services are connected, safe, secure and sustainable	**2. Person-centred**: Australians are empowered to look after their health and wellbeing, equipped with the right information and tools
3. Inclusive: Australians have equitable access to health services when and where they need them	**4. Data-driven**: Readily available data informs decision making at the individual, community and national levels, contributing to a sustainable health system

Partners and collaborators in the health ecosystem

Consumers and carers	Healthcare providers and organisations	Industry and technology vendors	Researchers	Governments

5

1. INTRODUCTION

1. INTRODUCTION

WHY DOES DIGITAL HEALTH MATTER?

Digital health is not simply about the latest technology. It is about supporting a modern, high-quality health system, improving the quality of life of individuals, families and communities, and equipping people to confidently manage their health and wellbeing journey. It's also about enabling healthcare providers to maximise their skills and contributions by increasing effectiveness and efficiency. Digital health is the foundation for all modern health service delivery and should improve safety, quality, productivity and efficiency.

People receive care in a range of different settings. Whether through community-based care, in hospital, in residential aged care, in general practice or in their homes, digital health should support the provision of safe, high-quality care and facilitate the transition between providers and settings. Health information should travel with people across their health and wellbeing journey, encouraging active participation in their own care and promoting informed decision making with the support of their care team.

Digital technologies and data provide people with better access to their health information, better quality care when and where they need it, and more seamless and personalised health outcomes.

Healthcare supported by digital innovation improves prevention and early intervention. It enables healthcare teams – including the individual, their family and carers, plus medical, nursing and allied health professionals – to identify the best available treatment options based on detailed information.

> " It's about time! Digital health ... is an absolutely essential part of a world-class healthcare system for Australians. It should empower us all to take greater ownership of our personal health, provide greater access to health services, support healthcare workers to achieve better patient outcomes and enhance public health literacy.
>
> **Consumer** – National Digital Health Survey 2021

NEXT STEPS ON OUR DIGITAL HEALTH JOURNEY

To support a future where healthcare is personalised, digitally enabled and data-driven, many nations are accelerating their digital health solutions. Doing so ensures a greater connection between different settings, such as community care, aged care, acute care and disability care. Australia aims to be at the forefront of this modernisation.

Digital technologies enable increasingly complex and chronic healthcare needs, as well as inequities in access and individual health outcomes, to be better addressed via multidisciplinary care. Digital innovation and interconnectedness are creating a shift in health and health-related workforce practices, leading to new models of care across the health, mental health, disability, aged care, child health and social services sectors. Increased digitisation is also unlocking valuable data that can be used to better enable evidence-based care.

This strategy continues the transformation journey, with a focus on system interoperability and the fast, seamless exchange of information, regardless of care setting, discipline or jurisdiction. The strategy provides direction to inform and enable technological innovation, acknowledging the role of government to help drive this activity through digital infrastructure and service delivery, and the development and application of conformance standards and effective governance, including clinical governance.

The strategy identifies opportunities for digital health to support planned national health system reforms[1] and address emerging contemporary health system challenges.[2]

Consistent and ongoing effort is required across 4 existing areas referred to as change enablers, so that digital health transformation can occur effectively and on a national scale. All are necessary to drive progress and achieve the strategy's full ambition. The 4 change enablers are:

- Policy and regulatory settings that cultivate digital health adoption, use and innovation

- Secure, fit-for-purpose and connected digital solutions

- Digitally ready and enabled health and wellbeing workforce

- Informed, confident consumers and carers with strong digital health literacy.

The strategy seeks to achieve 4 outcomes for Australia's health system, by ensuring it's:

1. **Digitally enabled:**
   Health and wellbeing services are connected, safe, secure and sustainable

2. **Person-centred:**
   Australians are empowered to look after their health and wellbeing, equipped with the right information and tools

3. **Inclusive:**
   Australians have equitable access to health services, when and where they need them

4. **Data-driven:**
   Readily available data informs decision making at the individual, community and national level, contributing to a sustainable health system.

The National Digital Health Strategy 2023–2028 sets the vision for digital health transformation across Australia and guides the development of the digital health environment.

COMMONWEALTH, STATES AND TERRITORIES

Health policy and investment
- All Australian governments' health plans
- All Australian governments' digital health plans

DIGITAL ECONOMY

Strategies and plans
- All Australian governments' digital policies and investment
- Organisations focused on the digital economy, infrastructure and connectivity

DIGITAL HEALTH AND HEALTH ORGANISATIONS

Strategies, plans and roadmaps
- Industry bodies
- Healthcare organisations
- Consumer peak organisations
- Vendors
- Researchers
- Health insurers

NATIONAL HEALTH PRIORITIES AND REFORMS

Plans and agreements
- Aboriginal and Torres Strait Islander health
- Primary care
- Preventative health
- Ageing
- Mental health
- Chronic disease
- Medicines
- Research
- Person-centred care
- Multidisciplinary care
- Continuity of care
- Sustainable rural and remote practice
- Health system efficiency
- Equity

YOU ARE HERE

National Digital Health Strategy

Sets the vision for **DIGITAL HEALTH** transformation

Strategy Delivery Roadmap

Identifies **PRIORITY AREAS** over 5 years

Partner Workplans

Demonstrate how partners in the ecosystem **IMPLEMENT** digital health activities across their health and care systems

Consumers and carers

Healthcare providers and organisations

Researchers

Governments

Industry and technology vendors

STRATEGY DELIVERY ROADMAP

The strategy is accompanied by a Strategy Delivery Roadmap, setting out priority actions to guide how partners contribute to implementing the strategy. Co-designed by the Australian, state and territory governments and other partners, the roadmap is a living document periodically reviewed to keep pace with technology developments, emerging policy priorities and health challenges. Partners include consumers and carers, healthcare providers and organisations, industry and technology vendors, researchers and government. Care providers, including residential aged care providers, are also considered important contributors to the digital transformation of health and care, as are care organisations that extend beyond healthcare, such as veteran support services, disability support services and social services.

The roadmap builds on progress and uptake in digital health and assumes existing infrastructure and services are leveraged to deliver the key initiatives. It focuses on priorities that require coordinated, national effort over the 5 years to 2028. It is not intended to be an exhaustive list of all digital health initiatives across Australia. All partners will be engaged in sharing information on progress and driving a culture of learning, collaboration, transparency and accountability. Updates on implementation of the roadmap will be available to ensure partners can continue to evolve and coordinate their contributions.

The strategy and the roadmap recognise that the development of digital health products and services must always incorporate a comprehensive approach to clinical governance. The *Clinical Governance Framework for Digital Health*[3] provides the structure to support accountability for the clinical safety and quality of healthcare products and services. As the scope of digital health products and services grows, an evolving, principles-based approach to clinical governance will be vital to the successful implementation, clinical safety and quality of technologically supported health and care services. Consumer safety, community trust and information security will be key when considering any new governance arrangements for sector-specific artificial intelligence (AI) and other emerging technologies, and the potential health and economic benefits these innovations can bring. It is critical for the entire health ecosystem to continue this evolution across all aspects of digital health by embedding a strong clinical governance approach that aligns with the National Digital Health Strategy and the Strategy Delivery Roadmap.

Learn more by reading the [Strategy Delivery Roadmap](#)

> 66 Good quality standards will ensure there aren't multiple incompatible systems.
>
> **Healthcare Provider** – National Digital Health Survey 2021

THE GROWTH OF DIGITAL HEALTH

There is now global momentum to improve health systems and accelerate the use of health information and tools using digital solutions.[4]

International cooperation is an essential part of this progress. Australia played a seminal role in establishing the Global Digital Health Partnership (GDHP) as the inaugural Chair of the partnership and host of its first summit in 2018. Since then, countries around the world have collaborated through the GDHP, sharing valuable insights on digital health standards and service delivery. Digital health is a high-profile topic at many multilateral forums, including the World Health Organization (WHO), the Organisation for Economic Coordination and Development (OECD), the Asia–Pacific Economic Cooperation (APEC) and the Group of Twenty (G20). As part of our commitment through the G20, Australia is a supporting partner in the Global Digital Health Initiative (GDHI). This initiative helps developing economies build comprehensive digital ecosystems via a WHO-managed framework.

Through a standards-based approach, Australia and other countries are building a future state of interoperability. For Australia, this will include policy settings that drive harmonisation and accelerate adoption which, in turn, support the technology sector to access and supply global markets. Consumers will have better access to internationally developed products and Australian healthcare organisations can reduce costs associated with localising global products.[5] The global digital health market is rapidly expanding. It is predicted to be worth US$505.4 billion by 2025, up from US$86.4 billion in 2018,[6] having accelerated in response to COVID-19.

Irrespective of their level of digital health maturity, many nations are focused on how digital health can improve national health outcomes and enable consumer-centred care.[7] For Australia to fully realise the transformative benefits of digital health, we must continue to work on scaling development and adoption, and driving the policy frameworks that support progress, both at home and internationally.

HOW THE BENEFITS OF DIGITAL HEALTH SUPPORT SUSTAINABLE HEALTHCARE

Harnessing the unprecedented availability of digital technology and data to ensure people have the right information at the right time will lead to a more efficient health system, as well as healthier populations. While there is substantial evidence that investing in digital health contributes to improved safety, productivity and system sustainability, there is more work to do to fully understand and measure these and other wider benefits, including social impacts, improved inclusivity and population health benefits.

There is also the need to understand, measure and improve system resilience and sustainability against external impacts resulting from climate change effects, possible future pandemics, cyberattacks or other extreme economic or social occurrences. For digital health, if the critical infrastructure that delivers essential services is compromised for an extended period, it would significantly impact the operation and delivery of digital health services, products and devices. Significant impacts include events or incidents that put the whole or vital parts of the health system at risk or reduce public confidence in the safety and reliability of essential health products and services.

The risk to digital health systems from the impact of various events or hazards is high and resilience must be a priority for all partners. This strategy recognises that Australia's regulatory settings, through Commonwealth, state and territory legislation, must keep ahead of the evolving risk environment to support digital health resilience. This will be achieved through regulatory and non-regulatory settings to support critical infrastructure owners and operators to effectively manage risks to the continuity of their operations through:

- mature risk-based and resilience approaches

- strong industry–government partnerships

- the strengthening of their security and resilience via regulatory frameworks, tools and improved collaboration.[8]

Climate change in Australia is exacerbating our current risks and creating new ones, posing serious consequences for communities, infrastructure, the economy, environment and the health system. The Australian Government is developing Australia's first *National Climate Risk Assessment* and a *National Adaptation Plan*[9] to better understand the risks and impacts from climate change and invest in a plan that adapts to those risks. The Risk Assessment identifies health as one of the many systems at risk of significant impacts from climate change and it will deliver a shared national framework to inform national priorities for climate adaptation and resilience actions.

While Australia's health system is increasingly responding to the health and wellbeing impacts of climate events, it also contributes around 7% to the nation's CO_2 emissions.[10] Digital health can minimise the carbon footprint of healthcare by reducing waste and duplication, the use of paper-based records and reliance on fossil fuels for travel to healthcare appointments.

Spending on healthcare has been steadily rising as a share of GDP since the 2000s. A large part of the growth over this period was driven by non-demographic factors including the increased use of health services, tests and pharmaceuticals, and decisions to subsidise the introduction of new technologies and medicines. This trend is expected to continue over the long term, driven by demand for access to the highest standards of care and rapid technological innovation.[11]

The productivity benefits of sharing more healthcare data extend beyond improved consumer outcomes and include better workforce efficiency, improved health service delivery, better evidence to inform health policy[12] and improved financial and environmental sustainability of

the health sector.[13] Population-level health system data can be leveraged to benefit the entire population when supported by legislation and appropriate policy. Analysis of data can provide important insights to support better resource allocation and policy planning, and enhance health and medical knowledge about new and emerging diagnoses and treatments.

