Western Australia Nursing and Midwifery Digital Health Strategy

Fit for a digital future, every nurse's
and midwife's business

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Assistant Director General foreword

The WA health system is committed to improving the way healthcare services are delivered to improve clinical outcomes. In recent years this has involved modernising and commissioning hospitals and health facilities, but it is also reflected by a focus on digital innovations.

Digital technology has the power to transform the way we deliver health care to make it more collaborative, immediate and consumer-specific. The WA Health Digital Strategy 2020–2030 sets the vision for a digitally-enabled public health system. Having a user-centric design approach, it supports the workforce, including nurses and midwives, while recognising capacity and capability are critical factors for successful implementation.

I commend the WA Nursing and Midwifery Digital Health Strategy – Fit for a Digital Future; Every Nurse's and Midwife's Business as a critical tool which will prepare the nursing and midwifery professions to drive the digital health revolution. Nurses and midwives, with their unique understanding of the needs and expectations of patients, are perfectly positioned to effect change and reform using digital technologies.

This year, during the COVID-19 pandemic the rapid uptake of new technologies by health services was unprecedented. One example is Telehealth. Already a core aspect of healthcare delivery in regional and remote areas, Telehealth emerged as a service delivery tool with broad potential across the sector. Nurses and midwives are integral to the success of this model as they are increasingly entrusted with greater responsibilities for delivering care via Telehealth solutions.

Our community is increasingly digitally enabled, improving the potential for collaboration between individuals and those caring for them. Nurses and midwives are uniquely positioned to identify, design, refine and deliver technologies that will support and improve the patient experience, while retaining the personal and human interaction that is fundamental to their professions.

Our ability to understand and respond to the needs of consumers is improving as we have increasing access to better data. We are moving towards a rapid translation of data, research and innovation into systemwide practice with many nurses and midwives driving the change.

It is an exciting time to be working in health and I look forward to working with the nursing and midwifery workforce in the delivery of this strategy.

Dr James Williamson
Assistant Director General, Clinical Excellence Division

Chief Nursing and Midwifery Officer foreword

It is my great pleasure to present the WA Nursing and Midwifery Digital Health Strategy – Fit for a Digital Future; Every Nurse's and Midwife's Business. The strategy aligns with the WA Health Digital Strategy 2020–2030 which challenges us to embrace digital innovations in the delivery of patient care, ensuring that consumers are at the heart of digital design.

Nurses and midwives combined make up the largest professional cohort of registered practitioners in health care. As a workforce we have enormous capacity to drive and implement change and realise the benefits of digital health for patients and staff in delivering timely, effective care.

This strategy provides a roadmap for our nursing and midwifery workforce to transform the way they provide health care. Importantly, it emphasises that human interactions remain essential to positive patient outcomes. It identifies ways which new technologies can support these interactions while empowering every nurse and midwife to continue to use their professional judgment and clinical decision making and care with compassion.

It is fitting that the WA Nursing and Midwifery Digital Health Strategy is released during the World Health Organization's International Year of the Nurse and Midwife 2020, which marks the 200-year anniversary of Florence Nightingale's birth.

Nightingale is widely regarded as the founder of modern nursing and the first nurse to document and analyse patient data. She was a passionate statistician and data visualisation pioneer becoming the first female member of the Royal Statistical Society in 1858.

In this spirit, the WA Nursing and Midwifery Digital Health Strategy has been developed following broad consultation with our professions along with a review of a vast amount of literature, including lessons learnt. It paves the way to improving the way healthcare services are delivered and reflects the ongoing commitment of all nurses and midwives to delivering best possible care for all Western Australians.

I look forward to progressing the implementation of the Strategy with the support of our nurses and midwives and wider interdisciplinary teams.

Dr Robina Redknap
Chief Nursing and Midwifery Officer

Executive summary

As technology develops and proliferates in all aspects of people's lives, the healthcare sector is increasingly challenged to embrace innovative ways of delivering services. Consumers have a rising expectation that healthcare services be integrated with their lives in the same way as products and services from other sectors.

Across the globe, healthcare providers are adopting and adapting new technologies every day. Wearable devices now connect with mobile devices that monitor several physiological aspects simultaneously. Web-based services and remote monitoring sensors are used widely across the sector, and nurses and midwives are driving the development of digital applications that are immediate, responsive and secure in favour of paper-based, manual processes.

In Western Australia, the *Sustainable Health Review: Final Report to the Western Australian Government 2019* (SHR), through its Strategy 6: 'Invest in digital healthcare and use data wisely', challenges those working in the health sector to capitalise on the digital evolution and change the face of how healthcare is delivered.

Consumers are increasingly encouraged and empowered to manage their own health and wellbeing, with an expectation that clinicians engage and support this drive. This includes nurses and midwives who are in a unique position to facilitate this change. As described in the SHR, digitising the WA health system will empower consumers through access to greater health information and efficient services that are safe, efficient and innovative.

The WA Health Digital Strategy 2020–2030 (WA Health Digital Strategy) outlines the vision for digitally-enabled health services in Western Australia over the next decade. It commits to investment in digital initiatives that contribute to the achievement of six strategic themes: empowered consumers, informed clinicians, optimised performance, supported workforce, enhanced public health and embedded innovation.

Nurses and midwives make up the largest cohort of professionals in healthcare and as such they will have an enormous role to play in this digital health transformation. This WA Nursing and Midwifery Digital Health Strategy, fit for a Digital Future, Every Nurse's and Midwife's Business, builds on and aligns to the WA Health Digital Strategy and underling initiatives, and describes how the nursing and midwifery workforce will be challenged and supported to drive digital innovation and change current practice.

This strategy was developed following engagement with multiple sources including consultations with the nursing and midwifery professions, healthcare industry partners, professional bodies, and literature research into post-digital health implementations and lessons learnt, suggestions and recommendations.

The four priorities and six themes of the strategy are outlined below. These priorities and themes provide a framework through which nurses and midwives can work together to support a digital health revolution here in Western Australia.

Priorities

Develop

Develop a nursing and midwifery workforce that can confidently use digital health technologies to enhance patient care and underpin the digital health goal

Collaborate

Work collaboratively with key stakeholders to ensure digital health information management technology forms an integral part of nursing and midwifery practices. Consider health informatics pathways for nursing and midwifery professional development

Empower

Facilitate access to resources and education that supports nurses and midwives to be confident and efficient in the use of implemented digital health technologies

Grow

Encourage the development of nursing and midwifery digital health literacy and its application. Upskill nurses and midwives to harness untapped resources.

Themes

1. Transforming organisational culture

2. Workforce confidence

3. Workforce capability, capacity, and competency

4. Digital literacy

5. Clinical process re-design, change management and driving benefit realisation

6. Training and education.

Successful implementation of the strategy is dependent on key stakeholders engaging with the Chief Nursing and Midwifery Office. This will enable a partnership to support and facilitate the development and implementation of actions within the document.

As a function of the System Manager of the WA health system, the office will work in collaboration with organisations to align with the short and long-term goals and initiatives of the overarching WA Health Digital Strategy. This approach will guarantee that nurses and midwives are well-positioned and informed to interact and engage with digital health project teams.

Introduction

Australian federal and state governments have undertaken an investment program financing millions of dollars in the building of new hospitals and upgrading current health facilities. This has resulted in the stimulation and uptake of digital health across Australia.

Investment in infrastructure, coupled with digital deployments, is paving the way for the growing need of modern healthcare amenities fit for a modern healthcare service. Universities are creating and introducing programs that support digital transformation. These improvements in healthcare education are supporting nurses, midwives and other clinical professionals to drive change in patient care and the services offered.

Worldwide, the development of new healthcare technologies is either in the pipeline or already implemented. The use of next-generation genomics, big data and advanced analytics, 3D printing, robotics and artificial intelligence (AI)[1] all have the potential to reshape the provision of health care. Some of these technologies have already found their way into current healthcare practices and organisations in Western Australia (WA).

The expectations of healthcare consumers, professionals and providers are driven and informed by their experiences of technology that have translated to everyday life. Consumers are becoming increasingly engaged in their health care, showing a growing trend of empowerment, monitoring and decision-making. This is aided by the quantity of information on the internet or from sensor-enabled devices and wearables, which are linked to applications such as blood glucose monitors, electrocardiograms and blood pressure monitoring devices.

As digital technologies become enabled, engaging the tremendous diversity of nurses and midwives who are involved in patient-centred care will be challenging. It will require a successful collaborative engagement process to facilitate the change in practice that digital health in partnership with nurses and midwives will deliver. For whole community uptake and participation, it will be essential for governments to tackle areas that are not technology-enabled to the level required, while the healthcare workforce upskill and develop new practices to allow adoption across all socio-economic groups. The development of meaningful relationships with industry partners, educational institutions, government departments, the clinical workforce and healthcare users will assist and facilitate embedding the digital health agenda into everyday nursing and midwifery practices. This will safeguard its success and, importantly, enhance patient health care.

Clear objectives for the nursing and midwifery workforce were outlined in Australia's National Digital Health Strategy,[2] while the WA Health Digital Strategy 2020–2030[3] sets out six strategic themes and system-level initiatives on the related Roadmap. This includes workforce digital capability development, for delivery over four horizons which will impact the nursing and midwifery workforce throughout the next decade and beyond.

