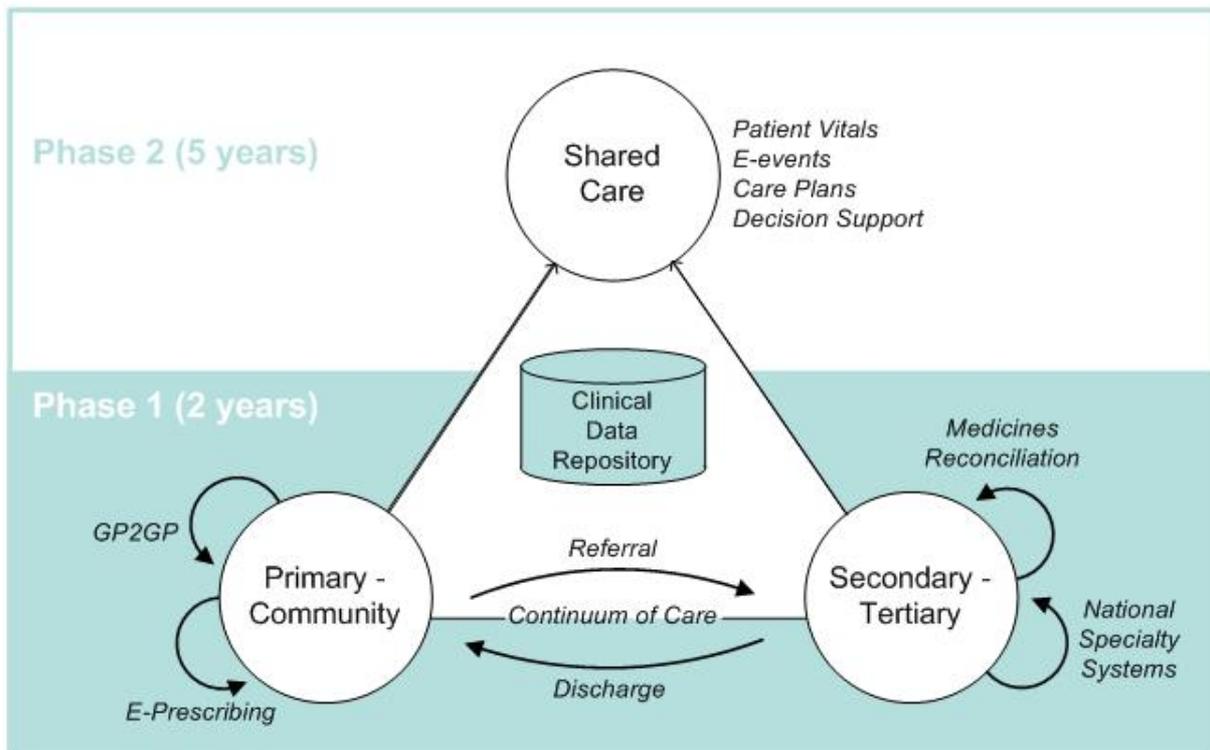


# National Health IT Plan

September 2010

Enabling an integrated healthcare model



IT HealthBoard

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Special mention goes to Tony Cooke, Chief Information Officer at Hutt Valley District Health Board, who co-authored the Plan while on secondment to the National Health IT Board.

## **Disclaimer**

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## Foreword

The Minister of Health, Hon Tony Ryall, received advice from the Ministerial Review Group in July 2009 that the leadership of health information technology (IT) must be strengthened within the context of improving the overall performance of the health system. In October 2009 the Minister directed the newly formed National Health IT Board to create the first National Health IT Plan for the sector, based on achieving the eHealth Vision:<sup>1</sup>

*To achieve high-quality health care and improve patient safety, by 2014 New Zealanders will have a core set of personal health information available electronically to them and their treatment providers regardless of the setting as they access health services.*

The National Health IT Board understands that it will take more than a national plan to achieve this vision. Equally, without a plan we will fail. The challenge, therefore, is to create a plan that drives a culture of innovation, partnership and respect to support health sector leaders make appropriate health IT investments in the context of the whole sector. As with any long-term plan, we must build a strong foundation first.

Person-centred health care has been a mantra within clinical circles for more than 10 years, yet the information solutions to support this have not materialised. Every day clinicians are managing patient care while working around the fact that information is held in separate locations, creating barriers to a better, sooner and more convenient health experience.

The investment in the next generation of health information solutions has reached a plateau, and the way forward is unclear. Early adoption and successful use of early generations of health information solutions has meant it has taken longer for the sector to recognise the lack of recent progress. New Zealand does not have the luxury of continuing with the fragmented, organisation-centric approach to health IT investments.

The benefits on offer to the health system through utilising information more effectively must be captured by enabling new models of care, improving patient safety and making productivity improvements. We must also develop the human capability to identify opportunities, implement systems in the best way and achieve the desired outcomes.

The first draft of the National Health IT Plan (the Plan), subtitled 'Draft for Discussion', was published in April 2010. I want to acknowledge the more than 200 submissions that were received from individuals and groups, and the support you gave in those submissions for the direction and priorities set out in the draft Plan. I trust that we have reflected your feedback.

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<sup>1</sup> National Health IT Board (formerly HISAC), eHealth Vision statement, February 2009.

In this version you will see that we have built on this direction and strengthened the Plan in a number of areas, particularly in relation to shared care, funding, population health and the rationale for regionalisation. Please take the time to read this Plan and assess both the priorities it sets out and the impacts it could have on the way health care is delivered in your part of the health system. I welcome your involvement in achieving the eHealth Vision and the goals of the National Health IT Plan.

Finally, thank you to members of the National Health IT Board, who continue to challenge, yet remain very positive about the journey we have commenced.

***Graeme Osborne***  
***Director National Health IT Board***

## Executive Summary

The National Health IT Board (the Board) has developed New Zealand's first National Health IT Plan to set priorities for regional and national IT investments over a five-year period. The main audience for this plan is clinical, IT and executive leaders, but it is relevant to anyone engaged in planning or delivering health care services.

### **An integrated 'sector owned' and 'community supported' National Health IT Plan**

For the first time there is a whole-of-sector plan to guide and prioritise investments in IT solutions throughout the health sector. It is a five-year view, which is integrated with the long-term planning framework being developed by the National Health Board (NHB) and with other plans for national services, workforce, capital and shared services.

The Plan recognises that there are health care organisations making good use of health IT solutions, so the early goal of the Plan is to ensure the benefits from the smart use of health IT solutions are spread among all New Zealanders.

To fund the proposed health information solutions, a greater level of DHB funding will need to be allocated to health IT projects, supported by targeted national funding.

### **New concepts in the Plan: shared care plans and common platforms**

The Plan is based on achieving the eHealth Vision. This means that each patient will have a virtual health record, with information stored electronically and accessible regardless of location by linking to: existing systems run by health care organisations (eg, general practice, hospital-based systems), a regional clinical results repository and a shared care record.

The Plan proposes *shared care planning* for specific health events and long-term care that is supported by a single shared care record, which is a structured and comprehensive record, developed by the patient, their family/carer and their health professional(s). It will define mutually agreed problems, goals, actions, timeframes and accountabilities for all those involved.

The Plan also requires hospitals in each region to agree to operate a *common platform* for a patient administration system, a clinical workstation and a regional clinical results repository. A common platform is a way of describing a standard set of software systems that is used within a region.

## The two phases of the Plan

### Phase 1: Consolidate, co-operate and lay the foundations (July 2010 to June 2012)

Phase 1 of the Plan is based on increasing health care organisations' use of health IT solutions to a consistent level of capability, incorporating:

- easy access to health information
- transfer of health information between health care organisations
- capture of clinical event information into a regional clinical data repository
- improvement of primary health care practice management systems
- consolidation of the systems used in secondary and tertiary settings into regional or national platforms
- improvements in the quality of information used for population health
- replacement of systems managing patient, practitioner and organisation identity.

### Phase 2: Shared Care (July 2010 to December 2014)

Phase 2 will commence with a design and 'proof of concept' phase and will deliver a shared care capability covering:

- patient vitals – historical patient information (eg, patient demographics, problem list, medications, alerts, access to more detailed e-events such as laboratory and radiology results, and medication history)
- a care plan – patient-based information that captures the plan for the patient's future course of care and that facilitates a multidisciplinary approach to support integrated care
- decision support – knowledge-based information, in context, to support the optimal delivery of care (including clinical risk assessment, the most effective treatment options and appropriate use of a clinical pathway).

## Successful achievement of the Plan

The Plan will be considered to have been successfully achieved when:

- New Zealanders:
  - understand, support and trust how their electronic health information is recorded, managed and accessed
  - can access a core set of their personal health information to share with their health practitioner(s)
- Clinicians:

- can access the most commonly held health information electronically at the point of care
- can use information systems to enhance the effectiveness of their health care practice
- District Health Boards:
  - have implemented common platforms in each region to manage patient administration and clinical information.

## **Feedback**

The National Health IT Board acknowledges and thanks everyone for their views and feedback, either as individuals or as organisations. All feedback has been considered.

The feedback was wide ranging and came from a variety of groups and organisations, including vendors, non-government organisations, the Ministry of Health, professional membership organisations and other public sector organisations.