Improvements in quality and safety through enhanced monitoring, risk management and quality improvement can contribute to reduced instances of preventable harm and unwarranted variation in care. There are more than 250,000 hospitalisations each year in Australia because of medication-related problems, with medication errors (including inappropriate use and adverse interactions) resulting in an additional 400,000 presentations to emergency departments annually. This costs Australia approximately $1.4 billion per year.[14] Internationally, the implementation of electronic medical records, combined with process automation and simplification, has resulted in a 25% reduction in avoidable hospital readmission rates and a 20% reduction in the length of hospital stays.[15]

As an example, the Commonwealth, state and territory governments are continuing to collaborate on Real Time Prescription Monitoring (RTPM). Each state or territory is separately responsible for the management of controlled medicines.[16] Through exchange of information from state and territory regulatory systems, prescribing and dispensing software provides real-time information to doctors (prescribers) and pharmacists (dispensers) about an individual's history and use of controlled medicines. This reduces unnecessary hospital admissions and prevents overdoses and accidental deaths. Technology that facilitates connections and allows this information to be shared helps reduce the misuse of medicines and ensures that people who genuinely need these medicines can access them. Similarly, the implementation of the Aged Care Transfer Summary (ACTS) that enables the sharing of an aged care resident's health information when they are transferred from one healthcare setting to another – such as their transfer reason, health summary and medication chart – ensures the safe, personalised continuity of their care and treatment.

This strategy recognises that there is a need to measure how digital health enhances the experience of consumers, improves population health, reduces costs, improves workforce capacity and satisfaction[17] and, ultimately, delivers a more financially and environmentally sustainable health system. Implementation of the Strategy Delivery Roadmap will require a holistic view of benefits measurement, capturing both the quantitative and qualitative benefits that digital health solutions bring to care delivery.
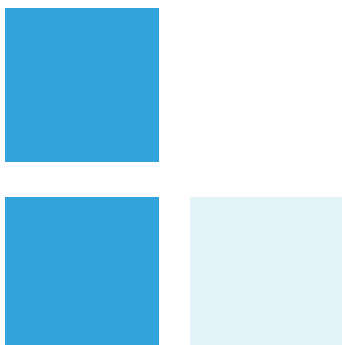
INNOVATION SPOTLIGHT
Kiss My Asthma app

More than 10% of Australians reported having asthma in 2020–21.[18] According to the Australian Institute of Health and Welfare (AIHW) Disease Expenditure Database, in 2015–16 asthma cost the Australian health system an estimated $770 million (19% of disease expenditure for respiratory conditions and 0.7% of total disease expenditure).[19]

Supporting Australians with asthma to look after their health and wellbeing and understand their asthma better can provide an improved quality of life. It can also bring down some of the costs of treating asthma, both in hospital and non-hospital care, as approximately 80% of asthma hospitalisations are preventable.[20]

A Cochrane Review study of 15,000 adult and child asthma patients found people supported by digital technology had much better asthma control and half the risk of asthma attacks.[21] The Kiss My Asthma app has been created by and for young people, enabling them to track their symptoms, access their action plans, set goals, access emergency information and collect data to share with their healthcare providers. Developed by the University of Sydney and Asthma Australia, the app also includes information on asthma triggers, symptoms, first aid and tips for better asthma control.[22] The app will be redeveloped in 2024 to take advantage of new technologies, with the same functionality as the Kiss My Asthma app and more.

TECHNOLOGY BENEFITS, RISKS AND CLINICAL SAFETY

New and emerging technologies are critical to the advancement and future sustainability of Australia's healthcare system. Health technologies are part of preventing and managing health issues caused by larger environmental, socio-economic or disaster-related effects such as those experienced during the COVID-19 pandemic and recent natural disasters. To take advantage of AI and other new technologies and support successful adoption, cultural change, individual digital competency and capacity, strong ethical frameworks and high clinical standards are required.

A robust safety framework will ensure the smooth integration of emerging digital technologies. Managing risk successfully is part of establishing nationally agreed principles, as well as nationally agreed ethical, clinical and technical standards. For example, non-regulatory frameworks could help unlock the benefits of AI in healthcare delivery, harness opportunities for innovation, and promote safer and more secure data sharing practices. Clinical governance promotes clinical safety, quality and assurance, and encourages continuous improvement in the delivery of all healthcare, including through health technologies.

Within appropriate consent and privacy frameworks, healthcare teams can share and access relevant information to inform decisions about diagnosis, treatment and integrated care. Australians expect to be in control of who has access to their personal health information and the development of a consent management framework is one of the short-term actions identified in the *Connecting Australian Healthcare – National Healthcare Interoperability Plan 2023–2028* (the Interoperability Plan). Co-designed with consumers, this framework will outline the arrangements for individuals to grant health and care professionals access to their health information, across a range of healthcare systems. Options will include making it easier to choose which healthcare providers are authorised (by the patient) and the types of information they can access.[23]

> " It is very helpful to have access to patients' previous results, discharge summaries and medication. This can help us provide the most effective treatment in an efficient and safe way.
>
> **Registered Nurse, NSW, March 2023** –
> Agency commissioned research, healthcare provider quarterly polling study

Regulation complements non-regulatory frameworks in the adoption of new technologies by ensuring patient safety, privacy and data security, and preventing potentially poor clinical outcomes due to misapplication of technologies.

Collaboratively developing the operating boundaries and frameworks to implement new technologies requires communication and ongoing learning, often at a rapid pace. Working together to understand the technology and its interaction with existing and emerging systems will collectively build trust and confidence, helping to realise the benefits of these new technologies.

2. A HEALTHIER FUTURE FOR ALL AUSTRALIANS

2. A HEALTHIER FUTURE FOR ALL AUSTRALIANS

The first *National Digital Health Strategy (2018–2022)*, released in August 2017, laid the foundations for fundamentally shifting Australia towards the wider adoption of digital systems to support healthcare, modernise digital health infrastructure, and improve information and data sharing.

During the life of the previous strategy, Australia experienced a remarkable acceleration in digital health development and adoption in response to unprecedented flood and fire events and the COVID-19 pandemic. As an example, the growth in telehealth use during COVID-19 in Australia was exponential:
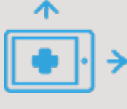
- 118.2 million telehealth services were delivered to 18 million patients, and more than 95,000 practitioners used telehealth services between March 2020 and July 2022[24]

- $4.4 billion of Medicare benefits were paid for telehealth consultations between March 2020 and December 2021[25]

- >85% of people who had a telehealth consultation in 2021–22 reported they would use a telehealth consultation again if offered[26]

> **"** We had 10 years of reform in 10 days!
>
> **Healthcare Organisation** – National Digital Health Strategy engagements 2021

This strategy identifies opportunities for digital health to support planned national health system reforms and address emerging contemporary health system challenges to deliver a sustainable, interoperable and inclusive health system now and into the future. It builds on the momentum achieved over the last 5 years through action under 4 change enablers. These change enablers represent existing areas of activity that require coordinated, consistent and ongoing effort to drive progress and realise the outcomes of the strategy.

The 4 areas that will foster the greatest change over the life of this strategy are:

CHANGE ENABLERS			
Policy and regulatory settings that cultivate digital health adoption, use and innovation	Secure, fit-for-purpose, and connected digital solutions	Digitally ready and enabled health and wellbeing workforce	Informed, confident consumers and carers with strong digital health literacy

In the context of these change enablers, 4 key whole-of-health-system outcomes are identified that set out specific areas for advancement while reflecting the broader goals of Australian healthcare.

All the enablers are necessary to drive and progress each of the 4 health system outcomes:

HEALTH SYSTEM OUTCOMES ENHANCED BY DIGITAL HEALTH			
Outcome 1: Digitally enabled	**Outcome 2: Person-centred**	**Outcome 3: Inclusive**	**Outcome 4: Data-driven**
Health and wellbeing services are connected, safe, secure and sustainable.	Australians are empowered to look after their health and wellbeing, equipped with the right information and tools.	Australians have equitable access to health services when and where they need.	Readily available data informs decision making at the individual, community and national levels, contributing to a sustainable health system.
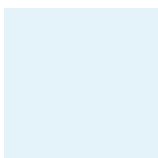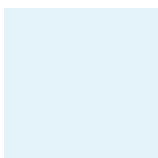
CHANGE ENABLER: Policy and regulatory settings that cultivate digital health adoption, use and innovation

To achieve an inclusive, person-centred and sustainable health system through better connection, Australia needs the right policy, regulatory, funding and governance settings in place to incentivise collaboration across the digital health ecosystem and accelerate innovation. Commonwealth, state and territory funding agreements, including the *Intergovernmental Agreement on National Digital Health 2023-2027* (IGA), provide the opportunity for agile funding to achieve national digital health reforms and support the rapidly changing digital health environment.

To create conditions in which healthcare providers and consumers can confidently engage with digital health solutions, a regulatory and policy environment that facilitates information sharing is critical. Clinical decision making will only improve if all healthcare providers know they will be able to easily access key health information when and where they need it.

The growth of consumer records in the My Health Record system over the last 5 years (from 5.39 million records containing data in January 2019 to 23.42 million in November 2023) has led to a substantial increase in consumer use and healthcare provider engagement as information is more reliably available. In November 2023 99% of general practice clinics, 97% of public hospitals and 99% of pharmacies were registered in the system.[27]

Efforts continue to connect more consumers and healthcare providers with the information and tools available. The release and uptake of the my health app has improved access and convenience for viewing and sharing health information uploaded to My Health Record. There is now a focus on ensuring that test information and results – including radiology, pathology and diagnostic imaging – are uploaded to My Health Record and are visible in the my health app in near real time.

> " Accessibility done right. It's great that the government is making their apps easy to use for people with disabilities.
>
> **my health app user comment** – Google Play Store Ratings and Reviews March 2023

The increased use by health professionals is improving health outcomes and workforce efficiencies and reducing duplication and wastage. The requirement to upload COVID-19 immunisation details to the Australian Immunisation Register (AIR) provides a useful example. The incorporation of data from AIR to the My Health Record system created an environment where required information was readily accessible and enabled consumers to access their information at key times, such as when demonstrating immunisation for domestic and international travel. The behavioural change associated with this, and other examples where there is a need to share and upload information, has led to greater consumer demand, increased use of My Health Record more broadly and greater confidence in the information available.

As information is exchanged at a faster pace, with more meaningful data, healthcare providers will be more engaged when using digital health products. This will add tangible benefits to the care they deliver and improve the efficiency of their work. Consumer expectations are driving this progress, as people now, rightly, expect healthcare providers to upload information and share it with their multidisciplinary healthcare team.

> " This is so easy to use. Disappointing there's not more information about tests included but helpful that you tell users who is uploading to my health record via the link. I won't be getting tests with labs that don't upload anymore.
>
> **my health app user comment** – Ratings and Reviews April 2023

Policy and regulatory settings that help healthcare providers and consumers to confidently adopt and use digital health are also needed. Carers and consumers require better access to, and use of, affordable digital health solutions, including increased digital literacy, appropriate connectivity and access to devices.

For personal devices to become a core information source for clinical care and personal health management, their cost must support inclusive and equitable service delivery. Similarly, digital health relies on the ability of healthcare provider organisations, individuals and families to share health information and data. This means that access to broadband infrastructure at a reasonable price is essential. The economic impact of digital health participation needs to be monitored so it doesn't become a source of inequity in the community.

There is plenty of evidence that for the healthcare industry, deriving value from collecting, organising and acting upon data and digital opportunities creates productivity gains[28] and improves the delivery of safe, high-quality care, yet some practical and logistical barriers need to be managed. Organisations and individual healthcare providers with demanding workloads require support and encouragement to adopt digital health practices. At the same time, personal data must be robustly protected in accordance with applicable laws, regulations and standards.