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1   Chilukuri & Van Kuiken, 2017
2   Australian Digital Health Agency, 2017
3   Department of Health Western Australia, 2019b

Strategy context

The WA Nursing and Midwifery Digital Health Strategy seeks to underpin and support the delivery of the following:

- *Sustainable Health Review Final Report to the Western Australian Government* 2019 (SHR)
- Australia's National Digital Health Strategy
- WA Health Digital Strategy 2020–2030 and related Roadmap
- *Educating the Nurse of the Future: Report of the Independent Review of Nursing Education* 2019
- WA Nursing and Midwifery Strategic Priorities 2018–2021.

Why the Nursing and Midwifery Digital Health Strategy is needed

The Government of Western Australia and the Department of Health WA are committed to transforming the provision of health care with the use of digital technologies. This decision supports the delivery of the *Sustainable Health Review*, the WA Health Digital Strategy and other recommendations to deliver a healthcare service fit for future consumer expectations.

Strategy 6 under the SHR specifies an intention to "invest in digital health care and use data wisely", recommending to:

- empower citizens with greater health information
- enable access to innovative, safe and efficient services
- improve, promote and protect the health of Western Australians.[4]

The digital transformation of health care will allow the provision of connected care across public and private healthcare providers, and across the vast rural remoteness of WA.

Building the capacity of nurses and midwives is essential to enable the digital technology required to support innovation. Nurses and midwives will play an integral role in utilising connected services. New skills will require development that supports and drives the digital transformation in practice, digital collaboration and the digital growth of nursing and midwifery professions. All these elements are necessary to meet the digital health goal of improving health service delivery by adopting new ways of working, leveraged by digital innovation.

The WA Chief Nursing and Midwifery Office's priorities to support digital health in WA are summarised in the Nursing and Midwifery Digital Health Strategy under four priorities and six themes. An overview and explanation of the themes are presented, together with strategic actions that will support nurses and midwives in the digital future.

The priorities and themes were developed from multiple sources of information assembled from post-digital health implementations. Lessons learnt, suggestions and recommendations primarily from the UK and within Australia have been considered and included. Further evidence and materials to support the themes was gathered from other healthcare industry partners and professional bodies who have consulted with the nursing and midwifery professions regarding digital health.

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4   Department of Health Western Australia, 2019a

Our priorities

Develop

Develop a nursing and midwifery workforce that can confidently use digital health technologies to enhance patient care and underpin the digital health goal.

Collaborate

Work collaboratively with key stakeholders to ensure digital health information management technology forms an integral part of nursing and midwifery practices. Consider health informatics pathways for nursing and midwifery professional development.

Empower

Facilitate access to resources and education that supports nurses and midwives to be confident and efficient in the use of implemented digital health technologies.

Grow

Encourage the development of nursing and midwifery digital health literacy and its application. Upskill nurses and midwives to harness untapped resources.

The Nursing and Midwifery Digital Health Strategy aims to:

Set out the role the WA Department of Health Chief Nursing and Midwifery Office will undertake to prepare the nursing and midwifery workforce to support the vision, outcomes and benefits of digital health, through aligning with the WA Health Digital Strategy and Roadmap, while supporting the priorities of strategies it aspires to underpin.

The scope of digital health for Western Australia

The WA Health Digital Strategy was delivered under the Sustainable Health Review, Strategy 6, Recommendation 22.

The WA Health Digital Strategy and related Roadmap sets a vision for a digitally-enabled Western Australia health system that takes a person-centred approach to transform the experience of healthcare consumers, healthcare providers, clinicians, and other stakeholders in healthcare delivery.

The six strategic themes outlined within the WA Digital Health Strategy are:

1. **Empowered consumers** – Improve equity of access and empower consumers to become true partners in their own care.

2. **Informed clinicians** – Ensure clinicians are informed to make effective decisions that support high value health care.

3. **Optimised performance** – Optimise health system performance with user-centricity, modernisation, innovation and interoperability.

4. **Supported workforce** – Support and foster workforce engagement through connectivity and communication.

5. **Enhanced public health** – Protect, maintain, promote and improve the health of individuals and their community through a combination of safeguards, policies and programs.

6. **Embedded innovation and research** – Embed innovation and research into core business and promote the adoption of rapidly evolving technologies.

In the advent of digital disruption and the changing digital health landscape, new technology offerings will continue to become available, redefining the working practices and processes for nurses and midwives. Therefore, in line with the intent set out in the WA Health Digital Strategy, it is essential to ensure that the nursing and midwifery workforce are suitably equipped with the capability, capacity, competency and confidence to embed digital initiatives within their practice.

The Nursing and Midwifery Digital Health Strategy therefore sets the direction to ensure the development of an organisational culture. This will support digital literacy in the nursing and midwifery workforce, leveraging the opportunities and the potential that digital health will bring to care delivery.

Each initiative has been associated with a suite of digital technologies that support it, as presented in Figure 1.

The scope of the WA Health Digital Strategy will encompass all care that nurses and midwives deliver, across all areas of health care, and touch all processes of care that the nursing and midwifery workforce carry out. Initiatives which provide nurses and midwives with real-time, comprehensive information to support decisions in care provision include:

- mobile health (mHealth)
- patient portals
- telehealth
- remote patient monitoring
- my Health records
- electronic medications management
- improved laboratory information system
- statewide Electronic Medical Record functionality
- improved medical imaging system
- shared care platform integrating primary, secondary and tertiary health services
- health operations/command centre
- augmented and virtual reality (VR)
- rostering, payroll and human resources systems
- data intelligence systems incorporating analytics.

This list of digital initiatives is not exhaustive. As the digital health landscape changes with the advent of new technologies, so will the initiatives that will redefine working practices for nurses and midwives.

Figure 1: Proposed initiatives for digital health

- Mobile Health
- Patient Portal
- Virtual Care
- Telehealth
- Remote Patient Monitoring
- My Health Record

- Digital Hospital
- Robotics, Automation and Artificial Intelligence (AI)
- Predictive Analytics
- Commercialisation, Development and Ownership of Intellectual Property

- Statewide Electronic Medical Record Functionality
- Electronic Medications Management
- Specialty Clinical Systems
- Laboratory Information System Replacement
- Medical Imaging System Replacement
- Mobile Applications and Devices
- Clinical and Research Analytics
- Care Coordination Platform Across Multiple Settings (Shared Care Platform)
- 24-hour WA Health Operations/Command Centre
- Augmented Reality and Virtual Reality

- Population Health data
- Spatial Data and Technology
- Research and Data Linkage
- Regulatory Responsibilities

- Employee Portal
- Third-Party Corporate Platform
- Learning Management System
- Financial Management Information System
- Human Resources, Rostering and Payroll Systems Replacement
- Online Credentialing System
- Business Intelligence

- Mobile and Efficient Workforce Computing
- Application Consolidation and Identification of Critical Systems
- Enterprise Architecture and Interoperability Standards
- Modernising ICT Infrastructure Foundations (HealthNext)
- Legislation and Policy Review

Overview of strategic themes

Theme one

Transforming organisational culture

Develop a culture that supports positive attitudes to enable the capacity, skills and knowledge required to provide digitally enabled care.

Theme two

Workforce confidence

Empower nurses and midwives to develop the confidence and ability to use digital health and assist healthcare consumers with all facets of digital health.

Theme three

Workforce capability, capacity and competency

Develop strategies to support the expansion of nurses' and midwives' capabilities required to deliver better health care and outcomes when using digital technologies.

Theme four

Digital literacy

Grow digital knowledge to ensure nurses and midwives are supported in developing skills with the confidence and proficiency to incorporate and harness digital ways of working into future practice.

Theme five

Clinical process redesign, change management and driving benefit realisation

Support the nursing and midwifery workforce to drive the necessary changes that redefine care provision realising the potential of digital health.

Theme six

Training and education

Support nurses and midwives to use and embrace digital health innovation by providing opportunities to access the education and training needed to deliver better healthcare outcomes.

Strategic theme one

Develop a culture that supports positive attitudes to enable the capacity, skills and knowledge required to provide digitally enabled care.

Transforming organisational culture

Digital technology is not the main deliverable or driving factor in healthcare innovation, although it is often seen as being so. The WA Health Digital Strategy recognises that supporting the workforce and a transformational culture will require effort.

True transformation results from new ways of working supported by a transformational organisational culture, not from the results of technology alone.

The drivers of innovative health care tend to be the desires of nurses and midwives to deliver better patient outcomes.

> "You can have the best strategy in the world, but if you don't really change the culture and the ways of working, you're not going to pull through that strategy."
>
> **Dave Rosner,**
> **Principal, Deloitte Consulting LLP**

Combining this ambition with changes to organisational culture and introducing digital tools results in the transformational delivery of health care to patients and advanced changes to practice.

If innovation is to occur using the capabilities of information technology as a supporting tool, there must be an established and confident underlying culture and workforce attitude towards its use. Embedded drive and determination in all behaviours to embrace digital health technologies will ensure the tools are seen by nurses and midwives as an enabler rather than a barrier.

It is imperative, then, that nurses, midwives, managers and leaders develop or already possess:

- an open mind to think about possibilities, unconstrained
- a constructive and encouraging attitude
- positive reinforcement behaviours
- a culture of constructive engagement.

The organisational culture and message which informs and shapes the overall culture of its workforce can assist in leveraging the digital health transformation and its uptake by nurses and midwives.

Nurses and midwives will exhibit a more positive attitude and willingness to engage and use digital solutions if the solutions are supported by the actions and attitudes of a healthy organisational culture, senior managers and nursing and midwifery leaders. It will then be perceived to be a useful tool in patient care and health outcomes.[5]

The WA Chief Nursing and Midwifery Office recognises the importance of these elements as the first step to achieve innovation that is enabled by digital health and the successful engagement of nurses and midwives.