For more information on the work of the National Health IT Board, please visit the website: <http://www.ithealthboard.health.nz/> or email: [enquiries@ithealthboard.health.nz](mailto:enquiries@ithealthboard.health.nz)

# 1 Introduction

## 1.1 Uptake of health IT

Over the past 30 years a strong uptake of information solutions in the New Zealand health sector helped to create a health information 'ecosystem' that was the envy of the world. Examples of such information uptake include:

- a national health index to identify patients, dating back to the early 1980s
- a national cancer register, dating back to 1948
- almost 100 percent usage of computer systems by general practitioners.

More recently, the National Health IT Board has found good use being made of innovative health IT solutions. Examples of good practice that have been developed and implemented in DHB districts include: electronic referral systems between primary and secondary care, a set of integrated clinical pathways, regional results repositories, and the development of a regional IT plan. The challenge is to harness and grow these solutions into a reliable set of nationally available health IT solutions.

## 1.2 The current state of health IT

The Ministerial Review Group's report, *Meeting the Challenge*, released in July 2009, concluded that there is an overall lack of co-ordination and leadership in health IT:

*The sector is currently inundated with too much information and too many IT projects. Literally each national health programme results in another 'national collection or database'. These current national collection and provider systems are not easily linked up to provide a 'patient or person-centred' view. This ignores the fact that for most people they will have more than one health issue that needs treatment and/or management.*

The New Zealand health information ecosystem is characterised by a large number of individual systems dispersed across the 20 District Health Boards (DHBs), the Ministry of Health, primary care organisations, private hospitals, rest homes and numerous non-government organisations. All are 'patient-centric' in their own right, but when attempts are made to bring patient information together into a single patient-centric view, the task, like assembling a jumble of jigsaw puzzles, becomes extremely difficult.

Even where larger, more integrated systems exist within DHBs, there is much duplication of data and function. Information is retrieved and processed in an inconsistent way, leading to unnecessary variation. Furthermore, the same system

implemented in different organisations is not necessarily compatible, because of the ability to customise the configuration and data within the same type of system. Often customisations are introduced to support local requirements that have grown up in response to local knowledge and circumstances rather than in response to good practice and standards.

The deployment of a fully optimised suite of clinical and business information systems remains an elusive goal. Those health organisations that have achieved a measure of success have created an environment where clinicians have a high dependence on systems, which in turn drives further demand and investment, especially for the infrastructure required to support the increasing number of users, storage and high availability required. This need to consolidate existing systems tends to slow the deployment of innovative and improved solutions. Other organisations continue to soldier on despite under-investment and a lack of resources or scale. This tends to lead to constant fire-fighting, where success is counted as keeping your head above water rather than making any forward momentum.

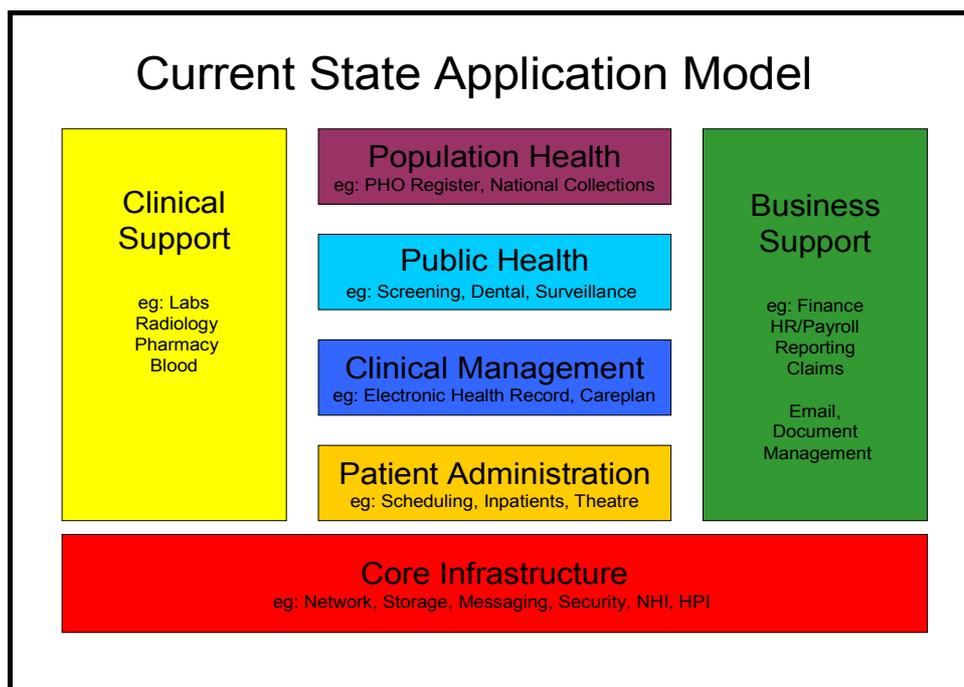
Consolidation to a smaller number of applications is happening by attrition rather than by design. Such convergence has at least enabled a degree of co-operation and knowledge sharing among IT staff who support the same type of software. Regional and national networks have started to emerge, allowing some systems to be shared.

## **Current state information model**

As part of the information gathered for this Plan, a survey of the systems deployed by DHBs has been conducted. The survey identified 90 different functional categories, each of which represents a system or a functional module of a system. This has created a very complex environment that is difficult to maintain and modify.

To provide some sort of overview, Figure 1 groups applications/systems into seven broad areas of similar functionality.

**Figure 1: Current state application model**



## Risks and barriers

Some of the risks and barriers to progress in the current state include:

- a complex suite of systems, which all try to co-exist but do not readily talk to one another – the effect is a structure that is more like an archipelago than a single land-mass of information, and such fragmentation has led to many solutions developing independently to solve the same set of problems
- an unmet demand for improved infrastructure to support 24/7 access to information by clinical users, who are critically dependent on computer systems to perform their tasks (in many organisations, items such as laboratory results, clinic letters and diagnostic images are only held electronically)
- a lack of clear direction and consistency in approach – DHBs have operated as autonomous entities, each making decisions about their own system solutions and configuration, and there is no master plan that recognises the investment and effort that needs to be made for all health care organisations
- a lack of recognition and understanding from executive leadership about IT priorities and long-term investment requirements
- the retention of the right balance of skilled and knowledgeable staff in a climate where such skills are sought after by other organisations willing and able to pay more, and where such specialist skills are hard to find beyond the major urban areas

- a resistance to change by end users when operational workloads are already high – the introduction of new systems causes disruption to normal work practices, and significant support and training are required in the transition.

## 1.3 Lessons learned

The National Health IT Plan presented in this document needs to be viewed in the context of a number of earlier strategies and plans, each of which set out a series of recommendations for the development of IT capability in the New Zealand health sector.

The Working to Add Value through E-information 2001 (WAVE) report and the Health Information Strategy of New Zealand 2005 (HISNZ) made significant contributions to the eHealth Vision for New Zealand by focusing on the key areas to be addressed. While some progress has been made on each of the 10 key WAVE report's recommendations, a decade later none have been fully implemented. The HISNZ emphasised patient-centred and core national systems but did not encompass all the activity in the health sector or establish accountability for implementation. The thermometers of HISNZ have risen, but not as fast as expected. Parts of the health sector still lag behind, and innovative solutions remain local rather than being adopted more widely. In the last five years national systems have not been replaced or significantly upgraded as expected. As a consequence, organisations or regions have attempted to develop their own solutions to problems that can be solved nationally..

Nevertheless, the last 10 years have brought a greater understanding of the capability of IT systems to enhance and sustain complex medical care. This decade has seen the development of electronic health records in primary and secondary care. Some of the earlier barriers (such as the lack of computer skills of health workers; the inadequate reliability, speed and capacity of the systems themselves; and the lack of understanding of how IT systems can be used in the context of patient care) have been considerably reduced. What remains are some cultural barriers to change, but also a clearer sense of direction, guided by more robust clinical and executive leadership and a coherent investment strategy for a sustainable IT environment to support integrated patient care.

The technology has developed rapidly, providing increased capacity, flexibility and usability. This huge increase in capability is both a blessing and a curse. It is a blessing because of its pervasiveness and ease of use; it is a curse because it has created a world so rich in information and technology solutions that it is hard to know where to start. In the meantime, an increasing portion of investment is directed at commodity software and hardware to keep up with business-as-usual demand for services.

In 2008 seven DHBs joined together to progress understanding of the health information requirements to support 'integrated health care'. The strength of this

initiative was that it engaged clinicians and defined a vision for the future. The National Health IT Plan is compatible with this initiative and will allow many of its recommendations to move forward under a different governance model and approach. The preferred option is that recommended by the 2009 Ministerial Review Group report:

*The implementation of a safe, shared and transferable patient electronic health record for the NZ health sector, using a distributed approach based on interoperability standards set by Health Information Standards Organisation (HISO).*

## 1.4 The drivers for change

The Ministerial Review Group's report recommended in July 2009 that:

*The National Health IT Board will, on behalf of the NHB, work with the sector to develop a National IT Plan (including a national IT architecture framework) to advance HISNZ. This plan will be a rolling plan with local, regional, and national views, and a short, intermediate, and long-term perspective that it is aligned with the National Health Workforce Plan and National Health Capital Plan.<sup>2</sup>*

More recently, the Government has stated that it is 'committed to ensuring that New Zealanders get better, faster and more convenient health services, and information technology has a key part to play in enabling us to achieve this.'<sup>3</sup>

Health sectors around the world are challenged by the increasing cost of health care caused by a range of drivers. The most significant are:

- ageing populations
- global competition for an increasingly expensive medical workforce
- increases in the prevalence and complexity of chronic illness
- advances in medicine and science
- increased public, consumer and patient expectations
- a limited ability to grow workforce capacity.

