Project: Clinical Informatics Fellowship Program Build Phase 1 (April to December 2022)

Stakeholder Engagement Report

Australasian Institute of Digital Health

For the Digital Health CRC

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Final Version

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Building a Specialist Digital Health Career Pathway: Clinical Informatics Fellowship Program Build (Phase 1, April to December 2022)

Executive Summary – Stakeholder Engagement Report

This report has been produced by AIDH as a deliverable under the Clinical Informatics Fellowship (CIF) Program Build project. This report:

1. Provides background to the project of developing a specialist digital health career pathway to a CIF Program
2. Outlines the project governance structures and decision-making processes
3. Describes how stakeholder groups were engaged and involved between April and December 2022
4. Articulates key learnings, recommendations, and points of difference from stakeholders; and
5. Presents a summary of outstanding matters to resolve and potential next steps.

This report should be considered in association with the prior deliverable, the Literature Review, and the original intention to proceed to pilot a fellowship model under the same contract with Digital Health Cooperative Research Centre (DHCRC).

Overview of Sections

Section 1 describes the objectives, foundations, and background information of the CIF Program.

Funding was provided by DHCRC under a partnership arrangement with AIDH to develop a CIF Program with input from a broad range of stakeholders, including the University of Queensland (UQ).

The CIF Program is proposed to have eligibility criteria for entry and a requirement for candidates to complete five components, including completion of a higher education course, participation in mentoring, industry collaboration and engagement, a project and successful completion of an exit assessment. Two sets of guiding principles were developed to inform the approach encompassing rigour and recognition, and diversity, inclusion and belonging. The CIF Program would also reflect the AIDH's vision of healthier lives, digitally enabled.

Section 2 outlines the governance structures in place for the CIF Program Build Project. A project leadership group was appointed in April 2022, in line with the partnership model between AIDH, DHCRC and UQ, with defined roles for each organisation. The leadership group developed an engagement plan and initial concepts to present to stakeholders.

The engagement plan included a large, cross-sector, multidisciplinary group including input from international partners. During 2022, the AIDH was concurrently engaged with many of the stakeholders for this project around other workforce capability building initiatives led by AIDH, including the development of the National Digital Health Capability Action Plan and its implementation. A pragmatic and iterative approach to stakeholder engagement was undertaken to allow flexibility such that stakeholders could be involved around these competing commitments. It was also important to develop and maintain clarity around the vision for, and the scope and purpose of, this project.

A formal governance structure for the project was endorsed by the AIDH Board in May 2022 to oversee the strategic direction of the program and enable effective decision-making. Three advisory groups were assembled, made up of diverse groups of clinical informatician subject matter experts, representatives from Australian peak health professional associations, clinical colleges and councils, higher education providers, the Australian Health Practitioner Regulation Agency (AHPRA), senior leaders in state health services and education, the Australian Digital Health Agency and an international reference group. An internal AIDH governing body – the Health Informatics Professionalism (HIP) Committee – was also proposed to be formed in due course.

Section 2 also details the advisory groups (shown in Figure 2, page 13) that participated in a shared purpose-setting exercise and helped articulate the vision and a set of guiding principles for the CIF program. The outputs from these engagements were endorsed by the project leadership group.

Section 3 describes stakeholder involvement throughout the CIF Program Build Project. At the outset of the project, a workshop on career pathways for clinicians in digital health was facilitated by AIDH at its Brisbane Summit in April 2022 where participants helped define a vision for specialist career pathways, barriers to and opportunities for professional recognition of clinician experts in digital health in Australia.

Advisory group members and a university working group were also consulted on the draft literature review document and provided feedback on the proposed fellowship model for further consideration and inclusion between July and October 2022.

The AIDH leveraged its existing, well-developed relationships with stakeholders; the 31 members of the Advisory Groups, who represented a diversity of thought and experience across clinical disciplines, clinical informatics and digital health roles, different healthcare settings and governance of health professional bodies agreed to be involved in a participatory design process across six months together with the six members of the Project Leadership Group. A pilot model for the CIF Program was co-designed, and the groups made recommendations to inform an implementation plan and an evaluation and impact framework. The draft model for a CIF Program is included in Appendix I.

Engagement activities included meetings, workshops, one-on-one interviews and discussions, through both face-to-face (mostly online) and asynchronous modes to input between scheduled meetings. Once the engagement activities were set, the Project Leadership Group determined that a survey would not add value to the program development process at this stage of the project.

Section 4 describes the outcomes from the stakeholder consultation and subsequent refinements to the vision statement for the CIF and guiding principles.

Following the stakeholder consultation in 2022, the AIDH submitted a pilot proposal to DHCRC in December 2022 which further detailed the model intended to be piloted. That refined model was not subject to stakeholder consultation and therefore does not feature in this Stakeholder Engagement Report. No agreement was reached between the AIDH and DHCRC to progress to a pilot at that stage.

The AIDH circulated a draft of this Stakeholder Engagement Report in June 2023 to ensure participants were satisfied that their input was captured appropriately. That draft included Sections 1 to 4 and the appendices. The Stakeholder Engagement Report was finalised in September and October 2023 after a change of AIDH CEO.

Outstanding matters and next steps

A new Section 5 was added to the report following further consideration of stakeholder feedback by AIDH in September 2023 and with a view to establishing the CIF on a sustainable basis.

The consultation processes (as detailed in Section 3) confirmed that there was general agreement that the structure of the proposed fellowship pathway was appropriate and would advance the professionalisation of the digital health workforce. However, the pathway which was consulted on was considered ambitious, and concerns were voiced by stakeholders (including the DHCRC in late 2022) regarding the feasibility of progressing to a pilot.

In response to the feedback from DHCRC and others, the AIDH reviewed how the proposed model could be established in a way that is scalable and sustainable. This included consideration of which components of the training pathway should be adjusted further to assist operationalisation by AIDH.

Section 5 details the key outstanding matters which need to be resolved before or alongside piloting of the pathway. AIDH would welcome the opportunity to discuss these matters further with DHCRC, including whether there are opportunities for further partnerships and/or funding. In the meantime, AIDH is having further discussions with its internal governing bodies to determine the most appropriate way forward. The AIDH executive team is also preparing internal workplans for 2023/2024 which will allocate staff resources to work through the outstanding matters noted above.

The AIDH looks forward to continuing to work in partnership with DHCRC and others to overcome these challenges and deliver a national CIF Program for digital health.

Section 1: Introduction

Between April and December 2022, the Australasian Institute of Digital Health (AIDH) led a project to develop an Australian Clinical Informatics Fellowship (CIF) Program for clinicians, in partnership with and funded by the Digital Health Cooperative Research Centre (DHCRC). A broad range of stakeholders were engaged in the project, including the University of Queensland (UQ), an early supporter of the project that was actively involved throughout. The project was announced publicly on 28 April 2022 at the AIDH Brisbane Summit, by DHCRC CEO Annette Schmiede, AIDH CEO Dr Louise Schaper and UQ's Digital Health Research Network Director, Associate Professor Clair Sullivan.

The AIDH led the project's consultation and engagement with national and international stakeholders to inform the design of an Australian CIF Program. The DHCRC led engagement with the Australian higher education sector. The purpose of this report is to describe the engagement with key stakeholders between June and December 2022 to develop a pilot model of the CIF Program.

About the CIF Program

The CIF Program is intended to establish a national program in digital health for clinicians. The program will allow clinicians to enrol and work prospectively towards a nationally recognised CIF. The CIF Program will be governed and awarded by the AIDH, including postnominals which will be widely recognised by the relevant clinical professional bodies.

Objectives of the CIF Program

- To establish clinical informatics as an **acknowledged and recognised profession** in Australia, with **international credibility and standing.**
- To build and foster a **large and diverse workforce** of skilled and well-networked clinical informaticians, actively engaged in a community of practice and maintaining their skills through continuing professional development, who occupy leadership roles in the digital transformation of the health and social care sectors.

The CIF Program

The CIF Program will have eligibility entry requirements and defined assessments and additional requirements that must be passed for successful completion. In line with established professional standards for clinicians, completion of continuing professional development (CPD) activities should be required to maintain fellowship status. Five components are proposed for the CIF Program including:

1. **Completion of a higher education course**: at graduate certificate level (Australian Qualifications Framework (AQF) Level 8) or above (expected to be accredited by AIDH's HIP (in association with international educational recommendations)
2. **Participation in mentoring**: active participation in the fellowship's formal mentoring program, coordinated by AIDH
3. **Industry collaboration and engagement**: active participation in organised activities of the AIDH's Fellowship network and digital health community
4. **Completion of a project:** application of knowledge through practice-based training or an industry placement and/or completion of supervised project in digital health
5. **Successful completion of an exit assessment:** based on a completed logbook and/or other assessment.

All five components listed above must be completed to be awarded a CIF, and ongoing CPD points must be accrued to maintain Fellowship status. Figure 1 below illustrates the pathway which was co-designed through the stakeholder engagement process.

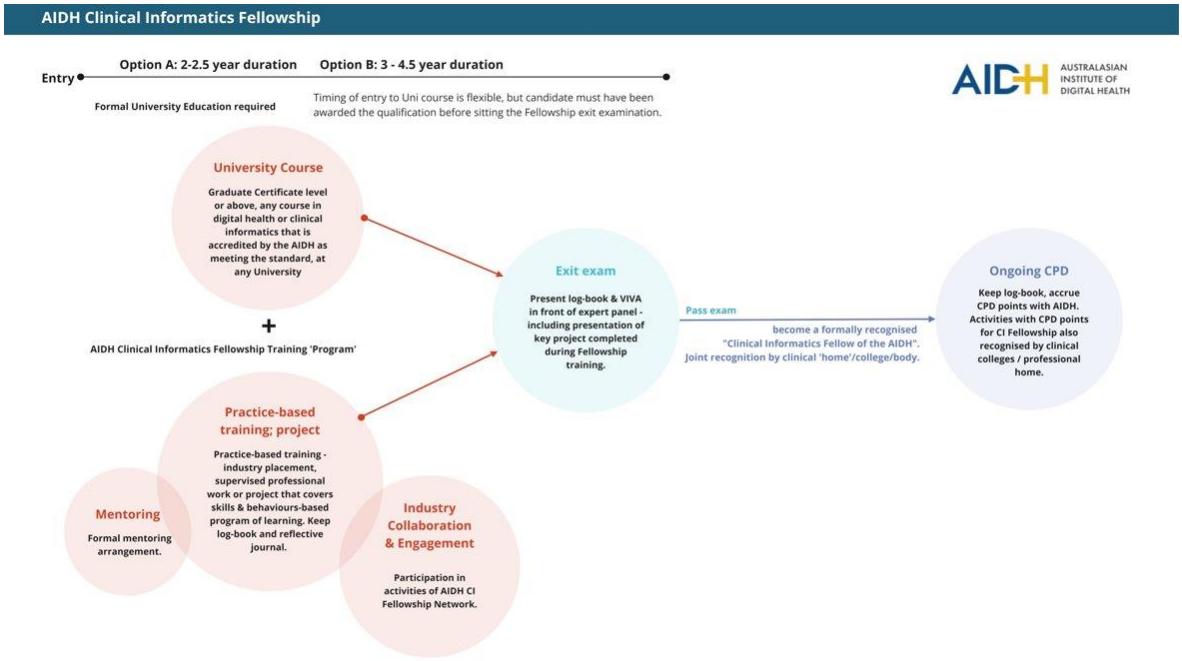


Figure 1: Co-Designed Model CIF Pathway

A comprehensive overview of the proposed program was also shared with stakeholders as part of the consultation process from July to December 2022, which is detailed in *Appendix I.*

Foundations Built on Competency-based, Applied Learning

The CIF Program is underpinned by the AIDH's Australian Health Informatics Competency Framework (AHICF). This was originally developed in 2013 by the Health Informatics Society of Australia (HISA)[1], with input from academia and applied leaders in health informatics. The AHICF establishes key domains of expertise and corresponding competencies that need to be attained to be deemed competent in health informatics. It has served as the basis for Australia's professional Certified Health Informatician Australasia (CHIA) program. Following nine years of applied use of the first edition of the framework, a comprehensive review of the AHICF was undertaken with extensive research and comparative modelling of competencies from across the globe. This resulted in the second edition of the framework being released in April 2022. Further detail on the AHICF is provided in *Appendix II*.

Fellowship Based on Principles

A series of principles on which the CIF will be based were developed by AIDH initially with input from the Project Leadership Group to reflect its original intentions. These were further refined following feedback received from the advisory bodies (noted in Section 2) and other consultation with

[1] HISA merged with the Australasian College of Health Informatics (ACHI) to form the Australasian Institute of Digital Health, on Monday 24 February 2020.

stakeholders, into the two sets of principles listed below. Details of stakeholder feedback on the principles is provided in Section 4.

Guiding Principles Set 1: Rigour and Recognition

- Provide **clinicians with a clear pathway to become a credentialed expert in clinical** informatics.
- **Leverage the national and international credibility of AIDH** and its networks through the International Medical Informatics Association (IMIA) to offer the appropriate **postnominals** to successful candidates.
- While the program will be offered, managed, and governed by the AIDH, the designation of Clinical Informatics Fellow of AIDH will be widely **recognised** by **clinical colleges and professional associations**.
- A **standards-based** approach to ensure the professionalisation of clinical informatics.
- A **knowledge and skills-based program**, where acquired knowledge is put into practice in supported learning environments.

Guiding Principles Set 2: Diversity, Inclusion and Belonging

- A **transdisciplinary clinical fellowship**, for clinicians from medicine, nursing, allied health and Aboriginal health work, including those regulated by the national boards of the Australian Health Practitioner Regulation Agency.
- Provide options which enable participation by clinicians who work in rural, remote, and metropolitan locations **across all settings** including aged care, community health, hospitals, mental health, primary care etc. Barriers and facilitating factors to participation in the program will be monitored across these diverse settings.
- **Design for flexibility**, expecting that clinicians will need to participate within their existing professional commitments, and some will have disability-related or other access requirements.
- **Embed continuous quality improvement into the program**, to identify barriers and facilitators to participation in and completion of the program, analyse them, propose and incorporate refinements to the fellowship pathway.
- Candidates will be **supported by volunteers from the AIDH Fellowship Network** as they progress through the program, with recognition that they are contributing to enhancement of the profession.

In addition to following these principles, and in line with all AIDH activities, the CIF Program and the conduct of all who are involved with it will reflect the AIDH's vision of ***Healthier Lives, Digitally Enabled*** and values of **passion, diversity, collaboration, credibility, creativity and quality**.

Background and Deliverables for Clinical Informatics Fellowship (CIF) Program Build Project

DHCRC funded Project 83: the UQ Graduate Certificate in Digital Health and Clinical Informatics

Prior to this project commencing, UQ, in collaboration with the DHCRC, developed a curriculum for a multidisciplinary *Graduate Certificate in Digital Health and Clinical Informatics* course, as part of a separate and prior project called *Project 83*. This was in response to Queensland Health's need to upskill the health workforce in digital health to deliver its transformation agenda. This course accepted its first enrolments in 2022. The curriculum for this course was informed by the curriculum of the American Medical Informatics Association's masters level program, a global scan, literature review, and further input from Queensland Health, AIDH and others.

