Allied Health Professionals:
The untapped potential in digital health
Acknowledgements

This position paper would not have been conceived and developed without the commitment and dedication of the team of professionals who wrote, word-smithed and reviewed iterations of the paper until the job was done. Special thanks and acknowledgements to the lead author Dr Josie Di Donato, and the below team:

Jayne Barclay  
Jeremy Roach  
Dr Josie Di Donato  
Dr Kirsty Mauder  
Dr Louise Schaper  
Melissa Fodera  
Dr Yasmine Probst

Thanks for the Inspiration

Research by McKinsey (2011) and Mauder et al (2018) identified key dimensions of e-health readiness for Australian allied health professionals, which provided an evidence-base to assist in informing the call to action for this position paper.¹ ²

We would also like to acknowledge Kathleen Philp whose 2015 article entitled “Allied health: untapped potential in the Australian health system” provided the inspiration for the naming of this position paper.³

Thanks for your Contributions

This paper was greatly enhanced thanks to the contributions and support received from organisations and individuals across the Australian digital health community who provided input during the consultation phase.

Allied Health Informatics
Position Statement

For too long the unique value of allied health professionals in digital transformation and change leadership programs has been undervalued.

It has been undervalued by those in digital health decision-making positions but also by those representing the allied health sector itself. However, after many years and investment in national, state and local digital health transformation efforts, change is afoot and the role for this vital sector is increasingly being recognised.

Allied health professionals have a critical role to play in the planning and delivery of healthcare services. With greater engagement in allied health informatics, further improvements in patient care and health system performance can be achieved. As healthcare enters the digital age, healthcare policy and digital reform must harness the expertise, diversity and reach of the allied health sector to improve health outcomes through digital health technologies.

To claim our place at the ‘decision making table’, allied health professions must lean in and invest in raising the digital health workforce capability across the sector – something we are primed to do.

Much of Australia’s digital health reform activity has been focused in the acute sector, with electronic medical records (EMRs) in hospitals; and in the primary care sector, digitising clinical records of general practitioners. While this important activity needs to continue, the future of reform in healthcare lies with truly patient-centred care, where the provision of health services and the collection of health information will also be increasingly centred in non-traditional care settings – the home and the community.

With allied health professionals’ holistic focus on the individual in the context of their environment, they are uniquely placed to be on the front line of digital healthcare innovation.

Call to Action

Allied health professionals are a group with untapped potential in digital health.

This position statement is a call to action for allied health professionals to lead, engage, educate and enable digital health innovation across the healthcare sector.

The time for action is now!
# Allied Health Professionals: The Untapped Potential in Digital Health

## Lead

- Embed digital health in allied health leadership roles and advocate for the unique contributions of this highly skilled workforce.

## Educate

- Explore developments in digital health and consider how these platforms and tools can integrate and enhance clinical practice and promote digital health education in allied health university programs.

## Engage

- Multidisciplinary digital health teams must include a strong allied health presence to further promote innovation.

## Enable

- Champion interoperability, data quality standards, and information system governance for a better performing healthcare system.

<table>
<thead>
<tr>
<th>Allied health professionals as providers of knowledge and service to patients within <strong>hospitals</strong></th>
<th>Champion interoperability, data quality standards, and information system governance for a better performing healthcare system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborate with Primary Health Networks and grow allied health’s identity for digital health</td>
<td>Encourage software vendors to develop products that enable allied health practitioners to participate and integrate with the broader health ecosystem.</td>
</tr>
<tr>
<td>Policy frameworks, strategic direction and decision-making to recognise the contributions of the allied health sector across the healthcare landscape</td>
<td>Form alliances with health professional groups and organisations to share innovation and lessons learned.</td>
</tr>
</tbody>
</table>

## Allied Health Professionals as Private and Independent Providers of Knowledge and Service to Consumers Across **Primary, Community and Aged Care**

- Explore developments in digital health and integrate tools such as smartphones, wearables, apps, sensors and others for an improved patient experience.