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5   de Veer & Francke, 2010

Cultural and attitudinal change

Nurses and midwives need to be engaged at all levels to accomplish the real innovative value that digital technology can deliver.

Historically, engagement has only occurred sporadically and has sometimes been approached with a degree of scepticism. Issues raised during the transformation process do not tend to be technology orientated, but rather related to people, attitude or organisational culture.

Nursing and midwifery attitudes towards technology tend to be based on previous experiences of healthcare IT, engagement, access to hardware and useability. The mere existence of digital technology is insufficient to bring about healthcare improvements. It must be usable and embedded into a local, positive nursing and midwifery clinical culture.

"A passionate and engaged workforce is critical to supporting the sustainability journey. WA must continue to build a culture that invests in and values people, unleashes staff talent and empowers people to innovate."

Department of Health Western Australia, 2019a

Organisations with input from nursing and midwifery leaders need to build a culture that shapes a workforce receptive to change and the change management process. The appointment of clinical champions and supporting active staff engagement can help to achieve this.

As recognised within the WA Digital Health Strategy, the digital health program of initiatives, with all the interdependencies, will require nurses and midwives to be consulted well before the technology is deployed, and then for the rest of the system life cycle and beyond. With the right skills, resources and supportive culture, nurses and midwives will positively engage with the digital health journey. They will then truly begin to develop new innovative solutions, improvements to quality and safety and ways of working which are underpinned by digital applications.

A positive, supportive culture and attitude can be achieved by:

- supporting the nursing and midwifery workforce
- developing digital literacy and skills
- encouraging engagement
- listening to concerns raised.

Addressing and undertaking changes to organisational culture and attitude supports Strategy 7, Recommendation 23 of the SHR. Supporting collaboration for change with a systemwide "culture of courage, innovation and accountability" that hopes to build on the professionalism of staff[6] is important for digital health to be successful.

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6   Department of Health Western Australia, 2019a, p. 22

Motivation of nurses and midwives

The motivation of nurses and midwives by organisations, clinical managers and nursing or midwifery leaders is important for digital health to be successful. Nurses and midwives need to understand the valuable and positive effects digital health applications will have on patient care, not just within the settings that they practice, but also throughout the whole care continuum.[7]

A lack of motivation exhibited by general or nursing and midwifery managers may be reproduced as mirrored behaviours. It is therefore important that nurses and midwives are motivated by:

- providing support to positively engage at all opportunities
- highlighting the benefits associated with digital health in a constructive manner
- being proactive in highlighting innovative ways of working in the future
- taking accountability and supporting nurses and midwives as they undertake roles that underpin system implementation.

Employing strategies for engagement and supporting positive attitudes enables organisations, nursing and midwifery teams and leaders to sustain workforce motivation. Likewise, developing good communication channels allows feedback and concerns to be addressed, encouraging a sense of ownership and reinforcing positivity.

Decisions to shape the nurse and midwife of the future

Healthcare organisations, their leaders and managers are critical in shaping future nurses and midwives. They are essential to ensure that visions, values and plans reflect the needs and expectations to drive a collective ambition. This will support nurses and midwives to use the digital health technologies planned for patient benefit.

The next generation of nurses and midwives are a group who are drawn to an organisation's positive digital culture.

Bold and progressive organisations will be rewarded by attracting and retaining digitally skilled professionals within their workforce. A reputation for a collaborative, imaginative and inclusive digital attitude towards nurses and midwives will drive ambition to change patient outcomes using digital technology.

The ability to attract such a technical-savvy group of nurses and midwives is a necessity and supported by the WA Health Digital Strategy. Such digitally talented individuals will become a sought-after resource as digital health technologies are increasingly used within hospitals and as interactive consumer health tools become available.[8]

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7   de Veer & Francke, 2010
8   Hemerling, et al., 2018

The benefits for nursing and midwifery will be:

- ✔ visions and values that are supportive of nurses and midwives
- ✔ an organisational culture that embraces an environment of change
- ✔ positive attitudes and a willingness to engage
- ✔ a culture of courage, innovation and responsibility.

Strategic actions

1. Work collaboratively with nursing and midwifery leaders to develop a culture within the workforce that is amenable to change.

2. Invest in the development of nurses and midwives who can sustain an ongoing culture to drive digital health innovation within their organisations while maintaining a compassionate and human element.

3. Collaborate with organisations to develop resources that will strengthen nurses' and midwives' understanding of the positive effects of digital health.

4. Promote the inclusion of nurses and midwives in all aspects of digital health to ensure they have a voice in key partnerships, influencing and driving decision-making throughout the digital health journey.

Strategic theme two

Empower nurses and midwives to develop the confidence and ability to use digital health and assist healthcare consumers with all facets of digital health.

Workforce confidence

The growth of health-related websites and online content is already impacting the nursing and midwifery workforce and its provision of care.

It is not uncommon for healthcare consumers to investigate conditions and clinical symptoms via such sites. This is particularly applicable to the younger healthcare users.

Decisions by consumers as to whether to attend primary or secondary care providers are now occasionally based on their interpretation of presented information. Consumers are now attending consultations with information in hand and preconceived ideas or thoughts about the care they should be receiving.

Traditional nursing and midwifery views on their roles and behaviours are now being questioned. The abundance of information and health-related data positions the consumer at a different level regarding ownership of their healthcare provision. As digital health changes how healthcare is delivered, nurses and midwives can no longer take a passive role.[9] Nurses and midwives must have confidence in their ability to communicate and interact with healthcare consumers, providing guidance as required to correct health content when not from an evidence-based source.

In the current nursing and midwifery practice environment, there is an abundance of paper charts and manual documentation. Digital devices are becoming an important and integral resource that will need to be accessed by nurses and midwives. The introduction of digital healthcare applications will change and impact how care is delivered.

The effective use of an Electronic Medical Record (EMR) and other digital technologies will only be achieved with the interaction and participation of all nurses and midwives who are confident in technologies that are fit for purpose. A viewpoint also recognised in the WA Health Digital Strategy.

Nurses and midwives must always understand and act on the information being presented, in a definitive, informed and appropriate manner, and in so doing reassuring consumers and peers. Equally, the innate ability of the more experienced nurse or midwife to recognise when their patient is deteriorating must not be dismissed in favour of advanced analytics or machine direction. Nurses and midwives still need to feel self-assured of their autonomy to manage their patient's clinical presentation. They will need to preserve a balance between professional judgement and clinical decision-making when using digital tools.

> "Consumer and healthcare providers' trust in digital health is critical to the successful delivery of the national digital health strategy. Strong privacy, security and risk management frameworks to protect sensitive information while also enabling the safe and efficient sharing of information are vital."

Australian Digital Health Agency, 2018

9   Masys, 2002

Trust and security

Nurses and midwives have a key role to play in assuring consumers that the security and protections in use by digital systems are robust.

This extends to how information is shared with other professionals in healthcare settings, and those involved in the patient's care journey.

Consumers, nurses and midwives must have trust in all digital systems they are using. They need to be assured that the systems:

- are safe
- secure the data
- meet the demands of national and local legislation
- protect the individual's privacy and confidentiality.

> "Confidence in the security and confidentiality of patient information and electronic clinical communications is important for users' acceptance of systems."
>
> **Royal College of Nursing, 2012**

The endorsement by nurses and midwives that digital systems meet the necessary requirements will only come when they are assured and encouraged by the trust in the systems they use. Effective decision-making processes are reinforced by the understanding they have about those factors that are of concern to healthcare consumers.[10]

Nurses and midwives must develop the confidence to question and raise concerns where necessary. It is essential that action is taken by nurses and midwives where digital systems are having a detrimental effect on patient health, data and information security.

The benefits for nursing and midwifery will be:

- ✔ increased confidence in guiding healthcare consumers to safe and evidence-based health information
- ✔ a beneficial partnership, aiding better health outcomes
- ✔ confident partners in healthcare decisions
- ✔ a greater understanding of the digital environments in which they practice.

Strategic actions

1. Promote and support the involvement of nurses and midwives in the design, assessment and implementation of clinical applications to enable development of digital nursing and midwifery practices.

2. Advocate for nurses and midwives to be involved and participate in the creation of policy, procedures and governance at a system, organisational and individual level.

3. Assist in the creation of a local quality framework that can be used by nurses and midwives to benchmark digital deployments, ensuring they are safe, secure and protect patient confidentiality.

4. Support nurses and midwives in building trust and raising awareness to overcome natural resistance to digital platforms and associated change due to confidence deficits or trust and security concerns.

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10 Department of Health Western Australia, 2019b, WA Health Digital Strategy 2020–2030, Strategic Theme 2.

Strategic theme three

Develop strategies to support the expansion of nurses' and midwives' capabilities required to deliver better health care and outcomes when using digital technologies.

Workforce capability, capacity and competency

New technologies planned for healthcare settings of the future will impact multiple health roles and functions.

Current normalised healthcare approaches and traditional ways of working will be challenged.

To strengthen the use of digital technologies, nurses and midwives must develop capability, capacity and competency in digital skills.