The UQ's *Graduate Certificate of Digital Health and Clinical Informatics* is made up of four courses (two units each), covering: (1) Foundations of Digital Health and Clinical Informatics; (2) Digital Health in Action; (3) Data and Analytics for Quality Improvement; and (4) Re-imagining Healthcare, which includes strategies for implementing digital disruption and transformation projects. Collaborating parties recommended that this core content be shared with other higher education providers nationally, and that it could underpin the formal education component of the CIF Program.

Fellowship Build Project Deliverable 1 – Literature Review

As noted as the start of Section 1, the DHCRC funded and partnered with AIDH to develop a national CIF Program from March 2022. The first deliverable for the project was a literature review. The AIDH engaged UQ to complete the literature review to inform initial work on developing a draft national fellowship model. The literature review summarised the available information on global and national digital health tertiary offerings, with a particular focus on those teaching applied clinical informatics i.e. the skills that clinicians require to practise and lead digital transformation. The review was first circulated to the sector advisory groups (including the governing bodies detailed in Section 2 and a selection of universities which the DHCRC engages with) for review and input in June 2022. The literature review has been subject to ongoing revision as the project has progressed, with further feedback incorporated from national stakeholders throughout 2022.

Fellowship Build Project Deliverable 2 – Stakeholder Engagement Report

This Stakeholder Engagement Report was initially delivered as a draft to the DHCRC in December 2022. The report was later circulated to the stakeholders referenced throughout (in June and July 2023), to ensure all parties were satisfied with how their input has been described. The final version of the Stakeholder Engagement Report was submitted to DHCRC in November 2023.

Fellowship Build Project Deliverable 3 – Draft Fellowship Model and High-Level Curriculum

The final deliverable for this part of the project was intended to be the draft Fellowship model and plan to operationalise and govern the program. Informed by the stakeholder engagement, a pilot model would be delivered to the DHCRC, for an initial intake beginning in 2023, with recommendations about how the DHCRC, other industry partners and stakeholders can collaborate on, support and benefit from the program was delivered to the DHCRC Board in December 2022. Following discussion between AIDH and DHCRC in early 2023, this work was placed on hold.

Section 2: Project Governance

In line with the partnership model between AIDH, DHCRC and UQ, governance structures were established through a Project Leadership Group to oversee this project and facilitate input from national and international experts in digital health education. Advisory bodies included the Industry Advisory Group, Clinical Informatician Advisory Group and International Advisory Group, which allowed for input from key stakeholders. The expertise of these groups was complemented by broader stakeholder consultation and opportunities for other parties to input (as detailed in Section 3).

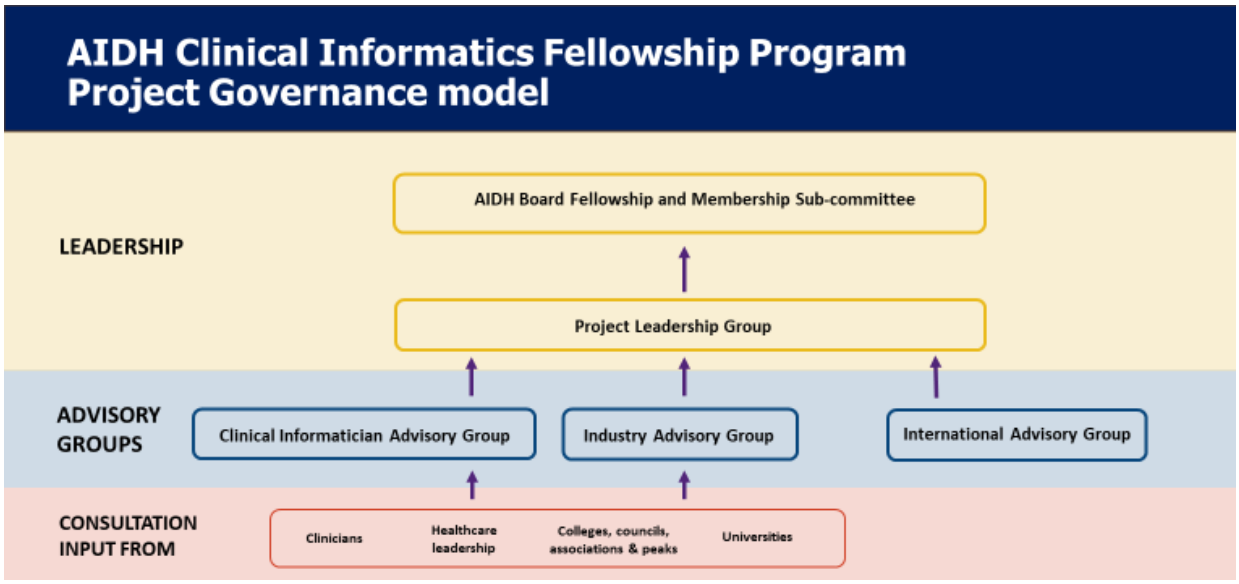


Figure 2: CIF Project Governance Model

Project Leadership Group

In April 2022, the AIDH, DHCRC and UQ appointed a Project Leadership Group (see Table 1, below) to coordinate the program, provide governance and strategic direction for the build of the program pilot model, including scope, schedule, budget, resources, dependence and risk and issue management.

This group proposed a formalised governance model to oversee the strategic direction of the Program and enable effective decision-making (Figure 2, above). This was endorsed by the AIDH Board's Fellowship and Membership Sub-Committee.

The group met at least monthly between April and December 2022, to consider input from workshops and outcomes of advisory group meetings and make decisions on aspects of the program build, to propose to the AIDH Board Fellowship and Membership Sub-committee (FMC), to make final decisions about the program. The FMC proposed that an additional internal AIDH governing body, the Health Informatics Professionalism Committee (HIP) should be formed, with members including health informatics leaders from education, health services and industry, to oversee the pilot program's implementation and evaluation.

Table 1 Project Leadership Group Membership

Member	Perspective
Dr Louise Schaper	CEO AIDH Fellow AIDH, Fellow International Academy of Health Sciences Informatics, Occupational Therapist
Greg Moran	Director Strategy and Workforce Advancement, AIDH
Gillian Mason	Workforce Engagement Lead for this project; Board Director AIDH, Physiotherapist & Consumer Representative
Dr Melanie Haines	Education Manager, DHCRC
A/Prof Clair Sullivan	Director, Queensland Digital Health Centre (QDHeC) and Head Digital Health Research Network, The University of Queensland (UQ). Endocrinologist, Fellow Royal Australian College of Physicians and Fellow AIDH
Prof Andrew Burton-Jones	Professor of Business Information Systems at UQ Business School, University of Queensland
Dr Lee Woods	Research Fellow (Digital Health) University of Queensland. Registered Nurse; Fellow AIDH

Industry Advisory Group

The Industry Advisory Group was established to provide input to guide the build of a fit-for-purpose pilot model that will meet the needs of health professionals, peak bodies and associations, clinical councils and their members, as well as the AHPRA (Table 2). They made recommendations about how the program could align with existing fellowship education, governance and accreditation structures and processes.

Invitations were sent to the CEO or Chair of each organisation asking them to nominate the most appropriate person. The DHCRC also nominated two PhD students to participate. Whilst the project team mapped the Australian ecosystem of clinical colleges, professional associations, boards, and other relevant organisations broadly, some selection criteria were applied to inform who to invite to be included in this phase of the program. The clinical colleges invited were considered based on whether they had previously been engaged with the concept of professional recognition for clinical informatics and whether they already had established pathways to a fellowship or specialisation. The resultant membership included representatives of the organisations (Table 2). These representatives had experience working across the healthcare sector, with clinical backgrounds in medicine (including surgery, ophthalmology, and medical administration), nursing and midwifery, allied health (dietetics and pharmacy), and others with backgrounds in health informatics, policy, standards, governance, education development and regulation.

During 2022, Greg Moran (Director Strategy and Workforce Advancement) also consulted with industry groups and clinical colleges on overlapping workforce initiatives, including the development of the Australian Digital Health Agency's (the Agency) National Digital Health Capability Action Plan and its execution. These separate engagements provided opportunities to further build awareness of the CIF Program across the sector, while also informing this program build from the existing knowledge and understanding of the needs of these groups that the AIDH has been engaging with.

There was also complexity in making sure that the purpose of each engagement with AIDH was very clear. Moreover, some organisations, including the National Aboriginal Community Controlled Health Organisation (NACCHO), were unable to make time to be involved due to their existing involvement with AIDH projects.

Table 2 Industry Advisory Group Membership

Organisation	Member	Perspective
AIDH	Angela Ryan	Director AIDH (ex-vice Chair of the Board & Chair Quality and Programs Board Sub-Committee). Chief Clinical Informatics Officer.
DHCRC	Dr Toby Hodgson	Program Manager, Digital Health CRC
DHCRC	Samantha Robertson	Dietitian researcher, Digital Health CRC PhD student
DHCRC	Han Chang Lim	Digital Platforms Manager, Uniting Care QLD, Digital Health CRC PhD student
Universities Australia	Rachel Yates	Policy Director Health and Workforce
Australian Digital Health Agency (the Agency)	Herbert Down	Branch Manager, Clinical and Digital Health Standards Governance
Allied Health Professions Australia (AHPA)	Bronwyn Morris-Donovan	CEO
Royal Australasian College of Medical Administrators (RACMA)	Dr David Rankin	RACMA nominated representative; Director Clinical Governance and Informatics at Cabrini Health
Australian Nursing & Midwifery Accreditation Council (ANMAC)	Jackie Doolan	Standards Development and Review Coordinator
Australian College of Nursing (ACN)	Sarah Hughes	ACN nominated representative; Chief Nurse Information Officer, part of leadership team of ACN Chief Nurse Information Officer Faculty
Australian College of Midwives (ACM)	Dr Angela Brown	Board Director ACM, Midwifery Program Director at UniSA and senior Lecturer in Nursing and Midwifery, midwifery representative for RANZCOG's Women's Health Committee
Royal Australian College of Physicians (RACP)	Dr Sandra Johnson	(RACP) nominated representative, consultant paediatrician and academic (Uni of Sydney)
Royal Australian College of Surgeons (RACS)	Tasmin Garrod	Executive General Manager, Education Development and Delivery
Australian Health Practitioner Regulation Agency (AHPRA)	Chris Robertson	Executive Director Strategy and Policy
Australian Department of Health and Aged Care	Kayla Jordan	A/g Assistant Secretary, Public Health and Surveillance in the Office of Health Protection and Response
Royal Australian and New Zealand College of Ophthalmologists (RANZCO)	A/Prof Peter van Wijngaarden	RANZCO nominated representative. Ophthalmologist, Deputy Director at the Centre for Eye Research Australia

Clinical Informatician Advisory Group

The function of the Clinical Informatician Advisory Group was to represent those who would ultimately be the 'customer' for the CIF. These were individual clinical informaticians who had demonstrated influence in the sector and who had been championing the need for this fellowship for some years. Members were invited by AIDH and others in the project leadership group (Table 3). The membership was selected for broad representation from medical, nursing, and allied health clinical informaticians and senior healthcare executives, with early and mid-career professionals also represented. As illustrated in the Figure 3, members had diverse backgrounds with clinical, management and senior leadership experience in public and private hospital, community and primary healthcare settings, rural health, public health, policy and prevention, translational research and in vendor-based roles. Members of the Clinical Informatics Advisory Group included individuals based in NSW, Qld, Vic and WA.

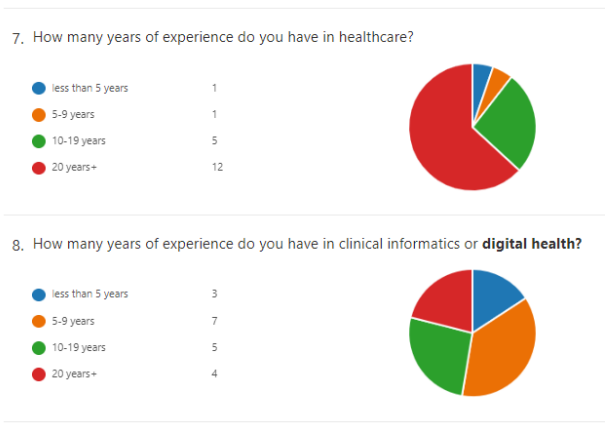


Figure 3: Experience in healthcare and clinical informatics or digital health of Clinical Informatician Advisory Group members

Further diversity of professional and lived experience in this group was essential in ensuring that the model would cater for a broad range of future Clinical Informatics Fellows and equip them to apply digital health expertise in various healthcare settings. Members of this group were asked to provide input based on personal or professional experience that they had in the healthcare or workforce needs of people, groups or communities who disproportionately face barriers in accessing or progressing their careers in healthcare or digital health.

Additional expertise provided by this group included lived experience of:

- Being a carer through palliative care;
- Disability and the related barriers to workforce access as well as exclusion of disabled people from research and clinical datasets;
- Being a child of non-English speaking parents and refugee family members;
- Belonging in the industry with an LGBTQI+ identity;
- Developing actions plans for Māori, Aboriginal and Torres Strait Islander health, consumer participation, digital health literacy; and
- Improving representation of nurses and midwives in digital health and transformation efforts.

No member self-identified as Aboriginal and/or Torres St Islander. This is a gap that ought to be addressed as advice is sought on implementation of a pilot program.

Table 3 Clinical Informatician Advisory Group Membership

Member	Organisation	Perspective
Dr Monica Trujillo	Telstra Health	Vendor based CHO, Fellow Royal Australasian College of Medical Administrators, Fellow Australasian College of Health Service Management, AMA member, public health experience
Julia Staples	Parkville EMR	Chief Allied Health Information Officer (physiotherapist) - 4 large public health services
Dr Rae Donovan	Metro South Health	CMIO - Medical Director, Digital Health and Informatics – large public hospital
Mark Nevin	Participating as individual	Former senior executive and CEO of major medical college Policy expert in digital health, economist, former clinician (optometrist) with experience in aged care, community and hospital settings.
Dr Rowan Ellis	Rotating around various hospitals	Clinician - Anaesthetic Trainee Board Member - Health Support Services, WA Health
Dr J. Oliver Daly	Western Health	CMIO - Chief Medical Informatics Officer/Director of Medical Informatics (Digital Applications) Urogynaecologist/Obstetrician RACMA Trainee
Dr Mark Santamaria	Alfred Hospital	Clinical Informatician Clinician working in tertiary Emergency / Trauma centre
Professor Keith McNeil	Queensland Health	Chief Clinical Information Officer
David Bunker	Health Translation QLD	CEO Genomics expertise, author of the AHMAC funded National Approach to Genomics Information Management Blueprint.
Nathan Moore	Western Sydney Local Health District	Chief Nursing Information Officer Simulation-based education specialist
Dr Mark Simpson	eHealth NSW	CCIO Executive Director Clinical Engagement and Patient Safety NSW Ministry of Health
Adjunct Professor Shelley Nowlan	Deputy National Rural Health Commissioner	QLD Health Chief Nursing and Midwifery Officer Registered Nurse; Fellow Australian College of Nursing
Mr David Lim	DHCRC & Curtain University PhD student	Registered pharmacist and an early career researcher
Professor Chris Bain	Monash University	Ex CHIS / Director Informatics roles; currently Prof Digital Health
Dr Graeme Mattison	DHCRC & University of Queensland PhD student The Prince Charles Hospital	PhD Candidate in Digital Health (Wearables in Healthcare) Thoracic advanced trainee & clinical research fellow
Dr Robyn Littlewood	Health and Wellbeing Queensland	CEO, paediatric dietician
Jade Barclay	PhD candidate, DHCRC & University of Sydney	Strategic Advisor, Digital Health & Innovation (DHCRC) Research/systems analyst, pain and multimorbidity clinic
Nigel Chartres	AIDH	Volunteer Strategic Advisor, health informatician
Kate Renzenbrink	Western Health	CNMIO larger metro health service (5 public hospitals) - aged care, community, mental health

International Advisory Group

The function of the International Advisory Group was to incorporate international best practice and global learnings into the development of the CIF Program model.