## Allied Health Professionals in **Corporate, Government, Academic, Medical Software and Consultancy**

- Leverage digital health initiatives in local areas; be present, influence and guide further innovation.
Executive Summary

Collectively allied health is represented by more than 27 different disciplines and 26% of the health workforce in Australia, who deliver 200 million health services annually. Despite their size and influence, allied health professionals have limited presence and influence in digital health initiatives.

Allied health professionals are uniquely positioned to maximise the benefits achievable from digital health. EMRs in hospitals and electronic health records (EHRs) in primary care are revolutionising the flow of information within and across health services. Furthermore, wearables, implantable devices, remote health monitoring via mobile phones, sensors, big data, artificial intelligence (AI) and social media are providing options for the way in which individuals seek and interact with healthcare services. Adaptability, working in multi-disciplinary teams and a holistic perspective of the individual in the context of their environment are recognised traits of the allied health workforce that will give this group of professionals an increasing advantage as health responds to the digital age.

In 2011, McKinsey and colleagues described allied health practitioners as critical information and delivery hubs within the health ecosystem, whose role and function had been largely overlooked by the e-health transformation agenda. Building on the McKinsey findings, recent research by Maunder et al (2018) focused on developing a Framework for assessing the e-health Readiness of Dietitians (FeRD), which could be broadly applicable to other allied health professions. The FeRD outlines five dimensions of eHealth readiness: aptitude, attitude, advocacy, access, and standards. The results of these studies provided an evidence-base to assist in informing the development of the call to action for this position paper.

Now is the time for Australia’s highly skilled allied health workforce to adopt a coordinated approach to digital health and inspire the next wave of innovative, disruptive solutions, to significantly improve service delivery and ultimately, patient outcomes. It will require a greater role in decision-making and demonstration of the knowledge and versatility allied health clinicians bring to healthcare delivery. This is a call to action for healthcare system administrators and allied health professionals at all levels nationwide.

---

The rationale for a position statement

A substantial proportion of healthcare demand is met by the allied health sector and yet the role is poorly understood, under-utilised and largely overlooked as an area for digital reform. There are a number of compelling reasons for change and this position statement seeks to be the catalyst for further action.

When allied health intervention is required as part of a person’s patient journey, it may involve several encounters within a short period e.g. physiotherapy sessions or highly specialised encounters at intervals e.g. diagnostic testing. These provide important follow-up, can be preventative and inform plans for ongoing care. In geographical areas that are not well served by local allied health practitioners (such as rural/remote), patients/consumers miss out entirely on this type of care. Digital reform of allied health care is essential to maintain equity of access, consistency and coordinated care across the patient journey, wherever it is needed.

The allied health workforce comprises a diverse range of highly skilled professionals trained in specific disciplines and together with medical and nursing, round out the basis for a multidisciplinary team-based approach to health care and treatment. Despite a number of years of investment and planning for the digital transformation of healthcare, a focus on allied health is yet to be considered. There is an urgent need to ensure the allied health workforce are adapting and well-prepared for the future of healthcare in a digitally-enabled society. Within a hospital setting, rarely is hospital performance data shared or discussed in terms of improvements due to allied health input. Similarly, measures of impact tend to be reported as counts of the occasions of allied health services provided.

This lack of information and impact measurement has obscured the value-add allied health contributes towards improved quality of care. It could be argued that this has contributed to allied health lacking sufficient involvement in discussions about the future of healthcare that has been enabled by technology. Much of Australia’s digital health investment has focused on the acute sector, with EMRs in hospitals; and in the primary care sector, digitalising clinical records in general practice. Consequently, this has given digital health primary focus on the documentation of disease, its management and the information requirements of doctors and nurses within acute care settings. While this important activity needs to continue, other aspects of reform include patient centred healthcare and health information located in less traditional care settings – the home and the community. The business case for digital health beyond counting services delivered is required. With greater involvement by the allied health workforce in digital health, information reform can shift from activity counting to data-driven and outcomes-based. Better integrated, coordinated and patient-centred care will be the main driver for information reform, and the need to evaluate health service delivery outcomes at a local level. This needs to be done in a collaborative fashion and one craft group cannot achieve full potential alone.