The potential benefits of increased access to digital technology and the use of data, as they relate to individuals, businesses and society, include:

- more competition – data enables consumers to make better comparisons on the price and quality of complex products such as healthcare. It allows them to make more informed decisions about the products they purchase, providing greater incentive for businesses and governments to compete either on price or product features

- innovation advancements – businesses can use data and research to further their understanding of what is and isn't successful. This can then be used to design new goods and services or make improvements to existing ones

- improved efficiency – data (for example, de-identified and population-level data) enables private and public health services and providers to allocate resources more efficiently. At a micro level, health provider time can be assessed and redirected to time spent with patients and their carers. From a macro perspective, data can be used to identify parts of a system (such as a hospital system) that are over or under capacity. Resources can then be directed or redirected accordingly, reducing the administrative burden and improving overall health system outcomes.[29]

Policy settings that mandate the capture of information in My Health Record, beginning with pathology and diagnostic imaging reports, will improve efficiency through reduced duplication of referrals, tests and follow-up appointments. Capturing medicines information in My Health Record will help avoid medication errors. Including the upload of discharge and transfer-of-care summaries will contribute to continuity of care. Further extension of these activities will support both healthcare providers and consumers.

Additional policy settings, including agreed standards and governance systems, are needed to encourage investment, development and further innovation in digital health. In response to the COVID-19 pandemic, the Australian Government introduced 281 new telehealth items on the Medicare Benefits Schedule to give consumers access to a broad range of health services via videoconferencing and phone. Between March 2020 and December 2021, more than 86.3 million instances of these new telehealth items were billed for services delivered to 16.1 million patients by more than 89,000 providers. This totalled $4.4 billion in Medicare benefits.[30] Telehealth is now a permanent feature of the Medicare system because of the shift in community expectations, with people wanting greater engagement between healthcare providers and the people they care for, as well as improved healthcare accessibility.

Regulatory frameworks that keep personal information and healthcare identifiers private and secure are in place in Australia, along with new services like a national digital identity system. Legislative frameworks and data security systems that keep pace with technological developments encourage industry development and innovation. They also make it an ethical requirement for healthcare providers to share an individual's information safely and securely by default. These frameworks and systems will give consumers and healthcare providers confidence that using digital health tools and sharing health information through a better-connected system is safe and secure.

SECURITY AND PRIVACY LEGISLATION AND SYSTEMS

Health system and technology partners encourage legislative and regulatory systems improvements, as doing so increases confidence that digital health information is private and secure.

To **achieve the benefits** of digital health:
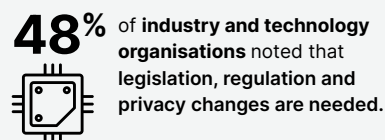
49% of **healthcare providers** noted that **legislation, regulation and privacy changes are needed**.

48% of **industry and technology organisations** noted that **legislation, regulation and privacy changes are needed**.

SOURCE
Australian Digital Health Agency (2021), National digital health survey 2021, Australian Digital Health Agency, Canberra

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The Interoperability Plan explains this policy direction and the ways a better-connected health system can be achieved, led by the Australian Digital Health Agency, with support and involvement from the entire health ecosystem. The Council for Connected Care (CCC) has been established to support the implementation of the Interoperability Plan.[31] The CCC will identify opportunities to accelerate interoperability across the health system. It will examine ways to harness these opportunities, working to promote and garner support for digital health initiatives that drive connected healthcare.

> " For me it is about setting standards that won't stifle innovation, it will expand it and provide a safe place to explore and develop new ideas. That is the hurdle to clear.
>
> **Industry and technology organisation** – National Digital Health Survey 2021

Standards have been identified as a key priority area of the Interoperability Plan. This acknowledges that connecting health and wellness care across Australia needs a collaborative approach where agreed standards are implemented consistently. Widespread and consistent adoption of standards provides the technical foundation needed for safe, secure, accurate and timely sharing of information between healthcare services and their consumers. The use of international standards provides assurance to industry that their products and services remain globally competitive and relevant to overseas markets. Australian localisation of international standards, where applicable, provides additional assurance that the standards meet needs specifically unique to digital health in Australia.

The development of standards is an ongoing, open and collaborative process, made easier through expert co-design and transparent governance processes. Several types of standards apply to the development of complex digital health solutions. For example, standards across the digital health implementation spectrum in the areas of content, terminology, privacy and security, health informatics and clinical practice lead to solutions that consumers and health services can trust and support. The National Safety and Quality Health Service (NSQHS) Standards are collaboratively developed and support implementation of the clinical governance framework, protecting consumers and improving the reliability and quality of health service provision.[32] The use of open standards, such as Fast Healthcare Interoperability Resources (FHIR ®), gives free access to technical specifications, implementation support and industry networks. These are needed to drive and deliver future possibilities for a connected healthcare system.

A consensus-driven and collaborative approach to standards for digital health technology and data sharing is key to realising the benefits of digital health and ensuring the broadest possible acceptance and compliance, as is the implementation of regulations to guarantee standards conformance.

CLEAR AND CONSISTENT STANDARDS TO SUPPORT DEVELOPMENT AND INNOVATION

We know that clear and consistent digital health standards, principles and guidelines support innovation and enable industry to improve functionality and user experiences of technology in a way that connects care.

To **achieve the benefits** of digital health:
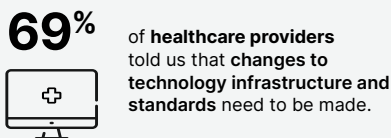
69% of **healthcare providers** told us that **changes to technology infrastructure and standards** need to be made.

66% of **industry and technology organisations** told us that **changes to technology infrastructure and standards** need to be made.

SOURCE
Australian Digital Health Agency (2021), National digital health survey 2021, Australian Digital Health Agency, Canberra

Australian governments, researchers, industry and healthcare providers are actively preparing for and embracing scientific innovations and cutting-edge technologies like AI, machine learning, quantum technology and big data analytics. Their adoption allows for greater system efficiencies, quality improvement, early intervention and prevention. Given the rapid growth and use of AI throughout the health and care industries, healthcare-specific governance of AI is needed to address its potential risks, challenges and opportunities. Collaborative development of policies and regulatory frameworks provides a holistic approach to managing the potential risks of AI use in healthcare, while harnessing the benefits and promoting innovation.

Fit-for-purpose policy and regulatory and governance settings and structures can foster collaboration and provide incentive to invest in all forms of digital health technology, research and innovation. Engaging researchers, clinicians and the health technology sector as partners in the co-design of digital health solutions means evaluation cycles can be established in accordance with the *Digital Health Standards Guiding Principles*, ensuring continued improvement and innovation.

These settings are vital for confirming that digital health transformation is safe, ethical, affordable and sustainable for all Australians, and that associated data supports decision making by individuals, healthcare providers and governments.

CHANGE ENABLER: Secure, fit-for-purpose and connected digital solutions

Healthcare is increasingly moving to 'anywhere, anytime' service provision, a shift supported by digitally enabled models of care that place people at the centre of their healthcare experience. To meet the needs of Australians, digital infrastructure must be modernised to support quality care, connecting providers and ensuring they can access and share the right information at the right time.

Digital solutions need to be easy to use, integrate seamlessly with clinical workflows and be fit-for-purpose, ensuring clinical safety and quality, privacy and security. The expertise of industry and the quality technology and digital software solutions it delivers is critical in achieving the aims of digital health policy, such as encouraging uptake and ensuring that initiatives are commercially sustainable. The Interoperability Plan sets out the pathway and actions needed to create an ecosystem of connected providers that conveniently and seamlessly share easily understood high-quality data.[33] The engagement of industry with the requirements of interoperability is key to its ultimate success.

> " Effectively, change is almost impossible without industry-wide collaboration, cooperation and consensus.
>
> **Simon Mainwaring** – CEO and Global Australian of the Year finalist 2015

CO-DESIGN OF DIGITAL HEALTH SOLUTIONS WITH CONSUMERS AND CLINICIANS IS ESSENTIAL TO ENSURE USABILITY AND ADOPTION

Health system and technology partners encourage legislative and regulatory systems improvements, as doing so increases confidence that digital health information is private and secure.
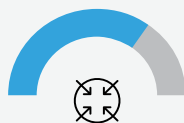
71% of **healthcare providers** indicated digital tools did not integrate with existing systems and processes (including models of care), which added time to their work and deterred use.

Healthcare providers cite the following barriers to incorporating digital health into their day-to-day work:

44% poor user experience and/or interface

28% complexity

53% insufficient infrastructure and/or support

HEALTHCARE PROVIDERS SEE THE BENEFIT OF DIGITAL INNOVATION TO OPTIMISE COLLABORATION

74% of healthcare providers want digital innovation to deliver integrated and high-quality healthcare services.

SOURCE
Australian Digital Health Agency (2021), National digital health survey 2021, Australian Digital Health Agency, Canberra

Co-design is key to enabling secure, fit-for-purpose and connected digital solutions in which consumers, industry and providers – both organisations and health workers – have confidence.[34] Collaboration between all partners and stakeholders in the digital health ecosystem – including Aboriginal and Torres Strait Islander peoples*, Culturally and Linguistically Diverse (CALD) communities and geographically dispersed populations – is essential to ensure solutions are personalised and tailored to their needs and circumstances.

INNOVATION SPOTLIGHT

Rural Doctors Network – increasing access to multidisciplinary healthcare through digitally enhanced outreach services[35]

People living in rural and remote communities experience poorer health outcomes and have reduced access to health services compared with urban populations. In response, New South Wales Rural Doctors Network (RDN) works to create and sustain access to quality multidisciplinary healthcare for all Australians, no matter where they live, using digital health technology to augment and scale its services.

The Outreach Program, funded by the Australian Government Department of Health and Aged Care, is part of RDN's Health Access initiative that increases rural and Aboriginal communities' access to locally designed and managed multidisciplinary health services. The program overcomes access barriers relating to distance, delay, affordability and cultural safety to deliver more than 1,000 services to rural and Aboriginal communities in New South Wales and the Australian Capital Territory. These services are delivered by medical specialists, allied health practitioners, nurses and Aboriginal health practitioners both face-to-face and virtually, as well as using hybrid delivery methods. The outreach models are sustainable and respond to locally identified health priorities.

Digitally augmented outreach services – fully virtual clinics and alternating face-to-face/virtual care – often involve local health practitioners, who provide in-person patient support in clinical rooms, and medical specialists providing virtual consultations. These models support the patient–clinician therapeutic relationship and increase access through timely follow-up care. RDN trialled a general practitioner telehealth model at rural aged care facilities that reduced unnecessary and costly hospital transfers for many frail patients. This has now been scaled through changes to Medicare GP telehealth items.

Digital health also supports rural service resilience and workforce skills. Most outreach services were sustained during COVID-19 when rural and Aboriginal communities worked to reduce community transmission. More than 50% of rural health practitioners reported using virtual models to maintain community access between July 2020 and June 2021 when more than 200,000 occasions of service were accessed by patients, of whom 62% identified as Aboriginal and/or Torres Strait Islander people. Multidisciplinary outreach clinics also facilitate skills and knowledge transfer between health professionals, with 15% of services routinely reporting upskilling activity.[36]

Patients have reported high rates of satisfaction when accessing services through the Outreach Program[37] and the provision of virtual care alongside in-person care correlates with higher health practitioner satisfaction.[38] RDN continues to explore ways to use digital health technology to support rural community access to healthcare and invest in rural workforce capability.

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* The foundation of the National Agreement on Closing the Gap is four Priority Reforms that have been directly informed by Aboriginal and Torres Strait Islander peoples. Priority Reform Four under Closing the Gap is: Shared Access to Data and Information at a Regional Level. Sharing data on health services, needs and outcomes with Aboriginal and Torres Strait Islander peoples can support and empower communities to obtain a comprehensive picture of what is happening in their communities to make decisions about their futures. The *National Agreement on Closing the Gap* details Commonwealth and jurisdictional governments' commitments to this Priority Reform. The Commonwealth collaborates with the Aboriginal community-controlled health sector to promote digital health to First Nations peoples.

