

# Training clinicians to lead clinical IT projects

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## ABSTRACT

Across New Zealand, a huge programme of work is being initiated to improve the health information systems of our sector. The goals of this plan are to address major risks and issues such as cybersecurity and our inability to securely share health data across organisations for clinical care. To fulfil the promise of planned health IT initiatives, we must involve clinicians of all disciplines to help lead, design and implement projects. However, there is currently little pragmatic training available for clinicians to learn how to do so. In 2019, Waitematā District Health Board and the National Institute for Health Innovation developed and delivered a 'hands-on' Clinical Digital Academy training programme for multidisciplinary clinicians. This paper describes the programme, the initial cohort's evaluation feedback and recommendations for the future.

Digital health has evolved rapidly over the last two decades, creating enormous potential to transform the healthcare sector. The Ministry of Health is developing a national Digital Health Strategic Framework<sup>1</sup> and is currently working on enabling digital health systems across the country. The Ministry of Health has also measured the country against the Global Digital Health Index,<sup>2</sup> showing that one of the areas of weakness within the index is training of the workforce. Across the Northern Region, we have an extremely large portfolio of planned clinical IT projects, underpinned by a regional Information Systems Strategic Plan (ISSP) that sets the direction for information communications technology platforms and services that support new models of care and better health outcomes for the people in our region.<sup>3</sup>

At Waitematā District Health Board (DHB), our experience is that clinical leadership is required to be involved in the design and implementation of clinical IT systems. IT systems need to enable and improve the clinical workflow and hospital processes that they support. They must be designed to make clinicians' jobs easier, rather than adding more steps that clinicians either do not perceive to be of benefit or cannot make work as part of clinical care.

To guide this design and development, clinicians who understand the processes and workflows need to be involved. Shepherding in these changes and the move to digital tools also need to be led by active clinicians. These people can work with frontline staff, understand their concerns and show clinicians how to get the best out of their IT systems. Many clinicians are interested in being a part of this but may not have the confidence, skills or opportunities to do so.

Internationally, it has been recognised that undergraduate and postgraduate health-professional training in health informatics has been limited,<sup>4,5</sup> and that a consistent approach and a clear framework for clinical informatics/IT leadership roles is going to be required for the future.<sup>6-8</sup>

We found there was a lack of practical options for training multidisciplinary clinicians in the skills that may be required to lead clinical IT projects. Existing (at that time) university-based postgraduate degrees in health informatics or IT professional courses did not include the hands-on systems used in DHBs or practical learnings from those actively leading clinical IT projects in our health sector. Certification systems (such as Certified Health Informatician Australasia (CHIA)) or professional

bodies (such as the Australasian College of Health Informatics (ACHI), now the Australasian Institute of Digital Health (HISA)) were not always appropriate for all clinicians or considered feasible within the DHB context. Clinicians other than doctors can also find it difficult to get time and funding for external education programmes. As a result, we decided to develop the Clinical Digital Academy (CDA) for clinicians in our DHB.

Our intention is to develop a clinical IT/informatics workforce that can lead clinical IT change within the health sector. In doing so, we recognised that clinical IT/informatics leaders are:

- from all clinical disciplines within the health sector
- able to lead clinical change enabled by health IT/technology and bring clinical services and teams along on the journey
- the bridge between clinical expertise and workflows, health-sector experience and IT
- trained in basic informatics, IT and digital health
- recognised in the DHB as advocates for improving clinical workflows, patient outcomes and patient/whānau experience.

## Waitematā DHB Clinical Digital Academy (CDA)

A block course was co-designed and developed between the DHB's Institute for Innovation and Improvement (i3) and the National Institute for Health Innovation (NIHI), which is part of UniServices at the University of Auckland.

We started with a review of existing clinical informatics competency domains from several international bodies<sup>4,9-11</sup> and combined them with our own learnings and expertise on leading clinical IT change within the organisation and beyond. A first draft of content topics was reviewed by the participants, who provided input into the design of the course and the learning objectives. The final agreed learning objectives were that participants would learn to:

- converse across clinical, operational and IT domains, particularly in the systems used at our DHB
- assess and use the DHB's health data to inform clinical practice and improvement projects
- consider ethical, equity, privacy and security concerns around the use of IT, technology and health data
- develop new IT/technology developments and projects using appropriate design methods and processes that are aligned with the DHB's digital health service vision
- manage clinical change enabled by IT/technology
- evaluate the impact of IT/technology projects.