Within community-based and private practice settings, allied health information resides in separate systems, siloed from the broader health system. In fact, for many allied health services, information continues to be collected on paper.
Without the means to communicate securely and electronically with other healthcare providers, it will be increasingly difficult to share information in near real time and to obtain a holistic view of the patient’s medical history. Communication via secure messaging has been available and affordable but has not been taken up by allied health working in the community. Financial and business drivers have strengthened the uptake and adoption in digital health in other segments such as primary healthcare and hospitals. Furthermore, technology offers an entirely new capability where there was never a paper equivalent. For example, smartphones, wearables, sensors, social media and peer-support platforms did not exist prior to advances in technology and these now offer new ways of practising clinically and engaging with consumers. As the volume of health knowledge continues to grow and patients and consumers become more engaged and empowered in their own health, so too do the professionals working with them need to engage in digital health.

This position statement is a call to action for an active and strengthened role for allied health professionals in digital health. This will require growing the identity of allied health in digital health, investing in digital skills and tools and; demonstrating leadership in digital health.
Leadership in allied health informatics is needed across the healthcare system to ensure sufficient advocacy for this highly skilled workforce. While dedicated leadership roles may be out of reach in some jurisdictions, recognition of the contributions and value that allied health services provide needs to be integrated into the decision-making processes. Within hospitals, it may be more practical to formalise leadership as executive positions to enable strong representation for allied health. Within the private practice and community healthcare sector, allied health digital leadership may be channelled through collaboration with the Primary Health Networks (PHNs) whose role it is to provide guidance and initiate active programs that seek to address key population and disease priority areas. Alternatively, leadership can be demonstrated by an innovative change in clinical practice and influence on the design of digital tools that leads to strengthened consumer engagement and improved patient experience.

**All disciplines of allied health** are encouraged to show leadership in the digitalisation of health. Assisted by technology and information, there are significant and unique contributions allied health can make towards supporting clinical care, health-related behaviour modification and removing barriers to access.

Allied health leaders can advance the shift from cure and treatment to prevention, education, patient-centred, value-based care that targets health literacy, patient empowerment and healthcare outcomes. Allied health professionals are widely distributed across the healthcare sector and well placed to collaborate and support other healthcare professions in achieving this goal.

In Australia, executive level allied health informatics positions are emerging although coverage of the healthcare system is yet to develop. Examples of emergent executive roles include:

- **Chief Allied Health Information Officer (CAHIO), Parkville Precinct Melbourne.** A part-time role created (0.5 FTE) for the Connecting Care EMR Program to engage all allied health therapy staff across four health services to optimise the design and implementation success of the EMR and associated technologies.

- **Chief Allied Health Information Officer combined with Executive Director allied health role (1 FTE).** Provides leadership and governance for allied health professionals within Sydney Local Health District (SLHD) including strategic planning and advice on allied health clinical practice, policy and workforce. The CAHIO role provides clinical leadership to allied health and leads AH SLHD in the strategy, development and implementation of Information and Communication Technology (ICT) and clinical informatics that support allied health staff, clinical practice, decision making and clinical applications.

- **District Director of Pharmacy and Chief Pharmacy Information Officer (CPIO),** strategic leadership and governance for pharmacy across the district, with a dedicated focus on clinical informatics, along with other core pharmacy aspects.