Taking advantage of new technology at the right time is essential to realising the full benefits of connected, sustainable and accessible digital health solutions. The following foundations have been established to provide all Australians with the ability to access their health information when and where they need it:

- the My Health Record system, including the my health app which gives easy access to My Health Record information

- the new Health API Gateway Service, which is a contemporary standalone national service that allows effective communication of health information between doctors, nurses, midwives, hospitals, specialists, allied health providers and consumers. It is the first step in providing a secure and scalable digital platform for exchanging and accessing health information. It creates a collaborative environment that accelerates the adoption and use of innovative digital services and technologies

- the National Authentication Service for Health (NASH), which allows healthcare providers to securely access the My Health Record system and share information using software that meets secure messaging and electronic prescribing requirements

- the Healthcare Identifiers Service (HI Service), which ensures all providers, organisations and consumers are correctly identified across digital health systems

- the National Clinical Terminology Service (NCTS), which develops and distributes national clinical terminologies and related tools to support data sharing across the health system. This is delivered in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO)

- the rolling out of state and territory electronic health records

- electronic prescribing and related medicine safety initiatives, such as the Active Script List and the Pharmacist Shared Medicines List

- the national digital identity system, which is an enhanced cyber security measure helping consumers prove who they are online so they can receive certain services, including some health and care services

- Provider Connect Australia™ (also known as PCA™), which allows healthcare organisations to maintain accurate information about the services they provide and the practitioners who deliver them in a single place

- the Therapeutic Goods Administration (TGA), which regulates therapeutic goods and medical devices. All therapeutic goods must appear on the Australian Register of Therapeutic Goods (ARTG) before they can be supplied in Australia. When digital health tools are used for a medical purpose of diagnosis, prevention, monitoring or treatment, rather than in the collecting, analysing and reporting of health information, the digital products (and software used) meet the definition of a medical device.

Governments, healthcare providers and technology vendors are responsible for ensuring personal information is protected and used appropriately through secure and resilient infrastructure and digital tools. Cyber security standards and resilience measures, compliant with the *Privacy Act 1988*, support all digital solutions to protect personal health information and ensure health system technologies are always available.
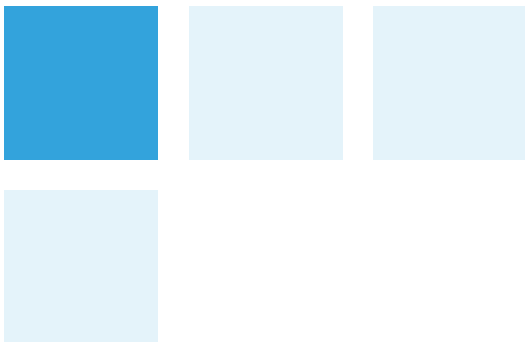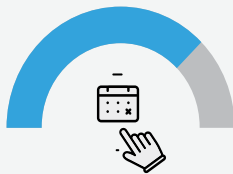
Digital health can transform how Australians look after their health and wellbeing.

AUSTRALIANS ARE READY TO INCREASE THEIR USE OF DIGITAL HEALTH:

The National Digital Health Survey 2021 revealed **consumers intend to increase their use of digital health in the future for:**
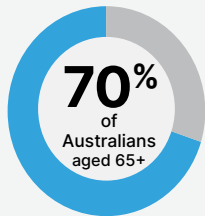
72%
booking healthcare
appointments online[1]

53%
accessing electronic health records, prescriptions, telehealth and receiving results[1]

AUSTRALIANS ARE INCREASINGLY TURNING TO DIGITAL SOURCES BUT NEED INFORMATION THEY CAN TRUST:

70%
of
Australians
aged 65+

have used the internet to research a health issue[2]

However, only **six percent** find an online health source they trust[3]

Australians want **more information and transparency** about the quality of health services, and to actively compare experiences and seek peer reviews[4]

AUSTRALIANS ARE ADOPTING AND USING MY HEALTH RECORD AT AN ACCELERATED RATE:

From July 2022 to July 2023 there was an **increase in views of My Health Record**[5] of

560,000

5.13M
Total to
July 2022

5.69M
**Total to
July 2023**
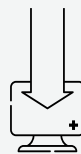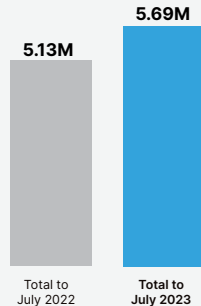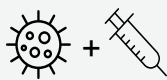
297,000+
people who had previously opted out have **re-registered for a My Health Record** as at July 2023[5]

The number of records being created is growing.

In July 2023 there were more than
23.6 MILLION
records[5]

SOURCES
1. Australian Digital Health Agency (2021), National digital health survey 2021, Australian Digital Health Agency, Canberra
2. Australian Institute of Health and Welfare (2020), Digital health snapshot, Australian Institute of Health and Welfare, Canberra
3. Australian Digital Health Agency (2017), Australia's national digital health strategy, Australian Digital Health Agency, Canberra
4. Australian Government Department of Health and Aged Care (2021), Draft recommendations from the Primary Health Reform Steering Group, Commonwealth of Australia, Canberra
5. Australian Digital Health Agency (2023), My health record the big picture, Australian Digital Health Agency, Canberra

CHANGE ENABLER: Digitally ready and enabled health and wellbeing workforce

Equitably connecting consumers with accessible health services when and where they need them relies on a digitally engaged, confident and equipped workforce that embraces digital healthcare solutions. Digital infrastructure can play a major part in increasing workforce productivity.[39]

All partners and stakeholders have a role in supporting and sustaining a confident, digitally enabled workforce. They ensure that the time and resources invested in training and digital adoption achieve workforce efficiencies. This is done by reducing administrative burden and improving the experience for consumers and healthcare providers at every stage of their training and working career.

This means not just supporting frontline healthcare providers, although that is vital, but also backing health data and systems developers, analysts and researchers, business and administrative staff, IT programmers and software professionals. The workforce also includes social service providers, such as housing, justice, child and family support, and policy and education professionals, who are all critical to health and wellbeing.

With all partners and stakeholders working together, the trainee health provider workforce is better supported with their career development and can access opportunities to gain varied experience across jurisdictions. Flexible and scalable solutions, such as a national system that shares clinician qualifications, will achieve nationally consistent outcomes. This will be done by drawing on states' and territories' existing processes and applying digital solutions that enable the mobility of trainees across settings and borders during their prevocational training period.

> " [Using My Health Record means] less burden on patients to carry with them all the paperwork and medication.
>
> **Emergency Medicine Specialist, NSW** – Agency commissioned research, healthcare provider quarterly polling study 2023
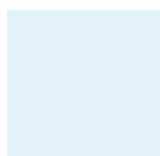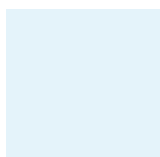
Levels of digital health maturity vary across the workforce. While the potential for digital health to improve workflow efficiencies and the quality and coordination of care is well recognised, the investment of time and money needed to lift digital maturity remains a barrier. Digital health capability building must be progressively embedded across all health professions, including throughout all health and care education, training and accreditation. This applies to all the medical, nursing, disability, aged care, mental health and allied health fields. *The National Digital Health Capability Action Plan* outlines the priority actions required to build digital health capability across the health 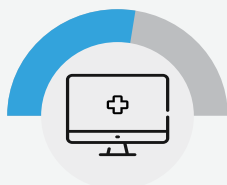workforce and respond to the needs of consumers now and in the future. It has been created in partnership with key stakeholders from across the health ecosystem and reflects a shared position about achievable high-impact actions to drive capability uplift.[40]

THE NATIONAL DIGITAL HEALTH SURVEY 2021 FOUND

Cost can be a key barrier to adoption and use of digital health for healthcare providers.

There are increasing numbers of people and organisations working as digital champions to showcase the power of digital health in clinical practices. However:

There are calls for digital health to be embedded in training for healthcare workers to increase uptake and ease of use.[1]

Inadequate digital health training and education is a barrier:

52%
of **healthcare providers** identified that **cost and funding** is a barrier to implementing digital health solutions in their day-to-day work activities.[1]
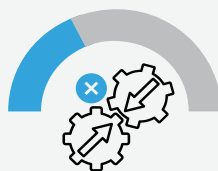
35%
of **healthcare providers** identified a **lack of integration of services** and processes, as well as the **skills to use technologies**, as barriers.[1]
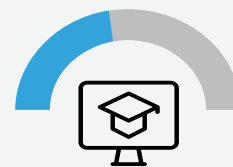
40%
of **healthcare providers** identified **inadequate training and education** as a barrier to adopting digital technologies in the workplace.[1]

HEALTH EXECUTIVE AND LEADERSHIP TEAMS ARE CRITICAL TO DRIVING DIGITAL HEALTH SYSTEM REFORMS

Digital health technologies **cannot be seen as separate** from people and the processes that govern how they work together.

Health executive and leadership teams are important for **setting the agenda and developing digital health standards** in relation to health data and improved workflows.

The **relatively small business scale** in some areas of the health sector (such as allied health) can pose limitations on investment in digital health capability.[2]
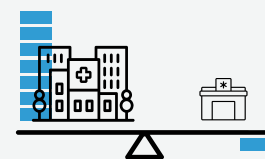
SOURCES
1. Australian Digital Health Agency (2021), National digital health survey 2021, Australian Digital Health Agency, Canberra
2. Australian Digital Health Agency (2020), National digital health workforce and education roadmap, Australian Digital Health Agency, Canberra

INNOVATION SPOTLIGHT

Rural Health Pro – building rural health workforce capability[41]

A lack of professional development opportunities, professional isolation, and psychosocial and personal factors are those most frequently cited as negatively influencing the retention of health professionals in rural areas.[42]

Rural Health Pro, an Australia-wide digital health tool developed by the New South Wales Rural Doctors Network is designed to support and connect rural health professionals and connects people and organisations passionate about keeping rural communities healthy. Using a partnership approach with health organisations, Rural Health Pro's digital hub enables health practitioners to interact through groups and discussions. Members can access content related to their profession and interests, learn about career opportunities, training resources and funding opportunities, and attend digital events.

Each year, Rural Health Pro hosts digital and hybrid wellness and capability events as part of its Rural Health Month. The initiative has grown steadily, with the 2022 event involving more than 1,300 participants.

Rural Health Pro is having a positive impact on rural health professionals. An evaluation of Rural Health Pro shows 66% of survey respondents in 2023 indicated that it made them feel more supported as a health professional; 56% indicated they felt more capable in their role; 58% stated they felt more connected to other health professionals; and 85% believed the personal and/or professional networks they developed on Rural Health Pro positively affected their life or work.[43]
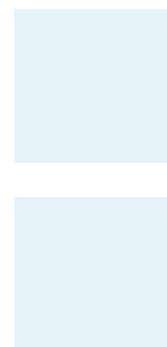
CHANGE ENABLER: Informed, confident consumers and carers with strong digital health literacy

Digital health literacy is a combination of health literacy – being able to understand and apply the health information provided to individuals – and digital literacy – being able to understand and apply digital tools. Widespread and confident digital health literacy is necessary for all parts of the community and health workforce to participate fully and equitably in the future of digital health.

Good health literacy is one of many factors – including education, income and culture – that impacts health and wellbeing.[44] Limited health literacy is associated with poor self-care, lower use of preventive health and increased hospitalisations.[45]

Improvements in health literacy can be achieved through interventions and programs targeted and tailored to specific population groups. Evidence suggests that both community-based interventions across various settings and healthcare provider activities improve consumers' health literacy and related self-care outcomes.[46]

Digital literacy and access to technology have become prerequisites for full participation in a modern healthcare system.[47] Essentially, supporting digital literacy increases health literacy.

When applied to healthcare, digital technology provides opportunities for consumers to manage their health proactively and access the care they need. Removing the need for a person to retell their history at each medical encounter is a simple but powerful example of how digital health can create easier and more efficient healthcare experiences. As access to digital health tools improves and the ability and confidence to use them increases among consumers, so too will the pace of Australia's digital health transformation. At the same time, the investment required to fuel this growth will surge.