The AIDH CEO invited individuals with internationally recognised expertise professionalising the role of chief clinical informatics officer in the United Kingdom (UK) and United States (US) and other relevant groups to nominate a representative (Table 4). This group provided advice and insights, based on their knowledge and experience of successes, failures and challenges in digital health workforce capability-building and implementing career pathway programs, and on the relevance and transferability of a Fellowship program to the international clinical informatics community.

Table 4 International Advisory Group Membership

Organisation	Member	Perspective
American Medical Informatics Association	Associate Professor Saif Khairat	School of Nursing and Carolina Health Informatics Program (CHIP) Research Fellow, Sheps Center for Health Services Research, Linberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill
Health Education England	James Freed	Chief Digital and Information Officer
Scottish Government	Professor Lesley Holdsworth	Clinical Lead for Digital Health & Care, Scottish Government Assoc. Director NHS Education Scotland
UK Faculty of Clinical Informatics	Dr John Williams	Founding Fellow of the UK Faculty of Clinical Informatics & member of Trustee Board Honorary Senior Research Fellow in Nuffield Department of Primary Care, University of Oxford Retired General Practitioner
AMIA	Professor Christoph U. Lehmann	Willis C. Maddrey, M.D. Distinguished Professorship in Clinical Science Director, Clinical Informatics Centre, UT Southwestern Associate Dean of Clinical Informatics Fellow American Academy of Pediatrics, Fellow American Medical Informatics Association, Fellow International Informatics Association
DHCRC	Adj. Associate Professor Annette Schmeide Emeritus Professor Christine Bennett AO	DHCRC CEO Advisor to DHCRC CEO Deputy Vice Chancellor, Enterprise & Partnerships (previous Dean, School of Medicine), University of Notre Dame Australia. Fellow of the Royal Australasian College of Physicians and a specialist paediatrician

Consultation and input from others

Consultation with other individuals and groups (clinicians, healthcare leaders, professional colleges, councils and peak bodies, and higher education providers), was undertaken, as needed, to address specific issues and opportunities relevant to these stakeholders as they arose. Further detail on this is provided in Section 3.

Australasian higher education providers that offer postgraduate digital health and clinical informatics courses were engaged by the DHCRC around the vision of connecting these courses to the new Fellowship pathway.

Section 3: How stakeholders were involved

Stakeholders were involved throughout the project by a variety of means and channels to contribute to the development of the vision, principles and high-level design of a fellowship pathway. Stakeholders were engaged through interviews, surveys and workshops, including through representatives on the project's governance structure (detailed in Section 2) which was designed to engage broadly with stakeholders and experts in professionalisation of digital health.

The program of engagement involved the following activities during 2022:

- A workshop *Building Specialist Career Pathways for Clinicians in Digital Health* at the AIDH Brisbane Summit on 29 April;
- Consultation with the University Working Group (led by DHCRC); and
- A participatory design process over six months involving members of the four project advisory groups who were part of the governance model, with consultation input from others.

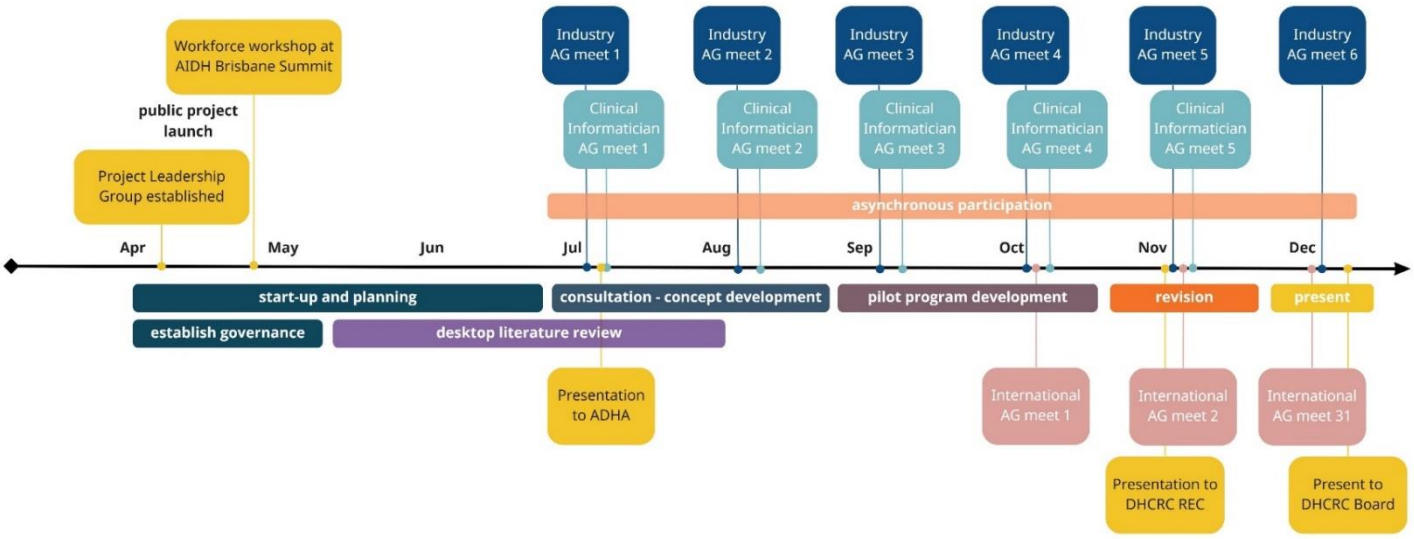


Figure 4: Timeline showing engagement activities.

Workshop – Building specialist career pathways for clinicians in digital health – led by AIDH

As noted above, a workshop was convened during the AIDH's conference called the Brisbane Summit, held in April 2022.

Approach

Attendees at the AIDH's Brisbane Summit were invited to attend a workshop on building pathways for specialist careers for clinicians in digital health. Attendees self-selected to participate in workshops held during the Brisbane Summit (n=92) including clinicians, health service managers, technical experts, researchers and industry professionals. The 92 participants joined a workshop facilitated by Dr Louise Schaper, Greg Moran and Gillian Mason. The workshop followed the announcement launching the collaboration between DHCRC, AIDH and UQ to develop a Fellowship program for clinical informaticians. The workshop canvassed views on opportunities and barriers to

professional recognition of the unique role of clinicians in digital health transformation. It also asked participants to input to the vision for specialist career pathways for clinicians in digital health.

An online whiteboarding tool (called Miro) was used by workshop participants either individually, or where access to the board was limited, as a small group using one device. After the workshop, data was extracted from Miro to Microsoft Excel and analysed in the text mining software Leximancer to identify concepts that occurred across the data using the inbuilt thesaurus. Data generated from each question asked of participants was analysed independently. Dr Lee Woods from UQ then conducted an analysis to interpret the concepts, their prevalence and relationship with other concepts to produce key themes from the data. Representative verbatim quotes were extracted to substantiate the findings.

Outcomes from workshop at Brisbane Summit

Question 1 'What is your vision for specialist career pathways for clinicians in digital health?Themes from responses:

1. Generate awareness/visibility/recognition/legitimacy of digital health or clinical informatics as a speciality
2. Representing digital health and its contribution to improving healthcare
3. Access to a career path in digital health including for leadership roles
4. Embedded digital health into clinical training.

Key quotes:

"...recognition of the importance of the role and expertise, including financial reward."

"Clinical informaticians included on service and health system committees."

"Recognise that clinical informatics is a clinical specialisation."

"Professional bodies embrace digital health specialisations for individual members."

Question 2 'What do you see are the barriers for professional recognition of the unique and important role of clinicians across our healthcare sector?

Themes from responses:

1. Lack of ongoing funding – genuine support for clinical informatician roles, rather than project-specific-, periodic or secondment positions
2. Health organisations do not provide support to balance clinical and 'non-clinical' roles like digital health
3. Strong pre-existing hierarchical structures are reluctant to change to incorporate such roles
4. Lack of professional recognition and awareness of the value of digital health expertise.

Key quotes:

"Professional streams in hospitals not allowing clinical shifts for clinicians in 'non-clinical' roles to support currency of practice."
"Funding for permanent roles (not just projects!)"

"...lack of recognition of the importance of the role and expertise, including lack of financial reward"

"No clear definition of profession"

"Informatician not seen as part of the core team."

Question 3 What do you see are the opportunities for professional recognition of the unique and important role of clinicians across our healthcare sector?

Themes from responses:

1. Contributing to decision-making at boards, committees and amongst government bodies
2. Upskilling self and others in digital health and the data lifecycle to improve health and care
3. Standardising skills required and roles across the career path, from undergraduate through to leadership.

Key quotes:

"We want to be known as 'clinician' with expertise, not the digital health person."

"Standardisation of clinical informatics role description across health > inform progression and succession."

"Rather than a base degree recognition this should be seen as a specialisation or a co-specialisation."

"Competency frameworks from novice to expert – clear how to move between sections."

The workshop and findings helped frame the context and rationale for the fellowship program.

Consultation with Australasian Universities – led by DHCRC

Consultation on the literature review and the proposed Fellowship model was undertaken with a selection of Australian universities by DHCRC during 2022.

Approach

Modes of engagement with higher education providers were considered by the Project Leadership Group. Dr Melanie Haines, who oversaw relationships between Australasian Universities and the DHCRC, determined that universities should be engaged with by emailing a copy of the literature review and a slide deck presenting the third iteration of the strawman of the pilot model. Recipients of this email were also encouraged to share with others who might also wish to contribute. Dr Haines followed up with those who gave feedback in September 2022 to ask if they would like to be acknowledged as individuals or institutions in this report.

University representatives were asked:

- for their views on the strawman of the Fellowship model – is the model correct, and, if not, where are the issues and what have we missed?
- for their input on the courses listed in the literature review – whether they were representative and current?
- to establish their needs and priorities in relation to digital health and clinical informatics courses and curriculum development.

Outcomes from consultation with universities

Dr Haines collated responses and forwarded a de-identified summary to the Project Leadership Group for consideration, which is reproduced here.

a. Most universities expressed support for the premise of a CIF, and the proposal to follow the American Medical Informatics Association (AMIA) model as a curriculum foundation.

b. They agreed that an inter/trans-professional approach is most apt in the Australian context, and that a reasonable cross-section of stakeholder groups is crucial to the program's

success. However, clarification was needed around the details of the approach to implementation.

c. They recommended that, until an accreditation process to professionally accredit digital health university programs in Australia is developed, the AIDH instead allow universities to submit a brief to be recognised as an approved program, which would expire 12 months after the implementation of the AIDH accreditation process.

   They advised that previous work has been undertaken by the Australasian College of Health Informatics' Education Committee and trialled at the University of Tasmania. However, the competency framework has since been updated and a process under the AIDH has yet to be established. They predicted that it would take at least six months (more likely a year) for a program to be accredited if the accreditation process was already in place. Concern was raised that if an accredited program is a requirement for candidates to enter the training pathway, accreditation may take up to two years to achieve (6-12 months for AIDH to establish the accreditation process, 3-6 months for the university to submit their accreditation application, 3-6 months for AIDH to accredit a program) and therefore no program will be able to accept candidates for the fellowship during that time.

d. Universities suggested referencing the Learning Health System Academy program offered by The University of Melbourne's Centre for Digital Transformation of Health. The existing clear curriculum pathways coordinated by the Biostatistics Consortium of Australia (BCA) may also be worth reviewing. Simple curriculum milestones (4 Graduate Certificate, 8 Graduate Diploma, 12 Masters units) and core / elective topic areas, like the BCA could be defined. Another point of reference would be the Co-op model in engineering and information technology at UNSW and UTS, which has been creating and supervising industry / academic projects for 30+ years.

e. Universities have prioritised training and research in digital health and clinical informatics and welcome this initiative. The AHICF and learning outcomes are areas of priority noted by most universities.

   "Our greatest need is to identify the modes of learning and assessment that are most meaningful and valuable for our major healthcare partner organisations."

   The priority in health informatics and digital health education and workforce development activities is to provide programs that have demonstrable impact and are effective in increasing the digital maturity of the health sector and improving the performance of the health system.

Further feedback about the fellowship model and recommendations were communicated to the advisory groups and considered as the strawman model was iterated on. The literature review was updated to reflect updated information on course offerings in Australia.

Participatory design process – led by AIDH

The Industry, Clinical Informatician and International Advisory Groups were engaged by AIDH between July and November 2022, and involved in the design of a shared vision for the fellowship, underpinning principles, and components of the pathway and a pilot model.

Approach

The Industry and Clinical Informatician Advisory Groups noted in Section 2 were consulted on the project, its rationale and a draft version of the literature review. They were also engaged in a participatory design process between July and November 2022, led by the Workforce Engagement Lead for the project, Gillian Mason.

The International Advisory Group was engaged from October and, in particular, contributed insights based on their knowledge and experience of successes, failures and challenges in implementing clinical digital health workforce capability-building and career pathway programs. The relevance and transferability of the fellowship program to the clinical informatics community internationally was also discussed.

The participatory design process with the Clinical Informatician, Industry Advisory and International Advisory Groups moved through three discrete phases:

i. Consultation and concept development

Meeting 1: Vision	**Introduce the program** **Present development process** **Output: Define our shared purpose and the vision of the Fellowship**
Meeting 2: Components	Updates on progress made & present findings from desktop review **Output**: Define critical elements of the Fellowship **Output**: Identify challenges and risks for various stakeholders **Output**: Determine guiding principles for the Fellowship

ii. Pilot program development

Meetings 3 and 4: Iterate on strawman model	**Consider critical elements – negotiables and non-negotiables relevant to you, the group, organisation, or institution you represent regarding critical elements:** - **Requirements of entry** - **Timing of formal university education piece & curriculum** - **Industry placement / work experience** - **Equity / access issues & proposed solutions for clinicians who are rural/part-time** **Output: recommendations for final pilot program model** **Output: Identify implementation considerations**

iii. Review

Meeting 5 and 6: Iterate on strawman model	**Review of proposed program model** **Output: further recommendations**

Gillian Mason chaired all meetings and facilitated the co-design process. She is a physiotherapist-researcher with stakeholder engagement and digital health expertise, a disability access and inclusion advocate, a consumer representative involved in Health Technology Assessment as part of the Department of Health and Ageing's Medical Services Advisory Committee and a Board Director of the AIDH. Gillian Mason was engaged as an independent consultant to do this work, and acknowledged, reflected on and discussed her perspectives, assumptions and influence throughout the process. During onboarding to the advisory committees, then throughout the process, participants were asked to share the perspectives they were bringing to the fellowship design process, including their roles, background, expertise and digital health workforce lived experience, to help the facilitator and others understand their input in context.