The Minister of Health has created a stronger sense of direction in response to the scarcity of resources and the need for sustainability in the face of increasing demand. It

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<sup>2</sup> Ministerial Review Group, *Meeting the Challenge*, 2009, RG Report, Annex 3: Recommendations., July 2009

<sup>3</sup> Hon Jonathan Coleman, Associate Minister of Health in his opening speech at the Health Informatics New Zealand Conference, 2 October 2009.

is clear that health IT solutions can and will play a significant part in supporting, enabling and in some cases creating sustainable health care solutions for the future.

It has been shown that allowing patients to have electronic access to their own health information acts as a catalyst for greater involvement in their own care. Greater involvement translates into improved compliance with treatment and earlier detection and resolution of health problems. This leads not only to an improvement in the quality and timeliness of services for the patient, but also to reduced demand on health institutions.

There is a need to take the time to design, make explicit and implement better models of care. Information solutions are both a barrier and an enabler to this end. They are a barrier because they are not currently delivering the required information to the clinician and patient at the point of care; they are an enabler because they are a prerequisite to supporting an integrated model of care, which requires multidisciplinary care to be delivered irrespective of time and place.

Health IT solutions must be designed taking into account the context of the 'whole system'. Too many initiatives and individual projects operating in isolation lead to a weakened focus. Rigorously prioritising work plans and aligning effort with strategy will maximise the available resources and enable real progress to be made.

## **1.5 The benefits of the National Health IT Plan**

The National Health IT Board (the Board) has identified the following overall benefits to be achieved from implementing the Plan:

- improved health outcomes
- improved quality of health care
- cost efficiencies, productivity improvements and better risk management
- improved employee skills and engagement.

The Plan sets out to achieve benefits from a small number of national and regional investments in health IT solutions to create enablers for integrated care, including:

- shared care plans, to support multidisciplinary clinical teams and patient engagement
- clinical pathways, to ensure consistency in care delivery
- remote monitoring and telemedicine solutions, to optimise care delivery
- national specialty systems.

Rather than continue an approach of developing an individual IT solution for each programme of care, the Plan sets out to implement IT solutions in the context of the whole system. This means building a functionally rich set of modules that clearly defines

the role of each module and the interfaces between them. The benefits of this approach are that high-quality functions can be designed once and used many times, changes in requirements can be responded to more quickly, and the design builds in flexibility and anticipates change. While requiring some upfront investment, this design approach will be more cost effective in the long term.

In our current environment the measurement and evaluation of benefits is inadequate. Accordingly, the Board is working with the National Institute of Health Innovation to create an evaluation framework for Health IT investments based on measuring implementation benefits.

## 1.6 Alignment with health sector priorities

The Plan will support the following health sector priorities.

### 1. The Minister of Health's six Health Targets:

- shorter stays in emergency departments
- improved access to elective surgery
- shorter waits for cancer treatment
- better help for smokers to quit
- increased immunisation
- better diabetes and cardiovascular disease services.

The Plan will support the achievement of these Health Targets by: (a) improved measurement of health outcomes at the national, regional and local levels, and (b) using a richer information set to support population health initiatives, quality improvement and the continuum of care.

2. **National services and regional service plans (including vulnerable services<sup>4</sup>)**, which will be supported by allowing clinicians working in one location to remotely support their colleagues in other locations and by facilitating clinical networking.
3. The **Better, Sooner, More Convenient Initiative**, which will be supported by: (a) making clinical data available to clinicians in different health care settings (including integrated family health centres), and (b) enabling agreed clinical pathways between primary and secondary care.
4. **Shared services opportunities**, which will be supported by: (a) implementing fewer systems that support well-understood, standardised processes, and (b) putting

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<sup>4</sup> A vulnerable clinical service is one where there are sustainability problems of a clinical or financial nature, now or in the future, -as defined by Central Region Technical Advisory Services Limited in 'Strengthening Hospital Services in the Central Region: Identification of services perspectives, August 2009'.

together foundational systems (networks, messaging standards, identifiers) to allow shared services to operate.

## 1.7 Alignment with other national plans

This Plan supports National Health Board planning by:

- endorsing a common platform approach to support the delivery of national services
- ensuring the DHB response to this Plan is incorporated into the new regional planning mechanism
- providing information solutions to support the long-term planning framework for health service design.

This Plan supports health workforce planning by:

- supporting change in clinical practice (eg, nurse prescribing)
- creating greater job satisfaction by improving access to trusted health information and enabling multidisciplinary practice
- pooling scarce human resource (eg, enabling remote access and access to specialised skill sets)
- forecasting skills requirements and training priorities.

This Plan supports capital planning by:

- allowing traditional investment in facilities and additional workforce to be offset by better use of health IT solutions, including:
  - consolidating to fewer instances of high-cost information solutions
  - sustaining and improving the quality of capital investment in IT
  - re-allocating funds from a wide range of separate capital investments in IT to a reduced number of longer-term sustainable investments.

## 2 A New Approach to Investing in Health IT Solutions

### 2.1 Our approach

*The next generation of health information solutions must be person-centred, optimising the patient's experience as they engage with the health system through a range of clinical pathways.<sup>5</sup>*

The Plan will define and progress the development of a sustainable, effective nationwide information and technology environment that:

- fosters safety and quality care
- is person-centred
- is provider-friendly
- increases the productivity of the system as a whole.

The Plan will support the Triple Aim<sup>6</sup> of health care improvement, which is to:

- improve the health of the population
- enhance the patient experience of care (including quality, access and reliability)
- reduce, or at least control, the per capita cost of care.

The Plan sets out to create clarity of purpose, consistency of approach and a framework to sustain co-operation between participants. It requires sector leaders to change some of the current behaviours and approaches used to invest in health IT solutions (see Table 1).

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<sup>5</sup> C Christenson, *Innovators Prescription*, – Clayton Christenson, 2009.

<sup>6</sup> Trademark of the Institute for Healthcare Improvement. (IHI)

**Table 1: The need for change: what should cease and what should continue or commence**

| <b>Cease</b>  | <b>Continue or commence</b>   |
|---|---|
| Developing solutions in silos   | Developing well-designed solutions (that can be re-used) on top of standard foundations   |
| Making individual (local) investment decisions  | Making national and regional investments  |
| Having too many projects and priorities   | Having fewer, achievable deliverables that can be sustained.  |
| Changing systems urgently as a result of policy-driven demands                              | Aligning policy with overall strategy, and meeting short-term policy needs with appropriate short-term information solutions                          |
| Developing policies and service contracts without taking into account operational realities | Encouraging strong engagement between policy and operational groups in all policy development activities  |
| Re-inventing the wheel  | Sharing knowledge, agreeing on problem definitions and agreeing on the best solution  |
| Not finishing projects properly, (eg, national roll-outs)                                   | Committing to an agreed implementation plan (with accountabilities)   |
| Having multiple competing (or isolated) innovation cycles                                   | Recognising and promoting partnerships with centres of excellence   |
| Piloting projects and then not picking up the outcomes for wider implementation             | Evaluating pilot outcomes, communicating clinical benefits and investing in the roll-out of initiatives that have convincing and compelling outcomes. |

## 2.2 Key success factors

The principal challenge of any health IT plan lies in its implementation rather than in the planning process itself.

Our approach to implementing the Plan recognises the following key success factors.

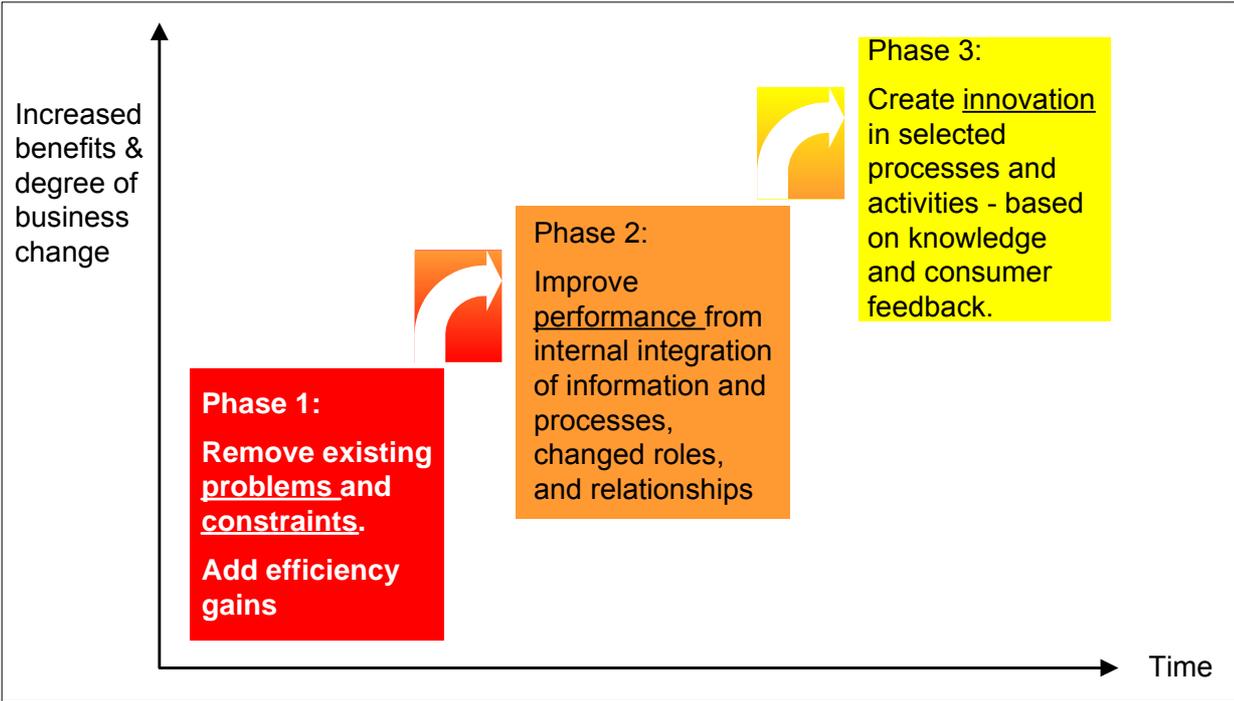
- The **leadership** of clinicians, to help govern, design and champion the implementation of information solutions, to support new or improved models of health care delivery.
- The **engagement** of consumers and health workers in identifying opportunities for health care quality improvements and in solving related problems through the use of information solutions.
- An open and transparent **partnership** with health care IT vendors, to develop the required health information solutions.
- The **certification** of information solutions against agreed standards, to ensure information is available, accurate and secure.