Australians are adaptable and demonstrate a readiness to adopt and engage with new technologies.[48] Consumers are increasingly demanding that digital health tools enhance rather than replace in-person care, noting that they expect choice and flexibility when deciding when and whether to use digital health tools.[49]

The enormous growth in the wearables and mobile app markets highlights the consumer demand for information to support health and wellbeing.[50] Safely leveraging the benefits of these digital technologies and other online platforms, and discerning reliable information and facts from false information, is essential. Empowering consumers and increasing overall community wellbeing will ultimately shift Australia's responsive health system towards a more preventive and personalised health model.

OUTCOME 1: DIGITALLY ENABLED

Health and wellbeing services are connected, safe, secure and sustainable

Much of the transformative power of digital health lies in the potential to combine personalised care with rich, accessible and reliable health system data and analytics. Digital health tools will support healthcare providers to collaborate, connect services and share information and decision making for comprehensive and multidisciplinary care. Evidence-based service delivery and policy design are achieved through collation and analysis of accurate and timely high-quality health information, leading to a more efficient and sustainable health system.

Consumers want a central role in their own healthcare. They want to be actively involved in decision making informed by real-time information that is shared between their healthcare providers.[51] Consumers want to easily navigate the care they need, moving seamlessly between providers and receiving care from a collaborative multidisciplinary team rather than isolated individual providers. Digital health tools can support consumers to navigate the health system, connect healthcare providers, facilitate communication and simplify and expand information sharing.

> " For my client group (mainly people with complex disability) having access to telehealth and online services has enabled me to provide services where once I would not have been able to. It [digital health] is critical for reaching people who traditionally find it difficult to access mainstream services, and those living in regional areas. For example, from our regional location, telehealth has enabled use to provide services to people living remotely, some of whom have never been able to access disability trained psychologists before.
>
> **Healthcare Provider** – National Digital Health Survey 2021

High-quality integrated information about an individual's health will be made available in formats that connect seamlessly with clinical information systems to support evidence-based clinical decision making, safety and continuity of care. Digital health tools that reduce the administrative burden of collating and integrating data will allow practitioners to dedicate more time to direct patient care. Digital platforms for shared-care planning between all healthcare providers will support person-centred care and ensure productivity and efficiency. Healthcare and wellbeing providers need to be equipped with the digital skills and capability to operate in this environment, with their needs and preferences being taken into consideration for system and product design.
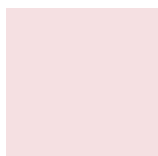
INNOVATION SPOTLIGHT

Territory Kidney Care – integrated care for kidney patients[52]

Chronic kidney disease (CKD) is a common and serious health problem in Australia. The burden of CKD is particularly heavy among Aboriginal and Torres Strait Islander people. Affecting more than 2 in 5 Aboriginal adults in remote Northern Territory (NT) communities, CKD causes kidney damage and/or reduced kidney function. People with the condition have poor health outcomes, reduced life expectancy and reduced quality of life.

Many people don't know they have CKD, as up to 90% of kidney function can be lost before symptoms are evident.

Territory Kidney Care (TKC) is an innovative clinical information system that uses powerful analytics to assist with the early identification and best-practice management of kidney disease. TKC connects to existing health record systems and securely transfers clinical information about patients, applying algorithms to sort patient records according to risk and CKD stage. TKC identifies patients for follow-up care and will alert the tertiary clinical support team of actions required.

The Menzies School of Health Research developed TKC in partnership with the NT Department of Health, the peak Aboriginal health representative body – Aboriginal Medical Services Alliance Northern Territory (AMSANT) – and local Aboriginal community-controlled health services. Their research demonstrated that integrated systems of care, which focus on prevention and care coordination, can slow the progression of kidney disease and reduce complications of interrelated illnesses such as diabetes and cardiovascular disease.

Importantly, TKC supports and enables what is most important: the provision of care and treatment of people with this complex condition by people who know them and their family best – their community health service, their community-based renal specialist and their GP.

The Interoperability Plan outlines a series of actions to support safe, secure, efficient and quality care.[53] The health ecosystem of connected providers will conveniently and seamlessly share easily understood high-quality data, supported by privacy, legislative and consent requirements. Because consumers will understand how their information is used and how to access it, they will be at the centre of their own healthcare.

> **"** It [My Health Record] is a great source of health information and helps me take charge of my personal health and feel in control of it.
>
> **Consumer, NSW** – Agency commissioned research, consumer quarterly polling study, 2023

CONNECTING AUSTRALIAN HEALTHCARE –
NATIONAL HEALTHCARE INTEROPERABILITY PLAN 2023-2028

The Interoperability Plan identifies five priority areas to advance digital health interoperability in Australia.

Icon	Priority	Description
	1. IDENTITY	Leverage the Healthcare Identifiers Service and the National Health Service Directory (NHSD). Adopting healthcare identifiers will ensure that individuals, healthcare providers and healthcare provider organisations are uniquely and correctly identified when exchanging health information.
	2. STANDARDS	Drive digital transformation through effective leadership and a sustainable approach to standards governance. This will ensure that digital health standards, specifications and terminology are developed consistently and collaboratively, and are fit-for-purpose, widely adopted and implemented using relevant conformity assessment schemes.
	3. INFORMATION SHARING	Increase information exchange between healthcare providers and individuals by making information discoverable and accessible. This includes consideration of an individual's safety, consent, privacy and data quality.
	4. INNOVATION	Drive interoperability through future innovations that apply the interoperability principles to new digital health initiatives and functional enhancements.
	5. BENEFITS	Measure healthcare services' digital health maturity to identify areas for investment that align with their strategic and transformational goals, and the national digital health direction. Identifying, executing and sustaining benefits of interoperability will inform progress on priorities and help target resources.

SOURCE

Australian Digital Health Agency (2023) *Connecting Australian Health Care: National Healthcare Interoperability Plan (2023-2028)*, Australian Digital Health Agency, Canberra

INTEROPERABILITY EVIDENCE CASE: Digital health and clinical radiology

Consumers benefit from strong partnerships and modern, fit-for-purpose digital technologies

Opportunities for digital healthcare in clinical radiology provide clear evidence of how interoperability and modern technological solutions could **IMPROVE CARE** across the healthcare journey. It would also improve access to radiological results and expertise for consumers in rural and remote areas.

Clinical radiologists, medical imaging technologists, sonographers and other members of the radiology team are ready to adopt **NEW DIGITAL HEALTH SOLUTIONS.**

Clinical radiology already uses several suitable standards and profiles relevant to image exchange that are effective for global interoperability of diagnostic imaging.

CONSUMER IN CONTROL

Fostering digital solutions geared towards interoperability will enable the adoption of a **STANDARDISED RADIOLOGY REQUEST SET.**

This will allow specific and consistent identification of radiological procedures performed.

Following a 2021 review, SNOMED CT-AU was endorsed by the Royal Australian and New Zealand College of Radiologists and the Australian Diagnostic Imaging Association as the preferred radiology referral set terminology.[1]

Ensuring that systems **CONNECT AND COMMUNICATE** with each other using a shared language enables the exchange of other resources, such as clinical decision support and access to historic images, which provides further benefits to referrer, radiologist and patient.

SOURCE
The Royal Australian and New Zealand College of Radiologists (RANZCR) and the Australian Diagnostic Imaging Association (ADIA) (2021), *Radiology Referral Set Position Statement*, RAMZCR & ADIA, Australia

Consumers can now choose to have telehealth appointments and receive electronic prescriptions as a safe and convenient means of obtaining their healthcare and medications. Between May 2020 and December 2022, more than 100 million electronic prescriptions were issued by more than 50,000 prescribers, GPs and nurse practitioners. Additionally, all major prescribing and dispensing software products are now conformant to My Health Record standards.[54] These innovations demonstrate how health systems can be adapted and changed by digital technology to expand consumer choice and increase healthcare provider options.

New partnerships across the health sector and new sources of health information amplify the benefits of data analytics, such as improved clinical decision making, public health policy and health research. When combined with emerging medical science and technologies such as AI and sensor technologies, data analytics can deliver more personalised treatment and care.

Services need to be safe and secure to be trusted by healthcare providers and the community – from cyber security concerns to matters of clinical and cultural safety. Digital health technology and services should enable all Australians to participate in a safe, connected, integrated, consumer-centred digital health ecosystem:

- The privacy and security of individuals and the system need to be protected through reliable and resilient protocols around the protection and sharing of information. Individuals should have the right to manage who has access to their information and when.

- Clinical governance and stewardship of digital health tools is essential. There must be continuous focus on the clinical impact of digital health tools, services and infrastructure to ensure clinical risks are managed appropriately. Digital health tools must support the delivery of high-quality healthcare.

- All digitally enabled health and wellbeing services must be culturally safe and appropriate for all individuals who use them. This must include Aboriginal and Torres Strait Islander peoples, people from culturally and linguistically diverse (CALD) and LGBTIQ+ communities, and members of all religions.

STRATEGY DELIVERY ROADMAP PRIORITY AREAS

We aim to create digitally enabled health and wellbeing services that are connected, safe, secure and sustainable. To do so, we will focus on these priority areas:

- **Connect care:** Moving the health system from siloed clinical document repositories to near real-time data exchange to deliver efficient, responsive and effective healthcare, particularly at points of transition across primary, acute, aged and other care sectors. This includes developing regulatory settings and national infrastructure that enables health information to be securely discovered, shared and combined to provide a single view of an individual, regardless of where data is held.

- **Enable a digitally ready workforce:** Building the digital and data capacity, competency and maturity of our health and wellbeing workforce to benefit consumers. With rapid access to relevant data, for example, healthcare providers have more time with patients and carers. *The National Digital Health Capability Action Plan* presents the priorities required to build digital health capability across the health workforce so that it responds to the needs of consumers, now and into the future.

- **Enhance and maintain modern and integrated digital solutions:** Through the Interoperability Plan, drive integration and utility across care settings to increase the amount of real-time information available to whole care teams and improve the efficiency, effectiveness and sustainability of the health system. Enhance and deliver digital solutions that support transition between care settings, including mandating the use of terminology and minimum system specifications required to support the secure sharing of information, as well as what information needs to be shared and when that should happen.

Learn more by reading the [Strategy Delivery Roadmap](#)

> ❝ If done right, improved use of technology in this field could significantly decrease administrative burden on practitioners and remove reliance on unreliable paper records. There is still a big gap between the health industry and other industries in their uptake of digital platforms, and the inefficiency of administration is often shocking.
>
> **Healthcare Provider** – National Digital Health Survey 2021

OUTCOME 2: PERSON-CENTRED

Australians are empowered to look after their health and wellbeing, equipped with the right information and tools

Digital health platforms, tools, records and, increasingly, smartphone apps help consumers to safely access and understand health information. They also support people to monitor and manage their own health and wellness, helping to shift Australia's health system towards prevention and personalisation of care.

Access to and control over trusted, comprehensive health information equips people to confidently engage with healthcare providers and build health literacy.