The week-long block course consisted of six modules that covered: vision and context; health information systems; data visualisation and analytics; design and evaluation; leading clinical IT change; ethics; and future considerations. Table 1 provides a summary of the course content. The course was facilitated by four key DHB and NIHI experts, and sessions were taught by clinical and topic experts both locally and internationally, including clinical IT leaders, IT professionals, DHB decision makers, data analysts, academics, senior physicians, primary care clinicians and experts in specific fields such as ethics. At the conclusion of the week, participants were expected to submit a proposal for a clinical IT project within their service by incorporating the learning from the week. This was assessed and feedback was given by the CDA facilitators.

## Evaluation of the first CDA

The CDA was run in September 2019. The initial cohort of CDA participants were selected from DHB clinicians who had previously indicated their interest in IT and informatics, or who applied to attend through their line managers and clinical heads. The 15 participants included senior and junior medical officers, allied health professionals and nurses from community, hospital and primary care settings. Prior to completing the course, the CDA participants

**Table 1:** Topics covered during the CDA.

Module	Topics covered
1. Vision and context	Overview of the national, regional and DHB digital health vision for the future, including recent and planned projects, successes and failures in the past, introduction to the people, roles and responsibilities
2. Health information systems	DHB information systems ecosystem and data flows from collection to storage to extraction for use, including interoperability and quality issues and primary care information systems
3. Data visualisation and analytics	Practical sessions on building forms and data analytics using DHB tools
4. Design and evaluation	Engagement with end users, co-design methods, digital development pathway, formative research methods, evaluation and approval pathway for clinical apps, research methods and evaluation and monitoring for digital tools
5. Leading clinical IT change	DHB project processes and tools, business-case process, costings and benefits measurement, risk assessment and mitigation and leading clinical IT change projects, including communication and training, adoption of technology and sustainability
6. The future and other considerations	Equity, ethics, data sovereignty, privacy, cyber-security, AI, big data, social media, telehealth/virtual consults and automation/robotic processing

were asked about their confidence in using health IT and leading IT-enabled clinical change, and their understanding of health information systems.

Immediately following completion of the CDA, participants completed an anonymous online evaluation of the programme via REDCap (n=15). The purpose of this evaluation was to:

- gain feedback on participant experiences
- assess the perceived impacts of the programme and changes in understanding and confidence related to health systems and clinical IT
- obtain suggestions for how the CDA could be improved
- seek interest in further training and fellowship positions.

Quantitative data were analysed and summarised using descriptive quantitative analyses, including means, standard deviations and proportions. Qualitative comments were analysed using a simple, general-inductive thematic approach to identify common themes and meanings from the data.

Participants said the strengths of the course included: the content (breadth of topics, emerging topics, practical toolkits, focus on clinician-led projects); the calibre and multidisciplinary nature of presenters (“wealth of knowledge and experience”, “speakers were dynamic and relevant”, “the interaction between speakers”); the mix of talks and practical sessions; the diversity within the class; and the culture (informal, conducive to discussions, energetic, flexible, integrated, interested, open to feedback and

ideas). All participants stated they would recommend the CDA to their colleagues. Thirteen (87%) participants said that running the course full time over one week was a good way to run the course and stated that this structure was the best for getting time off from clinical duties, that it was good for building momentum and knowledge and that it allowed time to get to know other participants.

During the CDA, we used an online discussion forum as a place to continue conversations, ask questions, share documents and ask students to rate the content of each day. Although the format of this forum was identified in the evaluation as not ideal, participants appreciated having such a shared space.

The questions assessing confidence in using health IT and leading IT-enabled clinical change and their understanding of health information systems asked before the CDA were repeated in the evaluation. Mean ratings can be seen in Table 2. Participants' self-rating of their level of confidence in using health IT and leading IT-enabled clinical change increased significantly after the course. Students' self-rated level of understanding of regional ISSP and DHB

health information systems also significantly increased after the course; however, it was still not particularly high. For example, the mean level of understanding of the DHB health information systems rose from a mean of 2.55 (indicating knowledge of the existence of the system) to a mean of 3.47 (indicating familiarity with, and an ability to answer questions about, the systems).

All participants (n=15; 100%) reported that the course had inspired them to do more training or take up other educational opportunities in the area. All participants (n=15; 100%) also said that, if it were available, they would want more training in the area. The areas they identified that they were interested in additional training included: data analytics; SQL database; form creation/building; creation of test plans; smartphone app development; clinical IT generally; and business case/proposal writing.