> "Investment in people as well as technology to engage, develop and support the healthcare workforce"
>
> **World Health Organization, 2020**

The terms 'capability', 'competency' and 'capacity' are often used interchangeably. However:

- capability has a broader meaning that takes account of attributes, attitudes and behaviours, and the ability to achieve a certain outcome in the future – in this way organisation capability arises from the use and application of an individual's competence
- capacity refers to the amount or volume of work
- competency usually refers to knowledge, skills or strength at a specific task; it can also be what expertise an individual has in a specific field.[11]

The WA Digital Health Strategy identifies workforce capability and capacity as one of the critical success factors to its implementation. In preparation for the implementation of an EMR and other digital initiatives, the WA Health Digital Strategy states the need for a digital maturity and capability assessment across the WA health system.[12] The purpose of such an assessment is multi-faceted and will assist in defining implementation readiness and future areas of enhancement. It also aims to understand variability, funding priorities, ICT infrastructure maturity and delivery capability and talent.

As part of the broader workforce readiness assessment initiative on the Digital Strategy Roadmap, nurses' and midwives' capability, capacity and confidence with digital initiatives will need to be understood. This will ascertain how prepared they are to deliver the necessary stages that will result in an enhanced delivery of care when using digital platforms.

The nursing and midwifery workforce must be able to engage and interact with the digital health project teams and system suppliers to be able to lead, or as a minimum advise on, the necessary requirements and expectations.

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11 Queensland Government, 2019
12 Department of Health Western Australia, 2019b

There are several barriers or obstacles nurses and midwives might encounter that would affect their capability, capacity or competency and ultimately their ability to engage and interact. These include:

- organisational digital unreadiness to support nurses and midwives
- lack of nurses' and midwives' own digital literacy
- lack of confidence in transformational change
- unavailability and type of training or upskilling and the methods utilised
- cultural disparity between IT, nurses and midwives
- decisions not rooted in nursing and midwifery priorities.

Improving nursing and midwifery capability, capacity and competency

The capability of nurses and midwives to use digital health technologies consists of more than providing training in how to use applications. It involves the development of competencies where nurses and midwives integrate knowledge, personal and professional standards, critical thinking and clinical judgement into their reasoning and choices.

Organisations must have a degree of confidence that their nursing and midwifery workforce has a level of competency when it comes to digital skills. The Nurses and Information Technology Final Report, conducted by the Australian Nursing Federation, found less than one-third of all nurses had an employment requirement for any digital skills contained within their job descriptions or roles and responsibilities.[13] This is a position that has not changed to any great extent since the report was published in 2007.

To address this, the inclusion of developed digital health competency standards and capabilities within nursing and midwifery position descriptions must be promoted at the point of recruitment. These standards must also be introduced to those progressing to new developmental opportunities within clinical areas.

It is important that demonstrable abilities are included in the application submission. A competency model or framework that can assist in the assessment of nurses' and midwives' capabilities must be adopted for all areas of the nursing and midwifery workforce.

Supporting part of Australia's National Digital Health Strategy's commitment to building the capability of the health workforce in digital health, the Australian Digital Health Agency (ADHA) in conjunction with the Australasian Institute of Digital Health are creating a professional development program. The program will incorporate a capability framework for nurses and midwives to identify the digital health capabilities required. It sets out to detail the specific digital health skills nurses and midwives need, ensuring practicability and relevance to practice.

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13 Hegney, et al., 2007
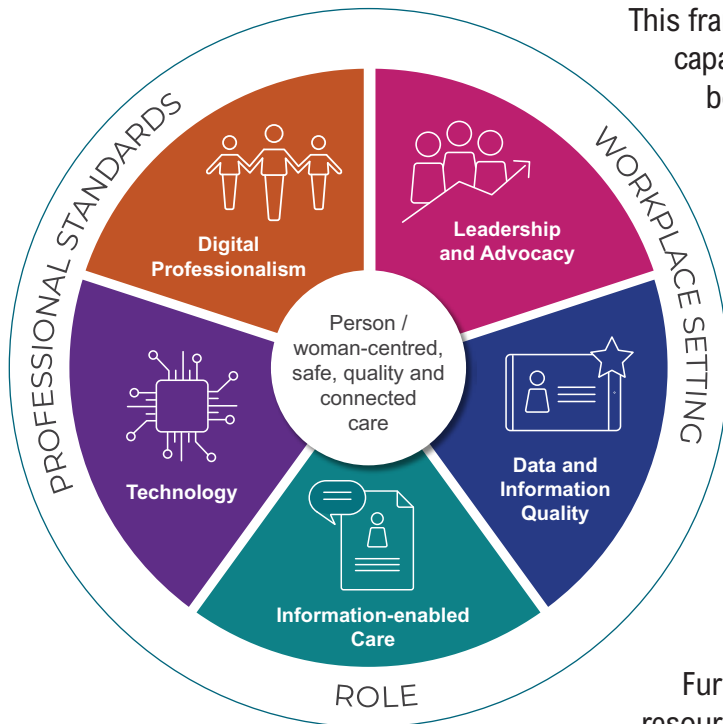
This framework sets the direction for digital health capabilities for nurses and midwives, providing both an overview and a deeper level of activities. It sets out the common definitions and roles, presented in a language that supports digital capability. Nursing and midwifery managers can prioritise areas for organisational development, thereby expanding capability, capacity and competency.

The program also aims to encourage positive attitudes that will support individuals, the nursing and midwifery workforce, and organisations. Once available its use can support the recognition of knowledge, behaviours and the digital health skills required for professional practice.[14]

Furthermore, the program will provide additional resources to maximise useability within the healthcare environment. These resources will be useful to develop and enhance the digital health capabilities of nurses and midwives within organisations. They can also be extended to all healthcare professionals to further improve the quality, safety and efficiency of care provided in a digital environment.

Nursing and Midwifery Digital Health Capabilities Framework domains and sub-domains
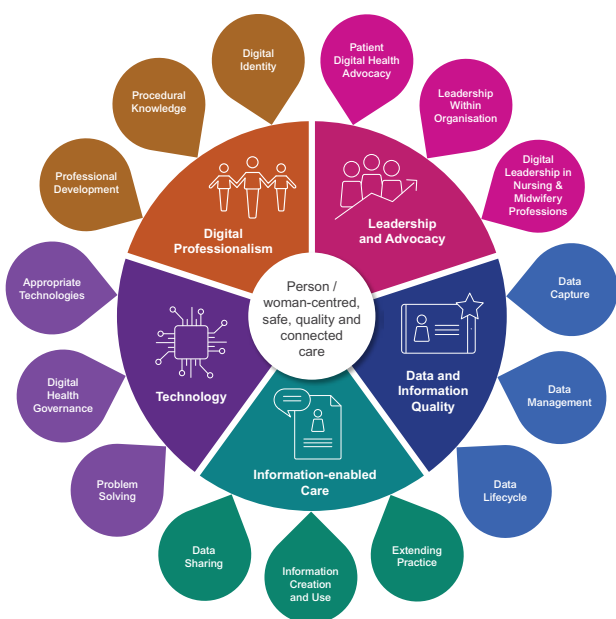
National Nursing and Midwifery Digital Health Capabilities Framework
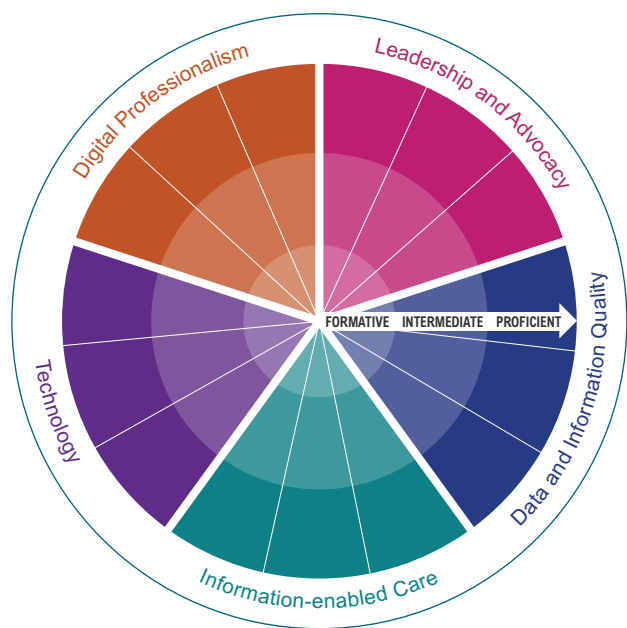
14 National Nursing and Midwifery Digital Health Capabilities Framework

Workforce readiness for a digital future

Healthcare consumers have an expectation that nurses and midwives, along with other healthcare providers, know how to use digital technology reliably and effectively. Recognising nurses and midwives as professionals, consumers will accept that digital technologies being used will enhance and augment care in ways that can improve their health status.

Nurses and midwives must ensure that the experiences and interactions of consumers with digital health at each contact point within health care are supported and of benefit to treatment outcomes.

Australia's National Digital Health Strategy, Strategic Priority 6 – a workforce confidently using digital health technologies to deliver health and care – sets out the expectation that nurses and midwives are self-assured and competent. Strategic Priority 6 states:

> Healthcare professionals want more support in learning how to maximise the benefits of digital health tools and services. The Australian Digital Health Agency will collaborate with governments, care providers and partners in workforce education to develop comprehensive proposals, so that by 2022 all healthcare professionals have access to resources that will support them in the confident and efficient use of digital services. In addition, the Strategy proposes rapid promotion of a network of clinician digital health leaders and champions across Australia.[15]

The ADHA is working towards the development of resources that will assist in creating a workforce that is confident in using digital technologies. Nevertheless, while these resources are being compiled, there must be a major effort to develop nurses and midwives in informatics skills and identify within professional development plans where gaps may exist.