> ❝ There is significant reliance on clients to share reports/information with each practitioner involved in their care. This burden on the patient could be alleviated if the whole healthcare team could securely share relevant information on a digital health platform.
>
> **Healthcare organisation** – National Digital Health Strategy engagements 2021
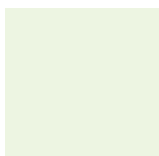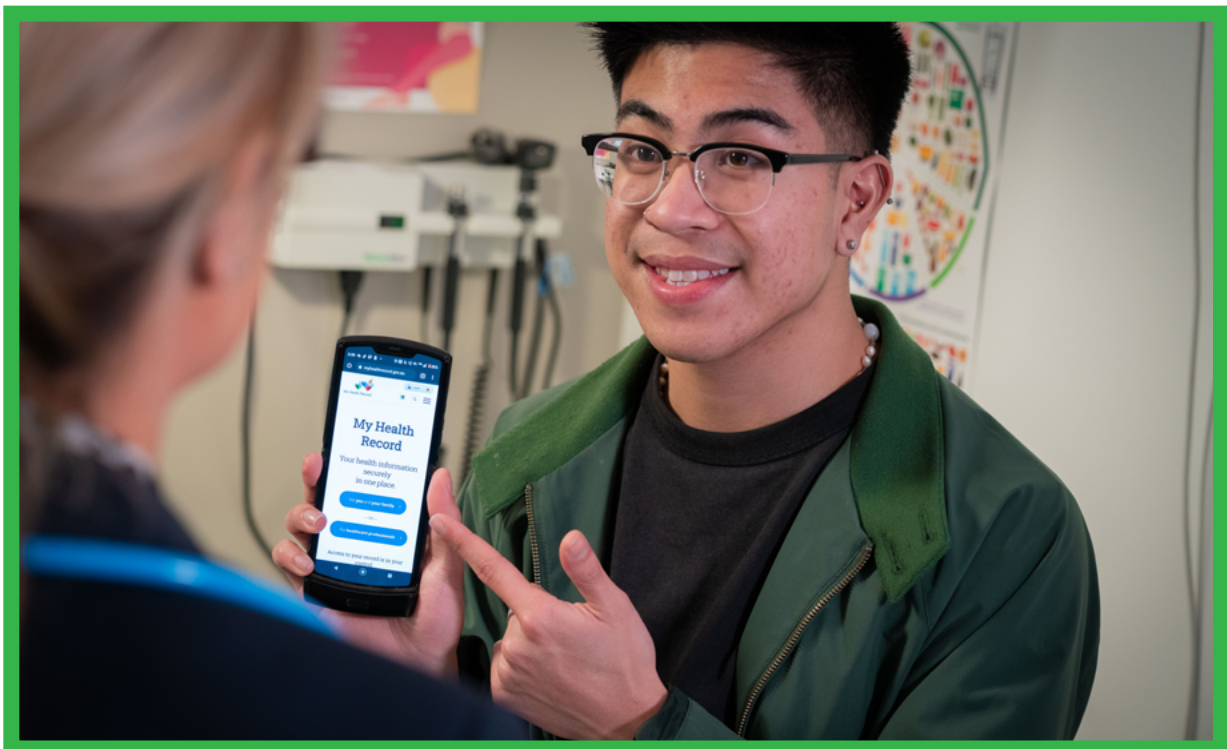
Australia is well positioned to increase its digitalisation, being in the top 20 countries assessed for digital readiness.[55] While Australia ranks very highly in digital readiness and most Australians are digitally connected, improving digital health literacy, access and affordability remains challenging.

ADOPTION AND USE OF DIGITAL HEALTH BY CONSUMERS

Australia has a clear imperative to ensure funding settings cultivate digital health adoption and use. We know cost can be a key barrier to adoption and use of digital health for consumers.
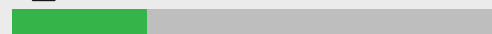
Affordability prevents

10% of **healthcare consumers** from using digital health.[1]
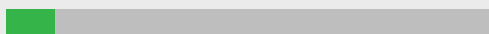
27% of **low-income households** need to **pay more than 10%** of household income for internet access.[2]
National average = 4% of households pay more than 10% of their income for internet access.

DIGITAL HEALTH CAN TRANSFORM THE WAY AUSTRALIANS ACCESS IMPORTANT HEALTH SERVICES

59% of healthcare providers report that digital health enables **better consumer-centred and culturally appropriate care.**[1]

SOURCES
1. Australian Digital Health Agency (ADHA), National digital health survey 2021, ADHA, Australian Government, 2021
2. Thomas J, McCosker A, Parkinson S, Hegarty K, Featherstone D, Kennedy J, Holcombe-James I, Ormond-Parker L and Ganley L, *Measuring Australia's Digital Divide: Australian Digital Inclusion Index: 2023*, ARC Centre of Excellence for Automated Decision-Making and Society, RMIT University, Swinburne University of Technology, and Telstra, Melbourne, 2023

Many Australians still experience barriers to effective and sustained adoption of digital technology. Digital exclusion, when measured by access, affordability and digital ability, is high for people who have not completed secondary education, are over 75, are on lower incomes, live alone or in public housing, have a disability, and are unemployed or not in the labour force. Despite improvements in digital access affordability (seen by an increase in the overall affordability score from 93.1 to 95.0 between 2021 and 2023), many people are still missing out.[56] For example, the National Disability Insurance Scheme (NDIS) supports more than 630,000 Australians with permanent and significant disability to build capability, increase independence and establish stronger connections with their community and workplace.[57] Yet many people with disability (55% in 2023) experience much greater levels of digital access affordability stress, meaning they would need to pay more than 5% of household income to maintain quality, reliable connectivity. There is also a divide between people in inner metropolitan and those in outer metropolitan, regional and remote areas who experience greater exclusion.[58] The Australian Government's *Digital Economy Strategy 2022 Update*[59] outlines progress made on reducing the digital divide and positioning Australia to become a top 10 digital economy and society by 2030.

> ❝ Programs are required to improve access to reliable and affordable telecommunications and digital services and to improve the digital ability of Aboriginal and Torres Strait Islander peoples. It is critical that Aboriginal Community Controlled Health Organisations have access to adequate infrastructure, support and appropriate connectivity to be able to provide the growing range of health and related services.
>
> **Aboriginal healthcare organisation** – National Digital Health Strategy engagements 2021

It is essential that digital health does not inadvertently create new problems and leave people behind, particularly those who could benefit from it the most. Digital health can make access to health services and information more inclusive, and it can be personally tailored for all people who use the service.

For example, digital health can be harnessed to:

- support the implementation of the National Agreement on Closing the Gap,[60] providing greater access to culturally safe and responsive health services for Aboriginal and Torres Strait Islander peoples[61]

- improve health outcomes for parents and children in the first 2,000 days of life

- reduce access barriers experienced by LGBTIQ+ people

- support trauma-informed care for veterans and their families

- support older people to age well in either their own homes or residential aged care facilities

- develop solutions that help prevent and manage chronic health conditions

- support the provision of culturally safe health services for Australia's diverse populations

- help overcome the challenges of healthcare in remote and regional areas

- support appropriate and accessible healthcare for people with disability.

Increasing digital – and social – inclusion relies on improving digital infrastructure to ensure reliable and high-speed mobile and internet connectivity across rural and remote regions, and making health services accessible across personal and shared devices.
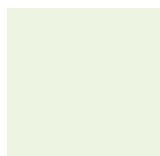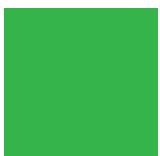
> " Access to specialist care in regional and remote Australia is a complete
> game changer. It will save lives and reduce the burden of diseases through
> earlier diagnosis and intervention.
>
> **Consumer** – National Digital Health Survey 2021

STRATEGY DELIVERY ROADMAP PRIORITY AREAS

Empowering Australians to look after their health and wellbeing, equipped with the necessary information and tools works to:

- **Support strong consumer digital health literacy:** Ensure all Australians have the resources and opportunity to improve their digital skills to navigate and benefit from digital health. All stakeholder groups must be engaged in the design and delivery of evidenced-based, best-practice digital literacy programs and initiatives.

- **Increase availability of health information:** Connect health information sources to enable increased discoverability and sharing and assist multidisciplinary care. Consumers benefit from healthcare providers having access to their health information, irrespective of the care setting or provider, empowering them to take control of their health journey. Through greater access to health information, healthcare providers are supported in their decision making, improving outcomes, reducing clinical risks and delivering workforce efficiencies, as well as reducing duplication, wastage and hospital admissions.

- **Enhance consent management and flexible health information exchange:** Australians expect to be in control of who can access their personal health information and how it's used. An enhanced my health app will enable consumers with a mobile phone to manage their health on the go and share their health information anywhere, quickly and securely. The vision of a connected, interoperable system is one that only shares personal data in secure, safe, lawful, ethical and culturally appropriate ways that are driven by the individual healthcare consumer.

Learn more by reading the Strategy Delivery Roadmap

OUTCOME 3: INCLUSIVE
## Australians have equitable access to health services when and where they need them

People need more options to access healthcare when they need it, plus more choice in the way they communicate with healthcare providers. They want healthcare that is personalised to who they are and where they live, and they want support navigating the health system. People also want flexibility and convenience in scheduling and receiving care, including reduced wait times, duplication and costs.

Digital health increases the options available for delivering care outside traditional business hours and conventional health service settings. Digital health will also help healthcare providers, individuals and carers organise the best care pathway.

Importantly, virtual care such as telehealth and remote monitoring will complement in-person care, enabling people to connect with their healthcare providers more easily and frequently.

There is currently enormous growth in the wearables market, which is expected to be worth over $75 billion by 2026.[62] Technology vendors and developers are experiencing an increase in demand for biometric sensors and wellbeing apps.[63] However, consumers and carers need information and support to make informed choices. It is important for people to be able to safely leverage the benefits of digital technologies, such as apps, wearables and online platforms, and discern reliable information and facts from misleading information or risky products.

Broad mobile coverage and boosted National Broadband Network (NBN) speeds are critical to delivering connected care and equitable digital health access. Reliable and accessible internet connection creates opportunities for collaborations between consumers, healthcare providers, governments, researchers and industry and technology vendors, driving digital health investment, technology and innovation.
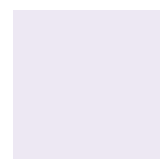
> 66 In order to bring in these new technologies there must be adequate technology infrastructure to fully realise the benefits of these new technologies.
>
> **Healthcare Provider** – National Digital Health Survey 2021

STRATEGY DELIVERY ROADMAP PRIORITY AREAS

Creating sustainable access to health services when and where people need them to:

- **Improve and expand virtual care:** Virtual care connects consumers with health professionals remotely to receive personalised and timely healthcare when and where it's needed, using real-time health data. It promotes flexible models of care, enabling a consumer and healthcare provider to engage a remotely located specialist in a consultation. Virtual care can include emails, messaging, push notifications, telehealth, video conferencing, remote monitoring, home monitoring devices and clinical information sharing between consumers and multiple healthcare providers. Emerging technologies and data sources are expanding the realm of virtual care.

- **Integrate personal devices:** Consumers generate and control their data in a fully digital health ecosystem in which technologies – such as wearables, mobile apps, telehealth and medical monitoring devices – let them connect to and share data with their care team. With appropriate privacy, security and consent, real-time data integration encourages safe, agile and responsive healthcare delivery.

- **Support equitable health access:** Timely, equitable and flexible access to healthcare is essential for all Australians, including those who face barriers accessing health services. This includes people with disability, people experiencing homelessness, consumers in outer metropolitan, rural and remote areas of Australia, Aboriginal and Torres Strait Islander peoples, CALD communities, veterans and people seeking sexual health and mental health services.

Learn more by reading the [Strategy Delivery Roadmap](#)

INNOVATION SPOTLIGHT

Broome Regional Aboriginal Medical Services (BRAMS) – virtual care of diabetes mellitus[64]

There is a high prevalence of diabetes mellitus within the Aboriginal communities of the Kimberley, Western Australia resulting in high rates of lower limb amputation. One of the main contributing factors leading to amputation is diabetic foot ulcers.

BRAMS, working in collaboration with Kimberley Aboriginal Medical Services and Diabetes WA, has developed and implemented a model of virtual care to improve preventive treatment of diabetic foot ulcers. The aim is to significantly reduce lower limb amputations and the need to travel long distances for treatment.

The model includes the use of a specialised wound care camera in the clinic to provide enhanced wound surveillance – including the measurement, imaging and documentation of diabetic wounds – to track healing. Pictures taken by nurses and Aboriginal health practitioners in the clinic and at outreach visits are remotely accessed and assessed by the patient's general practitioner who then decides whether further action and treatment are required. This can prevent the situation from deteriorating and the subsequent need for hospitalisation.