- **Alignment to the plans** of the National Health Board (NHB), and other NHB subcommittees responsible for workforce and capital, the Health Quality and Safety Commission<sup>7</sup> and Health Benefits Limited (the shared services organisation), such that:
  - information solutions will support the long-term planning framework for health service design
  - investments will focus on a small number of key projects co-ordinated across the DHBs, primary health care services and the Ministry of Health.
  
- **Clarity of thinking** in relation to sharing patient information and involvement of consumers: the principle is that individuals have certain rights of ownership over their health information, which includes the right to correct their information, the right to see who has looked at the information, and the right to know what their information is used for. Clinicians and health organisations have the important role of custodianship of that information. However, this principle does not change the understanding that clinicians should have access to, and share, information to support the delivery of care and maintain a continuum of care for their patients (using their professional judgement).
  
- **Accountability for delivery** of the Plan lies with sector leaders. The Plan works on the basis of the ‘tight-loose-tight’ paradigm: it is tight on priorities and expectations of what is required and who is accountable, but how the deliverables are achieved is the responsibility of the owner of each initiative/project in the Plan. The Board will then be tight on monitoring and evaluating the benefits and the lessons learned from each initiative and the Plan as a whole.
  
- **A planning approach** that understands that incremental change leads to transformational change: the three-phase interactive planning model developed by Dr Peppard of Cranfield University in the United Kingdom is illustrated in Figure 2.

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<sup>7</sup> The interim board of the Health, Quality and Safety Commission will be led by Professor Alan Merry, from the University of Auckland, who is also Chair of the Quality and Safety of Practice Committee of the World Federation of Societies of Anaesthesiologists.

**Figure 2: The three-phase interactive planning model**



We also need to learn from international efforts in similar countries to New Zealand – including Australia, Singapore, Canada, Denmark, Scotland and Wales – and engage with them where appropriate.

**2.3 Shared Care<sup>8</sup>**

To achieve the eHealth Vision, the Plan is based on a key design principle: ‘Over the next five or more years, a national shared care record is complementary to the current health IT solutions utilised by health care organisations.’ In addition, the shared care record will be a trusted source of information for use in personal health record systems.

The Board agrees with the definition of shared care presented at the national workshop in June 2010<sup>9</sup> that it should be made up of two parts: a shared care plan, supported by a summary personal health record.

<sup>8</sup> Shared or integrated care denotes care where ‘the patient is shared between individuals or teams who are part of separate organisations or where substantial organisational boundaries exists’, BR Winthereik, *Shared Care and Boundaries: Lessons from an online maternity record*, by Brit Ross Winthereik (Denmark: IT-University of Copenhagen; 2008).

<sup>9</sup> Dr Janine Bycroft and Associate Professor Rob Doherty, Importance of shared care planning, paper presented at the National Shared Care Plan Workshop: Themes and Next Steps; 11 June 2010.

## Shared care plan

A shared care plan is a structured, comprehensive plan developed by the patient and their family/carer and health professional(s) in order to facilitate a collaborative, multidisciplinary style of care. It defines mutually agreed problems, goals, actions, timeframes and accountabilities for all involved. This will improve communication and co-ordination and optimise patient management, thereby reducing complications and improving outcomes and quality of life. In the broader context, this may also include whānau<sup>10</sup> and iwi, whereby there may be a designated person within the whānau working with the patient(s) and health professionals.

Shared care plans are most effective at supporting the delivery of health care to patients where there is a multidisciplinary team required to deliver care over an extended period of time and from different locations.

## Summary personal health record

A shared care record includes a summary personal health record comprising core health information, such as patient demographics (age, sex and ethnicity), current medications, current diagnosis and problem list, alerts and allergies (see Figure 3). It will also give access to past events, such as results, visits and referrals.

To be shared, the care record must be available to patients and their health practitioners whenever they utilise services across health settings, including home, primary and secondary care, and the community. Some patients may also wish to share the information with their families or whānau.

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<sup>10</sup> Whānau encompasses not only your: - grandparents, - parents, and their siblings (- your brothers and sisters), and cousins, - your nieces and nephews, but also everyone who is connected to you through blood, be they your cousins' children, your great uncles' and aunts' descendants, your third cousins, your 99th cousins – , everyone. If a connection can be made, then whānau is established.

**Figure 3: High-level design of a shared care record**



### **Shared care record success factors**

The Board has identified some of the success factors for effective and sustained use of shared care solutions, as follows.

- Clinicians and their patients must trust the information contained in a shared care record.
- The record must be up to date, accurate and relevant.
- Access to the information must be achieved with ease, while maintaining appropriate security and an audit trail of user access.
- Understanding who is accountable for the whole plan (ie, the lead clinician) and for specific tasks or actions in the plan is important and must be visible to all. It is likely

these roles and responsibilities will change over time, and this function must be supported.

- A moderator to maintain data quality and resolve conflicting clinical advice may be necessary.

Overall, the success of shared care records will be based on whether patients and their care teams see value in accessing and updating the record over time, and on the measurement of improved health outcomes.

In Phase 2 of the Plan, the concept of a shared care record will be developed through a national shared care programme of work set up in a similar way to the Safe Medications Management Programme. It is expected that this phase will involve a series of iterative steps, whereby multidisciplinary care teams agree on specific health pathways for specific conditions. Possible early candidates for this approach are maternity care, early childhood and long-term conditions.

## **2.4 Information model**

A clearly defined and understandable information model is required to align systems, projects and infrastructure in an 'architecture' that coherently links the various components, but also defines the boundaries between them. A way of conceptualising this is to see the model as a series of discrete components linked to one another, where the higher components drive the configuration and characteristics of the lower components (see Figure 4). Typically, many functions of the lower components are required to support even a single function at the top level.

**Figure 4: Information model**

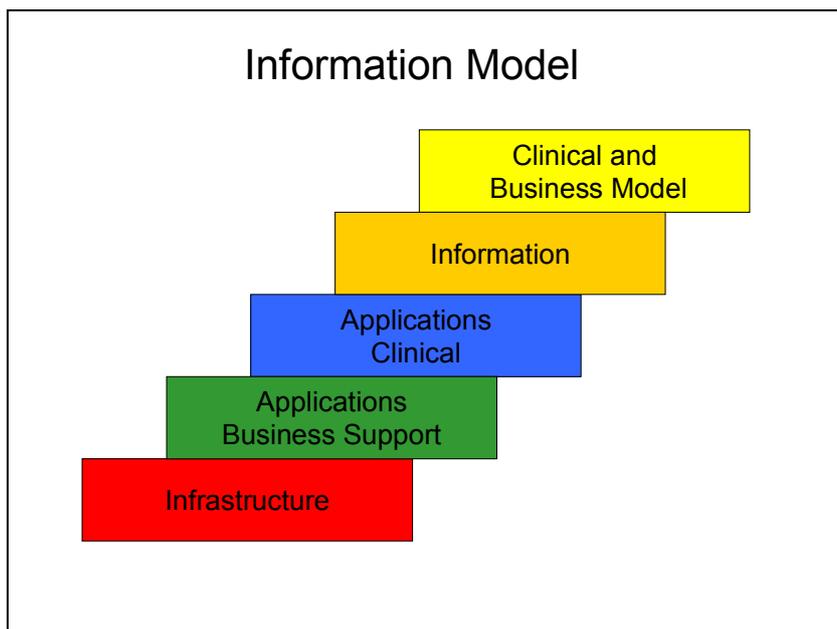


Figure 4 is a well-known information architecture model, which allows designers to build and integrate each component of the IT ecosystem in a systematic way. The components are described more fully in Table 2. (See also Appendix 1: Models, Information, Applications and Infrastructure.)