Forum

Group meetings were held via Zoom. Miro was used for whiteboarding during workshopping and to enable asynchronous participation as needed or desired. The whiteboard was available to group members at their convenience throughout the project, and functioned as a repository for meeting video recordings, notes, themes as they were produced and iterations of the strawman model of the fellowship pilot. Members were able to engage with and add to the whiteboard, ask questions and provide comment at any time. Several one--on-one interviews were conducted to expand on issues, opportunities and recommendations. Members were able to book time to meet with Gillian Mason to clarify discussion from missed meetings or contribute by email outside meeting times. The outcomes of these interviews and communications were added to the whiteboard over time, for consideration with other data.

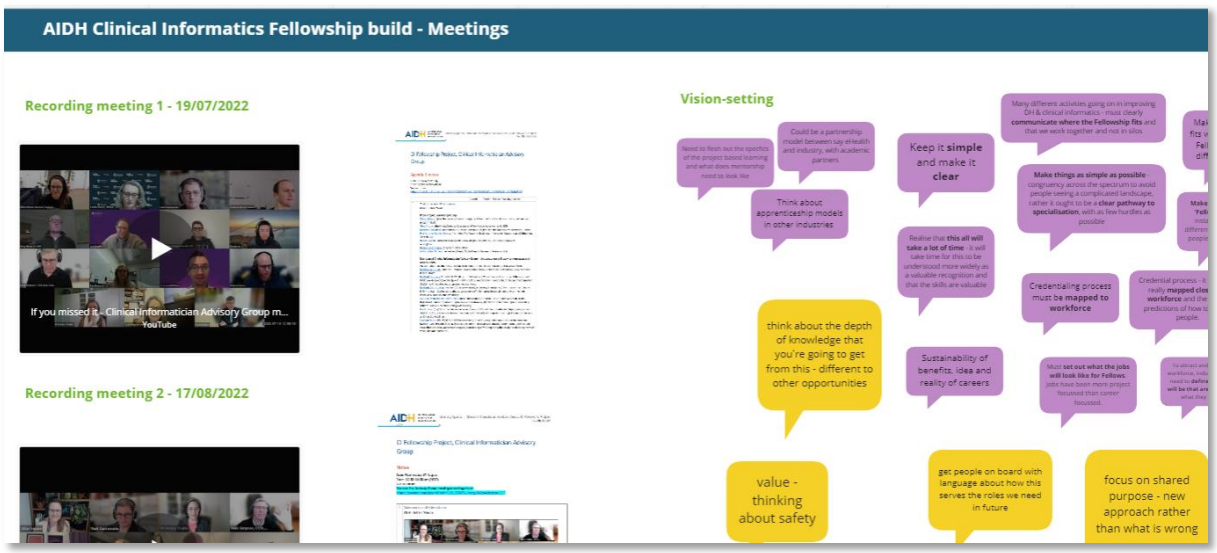


Figure 5: Example screenshot from Miro whiteboard

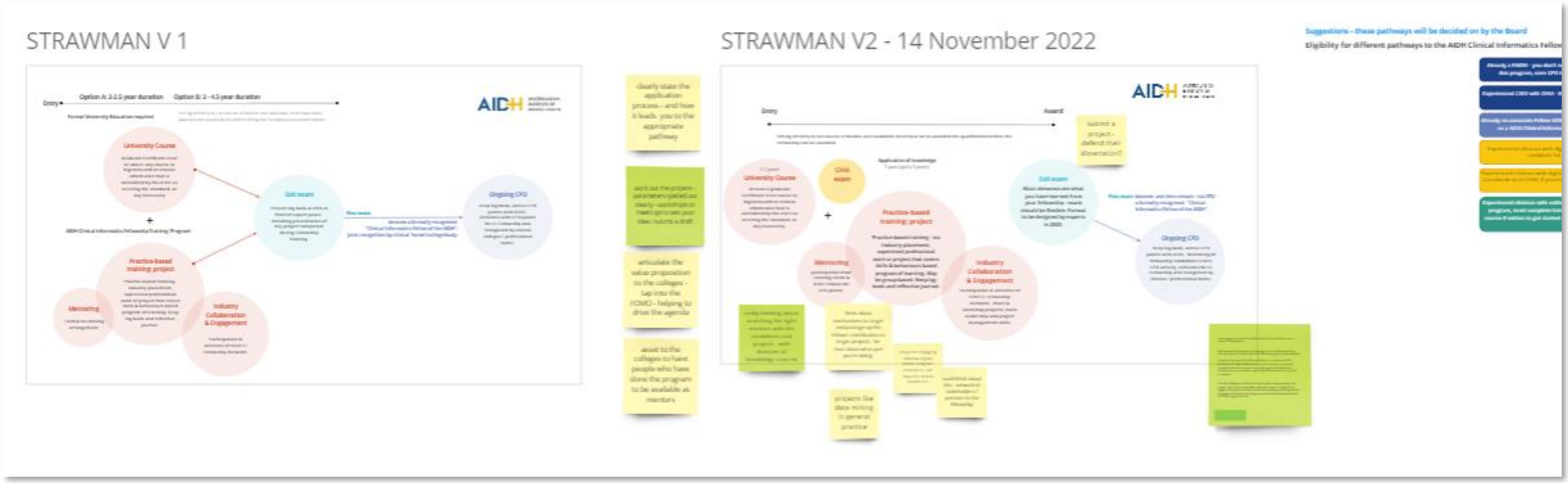


Figure 6 Example screenshot from Miro whiteboard

Outcomes from participatory design process

Between meetings, Gillian Mason documented specific recommendations made by groups, and produced themes from meeting transcripts, including the Zoom chat text from text from the whiteboard and from notes made during one-on-one meetings and asynchronous communication with stakeholders. These were used to guide the development of shared purpose and vision statements, a set of guiding principles and the fellowship model strawman that was iterated on.

The project leadership group met monthly, and reviewed the aggregate outputs from the meetings, key points of difference and the strawman model as it progressed. Where there were points of difference, decisions were made here and communicated back to the advisory groups

Section 4: Outcomes from Stakeholder Engagement

Section 4 describes the key learnings and consolidated recommendations from stakeholders, and how these were applied to inform the CIF and subsequent pilot.

This section presents a summary of themes, key quotes, and a description of the experiential knowledge shared by group members. These recommendations guided the development of the shared purpose and vision for the program, the principles that underpin the program model, and proposed metrics to inform an evaluation framework.

Participants generally agreed that the development of a new professional designation and its institutionalisation in Australia will be a major exercise of institutional entrepreneurship, as it will change the institution of healthcare in Australia. Clinical informatics should be regarded as a core domain of clinical practice, and clinicians should be able to be credentialled, recognised and remunerated for their advanced skills and expertise in the area.

Our shared purpose

The shared purpose statements below were refined though stakeholder engagement and discussions with the Project Leadership Group.

Establish the clinical informatician as an acknowledged and attractive profession in Australia, with international credibility and standing.
Build and foster a large and diverse workforce of skilled and well-networked clinical informaticians who are included in leadership in the digital transformation of the health and social care sectors.

These purpose statements were informed and refined by discussions around three main themes, including perceived challenges and risks to its success. Deidentified supporting quotations are included below to provide further qualitative insights.

1. **The clinical informatician is not yet a recognised or valued professional role in Australia.**

Clinicians who develop high-level informatics skills are not yet recognised as expert clinicians and this must change in order to position informatics as a legitimate career pathway for clinicians.

> *"I think what we do know is that most health professionals, most people working in the health space and the general public don't understand what a clinical informatician is."*

> *"From the medical perspective, since it isn't broadly accepted as a speciality skill and therefore if registrars take a role, it will not count towards their fellowship which is a deterrent. There is also a lack of opportunities both in the project and business-as-usual space for Resident Medical Officers which does not allow them to consider this as a career path."*

> *"Clinicians see that they have to choose between their clinical career (>a decade of training) or their passion/interest in digital health. The sunk cost of clinical training currently wins. We*

need to have a pathway for digital health specialist training which gives skills and qualifications to these individuals, which does not force them to abandon their clinical role."

"Building a recognised career path for clinicians who want to work within the clinical informatics field, providing them skills, recognition…as a clinician with a specialised skill set."

"…hold onto experienced staff who are deeply interested in this area - give them support and recognition"

"Certification also needs to come with roles where people will be paid more"

"There are difficulties in interested individuals gaining experience in this field. Many have had opportunities provided through (short-term) projects such as EMR rollouts, but frequently they do not have options to remain in this role and return to clinical duties."

2. **There is an urgent need to invest in the transdisciplinary development of clinicians as informaticians to meet future workforce demands, to ensure that safety and quality are at the centre of digital transformation.**

"The existing workforce does not have the skills to use the clinical systems we have. The data within these systems is often low quality because of clinical skill level."

"This is the only game in town moving us towards to real precision medicine agenda and if we don't have good clinical informaticians we will struggle to really provide that sustainability in that iterative improvement in safety and quality"

"We would strongly support it not being limited to AHPRA-regulated disciplines as there is an urgent need to include others, e.g. dietitians, psychologists and social care workers in digital transformation"

"Doctors may be "trapped" by the system we are in and are generally afraid to step outside of the mainstream training pathways for fear of jeopardising progression in clinical careers. This may be a gilded cage, but it is definitely a big factor turning passionate and talented people away from engaging in digital health."

3. **Clinicians should be included in decision-making about data and informatics and digital transformation of the health service.**

"Broader agenda of ensuring that clinicians are involved in decision-making about clinical analytics and not only technologists and vendor technologists."

"Enabling a culture of clinician-led digital health innovation to improve care delivery."

"Having clinical informaticians at the executive table making decisions about digital health procurement."

"So we don't end up with non-clinical folk making clinical environment decisions."

"We need a whole generation of people that can start to really provide the whole data and information agenda (clinicians must be involved in system design and decisions to get) high quality data and information available in real time and at the elbow for people to use to make good decisions clinically and corporately."

Vision

The vision statements below were refined though stakeholder engagement and discussions with the Project Leadership Group.

A clear pathway for clinicians to enrol and work prospectively towards an internationally recognised clinical informatics fellowship will be established that will value-add to their career as a clinician and lead to new, desirable jobs.
Clinical Fellows will be readily recognisable to their clinical colleges and employers as having specialised clinical knowledge, skills and credentials in informatics, leadership and service innovation, underpinned by a standardised curriculum.

The vision statements were developed from the following themes. Deidentified supporting quotations are included below to provide further qualitative insights.

1. **Keep (the pathway to fellowship) simple and make it clear.**

Recommendation: Articulate or illustrate career options and pathways. Communicate proactively about how the CIF articulates with medical and other clinical speciality programs.

> *"One of the challenges currently is just trying to understand how everything fits together. What are the pathways, and where are the gaps?"*
>
> *"Make sure it's clear where the Fellowship fits and that we work together (not in silos)."*
>
> *"It ought to be a clear pathway to specialisation with as few hurdles as possible."*
>
> *"...congruency across the spectrum to avoid people seeing a complicated landscape."*
>
> *"Clear pathways...for advancement into Clinical Informatics roles without having to step out of clinical practice; need to maintain registration and career advancement."*
>
> *"if we need to attract people to these areas and get people to professionalise, we need to actually sort of say where the jobs are."*
>
> *"...articulate the professional trajectories."*
>
> *"This international group could lead work in helping to map out career journeys for those roles that aren't invented yet."*

It was important to communicate very clearly that the program is not in competition with master's level education or higher-degree research programs, rather, the CIF Program is about developing competencies in the practical application of informatics in clinical settings.

2. **The value proposition is different for different stakeholders; understand it and communicate how the CIF Program aligns with stakeholder values.**

The current state situation is that, broadly, pursuing clinical informatics expertise has been seen as a distraction from the 'real work' of clinicians. It has usually not been perceived as career advancing for clinicians by their professional bodies, healthcare leadership or employers.

"Informatics expertise is sometimes seen as a C-anchor - doesn't give you a boost in an interview for a top-end executive role"

"The biggest challenge to people taking this up will be answering the question, what do I actually get at the end and what value will that add to my career aspirations?"

"Reputation? Career path and job prospects unknown?"

"...challenge in getting the colleges to recognise something that they might consider as a distraction from the main function of their fellowship."

"The biggest question I've got, having interviewed a number of those who are at the threshold of their next more senior specialist role is, a lot of them have this big question, 'Do I commit to this type of activity in conjunction with (my medical specialty)?' Because it can be viewed currently as a strong negative that may kill my specialism off. SoSo, I have to make this stark decision."

Recommendation: adopt positive, proactive messaging about what's needed to create the future state, where clinical informatics expertise is highly valued and indeed essential in a digitally enabled healthcare system.

"...be so careful to not to not say 'health, it didn't work before.' Rather, 'it just can't work now because it's different now.'"

"I think what we do know is that most health professionals, most people working in the health space and the general public don't understand what a clinical informatician is and how that role, and how the different bits of work we're doing actually fit in anywhere so it's our responsibility and our remit to continue to clearly communicate that."

"This is really essential to be able to provide employers and employees with some clear lines around exactly what their skills and capabilities are and how they're developing that...thinking about it from a recruiter point of view."

The value proposition will be clear to emerging professionals if the future state is highlighted, where clinical informaticians are integrated and responsible for innovation, in challenging and interesting roles.

"I just wanted to touch on the innovation angle, because, you know, if I think about the young trainees and fellows, their interest in digital health is very much intersecting with innovation and driving change in the profession. You know it's not just implementing solutions that are already out there. It's coming up with the next wave of solutions, and I think it would be a pity if we constrain the scope of this to just implementing solutions that are already well resolved. You know, I think we'd be missing out on a lot of people who might be interested in the fellowship if we don't harness at least basic grounding in what it takes to build new digital health innovation."

"...knowing that this is a recognised and valued fellowship that will value add to my career and to the organisation that I am working with."

Training a multidisciplinary group of clinical informatics experts will uplift healthcare sector capability. Involving clinicians with informatics expertise in decision-making about digital health

approaches will result in safer, quality healthcare, but it will take a concerted effort to make sure everyone knows this – especially healthcare executives and employers.

> *"...strategic aims - to grow our clinical informatics workforce, to push ahead so that our health systems understand the utility, and there is an outcome achieved, you know - collaboration and partnership."*

For clinical colleges, the value proposition includes having a standardised way to recognise clinical informatics expertise among members and fellows. Having fellows who also have the CIF should be seen as a way to strengthen or bring capability to the college. Investing in ongoing engagement and establishing metrics for evaluating the CIF that are aligned with colleges' values and priorities will be helpful in securing endorsement. Amplifying stories that demonstrate this professional value-add in ways that are relevant to the colleges will have an impact.