- **Clinical Informatics Director - Allied Health Digital Lead, Metro North Hospital and Health Service, Brisbane, Queensland**
Allied health professionals may draw their inspiration from Dr Lesley Holdsworth, who is physiotherapy-trained and a clinical lead for digital health and care, representing allied health professionals (AHPs), nurses and midwives in Scotland.7

“It is important that AHPs have a strong voice in the digital agenda, to reflect the reality of service delivery and what’s right for patients”.8

Under Dr Holdsworth’s leadership and Scotland’s Digital Health and Care Strategy, allied health professionals are benefiting from her advocacy “for high-quality services that will focus on prevention, early intervention, supported self-management, day surgery as the norm, and – when hospital stays are required – for people to be discharged as swiftly as it is safe to do so”.9

2. EDUCATE

Equip the future workforce with the knowledge and skills to confidently use and harness the power of a digitally-enabled healthcare system. For the current workforce, upskilling in digital health to enable clinical practice to be redesigned and enhanced to incorporate digital tools is essential.

In order for allied health professionals to demonstrate an aptitude for digital health and be regarded as leaders in this domain, we require education, training, and professional development.10 Equally, position descriptions must explicitly express digital health capabilities as core to working effectively as an allied health professional in a digitally-enabled healthcare system.

A gap between current and required informatics skills for allied health professionals was identified in early 2000.11 Fast forward to today (2019) and the literature continues to call for earlier preparation and inclusion of digital health content and competency across all entry-level clinical health profession university programs. However, challenges currently exist in trying to achieve this. For example, most health and medical tertiary programs are hamstrung to focus on curricula required to satisfy course accreditation requirements. Until peak bodies for allied health education and professional registration bodies address digital health as required rather than a desired area, this will be slow to change.12

Unfortunately, this leads to what is currently seen in many academic programs, which is a siloed approach to the integration of digital health competencies (i.e. single modules, ad-hoc demonstration, and sporadic learning activities).

Only a few healthcare professional courses have adopted a systematic approach to including digital health.13 This can be further aided through the promotion of authentic learning activities for work integrated learning using actual

---

7. Cummings E, Whetton, S and Mather C. Integrating health informatics into Australian higher education health professions curricula. In Health Professionals Education in the age of clinical information systems, mobile computing and social networks. 2017 Elsevier pp 323-343 DOI: http://dx.doi.org/10.1016/B978-0-12-805382-1.00016-4
clinical technologies seen in practice. For instance, developing learning outcomes in digital health through simulation practice and clinical placements. Other suggestions include, co-designing curricula with industry partners and clinical information system vendors to enable a seamless transition for graduands from coursework to clinical practice. This extends to embedding digital health content, skills, and competency assessment into formal continuing professional development requirements. This will help maintain professional registration within the existing workforce, formal and informal workplace training and education, and accelerate the micro-credentialing within courses in digital health.

A list of academic institutions and training providers currently offering formal education in digital health, certification, short courses and other resources are available through the Health Informatics Society of Australia (HISA) and Australasian College of Health Informatics (ACHI) websites. An example of a recognised and well-established credentialing program is the ‘Certified Health Informatician Australasia’ (CHIA), a collaboration between HISA, ACHI, and the Health Information Management Association of Australia (HIMAA).

3. ENGAGE

Allied health must have a role in the redesign of healthcare enabled by digital health. While the digitalisation of allied health care across the care continuum has been achieved in pockets, on the whole, it has been overlooked. Allied health must be involved in digital health initiatives to ensure our insights into innovation and creativity are considered. In our absence, decisions made on behalf of allied health and may not be the most effective clinical option or at worst, create a source of potential clinical risk. Digital health builds teamwork, collaboration and shared decision-making. This is already the model within which allied health operate and so the transition to digitally-enabled platforms of care will not be difficult. A positive attitude, inclusiveness and willingness to use digital solutions is necessary to progress advances in allied health practice for the benefit of patient care.