**Table 2: Details of the components of the model**

| Component/layer                    | Description  | Example(s)  |
|------------------------------------|--|---|
| <b>Clinical and business model</b> | This describes how clinical and business work flows at a high level. It defines how national, regional and local services will be delivered.   | Integrated care model   |
| <b>Information</b>                 | This is the information required to support the clinical and business model. It helps build knowledge and capability in the workforce. It also allows patients to confidently access trusted health information sources and engage with the health system effectively. | National collections, screening, patient information, decision support, clinical pathways, and health performance indicators, health awareness websites |
| <b>Applications</b>                | These are the applications that, working together, support the information required to support the clinical and business model. There are two classes of applications: clinical and business support.  | Clinical data repository, clinical workstation, practice management system, HR/payroll  |
| <b>Infrastructure</b>              | This is the supporting infrastructure that is required to run and access the applications and to ensure their recovery in case of failure.   | Network, operating system, data standards, security, data centre and hardware   |

**Example: Information requirements for cardiothoracic surgery**

The following is an example of how information flows relate to the model illustrated by a real life example of a patient requiring cardiothoracic surgery.

In the clinical and business model (top segment in Figure 4), there is a requirement for a clear and consistent model of clinical care that involves screening the patient and providing them with access to cardiothoracic services and surgical treatment, followed by rehabilitation and lifelong maintenance.

The clinical information (second segment from the top in Figure 4) to support this model of care will be a set of data with the following components:

- core patient data – the relevant reference information about the patient (eg, current medications, current problem list, current allergies, demographics)
- speciality patient data such as diagnostic tests, inpatient episodes – required to treat heart disease
- sub-specialty patient data – required specifically for cardiothoracic surgery.

In addition, a clinical pathway will help define the journey that a patient with this condition should make through the health system (regardless of location or the referred practitioner). This will form the basis for the patient's customised shared care plan.

Given that this is a national service, the information needs to be available to clinicians wherever they are practising, and to patients wherever they are living. Clinicians and patients will therefore require a 'view' of the patient's information that is tailored to their needs.

The data itself will be collected at source, and added to the regional clinical data repository where the patient resides. Clinicians (even if outside the region) will have access to this information and to a combined national view if the patient has relevant information sitting in more than one region. The clinical applications that support the process of treatment may be different, but they will nevertheless store the data in the regional repository in a standard way. The regional repository will then 'present' a view in a standard way to applications and authorised users wanting to access the patient's data.

Some of the infrastructure required to support this scenario will require a common patient identifier (the National Health Index number), an authorised user (verified through the Health Practitioner Index), and a standard view that is based on standard data item types (a common list of medicines or procedures, etc) delivered over a national network that is available 24 hours a day, 7 days a week. Also, an audit trail of clinicians' access will be created to allow the patient to see who has accessed or updated their data, and when.

## 2.5 Governance

Governance is about leadership and oversight. The challenge for governors of the Plan is to:

- encourage, shape and bring together diverse opinions to create a clear sense of direction
- have the courage to sustain investments over a period of time to provide the platform for transformational change
- maintain energy and interest among stakeholders and remove barriers to progress
- ensure organisations deliver on their promises for national and regional solutions.

### Governors of the Plan

Overall governance of the National Health IT Plan is the responsibility of the National Health IT Board. As governors of the Plan, the members of the Board will ensure:

- tight alignment with medium- and long-term plans of the Ministry of Health, the NHB and its subcommittees, covering workforce and capital investment
- collaboration with the recently established Health Quality and Safety Commission and Health Benefits Limited
- ongoing engagement with and support from a number of key sector groups.

The sector groups the Board works with are:

- the National Information Clinical Leadership Group representing clinical leaders who can provide leadership on the design and use of information solutions
- the Consumer Forum, representing consumers views
- the District Health Boards of New Zealand (DHBNZ) Information Group, representing DHB chief executive officers (CEOs) and chief information officers (CIOs)
- National CIOs, representing all DHB CIOs
- the Patient First Group, representing primary and community care organisations
- the Health Information Standards Organisation (HISO 2010), representing experts in individuals health information standards and overall governors of information standards in New Zealand
- the Sector Architects Group, representing health IT architects and helping to develop the sector information model
- the Health IT Cluster, representing health IT vendors.

In addition, the Board recognises that it must work with other organisations representing health care interests, including:

- other government organisations, such as ACC and PHARMAC
- community non-government organisations
- aged-care providers
- the private health sector.

## **Implementation leadership and accountability model**

The Board is actively supporting good governance at all levels and has created a strengthened implementation leadership and accountability model for the health sector. The model is made up of four parts, as follows.

1. **Primary Health Care IT Governance Group (known as Patients First):** this group is a collaboration of three organisations who want to improve the collection, use and reporting of health information across the continuum of care. The founding groups are the Royal New Zealand College of General Practitioners (RNZCGP), General Practice New Zealand and the Board. Patients First will govern primary and community health care projects, such as General Practitioner to General Practitioner (GP2GP), and will engage in the primary health care aspects of regional and national projects (eg, e-discharges, safe medications and community e-prescribing).
2. **DHB CEO Information Group:** representing the 20 DHBs, this group will co-ordinate DHB responses to the Plan, changes to leadership roles and improvements in capability. It will ensure delivery of key projects, including regional clinical data repositories, regional platforms for secondary and tertiary systems, and foundational infrastructure projects.
3. **National programmes:** using the example set by the Safe Medication Management Programme, key national programmes will be governed by sector steering groups. It is expected that new programmes will be required for shared care and national specialty systems.
4. **Ministry of Health Major IT Projects Group:** this group will oversee the delivery of new national infrastructure projects, including the Health Identity programme and changes to claims and payment systems.

**Figure 5: Governance of work streams and programmes**

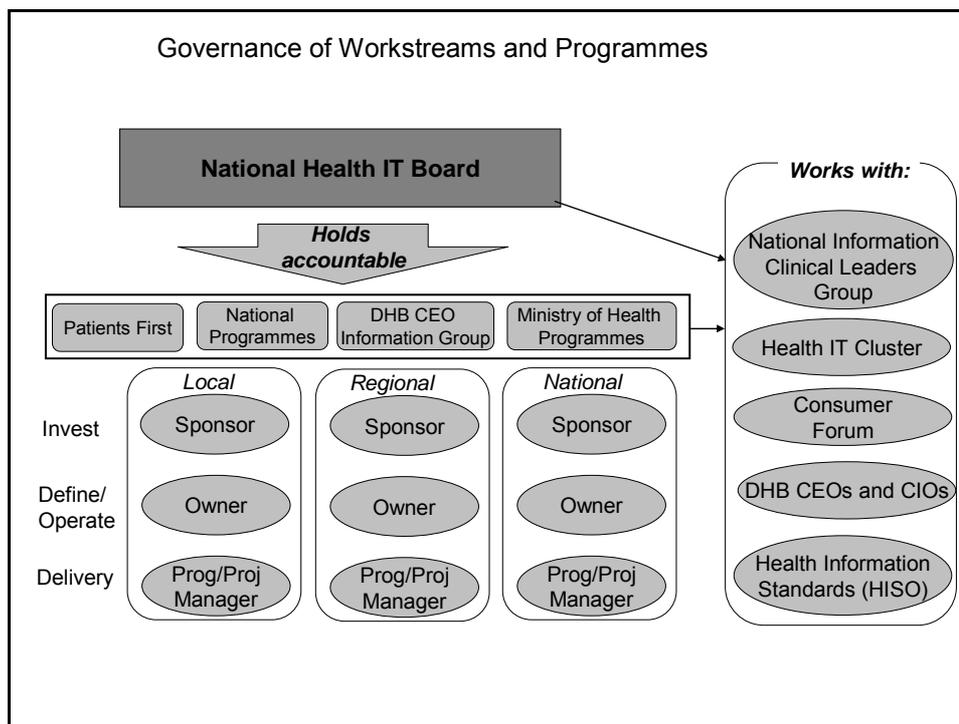


Figure 5 represents the groups the Board will work with and will hold accountable for achieving the Plan.

## 2.6 Funding

The National Health IT Board and DHBs will take joint responsibility for attracting the required level of funding to achieve the goals of the National Health IT Plan. The national and regional projects prioritised in the Plan must be supported by quality investments in ‘fit for purpose’ health IT solutions. The Board will support projects and initiatives where the right conditions are demonstrated to be in place.

Experience has shown that success is not about money alone. Successful health IT projects also have strong clinical and IT leadership, with executive support and a compelling set of business and clinical objectives. Strong engagement with end users in the design and implementation of the system will be evident.

Sponsors, and their designated work stream/programme owners, will utilise a combination of feasibility studies and formal business cases to attract project funding.

Depending on the level of funding required for each project, the appropriate approval process will be applied.<sup>11</sup>

The Board has identified the following major funding sources as sponsors for the Plan.

- **District Health Board project funding:** the Plan will require DHBs to invest a greater level of funding to implement and operate new and improved health IT solutions (in both the provider arm and as a requirement of the funding arm). At a macro-economic level, information-based organisations such as health care typically invest at least 4 percent of revenue on information solutions each year. An initial review of DHBs' expenditure shows that, on average, 2 percent of revenue is allocated to health IT solutions and infrastructure. By investing in standard regional and national solutions with propositions of proven value, the Board expects to see this average move upwards over time.
- **NHB project funding** is the responsibility of the Capital Investment Committee, which was established in April 2010. The Board has proposed a funding envelope over five years to support the Plan. The funds will be allocated to priority projects and nominally split into two equal amounts to cover national information solutions and IT infrastructure, and to support funding for DHB-led health IT projects.