> *"From RACMA's perspective, we strongly support the concept. We have a number of fellows at the moment working as chief medical information officers, and they're saying, 'we should have special recognition in our role in informatics within the College of Medical Administrators'. And we're saying, well, how do we recognise that? So, we're envisaging that this fellowship pathway could well be the criteria to establish the special interest group within RACMA in medical informatics."*

> *"The value proposition I see that these clinical informatics fellowships would have for the specialist medical college – I think it brings an extra capability to the college's fellowship. By encouraging people to have this as an additional expertise and take this on as well, they're advancing knowledge and capability of the medical fellowship."*

> *"Some of the colleges are less knowledgeable about what potential clinical informatics could have...in terms of transforming the workforce. If there are some exemplars...shining examples of professional value-add with clinical informatics, that could be a case study that could be articulated to motivate colleges to really get behind this and to build up their own frameworks internally."*

> *"I think for the colleges it would be an asset to have fellows who have done a project or program like the one we're talking about, so that they then in turn can mentor a lot of the younger doctors coming through. Certainly in my experience, in paediatrics, anyway, are very keen to learn more about digital health, and to have a greater understanding of where AI and regulation and so on fits. I think it's an asset for a college, any college to have people who have had this semi-formalised training or exposure that your program is offering. You need to basically sell it to them, as this will be an asset to your fellows that they would have gained skills that they would not otherwise have gained."*

3. Need for professionalising and standardising in the area.

Currently, almost anyone can claim to be an expert in digital health, especially as digital health now becomes a clinical, rather than technical or industry endeavour. Relevant ongoing education in clinical informatics with clinical colleges should be facilitated and recognition of skills standardised.

> *"It's a bit wild west out there at the moment!"*

"We should aim to establish the Clinical Informatics Fellowship as the de facto required standard for clinicians working in the digital health space at a senior level. I think that should be something to be working towards."

"We all have the same vision for this. We want professionals in this, rather than what I can say in many roles is we have people who have an interest, but they're really dedicated informed amateurs in this space."

"This is really essential to be able to provide employers and employees with some clear lines around exactly what their skills and capabilities are."

"Recognise that clinical informatics is a clinical specialisation."

"We (nurse informaticians) just get recorded as 'other'. Digital Health is still 'other' at ANMAC."

Thematic Analysis of Guiding Principles The purpose and vision-setting exercise informed the development of a set of guiding principles. These were further refined during the design process. The CIF must be equivalent in spirit to other fellowships, offering national and international credibility and standing, and a mark of excellence. It does not aim to provide medical specialist standing with any clinical college, rather, completing the fellowship program will provide clinicians with an additional credential.

Whilst it was seen as essential to reduce barriers to participation, especially considering the urgency of producing many trained clinical informaticians to meet workforce demands, the standard must be high. A data-driven learning system must be set up around the program for quality improvement that includes barriers and enablers to access and participation, so that these can be identified promptly and acted on.

Guiding Principles Set 1 – Rigour and Recognition

The guiding principles noted below were refined through consultation with stakeholders.

Provide **clinicians with a clear pathway to become credentialed as an expert in clinical informatics.**
Leverage the national and international credibility of AIDH and its networks through the International Medical Informatics Association (IMIA) to offer the appropriate **postnominals** to successful candidates.
While the program will be offered, managed, and governed by the AIDH, the designation of Clinical Informatics Fellow of AIDH will be **widely recognised** by **clinical colleges and professional associations.**
Maintain a **standards-based** approach to ensure the **professionalisation of clinical informatics**.
Deliver **a knowledge and skills-based program**, where acquired knowledge is put into practice in supported learning environments.

The set of principles around rigour and recognition were developed through discussion around these following themes. De-identified supporting quotations are also included below to provide further qualitative insights.

1. **Defining who is the best 'customer' for the CIF Program**

The pilot model of the CIF Program is designed to steer candidates to relevant, quality formal education and then through a program of practice-based learning, with mentoring and industry engagement.

Participants felt that whilst there should be a clear pathway for clinicians at all career stages to work towards and achieve the recognition, that both early career and late career clinicians would have the most to gain from participating in the program.

> *"We really have kind of two tracks: younger, less experienced clinicians wanting to cross over quite quickly, and more experienced clinical informaticians who want to formalise that."*

Entry to the program should require clinicians to have clinical experience and an interest in digital health, but requiring too much may create a barrier for newer clinicians who may move from healthcare to another industry. The availability of the program and clarity of a career pathway to informatics and leadership roles for earlier-career clinicians may contribute to their retention in health and care.

> *"Timing is very important - take too long and something else will come to the fore."*

> *"What I'm balancing off is, if we wait too long, we lose them entirely from allied health and they go off and do other careers and professions completely."*

> *"...they go off to do something else and we've lost that skill set, we've lost that opportunity."*

> *"I did specifically refer to younger doctors coming in and saying, gosh, we really want training in this because they are the ones that are often far more digitally aware and savvy. But then, at the same time, I have colleagues that are older, and saying, Oh, my gosh! I'm so glad I'm going to be retiring soon, because this stuff's overwhelming. However, if you put to them the notion that you could actually become trained yourself such that you could supervise and mentor others. That adds another dimension to an experienced clinician's profile, if you like."*

2. **The need for fast-tracked or legacy routes for experienced clinical informaticians.**

There must be different pathways to fellowship status for clinicians who already have all or some of the requisite skills and experience. This is especially important in identifying existing experts and building a critical mass of people who can be involved in mentoring and training clinicians who are moving through the program.

> *"Many senior clinical leaders in health informatics have not completed formal university courses in digital health or clinical informatics. They should all be CHIA certified, and many have completed analytics or IT related papers in their master's programs, but requiring a graduate certificate is likely to be a major barrier to clinical fellowship.*
>
> *There needs to be recognition of industry experience. Many senior clinicians in health informatics roles have had years of experience as chief medical/nursing informatics officers, been involved in major IT application implementation projects and are recognised organisation advisors in IT procurement and implementation."*

Some people felt that would value in requiring assessment of people being credentialled via a legacy route, to ensure a standard is met.

"There would probably be exceptions where (completing any part of the program would not be) necessary, for someone who's clearly very experienced. But they should be able to present a case study in an examination, and I think that helps with sort of harmonisation and standardisation."

"I do believe it's important that we set a standard, so that not only our colleagues and peers and our colleges, but also the community understands, or the people in business, that you might end up working for understands that you've had a baseline, at least the baseline training and your experience builds on that. But I do like the fact that you've got flexibility in terms of those clinicians who may come in that have heaps of experience, and then just need (certification) by AIDH. But I still think they might have to sit an exam… just to standardise it across the board."

This approach would be consistent with the US's approach for AMIA's Fellowship program – one becomes Board 'eligible' if they have demonstrated their prerequisite skills and experience, but the examination must be passed in order to gain Board 'certification'.

There are international arguments for phasing such an approach out over time, to avoid perceptions of there being lack of rigour or consistency, or that there are competing pathways that are 'shortcuts' to the award of the CIF. It was broadly acceptable to participants that the AIDH Board, informed by the HIP Committee, should determine the criteria for legacy routes. Applications to be considered for legacy should be at the determination of the AIDH Board and requirements/criteria should be made clear.

"It would be helpful to articulate that there's an application process for fellowship, and that as part of that application process there is an appraisal of which pathway is relevant to that individual applicant…that sets the trajectory for when you're eligible to sit your exam, or what your specific training needs are."

"…an explicit sort of application, process to acceptance and a mapping of journeys."

3. **A strong recommendation that the CHIA examination be included.**

The Industry and Clinical Informatics advisory groups strongly recommended that, at least whilst the program becomes established, that CIF candidates complete the AIDH's CHIA examination during the program, before they start any practice-based learning component. One rationale for this was that the CHIA is recognised in the sector nationally and internationally as a credible and trusted mark of excellence for health informaticians. It has become something that employers are looking for in Australia.

"(CHIA) I think it is the cornerstone, in my mind, of what AIDH needs to provide to provide a meaningful fellowship."

The CHIA examination could be used to certify that someone applying for CIF candidacy via a legacy route has the requisite knowledge to be able to safely undertake the project component without needing to complete further learning at a higher education facility. Some people felt it should be a mandatory requirement, even for those who had completed their university course exams.

"The CHIA sets a high bar for the knowledge that you need."

As part of the implementation of this program, the intention is to have higher education courses accredited via the AIDH's HIP Committee (aligning with IMIA's Accredited Health and Biomedical Informatics Program) as suitable to prepare fellowship candidates for their practice-based learning, including units on digital transformation, change management and leadership. Higher education providers around the country should have support to adapt their curricula to this standard.

A key point of difference was that whilst some people highly valued the content and relevance of the formal university postgraduate education in digital health that they had completed, others shared that they believed there to be community sentiment that these courses were not valued by experienced clinicians in the sector who have expertise in clinical informatics.

> *"I have a lot of scepticism about the quality of the grad certs and grad diplomas in informatics. Talking to colleagues, they don't get much out of it."*

Some expressed that they felt the courses at graduate certificate level did not cover all the domains of the AHICF that the CHIA examines, particularly around leadership and management, and behavioural and social and behavioural sciences, and that demonstrating these competencies would be essential prior to starting a project.

> *"I haven't done any of the grad certs at the various universities in digital health. But most people have been pretty underwhelmed, and most people who have actually worked in health informatics have been underwhelmed by the curriculum that is provided, that's not a criticism of those it's just I don't think it provides the breadth that the CHIA does, from a curriculum knowledge base."*

> *"I would suggest the potential candidates obtain CHIA accreditation as a pre-requisite to the (project component of the) program. CHIA has essential information and knowledge to form a fundamental for any informatician's work. The ability allows the fellowship program to have a baseline…University courses might need to be clarified for our candidates as the course content might have a different approach to the CHIA certification."*

> *… "very few (university courses in digital health or health informatics) were going across the board and having the hard core, the understanding of digital, like just health services data. And the leadership and project management."*

4. **Start slowly and plan to mature the CIF Program and the credential over time.**

Whilst rigour was universally important to stakeholders, keeping things simple, accessing and developing and maturing the program over time was strongly recommended. Many people, including those who had experience in establishing clinical fellowship programs and managing large-scale projects of change insisted that it will take time for people to 'get it', to engage with it, and to get it right.

> *"Don't overcomplicate it at the start."*

> *"I think we should keep things as simple and focused as possible, to start with, and then build on them."*

> *"…the minimum requirement - I feel like this might develop over time through piloting and testing."*

"Realise that this all will take a lot of time - it will take time for this to be understood more widely as a valuable recognition and that the skills are valuable."

"It took the UK 10 years to get a more stable expectation of CCIO as an understood role. Now they have CE/CCIOs running whole health organisations!"

Investment in both ongoing collaborative work with clinical colleges to build understanding of, and clearly illustrate the value and utility of clinical informatics and what future jobs and roles and pathways could look like for different health professionals and Fellows of clinical colleges will be important.

"It often takes time to get colleges to move, but nothing motivates a college more than what benefit it prefers down the line to them."

"[comparing to establishment of other new paradigm] ...At the beginning, nobody knew it. We had to take it so slowly, so that people 'got it'. For me, this has got to be about a phased approach, so that they go, 'so what does what does even that word informatics mean?' It might change from the first year to the second - don't get too bogged down in the beginning."

"If that there's time built in ...to talk it through with some of our major peak [allied health] bodies ...so we don't end up with disagreement and therefore we have other competing pieces of work running alongside this."

"Get people on board with language about how this serves the roles we need in future."

"Whenever we're creating a new profession, we need to give an articulation of professional trajectories and career development opportunities. It's probably not just one flavour that we're seeking here. Two examples of why we're doing this: we can have sub-specialists within their discipline who have expertise that can help deployment of major projects. But others who may choose to make this their primary profession."

5. **Joint recognition and endorsement by clinical colleges and professional peaks requires a clear understanding of what the CIF Program is.**

The requirements for joint recognition will be different for the different colleges and professional peaks, and as such requires further consultation with these groups now that a pilot model has been proposed. It will be important to clearly define for each body what the fellowship program is and is not, and where it fits in the hierarchy of qualifications and programs of learning.

"We do want endorsement from various colleges – expectation management will be tricky."

"There are some critical periods in training that the colleges would be reticent to interrupt. Working with each of the colleges to build out a roadmap is probably the best way to start getting some people on the journey. And then, once you get a few people on the train, then it shows that it's doable. Working closely with those colleges, or a few colleges just to get the ball rolling, is key."

"I think, a model to bear in mind that to think about is the AICD training, in respect of governance, which has become the de facto requirement for anyone basically who wants to join a board somewhere in Australia, that they have completed that AICD. And you complement that in, layer on top of other qualifications – you might be an economist or a

doctor, or nurse, or whatever …But then that's the expected (training that you've done) if you're going to be playing in the governance space seriously. …the goal to … establish the CI fellowship, as the de facto required standard, for clinicians working in the digital health space at a senior level."

What was most important to the participants in the design process was that clinicians' professional 'homes' recognise at least some CPD activities around digital health and clinical informatics for maintenance of their professional registration or clinical fellowship status.

"How do I get all of the hundreds of thousands of hours of people devoting to something that is highly relevant, highly usable, but it doesn't really as yet get called up in any way, shape or form as CPD – can we cement some of these relevant activities as CPD for the different colleges?"

"So, if you're doing it for one thing, can you also have it recognized with AHPRA and your CPD home, and also recognized with CHIA and everything else."

"Anything that you're going to do around log booking and reflective journaling it has to be supported by easy ways for people to keep track of it, because they're going to have onerous requirements from AHPRA, requirements from their colleges if they're doing a medical training program. And then you have other things like, you know, I have AICD – that wants CPD, and before you know it, you're in just like CPD hell trying to keep track of everything you're doing."

6. **Industry engagement and collaboration sessions could be high-value forums for project workshopping & developing skills essential for leading digital transformation.**

Industry engagement sessions could provide an appropriate forum for candidates to share and workshop their projects, and learn, extend and consolidate leadership, collaboration, change and project management skills from each other, from existing AIDH fellows and Chief X Information Officers (CXIOs). Many people did not feel confident that learning about these skills in a course readily translates into clinicians developing competencies in these areas. They agreed that more guidance, practice, and exposure to other skilled leaders across the health system would be very useful.

"I've done a grad cert and I'm also a CHIA. None of those things has equipped me to operate successfully in the health system – this answers that that sort of that gap."

Stakeholders universally agreed that the AIDH is well-placed to set up and foster an engaged CIF network, drawing from the >200 existing Fellows and established CXIOs across the country as mentors and/or supervisors. There was consensus that many existing AIDH Fellows and CXIOs would choose to participate in industry engagement and collaboration sessions that were part of the CIF Program. Candidates could present, socialise or test their project ideas for feasibility, seek to understand its relevance to the broader health system and potential up- or downstream impacts and seek advice and informal mentoring from clinicians and professionals they would not otherwise have access to or be connected with. Stakeholders felt such sessions would be useful in preparing candidates to better understand the clinical informatics profession and practice cross-disciplinary professionalism.

"This can be a silo breaker if we do it well, and I would love it to help contribute to that."