As allied health professionals in Australia we have not yet claimed our stake in digital health and risk not being well-prepared for the future of healthcare and miss out on resources to invest in digitally-enabled practice. In part, the issue lies in the lack of measurement that describes the complexities of what allied health does, how care is delivered and what is achieved.
Greater involvement in digital health initiatives will help grow the allied health’s identity and track record in digital health. Given allied health professionals’ holistic focus on individuals in their environments, it is time for allied health to have equal influence at the decision-making table and visible at the front-line of digitally-enabled healthcare innovation. Compared to the National Health Service of the UK, Australia is behind in relation to programs that support all healthcare professionals, including allied health, to innovate using technology. Some examples of allied health led initiatives are displayed as vignettes throughout this paper, with a more extensive list of initiatives available online.29

While there is some involvement by allied health professionals in clinical system implementations and redesign of clinical workflow, our input can be limited to providing guidance based on policy and the gold standard of practice. A deeper consideration of real-world practice, time pressures and the appropriateness of change by allied health is required. Without sufficient depth and breadth of allied health involvement, those ‘hard and fast’ rules of a system may be built inappropriately, limit the option to exercise clinical judgement and furthermore, preclude negotiation on the tools and data required to manage the change impact. Establishing multi-disciplinary teams, that include allied health professionals as equal partners allows advanced foresight and reduces the risk of making compromising decisions.

The following example describes an allied health digital health initiative to build a data analytics platform in order to provide insights in allied health practice. Through this insight, the importance of foot health and the role of podiatry was highlighted:

South Eastern Sydney Local Health District, NSW

Developed an interactive, monthly refreshed dashboard linking allied health datasets with admission data sets; allowing a visual representation of population pyramids and diagnosis-related groups, along with performance data, time to first treatment, and length of time on allied health caseload. Other districts have since worked collaboratively with SESLHD to enhance this dashboard further, such as nightly extracts, paediatric diagnosis, timeliness of referrals, and heatmap by patient postcode.

An enhancement to the dashboard was to develop an interactive, nightly refreshed dashboard connecting patients admitted with a diagnosis relevant to High-Risk Foot disease, and scored appropriately. Matching against all podiatry non-admitted patient units to identify any patients currently known to podiatry anywhere in the district, and noting recency of consultation. This allowed patients to be prioritised, for clinical review and consultation by podiatry services either during their admission or post discharge in the community. This resulted in an additional 1.0 FTE senior podiatrist being appointed across two sites, providing consultation and discharge referrals. This work underpinned the development of a Diabetes dashboard for endocrinology services, including the addition of pathology and medication data.

https://www.ehealth.scot/case-studies/
As a result of some of these initiatives across Australia, non-executive level allied health informatics positions are beginning to emerge. Examples include:

- Allied Health Performance and Data Analyst, forming part of a district’s performance analysis and management team.20
- Allied Health e-Clinician (0.5 FTE), forming part of a hospital-based health informatics team, (NM 1 FTE, Nursing 2 FTE, Medical 0.5 FTE, Pharmacist 0.5 FTE)21
- Clinical Informatics Pharmacist, forming part of the ongoing support team for electronic medication management systems

In this next example, an allied health digital health initiative with a focus on leveraging insights from pharmacy to deliver value to departments, clinicians, and their patients:

**eHealth NSW, Innovation Award winner 2016**22

As hospital pharmacy information systems were independently managed, the Statewide Hospital Pharmacy Product List (HPPL) was developed. This provided the foundation to allow insights into a yearly volume of 3.6 million dispensing, the value of $650 million, for 25,000 medications. The analytics system QlikView was leveraged to develop the PharmaLytics solution, which provided the ability to: 23

- Monitor HIV, hepatitis B and C treatment uptake to ensure policy targets were met, allowing measurement of the appropriate use of medicines
- Provide near-real-time stock levels and geographic tracking of medications on the "Life-Saving Drugs Register" (LSDR), allowing clinicians to rapidly locate antivenom and antidotes
- Monitor purchasing trends to identify cost-savings through substitution of generic medicines and to optimise contract negotiations

Since initial publication, the following enhancements have been implemented:

- Monitoring medication usage trends focused on chemical restraints in mental health patients
- Centralised stock level management to aid in medication recalls and shortages. Enabling physician access to monitor rates of opioid prescribing in real time to facilitate the discovery, discussion and modification of excessive and/or inappropriate prescribing. A 60% reduction in inappropriate prescribing was observed after 3 years.24
4. ENABLE

There is an opportunity to redesign and scale up the role of allied health professionals in digital health by making available the tools to enable interoperability and champion data quality standards. Product development discussions within the vendor community would benefit from allied health input. The diversity and reach of the allied health sector positions us strongly to guide information system governance and roadmap development. With systematic use of agreed standards and the practice of good governance, the downstream benefits of digital health can be optimised and the community can feel secure in a healthcare system that manages and shares their data safely, efficiently and leads to high-quality health care.