A good example of how this funding approach works is to review the projects requesting funds for the 2010/11 year, ie:

- national information solutions and IT infrastructure:
  - the Health Identity programme – replacing current NHI/HPI systems
  - claims and payments systems – improvement programme
- support funding for DHB-led health sector initiatives:
  - Midland Connected Health Project
  - Shared Care pilot projects.
- **The Primary Care IT Grant Fund**

The Board has an innovation fund of \$12 million over three years to support 'primary health care and integrated care' IT initiatives that align with the Plan. The process of accessing this fund, and current initiatives already supported, can be found on the Board's website (<http://www.ithealthboard.health.nz>).

The future will see more IT solutions purchased as a *service*. This is a change from the traditional method of purchasing IT solutions as a *capital asset*, in the same way a facility or item of physical equipment is purchased. This trend will over time reduce the requirement for capital funds, which will be offset by an increase in the requirement for operating funding. At a high level, it will require a shift of funding from depreciation on capital to payment for services funded as operating expenses.

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<sup>11</sup> All investments in IT projects over \$500,000 and all programmes with significant IT implications require endorsement and oversight by the IT Health Board.

This investment strategy is expected to achieve both direct and indirect cost savings. There will be direct and measurable savings through migration towards common platforms and increased reliability of infrastructure. There will be incremental improvements in the quality and delivery of care, which will be harder to measure but will nevertheless be present throughout the health care system. Finally, over the longer term these investments will enable transformation in the models of care and a shift towards involving patients more directly in their own care.

Many of these quality and productivity improvements will be manifested through absorbing increased demand, or shifting investment away from more traditional investments in bricks and mortar or human resources.

## **2.7 Sector capability**

### **Workforce**

Key to the success of the Plan is working with the sector to develop the skills and understanding required to deliver changes enabled by information solutions. The Board recognises that the skill sets required for successful implementation of information solutions are scarce and require many years of experience to develop properly.

The Board will work with Health Workforce New Zealand to:

- facilitate improved understanding of the importance of information solutions by health sector leaders in supporting the delivery of care, the measurement of outcomes, quality improvement and research
- develop the leadership role of clinicians in ensuring that effective and sustainable solutions are designed and implemented as part of the quality improvement cycle
- encourage the development of health IT professionals who naturally partner with clinicians, manage change effectively and create solutions that are effective, fit for purpose and intuitive to use
- build information management skills into training programmes.

The Board will also work with the universities to encourage the education of health and IT professionals in health informatics, and to incorporate applied research into their methodology and approach.

### **Sector architecture**

The Board seeks to utilise and pool existing expertise as much as possible. To this end, a Sector Architects Group has been formed to develop a common architecture for

national and regional information systems and infrastructure. This group comprises members from DHBs, primary health care and the Ministry to ensure a broad, sector-wide approach. A priority of this group will be to ensure clinical information systems are fast, easy to use, reliable and secure. Systems will need to support a single sign-on and deliver information in the patient context.

## 3 The Plan

The Plan is set out in two phases over a five-year period. The key objectives of each phase are described and then the activities associated with their delivery are outlined in nine separate work streams. Further detail on the implementation of each work stream is provided in section 4, where key projects, timeframes and responsibilities are documented. Section 4 will continue to be updated as regional and other sector plans develop.

### 3.1 The phases of the Plan and the design objectives

*To achieve high quality health care and improve patient safety, by 2014 New Zealanders will have a core set of personal health information available electronically to them and their treatment providers regardless of the setting as they access health services.*

The first phase of the Plan (over two years) will build on existing capability and applications, consolidating many systems into common platforms and laying a sound foundation for a consistent regional and national infrastructure. The second phase of the Plan will build on this foundation and enable the development of a shared care record available to patients and treatment providers, at the right place and the right time.

In Phase 1, support for current health sector activity will continue, with a focus on the continuum of care, including: e-referrals, e-discharges, safer medications management and improving primary care systems. This will create a standard set of interfaces that will feed into regional clinical data repositories.

Not all health care organisations, or regions, are starting from the same position, so Phase 1 is about bringing each of the regions up to the same level. The Board believes that this is achievable within a two-year period, but will reassess this target after the regional plans have been developed.

#### **Phase 1: Consolidate, co-operate and lay the foundation (July 2010 to June 2012)**

Phase 1 of the Plan is based on increasing health care organisations' use of health IT solutions to a consistent level of capability, incorporating:

- easy access to health information
- transfer of health information between health care organisations
- capture of clinical event information into a regional clinical data repository
- improvement of primary health care practice management systems

- consolidation of the systems used in secondary and tertiary settings into regional or national platforms
- improvements in the quality of information for population health
- replacement of systems managing patient, practitioner and organisation identity.

## **Phase 2: Shared Care (July 2010 to December 2014)**

Phase 2 will commence with a design and 'proof of concept' phase and will deliver a shared care capability, covering:

- patient vitals – historical patient information (eg, patient demographics, problem list, medications, alerts, access to more detailed e-events such as laboratory and radiology results, and medication history)
- a care plan – patient-based information that captures the plan for the patient's future course of care, and which facilitates a multidisciplinary approach to support integrated care
- decision support – knowledge-based information in context to support the optimal delivery of care (including clinical risk assessment, the most effective treatment options and appropriate use of a clinical pathway).

## **Design objectives**

A key design objective of the Plan is to reduce complexity by reducing the overall number of installations of each application, and thus the number of interfaces that have to be maintained. To make the transition from the current state to this future state, the Plan sets out the following design objectives.

1. Population health and shared care functions will be delivered as national systems.
2. Clinical support, clinical management and patient administration functions will be delivered regionally.
3. Business support functions will be delivered as one or two installations nationally.
4. Infrastructure will be delivered as a mix of national, regional and local components, all working according to the same technical and operational standards.
5. Knowledge management will be delivered via a consistent approach to websites for the sector, encompassing clinical innovation, clinical pathways and health information sources.

Other guiding principles for design and implementation are discussed in Appendix 4: Guiding Design Principles.

## **Deliverables in nine work streams**

The deliverables for Phase 1 are set out in eight broad work streams, encompassing two aspects of the information model, as follows:

- personal health information work streams:
  1. Quality Information for Primary Health Care
  2. Continuum of Care
  3. Safe Medications Management
  4. Clinical Support
  5. Patient Administration
  
- supporting information work streams:
  6. Population Health
  7. Business Support
  8. Safe Sharing Foundations.

A ninth work stream is the Shared Care programme, which is the Phase 2 deliverable.

## **3.2 Phase 1: Work streams**

### **Work Stream 1: Quality Information for Primary Health Care**

The Plan seeks to address major gaps in good-quality information in primary care, which will have benefits across the whole sector. The main focus is on standards for primary health data and national standards for all categories of health information. Another focus is on supporting clinical pathways, clinical decision support and clinical audit.

The key principle behind this work stream is that each primary health organisation is responsible for investing in the right information solution needed to support their service, while also making information available to other organisations across the sector in a well-defined and agreed way. It recognises the custodial role each organisation plays to safely collect, store, make available and maintain patient information according to agreed standards. It also recognises the need to aggregate information accurately to support population health analysis.

The information models for the health sector need to change from a fragmented approach to a 'bottom up' model that recognises the different ways information can be utilised by different users. A guiding principle is that data should be collected once and then used many times. Thus data can be used:

- to support patient self-management
- to support clinical intervention
- for clinical governance (maintaining professional standards, training and risk management)
- for administration (including evaluation and quality assurance)
- for strategy and policy development
- for research.

Associated benefits of this work stream are that it:

- measures quality and health outcomes based on a set of quality indicators
- improves co-ordination of care between practitioners
- supports improved skills and knowledge
- supports improved primary health care system capability.

## **Work Stream 2: Continuum of Care**

This work stream focuses on the transfer of health information between sector systems (including patient transfers between GPs, referrals and discharges), using standardised content, process and transfer protocols. It is a foundation for shared care. Health IT solutions need to recognise the continuous nature of health delivery while addressing recognised hand-over points.

This work stream starts to drive the development of standards for the core patient summary data and a safe clinical process for the hand-over of care. It also includes a component of standardised medication information.

Associated benefits of this work stream are that it:

- provides more reliable communication and transfer of patient information
- reduces transcription error
- improves the standardisation of patient information.

## **Work Stream 3: Safe Medications Management**

A national programme of work called Safe Medications Management (SMM) is already in place to address the safe use of medications. An early goal is to implement medicines reconciliation at the point of admission to hospital. The paper-based process has wide uptake by DHBs, and an electronic version of medicines reconciliation is being piloted at two DHBs. In future, medicines reconciliation will occur whenever a patient transfers between care settings, including when a patient is admitted or discharged from hospital or transferred between primary health practitioners.

Work on a New Zealand Universal List of Medicines (NZULM) and standardising the content of an e-medication record (including how it is presented and how it will be linked across systems) is in progress and was released for evaluation in May 2010. The NZULM provides the New Zealand Medicines Terminology and will pave the way for the NZ Medicines Formulary (how medicines are best used).

These activities will lay the foundations for electronic prescribing, dispensing and medicine reviews in both hospital and community settings. Medication management is a key component of the integrated care model and has its own work stream because of its high clinical benefit and the potential for standardisation of content and presentation, regardless of clinical setting.