Well-qualified clinicians with advanced informatics training should also be in every major healthcare organisation. For an average-sized healthcare organisation – for example, a metropolitan acute hospital – it is estimated at least five such individuals are required on staff. Their lead must be a well-trained and credentialled clinician–informatician and must report to an appropriate level within the organisation.[16]

The digital maturity and capability assessment undertaken as a foundational initiative of the WA Health Digital Strategy Roadmap, must fulfil its commitment to consider the adequacy of the organisation to appoint and support this clinical-IT conversant workforce, and the level of skills held by nurses and midwives.

The creation of nursing and midwifery digital learning networks is critical. These will assist in the implementation of digital technologies and ongoing improvements by healthcare organisations. Where they already exist, the networks must be supported by digital health tools and resources to enable their further development.

Such networks will be utilised at varying times, with some helping in the early stages of key initiatives and others at later stages during optimisation, decision support and analytics.

In line with the intent of the WA Health Digital Strategy, the broader governance and networks involved in digital health implementations must include nursing and midwifery representatives. This will enable cross-fertilisation of skills and assure nursing and midwifery workflows have input into implementation. Having this involvement from the onset of deployment planning will contribute to the success of digital delivery.

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15 Australian Digital Health Agency, 2017
16 National Advisory Group on Health Information Technology in England, 2016

Nursing and midwifery induction and orientation programs within healthcare organisations and clinical settings must include information about digital learning networks and the wider digital health initiative.

Governance and workforce

Due to the growth of data assets, the implementation of new technologies that will become available within digital health, and a new reliance on digital health platforms, there will be new challenges presented for data governance teams. The growing risks and threats to security and privacy that digital technologies present can compromise data integrity and ownership.

To protect all users of digital health, and to reassure consumers, there will be a requirement for healthcare organisations, technology developers and evaluators to have strong and responsive governance policy frameworks. It is essential they are fit for purpose to ensure digitally enabled health systems are safe and secure. At the same time, the governance must guarantee that consumers and clinical teams (inclusive of nurses and midwives) have access to data and analytic tools to enable them to make informed decisions about care.

A robust nursing and midwifery governance structure already exists within healthcare organisations. Safety and Quality teams are already in place and have delegated responsibilities, ensuring that governance, policy and procedures to incorporate digital technologies are available for deployment. The nursing and midwifery workforce must ensure it has knowledge of and complies with the frameworks, policies and procedures to avoid possible breaches. Where breaches do occur, nurses and midwives have a duty to report. An understanding of process and obligations will also reassure healthcare users that nurses and midwives are invested in keeping healthcare data secure.

The benefits for nursing and midwifery will be:

✔ positive engagement

✔ confidence in the ability to efficiently utilise digital technologies

✔ a confident manner when interacting with consumers and other healthcare practitioners

✔ a greater understanding when engaging with the digital health project teams.

Strategic actions

1. Plan and develop a workforce of competent nursing and midwifery informaticians in healthcare organisations, and provide them with appropriate resources, leadership and authority.

2. Strengthen and grow an understanding in digital skills within senior nursing and midwifery leaders to assist in informed decision-making processes.

3. Create jurisdictional digital learning networks to support implementation and improvement by utilising and upskilling nursing and midwifery staff. Utilise Learning Management Systems to target those who express interest.

4. Train and educate those responsible for governance within the nursing and midwifery workforce of EMR governance requirements. Enable the review and updating of governance policy, nursing and midwifery education, clinical policy and procedures.

Strategic theme four

Grow digital knowledge to ensure nurses and midwives are supported in developing skills with the confidence and proficiency to incorporate and harness digital ways of working into future practice.

Digital literacy

The definition of digital literacy has been described as "those capabilities that fit someone for living, learning, working, participating and thriving in a digital society".[17, 18]

Our everyday lives have become more connected and entwined with technology as we increasingly use smart devices or smart entertainment systems, interacting with voice recognition, voice activation or biometrics.[19]

Government agencies are increasingly expecting individuals to interact online. However, this picture is not the same for all: the digital "we" may not be applicable to those nurses and midwives who lack basic digital skills or understandings.

> "The uptake and acceptance of new digital technologies and tools that have the potential to enhance nursing care can be improved when nurses and midwives have excellent or improved digital literacy."
>
> **Health Education England, 2019**

Insights from consultations carried out by the Royal College of Nursing (UK) highlighted several barriers and enablers to successful EMR usage and implementation.[20] The deficiency of digital skills among nurses and midwives was acknowledged as being a significant barrier, particularly for those in the latter stages of their nursing career:

> "Let's not forget that some of the workforce started with pen and paper, and the support has not always been there to help them move along as new technology has been introduced." – Attendee.[21]

There is a need for organisations to raise awareness of digital literacy throughout all areas of the nursing and midwifery workforce. The fast-growing technology of wearable health devices and online tools is driving an increase in collaboration between consumers and clinical professions. Nurses and midwives will require access to training and support to develop skills, attitudes and behaviours that facilitate them to become digitally competent and confident. This will maximise potential therapeutic benefits and support new models of care aligning with Strategy 7 of the SHR.

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17 JISC (Joint Information Systems Committee), 2014
18 Health Education England, 2018
19 Royal College of Nursing, 2018
20 Royal College of Nursing, 2018
21 Royal College of Nursing, 2018

Improving nursing and midwifery digital literacy

Nursing and midwifery workforce levels of digital literacy must be reviewed and addressed. Improvement in digital literacy skills, digital awareness and capability will enable nurses, midwives, patients and individuals to improve health and wellbeing through technology.

When nurses and midwives have excellent or improved digital literacy, the uptake and acceptance of new digital technologies is enhanced.

Improving digital literacy for nurses and midwives will be a challenging task, requiring the use of numerous tools and vehicles with varying levels of content. This approach will prevent technology itself from becoming a barrier to learning.

Figure 2 outlines some successful factors which have been shown to impact the positive development and support of a digitally literate workforce.

An increase in digital literacy will provide nurses and midwives with new developmental and career opportunities. The implementation of WA digital health technologies throughout the next decade and beyond will result in an eventual shift in the balance of skills in the workforce.

For others, transformation in delivery of health care and working methods may result in a slower acceptance and cynical view about the digital health revolution. Anxiety and apprehension must be recognised and responded to as the role of nursing and midwifery fundamentally changes.[22] The development of a nursing and midwifery 'digital champion' role is suggested to play an integral role in assisting with support to lessen this impact.

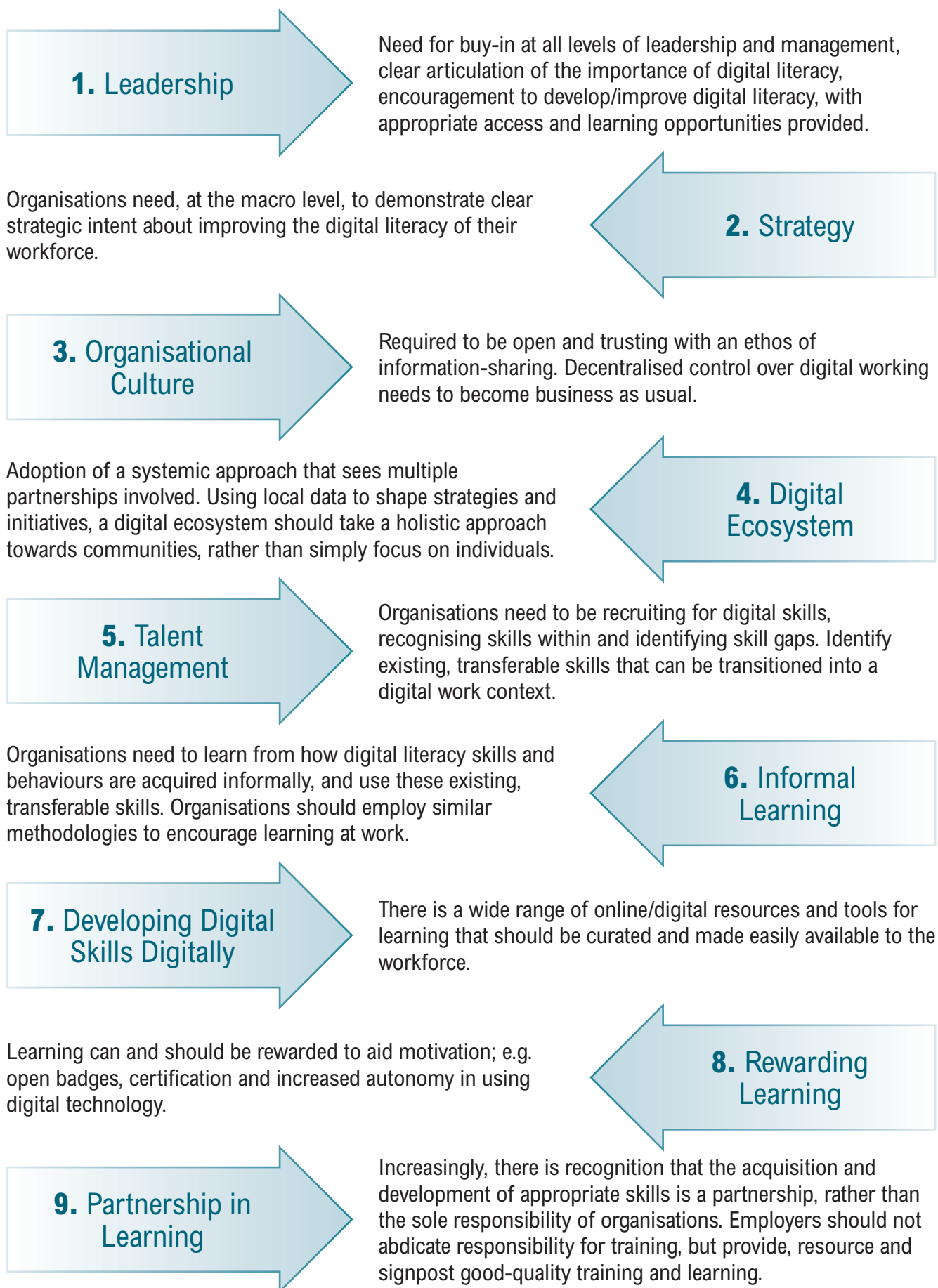"A lack of digital literacy development is a factor in the poor adoption of digital health technologies, resulting in missed opportunities to support clients, patients and carers to self-care."