"I think that is what would be needed to make sure it was a quality project and had that more holistic viewpoint. To enable allied health professionals to get involved in these kinds of projects in a meaningful, valuable way is that whilst they can come up with the idea, they need the networks to understand well what else is happening elsewhere. So, we're not reinventing the wheel…you know. Who else can help me? In which ways? How can I participate in a group to make sure I'm not just trying to come up with a solution in a vacuum on my own?

"Nationally there are 36 members of the Australian College of Nursing Chief Nursing and Informatics Officer group. We could engage them to look at mentorship. It would be a great enabler for knowledge sharing and advice on projects."

"It's so underrated how much we learn from each other in this transdisciplinary kind of area."

"It also enriched them because they found actually mentoring someone got them back to why they were doing medicine in the first place! And for this sort of mentorship will it be, you know, exciting to work with younger, wonderful, clinical informaticians who are the future."

"…make sure that there's mentoring formally set up, and there is a formal program of engagement, industry, collaboration, so that more junior clinicians who are kind of rapidly rising and ending up with this form of [certification], they're not ill-equipped to step into those roles, and there still would be a level of support available through the networks that we've hopefully helped to establish."

Fellows could provide updates on longer-term evaluation, key learnings from and impacts of past projects. It could be an ideal forum for teaching project management, change management and leadership skills, and linking candidates with mentors who have skills or knowledge that are not necessarily available to them at their project site.

"…[these] could help in assembling a sensible mentor team. As there are 6 domains of knowledge, if you have a depth of knowledge in biomed, it would be good to pair you up with someone who has a depth of knowledge in information systems, I think that will be critical to success."

"…without the leadership and management, the informatics is almost irrelevant, because you won't be taken seriously at an organisational level, to be able to make decisions, manage projects,"

"The other thing that is missing significantly (from the university courses) is the project management stuff, the change management, the leadership, the people and processes stuff beyond the technology that is just so important."

Stakeholders felt that these practical, informal learning opportunities would be of high value, and some felt that AIDH could develop and deliver some formal curriculum through these sessions.

"If AIDH can provide an online curriculum (in change management and leadership) that sits alongside the informatics knowledge-based curriculum, thinking about this from an ISIS (Indicators, Systems, Innovation, Strategy) and financial sustainability perspective, AIDH could do this so other training bodies and universities don't have to."

7. **Identifying projects will be straightforward, so long as candidates have support to develop a project proposal that meets an agreed standard.**

There was consensus that candidates proposing a project for their practice-based training using a standardised template, based on AMIA's Improvement in Medical Practice (IMP) activity guidelines, was a reasonable approach. Candidates would propose their project to the AIDH's HIP Committee and in their proposal outline how the project will seek to solve a problem through the implementation of a clinical informatics approach, enhance their knowledge and abilities as a clinical informatician, the impact on the health sector the project will have, and must clearly identify metrics for success that are appropriate to the discipline/setting/population/problem.

Candidates could choose to develop a project to work on alone, work on a team with others or choose a project from a list sourced by the DHCRC and AIDH. Project ideas could be socialised and tested at CIF Network sessions.

> *"Doing a joint project or something like that would actually work quite well because even if you've got a physio (who works in private practice) who has the best desire and will in the world they still lack that connection."*

Stakeholders felt that organisations and industry partners would want to propose projects and have candidates work with them on problems that are important to them.

> *"I don't think it's a problem (finding suitable projects and organisations to do them with). Having worked in general practice. I did some great projects just in data mining, or, you know, even collecting and collating patient data from experience data and things like that."*

> *"It could be an opportunity for those organisations to try before they buy… That they might be looking for talent in clinical informatics. I wonder if there is scope to have a network of stakeholders/ partners to the fellowship who might be a conduit for those programs?"*

> *"They could be value-add for those other organisations. As a as a case in point, I help to run a national screening program for diabetic eye disease. We would actually value the involvement of someone, you know, helping us to approach the data. I think there will be plenty of opportunities."*

> *"I think we need to think about scope to involve people who are not currently employed in informatics, and you know, how do they break in? …if there's scope for engaging national digital health program, providers like you know, Telstra Health, or some of the private insurers"*

> *"Do we engage a wider network of stakeholders and offer up opportunities for people to do programs? I think it would be a pity if it was constrained to just your own organisation. I think there's some convenience in that, but it is also some strength to like stepping out of your comfort zone: and learning, and in a new environment…I'd like to see that as a major component."*

There was discussion over several sessions about possible formats, methods, proposed and possible requirements and opportunities for supervising and mentoring.

The final recommendations from all advisory groups were to keep things simple and flexible in the early and pilot stages. It was seen as likely that different colleges and professional bodies may have different recommendations for their fellows and members, for example, requiring candidates to have supervision from a clinician of their own discipline, where others may not recommend this.

Candidates should propose the supervisory arrangement and mentorship that they think they might need for their specific project, and the AIDH HIP Committee will consider this on a case-by-case basis.

8. **The assessment component should be designed by an educationalist. It must be based on science-based authentic assessment methods rather than defaulting to a traditional high-stakes exam only**.

Stakeholders shared perspectives and their lived experience of being assessed and some stakeholders had worked with different colleges and trainee committees to designing and redesign fellowship assessments. All agreed that the assessment ought to be designed by a professional educationalist.

> *"This is the type of issue that I think we need to get in from a medical or an educationalist on ...a lot of organisations are trying to move away from the big bang examination. It's not the best way to assess somebody's overall competence. It depends on the mix of other assessments and the nature of the mentoring and the oversight of people while they're doing the project. They're getting feedback, et cetera, and demonstrating that they're progressing towards whatever the competencies are that constitute all of the skills you need to have to end up with the Fellowship in Digital Health."*

> *"I don't think it's about [assessing] knowledge. Knowledge is easy. It's about the ability to engage, develop, trust, confidence and lead. This is more about the attitude and behaviour and confidence building that the clinical fellow can demonstrate."*

> *"If we take a modern educational approach that we have a fundamental way we can actually be firm in our approach in 'This is why we're doing this, this is what we're doing. This is where we'll be inflexible, due to 'blah' rather than (based on) people's experiences through VIVAs or exams.' It's more based on current educational science. Which actually sets us up for growth and success."*

> *"...getting an educationalist involved. There are just so many different ways of assessing people, and it has to accommodate the diversity in the people who are keen to do this. For some VIVAs will not work well at all. That'd be absolutely terrifying, for other people exams are going to be terrifying. I went through this with the College of [speciality] ...we actually removed the VIVA from one of the sub-specialties, because it was, quite frankly, a way of picking and choosing who you wanted to be in the club...we stuck with the written and it's moved to a direct observation of procedural skills."*

The assessment process should consider and cater to different people's learning styles and access requirements. Authentic assessments such as written examinations, theses project reports, logbooks and vivas were suggested and discussed.

> *"I think exam's a daunting label. My strong preference would be that the candidates should submit a project that clearly outlines their roles and contribution, and ...then they defend their dissertation by a group of examiners who explore with them whether or not they've demonstrated the skills and accountabilities that would be required of a fellow."*

> *"If there's also a VIVA about your own project, an exam could be to get somebody else's project and interrogate their method and their process."*

"...also making sure that if they're going off track that that's caught early and addressed early. Whether that's an assessment thing or a supervision thing, I think it's really important."

"In defence of exams, from an accessibility perspective having options of exams and VIVAs and assignment type things, having a range of options, is quite important. Particularly if you've got neurodiverse folks, and others with different accessibility needs, exams are often preferred."

"A VIVA won't accommodate some people, not only if someone's neurodiverse, but also if English is not their first language, and that's important."

There was consensus that there should be a mechanism for at least informal assessment, or peer-review of projects throughout the program, to make sure candidates stay on track.

"Annual review or midpoint assessment? Someone to say, "You're on track,", checkpoints throughout or in between?"

"Somewhere where you check that your project still is within kind of the guard rails that you were presented with at the start, and then there's an opportunity to problem solve and kind of just cross-check also with people working in different settings to you what your impact is likely to be across their ecosystem."

Finally, it will be important to have a transdisciplinary assessment panel to fairly assess candidates with background in diverse disciplines and settings.

"I'm worried about context that when we have a group of assessors sitting around assessing project suitability, we need to have people around the table who actually understand the context of our (allied health) workforce, in order to participate in that conversation, or they are never going to get up...their projects won't be either complex enough, or you know, I can just hear that there'll be a raft of issues that we will have with them unless we build this in now."

Guiding Principles Set 2 - Diversity, Inclusion and Belonging

The guiding principles noted below were refined through consultation with stakeholders.

Deliver a **cross-disciplinary clinical fellowship program** – for clinicians who are health and social care professionals including those regulated by the Australian Heath Practitioner Regulation Agency.
Provide options which enable participation by clinicians who work in rural, remote and metro locations **across all settings** - aged care, community health, acute care services, mental health, primary care, and so on. Barriers and facilitators to participation in the program will be monitored.
We will design for flexibility, *expecting* that clinicians will need to participate within their existing professional commitments, and some will have disability-related or other access requirements
By **embedding the program in a learning system**, we will identify barriers and facilitators to participation in and completion of the program, and act on these.

Candidates will be **supported by the AIDH Fellowship Network** as they progress through the program, with recognition that they are contributing to the enhancement of the profession.

The set of principles around diversity, inclusion and belonging were developed through discussion around these following themes. As above, de-identified supporting quotations are included below to provide further qualitative insights.

1. **Healthcare is delivered in a cross-disciplinary environment, so we require skilled and competent clinical informaticians with diverse clinical backgrounds.**

"Clinical informatics transcends discipline-specific nuances."

"...the reality of the multidisciplinary environment we live and work in... informatics is a team sport."

Whilst it was broadly acknowledged that there will be complexities in delivering a fellowship program that meets the needs of clinicians from different disciplines, starting with a transdisciplinary pilot program was non-negotiable for all stakeholders. Simplicity and clarity around the program, however, should not be lost in this process. The risk of designing a medical-centric program that might be perceived to, or indeed does exclude others because of structural or cultural issues within the professions was seen as more important to address than the risk of taking longer to get started after developing inclusive processes and ways of working.

"...paradox...if we build up certain groups who are energised and specialised - we might actually leave some other groups behind."

"Maslow's pyramid needs has quite a lot to do with this. So, for example, white doctors in a certain age are quite self-sufficient. They are the people who've got the time and the opportunity and are self-directed and are therefore most likely to be able to take advantage of opportunities to join things like [this]..."

"In the UK, the Faculty of Clinical Informatics has very deliberately taken a multidisciplinary view, I think this is the right approach. The Faculty has many more members who are doctors, despite their being many more nurses than doctors in the UK. They have very deliberately taken the view that we should try to organise and focus on maintaining a degree of equity and make it as easy as possible for any of the clinical professions to get involved in this."

"Because of equity issues with access to training/professional development $$$$ vs salary, digital health has an under representation of nurses and midwives due to these structural issues. This has to be sustainable and accessible."

"... [for allied health] professional development and non-clinical activities difficult to access (funding and time)"

"...fellowship that acknowledges the complexity of the allied health space...multiple software vendors, poor and low collection of workforce data and activity data."

"...looking at what are the barriers that prevent people in lower paid occupations from joining? What are the cultural issues? It's a very complex area."

2. **An inclusive approach should be taken to defining 'clinician' when assessing a candidate's suitability for the program.**

Some stakeholders did feel that at least initially, the fellowship should be only offered to clinicians whose profession is regulated by AHPRA. However, most – including AHPRA's representative - strongly recommended that a more inclusive approach be taken to allow access to all clinicians who are able to gain entry to higher education courses. Unnecessary barriers to training and recognition should not be created for talented clinicians who have much to contribute in this space but are not in an AHPRA-regulated profession. Most commonly, the rationale for this was about making sure that we engage as diverse a group of clinicians as possible so that the group of Clinical Informatics Fellows that grows is equipped to contribute to digital transformation from different perspectives and experience of the system and how health and care impacts on patient, citizen and community outcomes. Some stakeholders felt that the legitimacy of the program could be lowered by including non-AHPRA regulated clinical professionals, but most stakeholders, including AHPRA, strongly disagreed with this sentiment.

> *"We would strongly support it not being (limited to) AHPRA-regulated disciplines… those that are self-regulating, in particular dietitians, speech therapists, exercise physiologists and the like, and I think there is particular interest from some clinicians in some of those groups."*

> *"We don't want to create little of …niche experts, but within each clinical specialty, you know, given that increasingly we want to see systematisation."*

> *"For us (allied health), it's probably more about setting than it is about clinician type"*

3. **Beyond diversity of discipline, we need a workforce of clinical informatics fellows with diverse professional and personal lived experience and identities**.

When designing for diversity and inclusion was discussed, stakeholders expressed that this was essential to ensuring both the quality of the program and its ability to deliver Fellows who would be equipped to work in digital transformation across the breadth of the health system and at its intersection with prevention, social care and public health. Fellows with different perspectives and broad networks will be more likely, in practice, to apply their skills in ways that will improve service quality and health outcomes for all Australians.

> *"An extra value is the diversity of thought that you're exposed to."*

> *"What I'm taking away from that is that our 'Faculty' actually needs to be diverse …we need to hard wire diversity into that first (group), so that they are able to mentor appropriately, so that our first generation that we grow ourselves is diverse, and we have a wonderful rich mix of professions, ages and backgrounds."*

> *"If we only target the very experienced and those heading towards executive roles, then we might get there faster, and be more assured, but it will be a narrow footprint."*

> *"Normalise including disabled clinicians in the workforce. [Career options like this help to establish] more part-time, off-the-floor roles in health."*

> *"…making sure that chronically ill clinicians, or people who want to choose to work part-time can have access to a program like this…so that we have diversity of thought, but so that we also have people who are really talented clinicians with an interest in informatics, if they are*

going to be working part-time, that they're not just sent to another industry because they have no other option. We want to retain that kind of talent in the system."

"Understand that mid-career professionals are often parents…having the time to undertake the fellowship amongst busy clinical schedules, research/admin commitments and family commitments."

Stakeholders discussed strategies to attract a diverse cohort to the program as well as how to predict, identify, measure and address barriers to access for different groups. These strategies, broadly, were either about communication strategies that clearly illustrate that this is a program for a diverse group of clinicians and promoted a sense of belonging, as well as strategies to address structural barriers, including personal and work time and funding.

"I think we found that AMIA, we were having a similar problem …attendees and members were …the typical white male dominant community. A few years ago we started having this DEI campaign using videos of members. We focus those videos using these individuals and we began using familiar faces to those under-represented groups in those videos to start showing that we are opening the door for really anyone and everyone."

"Initially, the Digital Health Leadership Academy (NHS England) stood up very rapidly - did some comms, sent messages to people they knew - inherent biases, because the people you know tend to come from your professional background, tend to look like you. We ended up with a high proportion of medics and a high proportion of white people, and a high proportion of men in cohort one."

"…if you work hard on it, what we find in the Faculty is, it does have results, and of course, as more women join, or as more non- white people join others outside the faculty see that, and they feel that maybe that's an organisation that they, too might want to join, and might: be welcome, and feel that they that they belong."

"Map / stories to illustrate appropriate projects in context of clinical workforce across settings and disciplines, to make it easier to determine what the commitment looks like for different types of clinicians."