The model provides clinical decision making benefits to the treating practitioners and the patient, including supporting ongoing care to prevent wound deterioration. Digital tools – such as a specialised wound care camera – provide clinical staff with the ability to review patients in real time and act early when necessary, creating service efficiency. Importantly, this model of virtual care enables clients to remain on Country, which significantly benefits their health and wellbeing.
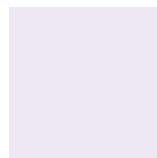
OUTCOME 4: DATA-DRIVEN

Readily available data informs decision making at the individual, community and national levels, contributing to a sustainable health system

To support the health of Australians, harnessing the power of health information, data and research is critical, as it enables informed decision making at the individual, community and national levels.[65]

Connected digital health platforms and mature data analytics will transform the way health information is used, improving health outcomes and enabling a more efficient, responsive health system. Sharing information across the health system provides a comprehensive view of an individual's health history, including past and current tests, treatments and health conditions. Sharing this information promotes better clinical decision making, optimal treatment plans and higher quality healthcare for that patient.

The same individual health data, when de-identified and brought together as part of a larger dataset (that is, secondary use), can also be used to inform clinical decision making. Analysis of an individual's health data within the context of similar groups of individuals (such as those with the same comorbidities or a similar demographic status) enables more nuanced clinical advice. Furthermore, de-identified health data generated at the point of care can be used to provide general practice with insights on their patient groups, inform improvements to clinical practice and reduce emergency department presentations and unplanned hospitalisations.

When de-identified health information is compiled as population health data, it can inform service planning, healthcare delivery and public policy. The analytic power now available means the pattern of interactions and health outcomes at the population level can inform future healthcare needs, the effectiveness of interventions and value-based healthcare investment. De-identified data also contributes to population-level datasets for epidemiological research, healthcare and product innovation and public policy development.

An example is the strategic partnership between the Department of Veterans' Affairs (DVA), the Department of Defence and the Australian Institute of Health and Welfare (AIHW) to build a comprehensive profile of Australian Defence Force (ADF) populations. Through data collection, data linkage and other means, such as the inclusion of veteran indicators in national surveys, the partnership aims to increase the range and quantity of data about the health and wellbeing of ADF personnel and the Australian veteran community to inform health and welfare policy, services and programs.

The Productivity Commission's *5-Year Productivity Inquiry Report: Australia's data and digital dividend* flagged that, while Australia does well compared to other developed economies on foundational aspects of technology and data use (such as internet connections and data volumes), we are falling behind on some more advanced indicators, and reiterated the potential benefits of adoption.[66]

INNOVATION SPOTLIGHT

Lumos – shining a light on the patient journey[67]

With the growth and ageing of Australia's population, and rising rates of some chronic conditions, many people require multidisciplinary care which involves longer and more intensive management of complex health needs.

Having whole-of-system information available in one place enables efficient delivery of coordinated care across many different settings. However, accessing health information can be complicated because it's collected in different care settings by public and private organisations.

Lumos is a pioneering program that provides new insights on a person's journey through the New South Wales (NSW) health system. Funded by the Australian Government under the Health Innovation Fund, Lumos is the largest collaboration the NSW Ministry of Health has ever undertaken with Primary Health Networks (PHNs) and general practices.

In Lumos, de-identified data from general practices is combined with other health service data to provide a more comprehensive view of patient pathways and health history. Lumos is not a real-time data sharing system, nor is it designed for the sharing of specific clinical detail about individual patients for the purpose of their ongoing care. It does, however, create a unique data asset that brings together whole-of-system information about patient journeys across the continuum of care, and this can be used to inform health service management and policies. It can also help identify opportunities for improving patient outcomes and experiences.

There are many controls to minimise privacy risks and promote transparency and accountability across the program, including approval by the NSW Population and Health Services Ethics Committee. Lumos is implemented equitably to ensure benefits are realised in priority populations, such as Aboriginal and Torres Strait Islander communities.

"Lumos provides us with the most interesting and amazingly detailed reports about our patients and their interaction with local health services."
**Professor Charlotte Hespe AM, Participating general practitioner and Chair,
Royal Australian College of General Practitioners**

During a major health challenge or crisis, governments, hospitals and healthcare providers need real-time, nationwide health data – data that can rapidly expand digital health activity and services, as required – to inform system planning. Never has the importance of health data been more apparent to Australians than throughout the COVID-19 pandemic.

Governments, policymakers, researchers and other health system partners also need accurate, up-to-date population health data to understand the health needs and unique challenges of all communities and inform long-term policy and planning. Taking advantage of the technology available to do this requires the support of a clear and confident regulatory framework.

That framework must also acknowledge and facilitate Aboriginal and Torres Strait Islander communities' and organisations' rights to shared data and information at a regional level.[68]

The combination of readily available information and modernised infrastructure allow for the expansion of personalised medicine by harnessing emerging medical science, such as functional genomics and metabolomics, and technology innovation, such as AI and sensor technologies. Coordination and collaboration are essential so the digital health ecosystem can adapt to and embrace these developments as they occur.

Further work will be done to measure the benefits of digital health so that all partners can understand its impact – particularly on saved time, reduced costs and improved health outcomes and safety – with the view to informing future investment. Once healthcare providers, individuals and carers at the point of care (primary use) are regularly sharing secure real-time information, secondary use of data will naturally follow.

STRATEGY DELIVERY ROADMAP PRIORITY AREAS

We aim to create readily available health data that informs evidence-based decision making at the individual, community and national levels, contributing to a sustainable health system and improved consumer health and wellbeing. We will:

- **Use health information for research and public health purposes:** Connected digital health systems enable access to more accurate, meaningful and higher quality health information. That data can be used to inform policy development, planning, clinical practice and decision support, exploratory and simulation research and the delivery of value-based care.

- **Plan for emerging data sources and technology such as artificial intelligence, spatial data, genomics:** Australian governments, researchers, industry and healthcare providers will actively prepare for and embrace scientific innovations and cutting-edge technologies like AI, machine learning, quantum technology and big data analytics. These advancements will support greater system efficiencies, quality improvement and early intervention and prevention, while observing the necessary regulatory and ethical frameworks.

- **Monitor and evaluate outcomes and progress:** Identifying, monitoring and evaluating the benefits of digital health will inform our progress, refine our priorities, identify models of high value and help us to send resources to where they are needed most. Using digital health tools to collect, analyse and report health information will support quality improvements in healthcare and patient-centred outcomes.

> **"** Digital solutions should, on a micro level, improve personalised healthcare and, on a macro level, drive a more nuanced use of evidence to shape public health policy.
>
> **Healthcare Provider** – National Digital Health Survey 2021

Learn more by reading the Strategy Delivery Roadmap

3. MOVING FORWARD TOGETHER

3. MOVING FORWARD TOGETHER

NOW IS THE TIME TO EMBED DIGITAL HEALTH INTO AUSTRALIA'S HEALTHCARE SYSTEM

> " We simply cannot build a stronger Medicare without better realising the opportunities that digital health technologies open up for more efficient and collaborative healthcare.
>
> **The Hon. Mark Butler, Minister for Health and Aged Care** – speech at the National Press Club, 2 May 2023

Overcoming geographic, financial, social, cultural and mobility barriers to enable inclusive access to healthcare is a major challenge for Australia and nations around the world. In regional and remote areas, the varying quality of digital infrastructure and its effect on technology penetration compound this challenge. These digital gaps reflect broader population inequalities and, unless addressed, can exacerbate gaps in health outcomes and further entrench disadvantage.

As a nation, we can transform our healthcare system and improve health and wellbeing through sustained and effective adoption and integration of digital technologies, as we shape and share a collective vision for digitally enabled healthcare.

We are building on the significant achievements of the previous National Digital Health Strategy, which has provided the solid foundations for Australia to grow and expand the use of digital systems. This strategy outlines what is needed to deliver digital health for the next 5 years for an innovative, future-focused, person-centred health system that can meet current challenges, as well as those beyond the horizon.

The strategy requires collaboration by all partners: consumers and carers, healthcare providers, industry and technology vendors, researchers and academia, and all Australian governments. This may be through formal structures, bodies and organisations, or an informal but equally constructive culture of cooperation and engagement.

The events of recent years – notably the COVID-19 pandemic, floods and bushfires – saw Australians embrace digital health technologies. They are now demanding more, and this increased demand will expand and strengthen the safety, quality and productivity of digital health technologies. Digital health can deliver more efficient and effective care at lower cost, while reducing administrative burden, duplication and overservicing. This will ensure the affordability and sustainability of future healthcare expenditure.

All Australians will benefit from the inclusive, sustainable and digitally enabled health system that we are building together.

4. REFERENCES

LIST OF SUPPORTING DOCUMENTS

The following documents have informed the National Digital Health Strategy 2023–2028 and the National Digital Health Strategy Delivery Roadmap. Many are referenced specifically within the text, but all have been considered and are reflected in terms of the stated outcomes and goals of this strategy:

- Aged Care Digital and Data Strategy (Department of Health and Aged Care)

- Artificial Intelligence Roadmap (CSIRO)

- Australia's Artificial Intelligence Ethics Framework – a discussion paper (CSIRO)

- Australia's Cyber Security Strategy 2020 (Department of Home Affairs)

- 2023-2030 Australian Cyber Security Strategy (Department of Home Affairs)

- Australia's Disability Strategy 2021–2031 (Department of Social Services)

- Australia's Primary Health Care 10-Year Plan 2022–2032 (Department of Health and Aged Care)

- Clinical Governance Framework for Digital Health (Australian Digital Health Agency)

- Data and Digital Government Strategy (Digital Transformation Agency)

- Digital Capability for Workforce Skills (Australian Industry Standards Ltd, provided by Department of Employment and Workplace Relations)

- Digital Economy Strategy (Department of the Prime Minister & Cabinet)

- Digital Government Strategy (Department of Education, Skills and Employment)

- Digital Health Blueprint 2023-2033 (Department of Health and Aged Care)

- Medical Research Future Fund Genomics Health Futures Mission Roadmap (Department of Health and Aged Care)

- National Aboriginal and Torres Strait Islander Health Plan 2021–2031 (Department of Health and Aged Care)

- National Aboriginal and Torres Strait Islander Health Workforce Strategic Framework and Implementation Plan 2021–2031 (Department of Health and Aged Care)

- National Agreement on Closing the Gap (National Indigenous Australians Agency)

- National Digital Health Capability Action Plan (Australian Digital Health Agency, Australasian Institute of Digital Health)

- National Digital Mental Health Framework (Department of Health and Aged Care)

- National Health Reform Agreement: Long-term health reforms roadmap (Department of Health and Aged Care)

- National Healthcare Interoperability Plan 2023–2028 (Australian Digital Health Agency)

- National Medical Workforce Strategy 2021–2031 (Department of Health and Aged Care)

- National Preventive Health Strategy 2021–2030 (Department of Health and Aged Care)

- Strengthening Medicare Taskforce Report (Department of Health and Aged Care)

- Trusted Digital Identity Framework (Department of Finance)

ENDNOTES

1 Department of Health and Aged Care (DoHAC), 2020–25 Addendum to National Health Reform Agreement (NHRA), DoHAC, Australian Government, 2023. The Strengthening Medicare Taskforce Report outlines a vision for Australia's primary care system of the future. The report recommends significant changes to how primary care is funded and delivered to enable high-quality, integrated and person-centred care for all Australians; Department of Health and Aged Care (DoHAC), Australia's Long Term National Health Plan, DoHAC, Australian Government, 2019.

2 Department of Health and Aged Care (DoHAC), Strengthening Medicare Taskforce Report, DoHAC, Australian Government, 2023. The Strengthening Medicare Taskforce Report outlines a vision for Australia's primary care system of the future. The report recommends significant changes to how primary care is funded and delivered to enable high-quality, integrated and person-centred care for all Australians; Department of Health and Aged Care (DoHAC), Australia's Long Term National Health Plan, DoHAC, Australian Government, 2019.