Clare de Normanville and Gill Scott, 2016

Literature review examining the extent to which digital literacy is seen as a challenge for trainers, learners and employees in the workplace

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22 Health Education England, 2019

Figure 2: Successful factors in developing a digitally literate workforce

1. Leadership

Need for buy-in at all levels of leadership and management, clear articulation of the importance of digital literacy, encouragement to develop/improve digital literacy, with appropriate access and learning opportunities provided.

Organisations need, at the macro level, to demonstrate clear strategic intent about improving the digital literacy of their workforce.

2. Strategy

3. Organisational Culture

Required to be open and trusting with an ethos of information-sharing. Decentralised control over digital working needs to become business as usual.

Adoption of a systemic approach that sees multiple partnerships involved. Using local data to shape strategies and initiatives, a digital ecosystem should take a holistic approach towards communities, rather than simply focus on individuals.

4. Digital Ecosystem

5. Talent Management

Organisations need to be recruiting for digital skills, recognising skills within and identifying skill gaps. Identify existing, transferable skills that can be transitioned into a digital work context.

Organisations need to learn from how digital literacy skills and behaviours are acquired informally, and use these existing, transferable skills. Organisations should employ similar methodologies to encourage learning at work.

6. Informal Learning

7. Developing Digital Skills Digitally

There is a wide range of online/digital resources and tools for learning that should be curated and made easily available to the workforce.

Learning can and should be rewarded to aid motivation; e.g. open badges, certification and increased autonomy in using digital technology.

8. Rewarding Learning

9. Partnership in Learning

Increasingly, there is recognition that the acquisition and development of appropriate skills is a partnership, rather than the sole responsibility of organisations. Employers should not abdicate responsibility for training, but provide, resource and signpost good-quality training and learning.

Source: Kennedy & Yaldren, 2017

Digital champions

Digital champions assist and help others to develop their digital skills and understanding by emphasising the benefits of using digital health.[23]

The use of champions creates the biggest impact on enabling and empowering individuals' digital literacy. They are also useful in providing inter-generational mentoring.

Types of digital champions are:

- **formal** – formally appointed roles
- **informal** – passionate nurses or midwives with a broad knowledge of the digital space in which they operate
- **spontaneous** – nurses and midwives who share their knowledge informally, unconsciously and unthinkingly.[24]

"Training is available, but support needs to be given in the work area as well as the classroom to ensure the learning is developed."

Royal College of Nursing, 2012

The different approaches of digital champions have had significant impacts on the levels of digital literacy. To improve nurses' and midwives' digital abilities all three types of champions should be used. Once in place, it is essential digital champions have continual development, training and ongoing support to remain effective.

Nursing and midwifery digital champions must be developed and used across WA to support healthcare providers in the implementation and operation of digital health. A collective approach needs to be undertaken to create shared guides, frameworks, education materials and other resources. These need to be stored in a central repository and available to all champions.

Champion skill sets

Partnership with healthcare organisations across WA is essential for nursing and midwifery digital champions to have the same clear direction of roles, responsibilities and standards. The suggested attributes and skills of digital champions are:

- digital enthusiasm
- basic to advanced digital skills linked to service delivery
- assessment skills to fully recognise the needs of the digital system user
- good communicators
- inclination to search for innovative opportunities to change practice
- experience in facilitating coaching and training
- passionate about the benefits of digital health
- inspired and confident to help others to learn.[25]

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23 Royal College of Nursing, 2018
24 Solomon, 2012, p.6
25 OneDigital, n.d

The benefits for nursing and midwifery will be:

✔ improvements in the effectiveness and use of digital systems within the clinical area

✔ increased interaction time with patients

✔ increased adoption and interaction with digital technologies

✔ support from digital champions to develop and grow in the digital environment.

Strategic actions

1. Facilitate the foundation work required to understand and identify the gap in the current nursing and midwifery digital skill sets.

2. Develop and implement a plan to facilitate continual collaborative interactions by the nursing and midwifery workforce as it operates within multidisciplinary settings including:

   - raising the level of digital education in nursing and midwifery or interdisciplinary education settings that nurses and midwives attend

   - incorporating digital education into continuing professional development programs.

3. Complete and implement a workforce plan designed to grow digital literacy in the nursing and midwifery workforce including clinician and non-clinician informaticians, nursing and midwifery researchers with expertise in clinical informatics, program evaluators and system optimisers (such as data processers, analysts, quality and safety leads).

4. Prioritise literacy of the nursing and midwifery workforce through accessible tools that enable understanding of digital health technologies and systems.

Strategic theme five

Support the nursing and midwifery workforce to drive the necessary changes that redefine care provision realising the potential of digital health.

Clinical process redesign, change management and driving benefit realisation

For nurses and midwives to successfully embrace the benefits that digital health applications can deliver, several significant factors need to be addressed.

Providing the capacity and capability to achieve the clinical changes required will be critical. Nurses and midwives who work with digital systems but do not change clinical processes will find it inadequate to allow transformative practice. Likewise, digitalisation of current processes with the expectation of producing the innovative changes in care delivery, anticipated benefits and improved health outcomes will also not be achieved.

"Consultation and information for users is an essential part of change management. This complex process includes understanding users' needs, keeping them informed and ensuring that the system and technology is acceptable and usable."

Royal College of Nursing, 2012

It is essential nurses and midwives are identified as one of the key resources in digital system implementations. They form a significant part of the health workforce and are important stakeholders whose voices need to be heard. Early collaboration and involvement of nurses and midwives must be undertaken at the start of discussions surrounding the technology to be implemented. Their input is vital to agree on functionality and how it would be used to change practice.

Engagement will form an essential part of the change management process. The effort to involve nurses and midwives within governance and working groups must be made. It is also essential the wider clinical workforce receives regular updates to facilitate participation and ownership. Adopting this approach will improve the awareness of nurses and midwives and increase their willingness to engage.[26]

This approach is promoted throughout the WA Health Digital Strategy. The design principles outlined indicate a user-centred approach to design involving input from nurses, midwives and other clinical stakeholders.

Nurses and midwives must own and drive the transformational change in partnership with the IT function. They are key in understanding how the digital systems will impact on current patient pathways and processes.

Historically, the implementation of change in transformation programs has failed where there has not been a partnership. It is therefore important that nurses and midwives are engaged to avoid this.

The WA Chief Nursing and Midwifery Office recognises that any change management ability may need to be developed within the nursing and midwifery workforce. Change management capability will be needed to carry out the process redesign elements of any digital health implementations.

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26 Royal College of Nursing, 2012

Working practices should be standardised wherever possible to assist in the redesign of clinical practice and clinical workflows. This approach is supported through lessons learnt from numerous digital health deployments by the UK's National Health Service. The change management and clinical process redesign will need to be driven by the scope of the EMR functionality that is being deployed, and the approaches undertaken to achieve it.

The adoption and development of standards help to form expectations for safety, particularly among healthcare consumers.[27]

"Technology alone will not determine an improvement in quality or safety; organisation culture, service redesign, process redesign plus the change in the technology all contribute to a socio-technical change."

Shaw, Hines and Kielly-Carroll, 2017

The benefits for nursing and midwifery will be:

✔ nursing and midwifery taking a lead in change and adding value – this demonstrates the beneficial outcomes of process redesign

✔ development of new ways of working that are person and patient-focused

✔ development of nurses and midwives to become confident e-health leaders

✔ digital systems that are fit for purpose, with functionality driven by nurses and midwives.

Strategic actions

1. Support the nursing and midwifery workforce to work in partnership with the IT function, enabling the clinical redesign and change management process.

2. Work collaboratively with nursing and midwifery leaders to develop change agents within the workforce who can map clinical process and deliver change.

3. Facilitate the dissemination of digital health best-practice resources, utilising information and lessons learnt from local and global implementations and other evidence-based sources.

4. Work collaboratively with health services to identify and support digital health research and innovation opportunities.

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27 Institue of Medicine (US) Committee on Quality of Health Care in America, 2000

Strategic theme six

Support nurses and midwives to use and embrace digital health innovation by providing opportunities to access the education and training needed to deliver better healthcare outcomes.

Training and education

Nurses and midwives are vital participants in the effective delivery of digital services. They must have the essential skills and knowledge to participate in the whole process. Nurses and midwives must have access to digital health technologies to develop their digital abilities. Embedded teaching and learning processes, access to appropriate courses, assessments and recognised national qualifications are required. These elements will develop the digital abilities for nurses and midwives to be future healthcare practitioners in a digital workspace.