"Consider equity challenges in retaining the fellowship (not just at entry), including for individuals with career break."

"The costs for training, are just so prohibitive that it's really even hard to get someone you know, to go and do a $300 course so, so there is just an equity issue here (nursing)."

"There is a discrepancy… some professions actually get paid to do professional development, and have a budget as part of their package, a lot of others don't."

Scholarships or clinicians being granted paid time to work on projects away from their substantive clinical roles were suggested as treatments for some of these challenges, however, some stakeholders shared that the current state is still that stepping out of clinical roles may still jeopardise a clinician's career whilst the profile of the clinical informatician continues to develop.

"Most allied health professions, we don't have an existing sort of fellowship model to fall in line with here. And so, yeah, I think my vote would be for not establishing an expectation where you're porting a clinical role to undertake the project, because I think that for allied health that

it would really make this not accessible to a big group of people where that's not practical or available. Because there isn't an established framework for which people can do that really."

"...part-time and, the time and space restrictions, not just the financial ones when we're thinking of for equity."

4. **Build in and expect that people will need flexibility and options for in-person and remote participation and the pace of engagement activities and project work as the norm, not only as an exception.**

The program should work around the diverse needs, routines and the priorities of candidates and their employers to be as accessible as possible. Stakeholders felt that so long as projects meet the standard guidelines for what needs to be learned and achieved and the overarching timeframes, that the AIDH HIP Committee deems that there is sufficient support in terms of supervision, mentoring and support of the site, then there does not need to be a set expectation for the physical training environment.

"...not an accredited (teaching) hospital, rather a 'regulated environment'. In advance of somebody commencing their practice-based learning there should be a check that the amount of time they're doing it in is suitable, the location they're doing it in is suitable, there are proper supervisory mentorship arrangements in place, and then you can sort of de-facto regulate the environment in which that's taking place without having to accredited facilities."

"What I think should be spelled out ...is a set of principles around the location that somebody would undertake their training and keep that flexible. So, it's not hospital centric, the people in community practice settings can also do it, having a degree of flexibility also around who might supervise it. If there's nobody suitable to supervise, they might lean on their mentoring arrangement."

"When you're getting towards the senior level of your career, often that's the most challenging time to then do additional courses because you're in the mix, you're in the middle of all of this and to then go off and do some of this work! That's why the pacing and the set out of that process (could make it possible)"

"Flexibility in training pathway to allow for clinicians to start/stop as needed and couple with own profession's training requirements."

"Probably the toughest challenge are the people who are not based in a tertiary facility. So, they're rural, they're remote-based, they're the speech therapist who spends most of her time in a car driving to schools and doing school-based visits. People who work in NDIS. Like all these people that their day job while they're interested in this stuff, it doesn't give them opportunities to get some tangible experience in digital health. You know, we want to be able to facilitate those opportunities."

The amount and frequency of supervision and mentoring should be expected to vary. Minimum standards may develop over time.

"There's a generational difference. Those people who are mid-career, more senior know exactly what they want to get into. They've seen a lot of their career. They come to school or come to the scholarship, knowing what they really want to hone in on. Versus [someone less

experienced] …they want some handholding…we found that close mentorship to be very helpful for the younger generation."

Several models for mentoring and connecting remote candidates to work together were proposed by stakeholders to consider, including the Echo model. All agreed that participation in the activities of the CIF network should be mandatory, and that efforts should be made to ensure that candidates can participate and be supported by the AIDH Fellowship Network fully either in-person or remotely, with some provisions for asynchronous engagement as well.

"How do we, when going forward, not leave anyone behind?"

5. **Age should be deliberately included in the diversity strategy.**

The fellowship program should be accessible and attractive to highly experienced clinicians, and those who are working in senior executive positions who need upskilling in digital health to contribute to digital transformation of the system.

"An attendee in one of the talks I was giving, she said, "You know, I retired because of this thing! I was ashamed to ask a fresh graduate how to enter meds or to do documentation, and so I just retired to see myself from the embarrassment."

"I think we're at this generational interchange…where the people we want to change need teaching, and yet the current teachers or supervisors don't necessarily have that skillset to provide it. So, we're seeing this in the Royal College of Physicians, that the senior generation of physicians have only ever worked on paper, and so the idea of clinical terminology or clinical decision support is completely foreign to them. Yet we've got this new cohort who now needs shepherding through these complexities…"

"I think for the clinical colleges it would be an asset to have highly experienced Fellows who have done a project or program like the one we're talking about, so that they then in turn can mentor a lot of the younger doctors coming through….[these more experienced clinicians] are actually very keen to learn more about digital health, and to have a greater understanding of where AI and so on fits. I think it's an asset for a college, any college to have people who have had this semi-formalised training or exposure that your program is offering."

"Your outreach may need to be physical to reach those areas where people are less tech savvy – flyers, or billboards!"

6. **A diverse group of stakeholders should continue to be involved in setting up a learning system for ongoing evaluation and development of the program.**

Stakeholders recommended – and were interested in being involved in - determining which and how data should be collected, how it should be analysed, interpreted and acted on. Transparency and shared, ready access to key data should be principles that underpin the program's evaluation and development. There should be investment in ongoing work with clinical colleges, professional peaks, organisations who are sites for projects, candidates and graduated Clinical Informatics Fellows not only to secure support for the program, but to inform the evaluation and share data.

"AHPA would be keen to ensure we can always access data related to the number of fellows with allied health related qualifications and understand the projects being undertaken which

are relevant to allied health, to assist with inclusion in relevant projects AHPA have funding for and to ensure no duplication/indicate where able to support one another."

"Articulate the value proposition to the colleges - tap into the FOMO!

There's the fear of being left behind. If other specialties are embracing the digital health agenda, not having it forced upon them, but actually helping to drive the agenda, I think that's something that would speak to the colleges."

There was broad support for looking at three levels of evaluation:

i. The impact of the program of learning itself
    a. Satisfaction of participants
    b. How it has built capability in individuals
    c. How it has benefited the organisations people did projects within
    d. How it has impacted on the community of fellows
ii. Whether the program does lead to a clear career trajectory and for whom - work readiness for these new roles and what they look like
iii. The impact of the establishment of these new roles for clinical informaticians on the sector, nationally and internationally

The International Advisory Group expressed on interest in leading collaborative work to map out career journeys for relevant professional roles that aren't invented yet.

"We have a desire to work together to define some common metrics … conduct research to examine the impact desire to develop the evidence space about what the impact of these roles actually are (on systems and the quality and safety of healthcare in the digitally enabled world)."

From Consultation to Pilot

Following stakeholder consultation, a proposed pilot model was finalised and presented to the DHCRC Board in December 2022. In this model, Fellowship candidates would be required to complete any Australian degree at a Graduate Certificate level (AQF Level 8) or above, in digital health and/or clinical informatics that is accredited by AIDH as meeting the national curriculum standard. Fellowship candidates would then apply their knowledge and build their capability for leadership, project and change management through participation in a program of practice-based learning, mentoring and community engagement. Their demonstration of skills would finally be assessed by a panel of existing Fellows, against the AHICF. Once established, the Fellowship would be governed and issued by the AIDH, awarding postnominals which are intended to be widely recognised by clinical colleges and/or professional associations. Maintenance of Fellowship status will require completion of ongoing accrual of CPD points. Further details are presented in *Appendix I*.

Section 5: Outstanding Matters and Next Steps

This Stakeholder Engagement Report document was made available to advisory group members to review and provide feedback on. This was important to ensure that contributors' input was represented as intended. The draft Stakeholder Engagement Report was circulated to stakeholders who contributed by Gillian Mason in June 2023 to ensure that their input was accurately reflected in this document.

Outstanding Matters

Following circulation of the final draft Stakeholder Engagement Report in June 2023, the AIDH has reviewed stakeholder feedback and how the proposed model could be established on a scalable and sustainable way, including how components of the training pathway could be operationalised. Further planning is required to resolve outstanding issues alongside preparations to pilot the CIF Program.

Firstly, splintered, multiple or rival fellowships in digital health would create confusion in the labour market and make it challenging for potential employers to determine which is most suitable to lead digital health adoption. Stakeholders voiced strong support for development of a national CIF Program, however further consideration is required of exactly how this additional pathway would sit alongside the pre-existing Fellow Australasian Institute of Digital Health (FAIDH) and Associate FAIDH. The AIDH will give further consideration to this alignment in the coming months.

Secondly, a key principle of health education is the need for ongoing professional development to maintain currency of skills. Stakeholders agreed that this is also true for clinical informaticians. Further work is required to determine how AIDH can operationalise requirements for CPD for clinical informatician fellows in digital health, considering that registered clinicians already have their own CPD homes by virtue of being registered professionals. While it will be important to demonstrate CPD specific to clinical informatics, broader requirements should be considered when determining the most appropriate mechanism to do so.

Thirdly, further consideration is needed for how to determine the suitability of higher education courses (Graduate Certificate or above) for the fellowship pathway. University stakeholders noted challenges in directly accrediting their courses for this pathway, which would also require tailored accreditation standards, skilled volunteers, central coordination and an appeals process. Other means of achieving the same ends of having a choice of university courses to attend to acquire the appropriate level of knowledge will be explored by AIDH before settling on a specific process.

A fourth outstanding matter is the precise mentorship model and oversight of practical training and project development. These will be highly reliant on volunteers, trained with guidance and other materials. Furthermore, AIDH will need internal staffing allocations to coordinate and link mentors with applicants and set expectations for all parties.

The final major outstanding matter is that several stakeholders noted the requirement for educationalist input to design the exit assessments to ensure that candidates for fellowship have attained the requisite knowledge, understanding and experience in digital health to attain fellowship. This would also inform the nature of logbook analysis and other exit assessments, including what skilled volunteers support would be required and how this can be coordinated by AIDH. Funding will be required to engage an educationalist to design an appropriate and flexible

approach to the final assessment that aligns with the pathway's vision and principles. The final assessment should also be informed by further stakeholder engagement with clinical colleges, universities and refined following a pilot.

The AIDH welcomes the opportunity to discuss these matters further with DHCRC, including exploring opportunities for further partnerships and/or funding. In the meantime, AIDH is having further discussions with its internal governing bodies to determine the most appropriate way forward. The AIDH executive team is also preparing internal workplans for 2024 which will allocate staff resources to work through the outstanding matters noted above.

The AIDH looks forward to continuing to work in partnership with DHCRC and others to overcome these challenges and deliver a national fellowship program for digital health.

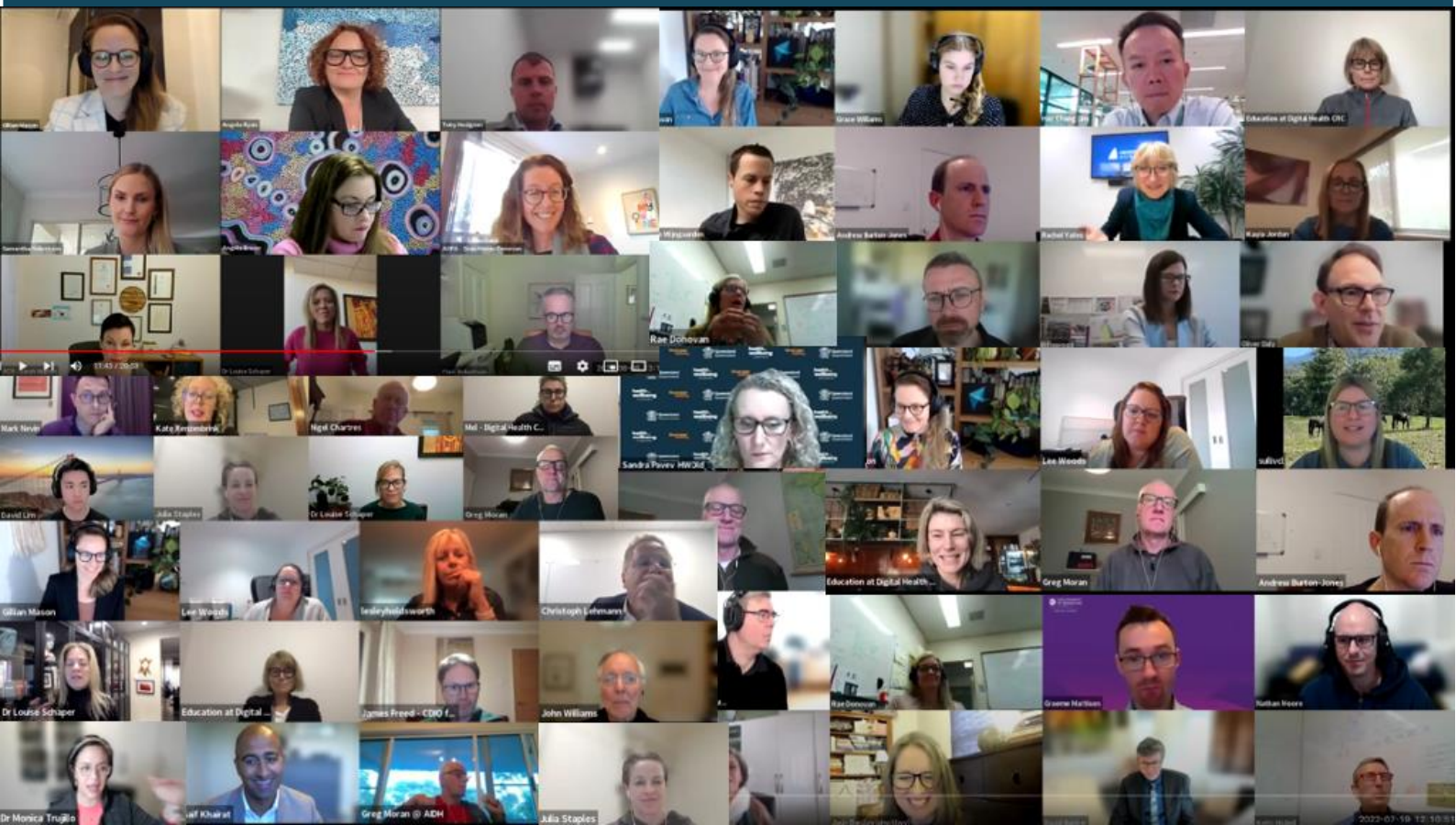
This project was supported by Digital Health CRC Limited. Digital Health CRC Limited is funded under the Commonwealth Government's Cooperative Research Centres Program.

digital health crc

AIDH AUSTRALASIAN INSTITUTE OF DIGITAL HEALTH

The AIDH would like to acknowledge the significant and valuable volunteer contributions of the experts involved in Phase 1 of the project.

We're so excited to realise this vision for Australia's Clinical Informatics Fellowship Program, together with you!



Appendix I - DRAFT Fellowship Program

The Australasian Institute of Digital Health (AIDH) Clinical Informatics Fellowship (CIF) Program is being developed to allow clinicians to enrol in a recognised national clinical informatics fellowship. It will provide a clear and standardised pathway for clinicians to become experts in digital health and lead digital transformation for care services.