3 Australian Digital Health Agency (ADHA), Clinical Governance Framework for Digital Health, ADHA, Australian Government, 2023.

4 World Health Organization (WHO) and International Telecommunication Union (ITU), Digital health platform handbook: building a digital information infrastructure (infostructure) for health, WHO and ITU, 2020.

5 Australian Digital Health Agency (ADHA), Connecting Australian Healthcare – National Healthcare Interoperability Plan 2023-2028, ADHA, Australian Government, 2023.

6 ANDHealth, Digital health: the sleeping giant of Australia's technology industry, ANDHealth, 2020.

7 World Health Organization (WHO) and International Telecommunication Union (ITU), Digital health platform handbook: building a digital information infrastructure (infostructure) for health, WHO and ITU, 2020.

8 Cyber and Infrastructure Security Centre (CISC), Critical Infrastructure Resilience Strategy 2023–2028, CISC, Department of Home Affairs, Australian Government, 2023; Cyber and Infrastructure Security Centre (CISC), Critical Infrastructure Resilience Plan, CISC, Department of Home Affairs, Australian Government 2023.

9 Department of Climate Change, Energy, the Environment and Water (DCCEEW), National Climate Change Risk Assessment, DCCEEW, Australian Government; DCCEEW, National Climate Resilience and Adaptation Strategy 2021-2025, DCCEEW, Australian Government.

10 A Malik, M Lenzen, S McAlister and F McGain, 'The carbon footprint of Australian healthcare', The Lancet Planetary Health, 2018, 2(1):E27–E35, doi:10.1016/S2542-5196(17)30180-8.

11 Commonwealth of Australia, 2023 Intergenerational report: Australia's future to 2063, pp. 148–151, Australian Government, 2023.

12 OECD, Health in the 21st Century: putting data to work for stronger health systems, OECD Publishing, Paris, 2019.

13 Productivity Commission, 5-year productivity inquiry: Australia's data and digital dividend, Vol.4., Productivity Commission, Australian Government, 2023.

14 Pharmaceutical Society of Australia, Medicine safety: take care, Pharmaceutical Society of Australia, 2019.

15 S Blackburn, D Gärtner, M Freeland, A Kelley, S Pickover, T Thomassian and N Ubaldi, Digital Australia: seizing the opportunity from the fourth industrial revolution, Digital/McKinsey, 2017.

16 Pharmaceutical Society of Australia, Medicine safety: take care, Pharmaceutical Society of Australia, 2019.

17 S Blackburn, D Gärtner, M Freeland, A Kelley, S Pickover, T Thomassian and N Ubaldi, Digital Australia: seizing the opportunity from the fourth industrial revolution, Digital/McKinsey, 2017.

18 Australian Institute of Health and Welfare (AIHW), Asthma – key statistics and information about asthma and its prevalence in Australia, Australian Bureau of Statistics, 2022.

19 Australian Institute of Health and Welfare (AIHW), National asthma indicators – an interactive overview, AIHW, Australian Government, 2019.

20 M Chan, M Gray, C Burns, L Owens, A Jaffe, N Homaira, 'Assessment of Variation in Care Following Hospital Discharge for Children with Acute Asthma', Journal of Asthma and Allergy, 2021, 14:797-808.

21 A Chan, A De Simoni, V Wileman, L Holliday, CJ Newby, C Chisari, S Ali, N Zhu, P Padakanti, V Pinprachanan, V Ting, CJ Griffiths, 'Digital interventions to improve adherence to maintenance medication in asthma', Cochrane Database of Systematic Reviews, 2022, Issue 6, Art. No. CD013030, doi: 10.1002/14651858.CD013030.pub2.

22 Asthma Australia, Kiss My Asthma app, 2022.

23 Australian Digital Health Agency (ADHA), Connecting Australian Healthcare – National Healthcare Interoperability Plan 2023–2028

24 Australian Digital Health Agency (ADHA), Telehealth, ADHA, Australian Government, 2022.

25 Australian National Audit Office (ANAO), Auditor-General Report No. 10 of 2022–23: Expansion of Telehealth Services, ANAO, Australian Government, 2023.

26 Australian Bureau of Statistics (ABS), Patient Experiences in Australia: Summary of Findings, ABS, Australian Government, 2022.

27 Australian Digital Health Agency (ADHA), My Health Record: The Big Picture, June 2023, ADHA, Australian Government, 2023.

28 Productivity Commission, 5-year Productivity Inquiry report: Australia's data and digital dividend, Productivity Commission, Australian Government, 2023.

29 Productivity Commission, Data Availability and Use Inquiry, Productivity Commission, Australian Government, 2017; Data Availability and Transparency Act 2022. The provisions under the Data Availability and Transparency Act 2022 demonstrate that the data-sharing initiatives promoted in the Productivity Commission's Data Availability and Use Inquiry report are taking effect.

30 Australian National Audit Office (ANAO), Auditor-General Report NO.10 OF 2022–23: Expansion of Telehealth Services, ANAO, Australian Government, 2023.

31 The Council for Connected Care [website], Australian Digital Health Agency, Australian Government.

32 Australian Commission on Safety and Quality in Health Care (ACSQHC), National Safety and Quality Health Service (NSQHS) Standards, ACSQHC, Sydney, 2023.

33 Australian Digital Health Agency (ADHA), Connecting Australian Healthcare: National Healthcare Interoperability Plan 2023–2028, ADHA, Australian Government, 2023.

34 M Ferri Sanz, B Vallina Acha and M Ferrando Garcia, 'Co-design for people-centred care digital solutions: A literature review', International Journal of Integrated Care, 2020, 21(2):16, doi: 10.5334/ijic.5573.

35 The Australian Government's Outreach Program, administered by Rural Doctors Network (RDN) in NSW and the ACT, aims to increase access to health services for rural communities and Aboriginal people. RDN, n.d., NSW Rural Doctor's Network [website], accessed May 2023.

36 MI Islam, S Bagnulo, Y Wang, R Ramsden, T Wrightson, A Masset, R Colbran, M Edwards and A Martiniuk, 'Job Satisfaction of Health Practitioners Providing Outreach Health Services during COVID-19 in Rural New South Wales (NSW) and the Australian Capital Territory (ACT)', Healthcare, 2023, 11(1):3.

37 MI Islam, C O'Neill, H Kolur, S Bagnulo, R Colbran and A Martiniuk, 'Patient-Reported Experiences and Satisfaction with Rural Outreach Clinics in New South Wales, Australia: A Cross-Sectional Study', Healthcare, 2022 10(8):1391.

38 MI Islam, et al., 'Job Satisfaction of Health Practitioners Providing Outreach Health Services during COVID-19 in Rural New South Wales (NSW) and the Australian Capital Territory (ACT)', Healthcare, 2023 11(1):3.

39 Productivity Commission, 5-year Productivity Inquiry report: Australia's data and digital dividend, Productivity Commission, Australian Government, 2023.

40 Australian Digital Health Agency (ADHA), The National Digital Health Capability Action Plan, ADHA, Australian Government, 2021.

41 NSW Rural Doctors Network (RDN), Rural Health Pro [website], accessed May 2023.

42 Martiniuk et al, 'Capability… what's in a word? Rural Doctors Network of New South Wales Australia is shifting to focus on the capability of rural health professionals', Rural and Remote Health, 2020, 20(3):5633; Buykx et al, 'Systematic review of effective retention incentives for health workers in rural and remote areas: towards evidence-based policy', Australian Journal of Rural Health, 2010, 18(3):102-109, doi PMid:20579020.

43 Rural Doctor's Network and Deakin University, Evaluating Rural Health Pro – A web platform to support rural health professionals, in press.

44 K Foley, T Freeman, P Ward, A Lawler, R Osborne and M Fisher, 'Exploring access to, use of and benefits from population-oriented digital health services in Australia', Health Promotion International, 2021, 36(4):1105–1115, doi:10.1093/heapro/daaa145.

45 Australian Institute of Health and Welfare (AIHW), Health literacy, AIHW, Australian Government, 2022.

46 Australian Commission on Safety and Quality in Health Care (ACSQHC), Health literacy: taking action to improve safety and quality, ACSQHC, Sydney, 2014.

47 E Beaunoyer, S Dupéré and M Guitton, 'COVID-19 and digital inequalities: reciprocal impacts and mitigation strategies', Computers in Human Behaviour, 2020, 111(6):106424, doi: 10.1016/j.chb.2020.106424.

48 IT Brief Australia, 2018, Testing technology: Why Australia is the perfect sandbox for innovation [website], accessed May 2023.

49 Australian Digital Health Agency (ADHA), National digital health survey 2021, ADHA, Australian Government, 2021.

50 Institute for Molecular Science and Engineering, Briefing Paper No 6: The future of wearable technologies, Imperial College London, United Kingdom, 2021.

51 Australian Institute of Health and Welfare (AIHW), Coordination of health care: experiences of information sharing between providers for patients, AIHW, Australian Government, 2019.

52 Menzies School of Health Research (MSHR), Territory Kidney Care: a clinical decision support system to facilitate integrated care for people with CKD in the NT, MSHR, Northern Territory, Australia, 2023.

53 Australian Digital Health Agency (ADHA), Connecting Australian Healthcare: National Healthcare Interoperability Plan 2023–2028.

54 Australian Digital Health Agency (ADHA), My Health Record: The Big Picture, February 2023, ADHA, Australian Government, 2023.

55 CISCO, Digital Readiness Index, 2021, cited in The Department of the Prime Minister and Cabinet, Australia – A World Leading Modern, Digital Economy, Australian Government, 2022.

56 Australian Digital Inclusion Index (ADII)[website], ADII, 2023.

57 National Disability Insurance Agency (NDIA), Data Insights, NDIA, Australian Government, 2023.

58 Australian Digital Inclusion Index (ADII)[website], ADII, 2023; The 2023 ADII shows there is a considerable digital gap between First Nations and non-First Nations people in Australia. The digital gap in 2023 is 7.5 points. The gap is particularly pronounced between First Nations and non-First Nations people living in remote (21.6 points) and very remote (23.5 points) locations, although it exists across most areas regardless of remoteness. Access is a critical issue in remote First Nations communities. The National Agreement on Closing the Gap has 19 national socio-economic targets across areas that have an impact on life outcomes for Aboriginal and Torres Strait Islander peoples. Target 17 is 'Aboriginal and Torres Strait Islander peoples have access to information and services enabling participation in informed decision-making regarding their own lives.' The benefits accruing to First Nations communities from the strategy will, in part, be determined by digital inclusion and access.

59 Department of the Prime Minister and Cabinet, Digital Economy Strategy 2022 Update, Australian Government, 2022.

60 Australian Governments and Coalition of Peaks, National Agreement on Closing the Gap, Coalition of Aboriginal and Torres Strait Islander Peak Organisations and all Australian Governments, 2020.

61 Department of Health and Aged Care (DoHAC), National Aboriginal and Torres Strait Islander Health Plan 2021–2031, DoHAC, Australian Government, 2021.

62 N Nasiri, Using wearables to create a proactive healthcare system, NSW Smart Sensing Network (NSSN), 2022.

63 Australian Digital Health Agency (ADHA), National digital health stakeholder consultations 2021, ADHA, Australian Government, 2021.

64 Broome Regional Aboriginal Medical Service (BRAMS)

65 Australian Health Ministers, National Health Reform Agreement (NHRA) – Long-term health reform roadmap, Australian Health Ministers, Australian Government, 2021.

66 Productivity Commission, 5-year Productivity Inquiry report: Australia's data and digital dividend, Productivity Commission, Australian Government, 2023.

67 NSW Health, 2021, LUMOS: Shining a light on the patient journey in NSW, NSW Health [website], accessed May 2023.

68 Closing the Gap [website], National Agreement on Closing the Gap, accessed May 2023; Closing the Gap [website] Priority Reform Four - shared access to data and information at a regional level, accessed May 2023.

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