All nurses and midwives can no longer be passive users of health technologies. Taking a submissive role in the delivery of solutions that do not support current and future care practices is not acceptable. Instead nurses and midwives must take full advantage of training and education to become active participants and informed contributors in digital health technologies, its use and their own transformational abilities. The introduction of digital health, underpinned by training in the digital arena, is an opportunity to drive innovation in numerous areas of care that nurses and midwives are so passionate about.

"It is only with a workforce with the right skills that we can hope to move not just to fundamental standards like digitised care records and information sharing across care pathways, but to real innovations solving real problems, advancing practice."

Natasha Phillips
Chief Nursing Information Officer,
University College London Hospitals

The ability to record patient data in one clinical setting and use the information in multiple ways and situations will require a comprehensive ongoing training plan for nurses and midwives. The benefits that digital clinical information systems deliver will not be fully realised if nurses and midwives are unable to understand how EMR functionality and other digital initiatives can support decision-making and improve safety and quality of care. Nurses and midwives must not see these systems purely as data silos or repositories. Instead they must understand how quality information can be effectively used to drive enhancements in patient care.

Education and training, both short and long term, of the nursing and midwifery workforce in all aspects of digital health will play a pivotal role in achieving this understanding. New vehicles and methods of delivering education and training will be needed to ensure every nurse and midwife, from undergraduate to senior levels, has access to digital health educational content irrespective of:

- employing organisation
- location or remoteness
- clinical speciality
- shift or work pattern
- level of registration or seniority.

Senior nurses and midwives within healthcare organisations must play a vital role in ensuring the workforce is suitably skilled and equipped. Their involvement will ensure patient care needs are supported through the development of skills, the expansion of knowledge and by entrenching an ethos that supports digital health usage in care provision.

Universities, educators and trainers

A collaborative partnership between health care and the education sector is necessary to enable the delivery of integrated, applicable and responsive education programs for undergraduate and postgraduate nurses and midwives.

Nurses and midwives will be the greatest user groups of the EMR functionality and other digital health technologies that are introduced. They will be a significant group that will be impacted by the introduction of changes to current working practices. Preparation of newly qualified nurses and midwives to meet future healthcare models, irrespective of future employer, must be shared across all sectors responsible for the education of this group. These providers include the university and healthcare sectors and other professional bodies which are involved with education provision.

For newly qualified nurses or midwives to become part of a digitally ready and literate workforce, they must be supported by a solid theoretical and practical foundation in digital health concepts including ethics, data usage, information interpretation and its application.[28]

Considerations by educational institutions may include:

- infusing digital literacy and core health informatics competencies across the whole health portfolio of courses provided
- demonstrating digital competencies required within teaching resources and practical undertakings
- developing an understanding of key elements of digital technology – big data, analytics and AI, robotics, genomics, VR and their application in health care
- articulating and understanding socio-technical aspects of the digital workplace
- encouraging and demonstrating how students can remodel critical thinking to generate innovative ideas which utilise digital technologies rather than reinforcing traditional attitudes, professional hierarchies and task-driven processes.[29]

Nursing and midwifery educators must consider the development of plans that build into current curriculum digital health competencies and elements of digital literacy. The WA Chief Nursing and Midwifery Office recommends these underpinning proficiencies are based on the developed National Nursing and Midwifery Digital Health Capabilities Framework discussed earlier in this strategy document.

> "University curricula need to consider skills development that prepares nurses for roles that may not have been conceived today and which will enable nurses to confidently pursue emerging career opportunities."
>
> **Nursing Informatics Australia and Health Informatics Society of Australia Submission**

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28 Nursing Informatics Australia and Health Informatics Society of Australia, 2019
29 Rowlands, 2020

At the time of creating this document, varied digital competencies and capabilities are being provided by education institutions in WA through their undergraduate nursing and midwifery curriculum courses. Education providers have expressed a desire to actively engage, thereby optimising opportunities to underpin digital health concepts and understandings for new and postgraduate students. The undertaking by health agencies to partner with universities and training institutions aligns with Strategy 7 of the SHR and Strategic Priority 6 of Australia's National Digital Health Strategy. An embedded digital health foundation will enforce the digital way forward in everyday nursing and midwifery practice.

Training healthcare professionals in digital health

It will be important to recruit or promote nursing and midwifery professionals with relevant informatics skills. Engagement with a conversant workforce by the digital health IT teams when projects commence will allow nurses and midwives to participate in the process in an informed manner.

By undertaking collaborative partnerships with education providers to develop or enhance curriculum for digital health informatics, nurses and midwives will be able to undertake relevant recognised qualifications. This will facilitate nurses and midwives engaging with a better understanding of processes and practices.

The WA Chief Nursing and Midwifery Office, informed by lessons learnt from international digital health initiatives, supports and encourages nurses and midwives to undertake training and education in health informatics, digital literacy, change process and other skill sets applicable to assisting in digital health transformation.

In the same manner, the WA Chief Nursing and Midwifery Office calls on healthcare organisations to support nurses and midwives in this endeavour to enable digital health transformative practice. The expectations and opportunities for better health care through digital health technologies cannot be achieved without the assistance to expand knowledge and skills, to realise the practice redesign elements and to rethink how the business of health care could be carried out.

The professional growth of nurses and midwives by undertaking accredited courses must be encouraged. As an enabler, the WA Chief Nursing and Midwifery Office and other professional bodies provide financial support in the form of scholarships. For those WA nurses and midwives wishing to complete a postgraduate accredited health informatics course, an application for such financial support can be submitted to the WA Chief Nursing and Midwifery Office. Usual scholarship eligibility criteria apply.

Nursing and midwifery leaders must lobby for digital health to form part of organisational induction and transition to practice programs for newly qualified nurses and midwives. There is also a need for dedicated learning centres in clinical areas. Nurses and midwives must be provided with the opportunity to upgrade and maintain their skills and knowledge in digital health technology and information management, aligning professional development with defined career pathways.

The benefits for nursing and midwifery will be:

✔ the right skills mix to work in a digitally enabled clinical environment

✔ a level of education and confidence that enables the interaction with peers and healthcare consumers regarding digital health and its use

✔ increased appeal for career pathways in digital health

✔ provision of a professional developmental pathway to bridge clinical practice and digital technology roles.

Strategic actions

1. Identify digital health literacy core competencies that must be included in the education and training curricula of nursing and midwifery health professionals attending universities or Technical and Further Education (TAFE) institutions.

2. Support the creation of continual collaborative partnerships with the education sector to ensure future nurses and midwives have skills applicable to a developing digital healthcare service.

3. Support the delivery of nursing and midwifery education programs to enhance skills that will:

   - improve nurses' and midwives' abilities to engage with the digital health program

   - develop capability for nurses and midwives to drive the change process

   - nurture the skills necessary to continue the drive for innovation and research that supports digital health and improved patient outcomes.

4. Develop nursing and midwifery leaders who will engage and support an ongoing workforce culture change.

Implementation action plan

Develop a culture that supports positive attitudes to enable the capacity, skills and knowledge required to provide digitally enabled care

Empower nurses and midwives to develop the confidence and ability to use digital health and assist healthcare consumers with all facets of digital health

Develop strategies to support the expansion of nurses' and midwives' capabilities required to deliver better health care and outcomes when using digital technologies

Grow digital knowledge to ensure nurses and midwives are supported in developing skills with the confidence and proficiency to incorporate and harness digital ways of working into future practice

Support the nursing and midwifery workforce to drive the necessary changes that redefine care provision realising the potential of digital health

Support nurses and midwives to use and embrace digital health innovation by providing opportunities to access the education and training needed to deliver better healthcare outcomes

Actions from theme one

Develop a culture that supports positive attitudes to enable the capacity, skills and knowledge required to provide digitally enabled care:

1. Work collaboratively with nursing and midwifery leaders to develop a culture within the workforce that is amenable to change.

2. Invest in the development of nurses and midwives who can sustain an ongoing culture to drive digital health innovation within their organisations while maintaining a compassionate and human element.

3. Collaborate with organisations to develop resources that will strengthen nurses' and midwives' understanding of the positive effects of digital health.

4. Promote the inclusion of nurses and midwives in all aspects of digital health to ensure they have a voice in key partnerships, influencing and driving decision-making throughout the digital health journey.

Actions from theme two

Empower nurses and midwives to develop the confidence and ability to use digital health and assist healthcare consumers with all facets of digital health:

1. Promote and support the involvement of nurses and midwives in the design, assessment and implementation of clinical applications to enable development of digital nursing and midwifery practices.

2. Advocate for nurses and midwives to be involved and participate in the creation of policy, procedures and governance at a system, organisational and individual level.

3. Assist in the creation of a local quality framework that can be used by nurses and midwives to benchmark digital deployments, ensuring they are safe, secure and protect patient confidentiality.

4. Support nurses and midwives in building trust and raising awareness to overcome natural resistance to digital platforms and associated change due to confidence deficits or trust and security concerns.

Actions from theme three

Develop strategies to support the expansion of nurses' and midwives' capabilities required to deliver better health care and outcomes when using digital technologies:

1. Plan and develop a workforce of competent nursing and midwifery informaticians in healthcare organisations, and provide them with appropriate resources, leadership and authority.

2. Strengthen and grow an understanding in digital skills within senior nursing and midwifery leaders to assist in informed decision-making processes.