A total of eight (53%) of the CDA participants reported they were potentially interested in completing formal post-graduate (tertiary) courses in this area. The remaining seven (47%) said they were not, for reasons such as lack of time, no perceivable benefit and it being too much of a commitment. Less than half (n=7; 47%)

**Table 2:** Change in rated levels of understanding and confidence.

	Pre course (n=11)		Post course (n=15)		p
	Mean	SD	Mean	SD	
<b>Participants' ratings of their level of understanding</b> (1=no understanding, 2=knowledge of the existence of the system, 3=familiar and can answer questions, 4=daily interaction, 5=expert)					
Of the regional ISSP	1.64	1.03	2.64	0.84	0.013
Of DHB health information systems	2.55	1.04	3.47	0.74	0.014
Of the DHB data/business intelligence tool	2.64	1.12	3.13	0.83	0.206
<b>Participants' ratings of their confidence</b> (1=no confidence, 5=extremely confident)					
In the use of health IT in their job	3.09	0.94	4.07	0.59	0.004
In leading IT-enabled clinical change in their service	2.91	1.14	4.00	0.65	0.005
In leading IT-enabled clinical change in a different service	2.09	0.83	3.20	0.56	<0.00

reported that they are interested in applying for accreditation in the area.

In regards to ongoing networking, participants identified the following as important aspects: regular scheduled networking events/meet-ups (n=8); opportunities for collaboration, sharing ideas, helping others and getting assistance and feedback (n=9); and updates from participants (n=2).

## Conclusion and next steps

Waitematā DHB's CDA can be seen as a successful first foray into the practically focused training of clinicians in health IT within the health sector in New Zealand. Clinicians were hungry for further training and appreciated the practical, hands-on focus with our clinical IT leaders. Participants also indicated that they were inspired by the CDA to take up further challenges.

It was always planned that the block course would be followed by a number of 12-month Clinical Digital Academy Fellowships—part-time roles to lead clinical IT projects with the support and mentorship of the i3 and the DHB's Health Information Group. Two graduates of the programme have taken up these fellowship positions. Furthermore, three graduates have been supported to take up other digital roles within i3 or the health service. There are three graduates that report actively leading digital initiatives in their services, and others report promoting the use of digital systems within their clinical roles.

Although developed for the context of Waitematā DHB, the CDA could be used

as a model for other DHBs and health-sector settings. As described, our course is a mixture of digital health education and local practical experiences. The balance of university and local organisational expert teachers would need to be adapted for different contexts.

However, much more than the CDA is required. Digital health needs to be included in all clinical professional training from undergraduate level onwards.<sup>4-7</sup> It is our view that it also needs to be included in all ongoing education programmes within our health services to lift the overall level of digital literacy and confidence of all staff. This is recognised in the Global Digital Health Index, where two of the 19 indicators are about digital health being integrated in health and health-related professional pre-service training and in-service training.<sup>2</sup> New Zealand (scored by the New Zealand Ministry of Health in May 2018) rated itself as Phase 3 for workforce indicators overall (out of 5), stating that less than 25% of health and health-related professionals have digital health in pre-service training curricula, and a digital health curriculum is "proposed and under review" as part of in-service training for health professionals in the workforce.

It is planned that the CDA will be run at Waitematā DHB at least annually to continue to grow the number of clinicians with digital expertise within the DHB. In light of the huge gains that have been made as part of the response to the COVID-19 pandemic, we envisage that this type of training will be even more relevant to our health workforce going forward.



**Competing interests:**

Dr Dobson reports grants from Waitematā District Health Board during the conduct of the CDA. Robyn Whittaker and Rosie Dobson work for the National Institute for Health Innovation, Auckland UniServices Ltd, which may in the future receive further funding to deliver the CDA.

**Acknowledgements:**

We wish to acknowledge all of those who participated in teaching and provided support throughout the CDA (Dale Bramley, Karen Bartholomew, Kevin Blair, Stuart Bloomfield, Andrew Cave, David Grayson, Peter Groom, Will Hewitt, Jono Hoogerbrug, Judith McCool, Elna Meller, Karen Nelson, David Ryan, Vanessa Selak, Chris Southen, Rochelle Style, Jonathan Wallace, Eric Topol and Ted Adams) and our initial cohort of participants in the CDA.

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