Associated benefits of this work stream are that it:

- reduces adverse drug events
- improves the use of medicines to treat patients
- reduces pharmaceutical wastage
- reduces administrative overheads and manual handling.

## **Work Stream 4: Clinical Support**

Information solutions are required to support a single sign-on and a fast, easy-to-use, common view of detailed clinical data to support diagnosis, prioritisation, treatment, recovery and clinical audit. While supporting access to information for all authorised clinicians, this work stream mainly focuses on secondary and tertiary care.

In the next two years the aim is for each DHB region to implement a regional clinical support platform that includes:

- A common clinical workstation user interface
- A common set of clinical support systems (ie, radiology, laboratory and pharmacy)
- A single clinical data repository that stores:
  - laboratory results
  - radiology results and images
  - other diagnostic results (eg, ECG, Holter and spirometry)
  - discharge summaries
  - referrals
  - clinic letters
  - medications
  - other patient documentation.

Associated benefits of this work stream are that it:

- improves access to diagnostics
- saves costs through reductions in repeat tests
- makes better use of the workforce (after-hours radiology)
- provides information for population health analysis and reporting.

## **Work Stream 5: Patient Administration**

A number of DHB hospitals operate patient administration systems that will no longer be supported by the vendor. These are core systems that manage patient information, including: demographics, appointments, medical records coding, and patient tracking in a hospital setting. It is difficult to support clinical information systems without having a stable and reliable version of this core application. Implementation of such systems involves a large and complex project that typically takes up to two years and requires significant investment.

In the next five years there are opportunities to consolidate to a limited number of software solutions and move towards consolidated solutions at a regional level. One of the difficulties will be aligning and agreeing to common business processes for patient administration, both across hospital departments and between hospitals. The business owners (chief operating officers) will need to take a strong regional lead during this transition.

DHBs that continue to operate patient administration systems that are old and inflexible have had significant pressure from emergency department personnel to implement dedicated emergency information system solutions. The Board has reviewed this situation, in conjunction with the Australasian College for Emergency Medicine (ACEM). The Board believes it would be preferable for emergency departments to utilise their organisation's patient administration system rather than implement a new dedicated emergency system. However, there may be circumstances where such systems in emergency and other clinical departments cannot be modified sufficiently to meet functional requirements, in which case a dedicated system may be considered.

The Plan prioritises the:

- replacement of obsolete versions of patient administration systems in DHBs, moving towards a standard regional platform over a five-year period
- improvement of business processes to a regionally agreed standard to optimise the patient journey.

Associated benefits of this work stream are that it:

- reduces the costs and risks of legacy systems
- enables more streamlined patient services
- supports a common set of measurements for patient administration and workflow.

## Work Stream 6: Population Health

Population health includes the national collections, primary health organisation (PHO) registers and disease-based research registers (eg, the NZ Cancer Register). Included in the wider context of population health are public health functions such as screening and surveillance.

This Plan supports the consolidation of these functions regionally and nationally. Screening services do not require a separate system built for each type of screening. Instead, using population registers and a common set of supporting processes, by selecting populations of interest (eg, children under five years of age) and leveraging data from existing clinical information systems, specific screening programmes can be developed off the one system.

The Plan prioritises:

- consolidating screening registers based on the principle of populations of interest associated with relevant types of screening-specific information
- developing a public health information strategy to reduce fragmented efforts across DHB public health units, and developing common reporting requirements (eg, for pandemic management)
- standardising national collections according to agreed data standards determined by HISO – many of these are first-generation systems and need to be upgraded to meet today's population health needs
- creating the ability to deliver aggregated and/or patient-level data that is anonymous, for the purpose of quality assessment, analysis and measurement of outcomes.

In future the combination of national collections and regional data repositories will create new opportunities for research (with built-in anonymity) on difficult-to-study public health problems, such as the effects of environmental exposures, or to evaluate the effectiveness of population health.<sup>12</sup>

## Work Stream 7: Business Support

Business support application investments will be facilitated by Health Benefits Limited (the national shared service organisation) but will be co-ordinated as part of the overall National Health IT Plan.

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<sup>12</sup> Based on the submission of Nicholas Jones, public health physician, Hawke's Bay DHB.

The Plan supports:

- consolidating finance systems to one or two installations nationally, with a standard chart of accounts, standard product catalogue and standardised reporting
- consolidating payroll and roster systems to regional or national installations
- consolidating document management and email/calendaring products over normal replacement cycles
- developing knowledge management systems based on presenting information in a common website format.

## **Work Stream 8: Safe Sharing Foundations**

Safe sharing of health information is only possible with a robust and reliable data and network infrastructure. This will involve implementing the already agreed policy on the safe sharing of information (as provided for in the Health Information Security Framework).

This area comprises a set of enabling investments that underpin the other focus areas. It is a necessary prerequisite for developing a shared care plan. Such initiatives as regional data centres, common authentication directories and national licensing for some infrastructure services will be considered here.

Associated benefits of this work stream are that it:

- maintains a common set of identifiers for health sector use, which will allow information to be linked together
- increases patient responsibility by allowing access to their own records.

### **3.3 Phase 2: Shared care programmes**

The Board supports starting the 'shared care' journey in parallel with the Plan's first phase: consolidate, co-operate and lay the foundation. These programmes will be set up along the same lines as the Safe Medications Management national programme, which has sector-wide governance and participation.

The Board has identified two subject areas that are under consideration for national shared care programmes. These subject areas have selected themselves by, firstly, presenting instances where a real information gap exists between clinicians and their patients that is reducing the effectiveness of care; and, secondly, where a commitment to strong clinical leadership is demonstrated. The two programmes are presented below as strong possibilities for progressing over the next 12–18 months.

## Maternity / well child / paediatrics

Building on the recent work by the Ministry on improving the quality of maternity information, this project will supersede the current focus on shared maternity notes between clinicians. The goal is to have a shared record for all newborn babies, and their mothers, from June 2012.

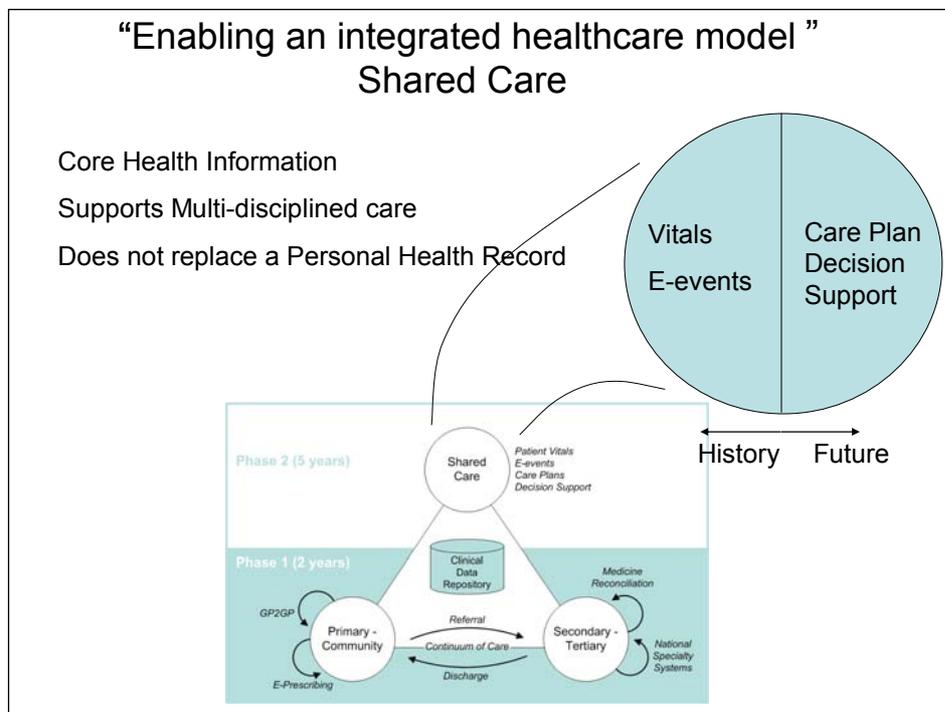
The Board is working with Canterbury DHB, the College of General Practitioners, the College of Midwives, the College of Obstetricians and Gynaecologists and the Ministry of Health's Child, Youth and Maternity Team to establish the programme.

## Long-term conditions

Building on the work of leading clinicians in Auckland, this national programme will create a shared care record for a population of patients with long-term conditions. This programme will incorporate the ASSET project, which will mean that a group of selected patients will also have in-home monitoring units.

Both programmes will be evaluated carefully to ensure that all findings are captured and the benefits of each programme are understood.

**Figure 6: Shared Care – how it fits into the model**



## 3.4 Implementing the Plan

Section 4 presents five project tables that describe the high-level implementation plans for five of the work streams that are in development. Here implementation of the Plan is discussed more generally.

The Board recognises that there have been relatively few successful implementations of health IT projects that span multiple organisations, and that such collaboration is difficult to achieve without determined leadership and goodwill on all sides. It is therefore important that the Board creates the right level of oversight and co-operation between health organisations to ensure the right projects are worked on and that, once committed to, projects are delivered as promised and the benefits are realised.

The primary mechanism used to ensure DHBs understand what is expected of them will be their regional IT plan, which, under the new DHB planning framework, will be included in the Regional Service Plan. These regional IT plans will focus on Phase 1 milestones over the next two years and are expected to be completed by 30 September 2010.