3. Create jurisdictional digital learning networks to support implementation and improvement by utilising and upskilling nursing and midwifery staff. Utilise Learning Management Systems to target those who express interest.

4. Train and educate those responsible for governance within the nursing and midwifery workforce of EMR governance requirements. Enable the review and updating of governance policy, nursing and midwifery education, clinical policy and procedures.

Actions from theme four

Grow digital knowledge to ensure nurses and midwives are supported in developing skills with the confidence and proficiency to incorporate and harness digital ways of working into future practice:

1. Facilitate the foundation work required to understand and identify the gap in the current nursing and midwifery digital skill sets.

2. Develop and implement a plan to facilitate continual collaborative interactions by the nursing and midwifery workforce as it operates within multidisciplinary settings including:

   - raising the level of digital education in nursing and midwifery or interdisciplinary education settings that nurses and midwives attend

   - incorporating digital education into continuing professional development programs.

3. Complete and implement a workforce plan designed to grow digital literacy in the nursing and midwifery workforce including clinician and non-clinician informaticians, nursing and midwifery researchers with expertise in clinical informatics, program evaluators and system optimisers (such as data processers, analysts, quality and safety leads).

4. Prioritise literacy of the nursing and midwifery workforce through accessible tools that enable understanding of digital health technologies and systems.

Actions from theme five

Support the nursing and midwifery workforce to drive the necessary changes that redefine care provision realising the potential of digital health:

1. Support the nursing and midwifery workforce to work in partnership with the IT function, enabling the clinical redesign and change management process.

2. Work collaboratively with nursing and midwifery leaders to develop change agents within the workforce who can map clinical process and deliver change.

3. Facilitate the dissemination of digital health best-practice resources, utilising information and lessons learnt from local and global implementations and other evidence-based sources.

4. Work collaboratively with health services to identify and support digital health research and innovation opportunities.

Actions from theme six

Support nurses and midwives to use and embrace digital health innovation by providing opportunities to access the education and training needed to deliver better healthcare outcomes:

1. Identify digital health literacy core competencies that must be included in the education and training curricula of nursing and midwifery health professionals attending universities or TAFE institutions.

2. Support the creation of continual collaborative partnerships with the education sector to ensure future nurses and midwives have skills applicable to a developing digital healthcare service.

3. Support the delivery of nursing and midwifery education programs to enhance skills that will:

   - improve nurses' and midwives' abilities to engage with the digital health program

   - develop capability for nurses and midwives to drive the change process

   - nurture the skills necessary to continue the drive for innovation and research that supports digital health and improved patient outcomes.

4. Develop nursing and midwifery leaders who will engage and support an ongoing workforce culture change.

In keeping with the SHR and the *WA Health Digital Strategy 2020–2030*, a roadmap which acts a starting point to inform a more detailed implementation plan is suggested.

Roadmap

Horizon 1 **Setting Up Success**	Horizon 2 **Early priorities, results and building momentum**	Horizon 3 **Driving deeper change and seeing results**
• Support digital health planning • Support developing a culture amenable to change • Invest in nurses and midwives to drive innovation • Develop resources to increase digital health understanding • Included nurses and midwives in digital health projects and early system lifecycle • Representation in digital health policy creation. • Build awareness of digital platforms and associated benefits • Understand organisation levels of digital literacy • Introduce digital health capabilities framework tool • Develop digital learning networks • Develop digital champions • Develop change agent resources • Build knowledge in the change management process • Commence engagement with industry and education partners • Develop a quality deployment assessment framework	• Embed digital skills in workforce education • Build momentum and uptake for involvement in digital health decision making • Strengthen representation on work groups • Further address confidence deficits, trust and security concerns • Further strengthen and grow digital skills • Support on-going culture change • Disseminate best practice resources • Continue the investment in nurses and midwives driving innovation • Further embed nurses and midwives in digital health implementations • Strengthen networks and partnership links • Embed change theory and process redesign into practice	• Continue to identify and support digital health innovation and research opportunities • Review and update digital health literacy competencies • Review digital champions and learning networks • Continue the investment in nurses and midwives driving innovation • Continue to assess practice using digital tools • Continue to embed the identification of benefits and drive benefit realisation • Ensure processes are embedded into business as usual practices. • Continue interactions and involvement with digital health project teams as necessary to develop system improvements
2020–2022	**2022–2024**	**2024–2026**

The changing landscape that is associated with the tasks of delivery may disrupt certain timescales and render plans unrealistic in their delivery. The implementation plan, a next stage of this strategy, will need to be developed and executed with some caveats in place. Evaluation and monitoring both the nursing and midwifery digital health plan and those surrounding the technology deployments will need to be considered to ensure readiness and alignment. As part of its creation, the implementation plan will set out the risks and issues that may affect its delivery.

Although certain elements of nursing and midwifery involvement in the digital health journey are dependent on time lines controlled by deployment teams, there are several foundational aspects that can be undertaken. These revolve around educating nurses and midwives in principles and methodologies that support tasks such as change management, process mapping, and process redesign.

A look into the future

The future is already here. Technology moves at an accelerated pace, such that many healthcare technologies are either at an advanced stage of development, waiting to be adopted or augmented further in their current use. Plans for working in that future for many organisations here in Australia are still in the evolution phase. It should be a pre-requisite that nurses and midwives are firmly embedded in those discussions, to evolve as key drivers in developing innovative opportunities for technology use wherever care is delivered.

Patients receive a personalised hospital welcome package. This includes the same demographic and clinical information, past medical history, allergies, investigations and results that the incorporated application AI has combined from the cloud-based record, and pre-populated into the admission workflow.
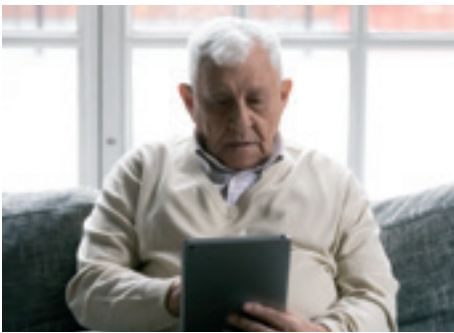
The admission process for the patient, nurses and midwives has changed beyond recognition. No longer is the patient asked for the same piece of information. Nurses and midwives do not have to complete numerous admission forms; instead patient information is populated from the admission digital workflow and is available immediately on patient and healthcare devices.

Nurses and midwives can also see patient medications on their digital device. These are based on patients' genetic profiles and can be requested for stocking and sourced by the e-pharmacy robot ready for delivery to the e-dispensary within the patient's room.

A look into the future

Nurses and midwives can enter their availability for a shift on a staffing app. In-built, acuity-based staffing analytics can study planned admissions, the current inpatient acuity and those presently triaged in the emergency department who may require an admission. This data allows staffing provision to be based on appropriate staff competencies against patient clinical needs.

AI algorithms are also integrated into the discharge workflow. As information is held within the cloud, customised discharge guidelines can be integrated into the virtual care assistant. Patients can take as long as they need to understand the instructions. Questions can be answered by the virtual care assistant or chat bots at any time or, if it is necessary, have a nurse or midwife sit to discuss any issues or concerns.

Patients can interact with their virtual care assistant to get information about procedures, accessing a vast database of medical material and patient stories. What to expect pre or post procedure, recovery times, and medication requirements can also be accessed.
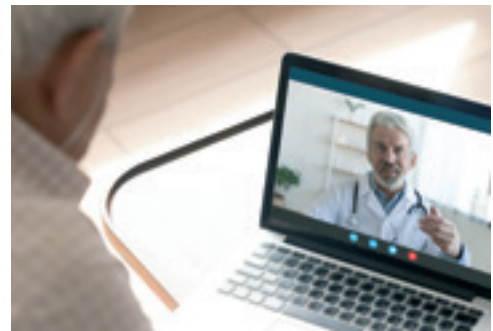
Virtual training by means of VR simulation is now common, running realistic scenarios, empowering nursing and midwifery staff to become proficient and knowledgeable in clinical procedures and understanding disease process.

Post-discharge, all episodes of care information are stored in the cloud, available within the My Health Record. All applicable information is also available to primary care teams, thereby allowing ongoing supportive care.

Glossary of terms

Advanced analytics

The autonomous or semi-autonomous examination of data or content using sophisticated techniques and tools to discover deeper insights, make predictions or generate recommendations. Advanced analytic techniques include those such as data/text mining, machine learning, pattern matching, forecasting, visualisation, multivariate statistics, graph analysis, simulation and complex event processing.

Big data

High volume, high velocity and/or high variety information assets. Information processes that are innovative or cost-effective can be utilised to enhance decision-making and process automation.

Cloud (Computing)

Data centres that comprise vast amounts of data storage which is made available to users over the internet.

EMR – Electronic Medical Record

An Electronic Medical Record (EMR) contains information that is created and held within a single healthcare organisation. Used by clinicians, EMRs are the digital versions of paper charts, assessments, test results, medication charts and other documentation.

Genomics

Genomics studies how a variation in a genotype (DNA) relates to changes in phenotype (physical characteristics) often at the molecular or cellular level. It seeks to understand how a gene relates to a disease or disorder.

ICT

Information and Communications Technology

Robotics

The study of robot technology and its design, construction, application and operation.

Socio-technical

An approach to organisation work designs that considers and recognises interactions between people, their behaviours and technology.

3D printing

A process by which material is manipulated under computer control, creating a three-dimensional object.

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