The specialised nature of each allied health discipline has led to considerable variation in the way allied health is structured, practised and subsequently how vendor solutions have been designed to support our clinical discipline. This fragmentation of vendor solutions limits interoperability and insufficient coverage of allied health specialties. Interdisciplinary collaboration is made more difficult which then creates concern for standards compliance. A case in point is the findings from a 2018 product feature survey of practice management software commonly used by Australian physiotherapists in private practice. In that study, 27 software vendors were surveyed, and in relation to interoperability and standards, 36% were Fast Healthcare Interoperability Resources (FHIR) enabled, over half reported they were MyHealthRecord compliant and 50% had the ability to identify a client’s indigenous status in a way that was compatible with national data standards. These results suggest that there continues to be a need to promote the importance of standards for quality data and system interoperability if the goal of integrated care is to be achieved.

While allied health practitioners have widely differing needs for both data access and interface design, integration into coordinated healthcare system-wide initiatives rely on a minimum level of interoperability. Health information systems need to be able to “talk” to each other within and across organisational boundaries about the care and management of patients and clients. Currently, many allied health software products focus on administration and commercial activities such as booking, billing and limited health-related data and capability for reporting purposes. In order to play an active role in the digital transformation of healthcare, we need to influence future development of software designed to support our clinical practice. A more integrated and holistic approach to system design that aligns to the patient journey across the continuum of care is encouraged.

Use of Allied Health National Best Practice Data sets developed by the National Allied Health Data Working Group (NAHDWG) and National Allied Health Classification Committee (NAHCC) is a useful starting point.

These include:

a. Allied health admitted patient care National Best Practice Data Set
b. Allied health non-admitted patient National Best Practice Data Set
c. Allied health non-admitted patient emergency department National Best Practice Data Set and
d. Allied health non-individual patient attributable and clinical support activity National Best Practice Data Set

These will be included within the Systematised Nomenclature of Medicine, Clinical Terms, Australia (SNOMED CT-AU). While initiatives that enable access to a national repository of key information about a person’s history of illness, tests, imaging and medications, such as the MyHealthRecord, were welcomed by those in private practice, access has been limited due to system incompatibility. There is a role for the allied health sector to influence the vendor community in this regard with some success stories already – see the vignette below about Global Health in partnership with the Adelaide PHN and Peninsula Health VIC.

Global Health partnering with Adelaide PHN and Peninsula Health.

An allied health practice system vendor (Global Health) is empowering allied health to access the MyHR directly from within the platform, and share meaningful clinical data with the MyHR, utilise secure messaging between providers, and utilise the clinical practice system for clinical documentation, referral management and billing.

Adelaide PHN in collaboration with Global Health is undertaking this project, as well as Peninsula Health, VIC.

Global Health’s personal health record ‘life card’ integrates with diabetes Victoria, Apple Health, and plans to integrate with IoT ecosystems.

For many consumers, digital services will not only be the first point of contact with health services, but this will be how they choose to engage with healthcare on an ongoing basis.

As in other areas of healthcare, the work of allied health is yet to be well defined or seriously considered in the digital health and informatics governance agenda. Therein lies an opportunity for the advancement of digital health and the future of the allied health professions, as a clinical resource that is yet to be tapped.

CALL TO ACTION

Allied health professionals are a group with untapped potential in digital health. We are uniquely positioned to maximise the benefits achievable from digital health and help individuals, families and organisations navigate the complex clinical informatics landscape. The time for action is now.