The CIF Program will provide formal education and practice-based training in

- applied clinical informatics
- effective and collaborative ways of working across disciplines and with health and social care stakeholders to achieve better health and care outcomes through digital transformation.
- leading and supporting digital transformation in the contemporary Australian health and social care ecosystem.

The CIF will connect prospective AIDH Clinical Informatics Fellows to a network of diverse clinical and health informaticians as emerging leaders in digital change. The professional fellowship standing will be widely recognised by the relevant medical/clinical/health college or professional association and the AIDH.

Once a candidate successfully completes the CIF Program, they will be expected to participate in ongoing continuing professional development activities to remain a Clinical Informatics Fellow of the AIDH.

As shown in the following Figure 7 the CIF will have acceptance for enrolment and successful completion requirements. Duration will be flexible, but it is likely to be between two to four years, depending on when they begin, the timing of each component of the program and how much time candidates can dedicate alongside their clinical practice. It is anticipated that most candidates will remain in full-time employment while completing the program.

There are five (5) components to the CIF Program, all of which must be successfully completed to become a Clinical Informatics Fellow:

Five components are proposed for the CIF Program including:

1. **Completion of a higher education course**: at graduate certificate level (Australian Qualifications Framework (AQF) Level 8) or above (expected to be accredited by AIDH's HIP (in association with international educational recommendations)

   This can be completed prior to application to the Fellowship program (within two (2) years of application) or as part of the program.

2. **Participation in mentoring**: active participation in the CIF's formal mentoring program, coordinated by AIDH

3. **Industry collaboration and engagement**: active participation in organised activities of the AIDH's Fellowship network and digital health community

4. **Completion of a project:** application of knowledge through practice-based training or an industry placement and/or completion of supervised project in digital health

5. **Successful completion of an exit assessment:** based on a completed logbook and/or other assessment.

   These and other suitable assessment formats, to be designed with input from a professional educationalist, with a view to the candidate's project being presented to an expert panel and subjected to scrutiny.

All five (5) components listed above must be completed to be awarded a Clinical Informatics Fellowship. As noted above, to maintain Fellowship status, ongoing CPD is required.

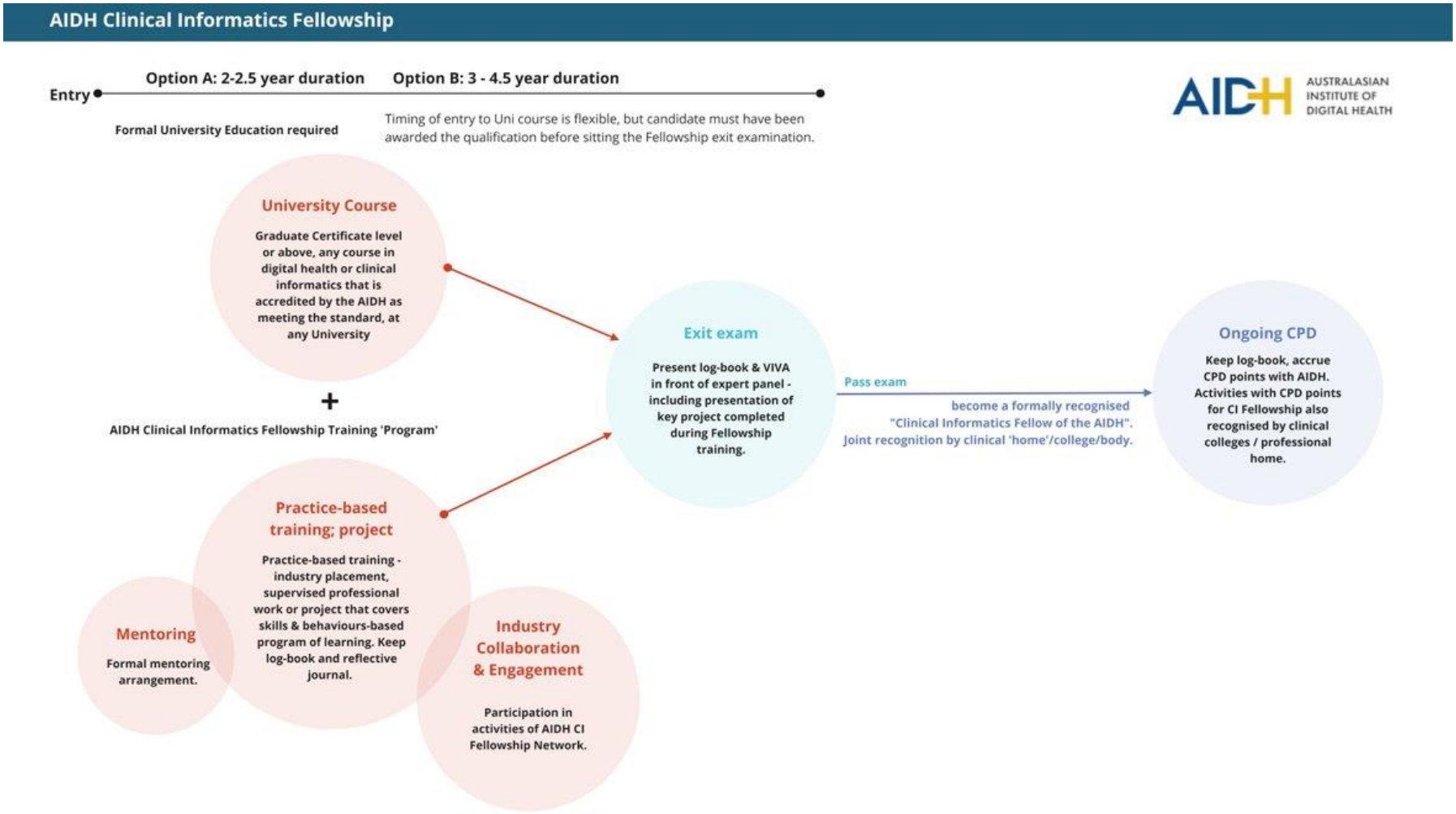


Figure 7: CIF Program

Once a candidate successfully completes the CIF Program, they will receive appropriate postnominals and become formally recognised as a 'Clinical Informatics Fellow of the AIDH' – widely recognised by professional clinical colleges and associations in Australia.

All CI Fellows will be required to participate in ongoing continuing professional development to remain Clinical Informatics Fellows of the AIDH.

Entrance Eligibility Criteria

To apply for acceptance into the program, clinicians must have at a minimum:

- completed their clinical training (to attain professional registration as a clinician from an APHRA board, membership of the peak professional body, or equivalent for that profession).
- have more than three (3) years clinical experience.

Formal Knowledge Assessment Component

This component of the CIF comprises:

1. **Higher education Course**: Approved higher education course at graduate certificate level (AQF Level 8) or above

This can be completed prior to application to the CIF program (within two (2) years of application to the program) or as part of the program.

Practice-Based Learning, Applied Knowledge, Engagement and Assessment Component

In recognition that informatics is very much an applied discipline, candidates must also complete the below three (3) activities to demonstrate the application of their clinical informatics knowledge, develop new knowledge in health sector leadership and project management, develop their skills in cross-sector and cross-disciplinary collaboration, and build professional networks.

2. **Mentoring**: Active participation in the CIF's formal mentoring program

The Institute will pair each candidate with a mentor from within their CIF ranks (200+ individuals) and provide a guided program to support effective mentoring between mentor and mentee.

3. **Industry Collaboration & Engagement**: Active participation in organised activities of the AIDH Fellowship Network

Candidates will be required to attend scheduled engagement sessions with other candidates in their cohort. There will be a minimum attendance requirement set.

Candidates will form project groups, receive support to frame their project concept prior to submitting it for approval, present / socialise their project and its relevance to the broader health system and up / downstream impacts, network with Fellows, share their learnings and hear from experts for informal professional development.

4. **Project**: a practice-based training/industry placement and/or supervised professional project

A component of the knowledge assessment part of the Fellowship program must be completed before embarking on the project.

Candidates will either develop their own project, work on a team with others or choose a project from those sourced by the DHCRC and AIDH. Project proposals will follow a standardised template. Based on the Improvement in Medical Practice (IMP) activity guidelines that **AMIA** uses for maintenance of AMIA Board certification, the candidate must demonstrate in their proposal: how the project will:

- Seek to solve a problem through the implementation of a clinical informatics approach,
- Enhance their knowledge and abilities as a clinical informatician,
- Impact on the health sector, and
- Clearly identify metrics for success that are appropriate to the discipline, setting, population or problem.

The AIDH Fellows Network will provide feedback to aid with proposal development before it is submitted to the HIP Committee for approval.

Project duration could be from six (6) months to three (3) years duration and must have check in points and measures with approved mentors or supervisors which allow for reflection, feedback and evaluation (acknowledging that it will not be possible for all candidates to have an appropriate supervisor at their physical place of work).

Exit Assessment

5. **Exit assessment**: submission of a logbook and passing an exit assessment where the candidate's project is presented and defended to an expert panel

Successful completion of the program will require candidates to present and defend their project to an expert panel. An example of a completed logbook and/or other templates will be provided to candidates upon entry to the program, so it is clear how they are expected to document their learning and the outcomes of their project. The exit assessment may take the form of a VIVA examination – this requires further consideration and advice. Assessment of Fellows' knowledge and skills will be against the AHICF – detailed in Appendix II.

Legacy Routes (or grandparenting)

There will be pathways to the Clinical Informatics Fellowship award – legacy routes (grandparenting) – for clinicians who have gained and proven the requisite knowledge, skills and experience to be awarded Clinical Informatics Fellow status without needing to complete some or all of the program. These pathways will be essential as the program becomes established, with the view to phasing these out over time. The AIDH Board, informed by the HIP Committee and the results of consultation throughout the Fellowship development phase will determine the criteria for legacy routes. Applications to be considered for legacy will be at the determination of the AIDH Board. This approach follows the US's approach for AMIA's Fellowship program.

Governance Model

The CIF is under the jurisdiction of the AIDH Board. As the Australian professional body for digital health and health informatics, AIDH has the authority to set the professional standards for our profession and collaborate internationally via the global body – the International Medical Informatics Association (IMIA).

The governance, management and administration of the Clinical Informatics Fellowship and its continuing professional development (CPD) will be managed by the AIDH (Figure 8).

The Digital Health CRC and UQ will occupy seats on the Project Leadership Group in perpetuity.

It is anticipated that following the successful conclusion of the Cohort I Pilot program, this governance model will be simplified to include only the three 'leadership' groups.

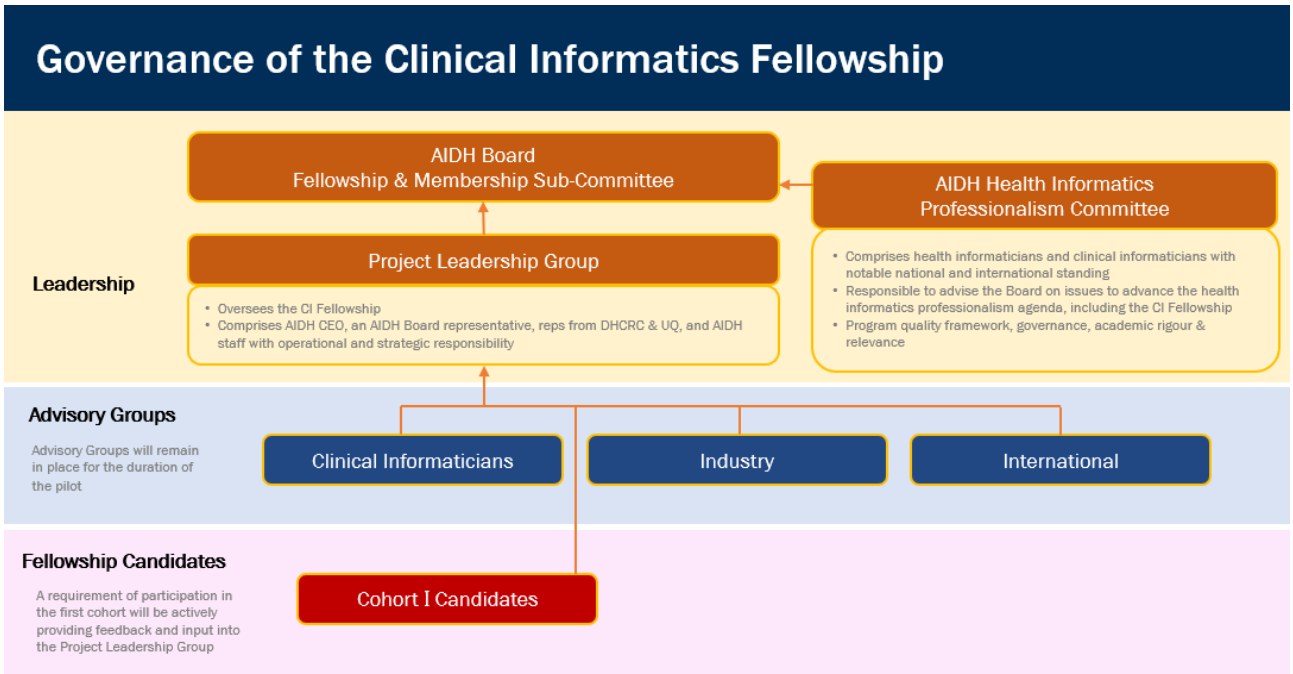


Figure 8: CIF Governance Model

Appendix II – Competency Based Program

Assessment of CI Fellows knowledge and skills will be against Australia's Health Informatics Competency Framework (AHICF), developed and maintained by the AIDH.

The AHICF was developed by academic and applied leaders in health informatics, following nine years of applied use of the first edition of the framework which served as the basis for Australia's professional certified health informatician program (CHIA). Extensive research and comparative modelling of competencies from across the globe was undertaken in a comprehensive review of AHICF, with the second edition of the framework released in April 2022.

The AHICF comprises 53 informatics competencies across six domains of expertise in which informaticians require cognitive competence:

i. Leadership and Management
ii. Information Technology
iii. Health Sciences
iv. Social and Behavioural Sciences
v. Information Science, and
vi. Core Health Informatics Principles.

All competences as assessed in the CHIA are aligned to three of the six Revised Bloom's Taxonomy of Educational Objective levels (Understanding, Applying, and Analysing). The table below summarises the six domains of expertise:

The AHICF will continue to evolve in response to the changing needs of the healthcare workforce and will provide the standard to which the Fellowship program is built upon.

	DOMAIN OF EXPERTISE	DESCRIPTION OF COMPETENCY DOMAIN	DOMAIN LEVEL
A	Health Sciences	Health informaticians interpret *health science* in order to communicate with stakeholders and contextualise their work.	Understanding
B	Information Science	Health informaticians apply *information science* to design, develop, capture, analyse, present and preserve high quality data, information, knowledge, and wisdom.	Applying
C	Information Technology	Health informaticians apply *information technology* concepts to ensure quality information and transaction processing.	Applying
D	Leadership and Management	Health informaticians apply *leadership and management* principles to functions, projects, and programs.	Applying
E	Social and Behavioural Sciences	Health informaticians apply *social and behavioural science* principles for evidence informed decision making.	Applying
F	Core Health Informatics	Health informaticians select relevant *core competencies* for the management of healthcare data, information, knowledge, and wisdom.	Analysing