In addition to supporting the Regional Service Plan accountability framework, the Board will work directly with other leadership and accountability groups,<sup>13</sup> such as, Patients First, the National Programmes and the Ministry of Health to help develop and monitor their detailed implementation plans.

### Investment Priorities

The Board expects DHB chief executives to focus on reprioritising resources towards national and regional initiatives after a careful review of their local DHB projects. The Board also expects to see a shift of resources, including a significant increase in expenditure, to regional solutions in 2011/12 (and a corresponding decrease in local solutions).

National specialty systems will be funded jointly by the DHBs delivering the service, with the National Health Board providing assistance where necessary. The Board is also working with Health Benefits Limited, the newly formed shared service organisation, on critical products and services, such as telecommunications, software licences and external hosting agreements that can be licensed or purchased nationally.

Funds will need to be re-allocated from local solutions to the regional and national solutions set out in the Plan. A portion of funds must be earmarked for improving the quality and productivity of a service before committing to investing in the enabling health IT solution. Over the longer term, an increasing proportion of spending will move from investment in further human resource or 'bricks and mortar', towards more distributed models of care, underpinned by good information management systems.

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<sup>13</sup> See Section 4.5.2 Accountability Model

The Board recognises that benefits from such investments will largely be realised in the medium to long term (two to five years) and that there is therefore an 'investment hump' during which investments in new systems will occur alongside the costs of maintaining the current systems. Access to national funding for regional initiatives can be sought via the National Health IT Board through to the Capital Investment Committee.

### **Centres of Excellence**

The approach to implementation will be to trial innovations and deliver projects of national significance in the settings where they are most likely to succeed. This will support enhanced workforce capability and an implementation approach that can be leveraged for national roll-outs. Where there are existing centres of excellence, case studies and evaluations will be carried out so that these become better known.

### **Connection across other social services**

The Board will seek opportunities to engage with central government agencies in the areas of education, social development and housing, and with local authorities.

### **Procurement**

The Board will move towards a more strategic process to support 'active procurement' and service partnerships. This will speed up purchasing and remove many of the current frustrations both vendors and customers are experiencing with the process.

### **Delivering health IT solutions nationally or regionally**

A key theme of the Plan is to ensure that health IT projects are achievable, deliver real value and are sustainable. Related to this theme is the question of whether health IT solutions should be implemented locally, regionally or nationally. The Board has proposed a core set of regional health IT solutions based on national standards. Where strong national clinical governance already exists, or where a national service is agreed, then a national specialty system will be adopted.

The rationale for implementing certain regional solutions as opposed to national solutions is as follows.

- **Regional solutions support innovation and competition:** the health IT environment should reflect differing population and workforce needs and priorities between regions. Regions will potentially 'compete' to achieve the goals of the Plan, and other regions will not want to be left behind. A regional approach avoids lock-in by any one vendor or product. Different regional solutions can provide leverage over vendors who do not perform.

- **Regional implementations will deliver consolidation faster:** consolidation of health IT solutions must be built on strengths and proven solutions. Each region is starting from a different point, and a regional approach will allow for projects to follow different sequencing, building on existing capacity, knowledge and infrastructure. Regional centres of excellence can then be used as a model for other regions when their timing suits.
- **National solutions have higher levels of risk and longer lead times:** the risk of implementing systems nationally is that the lead time is often very long, because it takes longer to set up, align processes and roll out the solution. Lengthy lead times are a source of frustration for investors and end users, who can quickly revert to local solutions when they sense that their expectations are not being met. Large system implementations are also by their very nature riskier and harder to manage.

### 3.5 Criteria for success

The Board has identified three broad criteria for success, which, when ‘added together’, will enable the eHealth Vision: clinical governance, an agreed work plan for health IT investments, and the increasing use of self-care, care teams and on site (remote) support. These criteria will be supplemented by more specific objectives developed within each category.

#### Clinical governance

- Clinicians and clinical networks will confidently lead the identification of quality improvements, the development of new or improved clinical pathways and the design of information solutions.
- Clinicians and clinical networks will partner with sector leaders and IT professionals to deliver ‘fit for purpose’ information solutions.
- Improvements in quality and overall health outcomes will be measured openly, and new improvements will be identified for clinical pathways and related systems.
- Clinical governance will be supported by executive leadership and the development of clinical leaders.

#### Agreed work plan for health IT investments

- A small number of major sector-level health IT investments will be under development each year, based on the priorities identified in national plans and the benefits to the health sector as a whole.
- Current information systems will be leveraged to deliver on new clinical and business support requirements.
- People across the sector will have clarity on whether information solutions are delivered at a national, regional or local level.
- A baseline stocktake of systems and capability will be updated quarterly to allow changes in system configuration and capability to be measured over time.

## **The increasing use of self-care, care teams and remote support**

- An increased number of patients will access their health information online and will communicate with their clinicians remotely.
- Shared care information solutions will be the natural starting point for the delivery of new health IT solutions.
- Projects that support workforce issues (eg, effective remote access to specialist clinical expertise) will reduce the need for the traditional level of facility investments.

## **3.6 Issues and risks**

The following are some of the more significant current issues and risks, along with suggested mitigation.

### **1. Risk**

Health care organisations have already planned their health IT initiatives and projects for the 2010/11 year.

#### **Mitigation**

- Clear signals were provided to DHBs from February 2010.
- Regional planning will be the mechanism used to address the prioritisation challenge.

### **2. Risk**

Consumers will have a wide range of views in relation to a single health IT plan, ranging from frustration with the lack of progress to concern for the privacy of their information.

#### **Mitigation**

- The Board will engage with consumers through the consumer forum and directly with community groups.
- Privacy impact reviews will be completed on health IT solutions involving the sharing of identifiable personal health information.
- Projects will need to ensure clinicians and patients are informed about changes to, and the operation of, health IT solutions.

### **3. Risk**

Health IT vendors have received mixed signals from the sector, and, as a result, have been set up to work with a fragmented sector.

#### **Mitigation**

- Vendor partnership meetings will be held on a six-monthly basis to build relationships and reset the model of engagement with the health sector.

- The Plan will generate new opportunities for those vendors who are able to demonstrate products and services that meet the objectives of the Plan.

#### **4. Risk**

Both IT staff and clinical staff with IT experience are scarce and are generally fully committed to local projects.

##### **Mitigation**

- Professional development opportunities will be provided through working on regional initiatives.
- The profile and experience of staff will be developed through centres of excellence.
- New talent will be mentored and developed by encouraging a learning environment and retaining staff over the long term.
- The National Information Clinical Leadership Group will facilitate clinical leadership and engagement.

## 4 Implementation Plans

The following section presents five project tables that describe the high-level implementation plans for the five work streams that are in development and that will continue to be updated over the course of the Plan. These five work streams are:

1. Quality Information for Primary Health Care
2. Continuum of Care
3. Safe Medications Management
4. Clinical Support
8. Safe Sharing Foundations.

### Notes on the tables

Italics have been used in the tables where the project is planned but not yet scoped or approved. Common abbreviations used in the tables are expanded below. Please refer to the Glossary for other abbreviations.

|       |  |
|-------|--|
| GPNZ  | General Practitioners New Zealand              |
| NHB   | National Health Board                          |
| NHITB | National Health IT Board                       |
| NICLG | National Information Clinical Leadership Group |
| SMM   | Safe Medications Management                    |
| RNZGP | Royal New College of General Practitioners     |

**Table 3: Proposed investments in Work Stream 1: Quality Information for Primary Health Care**

| <b>Projects</b>                                     | <b>Objectives</b>   | <b>Sponsor</b>                      | <b>National/regional implications</b>  | <b>Milestone</b>   | <b>Delivery date</b> |
|---|---|-------------------------------------|--|--|----------------------|
| <b>Practice management system requirements</b>      | Define a set of requirements for general practice management systems (PMS) to support good clinical practice.   | GPNZ/<br>NHITB                      | The main practice management systems will be certified against these requirements.   | Requirements agreed.   | 7/2010               |
|   | Implement changes to practice management systems and certify them.  | GPNZ/<br>NHITB                      | New standards will become part of general practice systems.  | National roll-out completed.                                   | 12/2011              |
| <b>Primary Health Care Dataset (formerly QI4GP)</b> | Design and implement a primary health care information model.   | RNZCGP/<br>NHITB                    | A set of health data for primary care will be developed that can be used to maintain quality indicators.   | Data set agreed.   | 6/2011               |
| <b>Clinical Pathways Review</b>                     | Evaluate clinical pathway methodologies and tools for use in primary and community health care  | RNZCGP/<br>NHITB                    | Evaluation will recommend an approach, and the use of appropriate tools.   | Evaluation completed.  | 7/2010               |
| <b><i>Clinical Pathways</i></b>                     | <i>Develop standard clinical pathways across primary and secondary sectors.</i>   |                                     | <i>A common approach will be taken to developing clinical pathways in a district, co-ordinated regionally.</i>   | <i>Clinical pathways in use.</i>                               | <i>7/2012</i>        |
| <b>Data Concepts Dictionary</b>                     | Define a common set of data elements used throughout the health sector, focusing on high-value clinical information initially. Use GP2GP and SMM projects as starting points. | NHB –<br>Information Strategy Group | A standardised clinical data set will be published and made available for use in data collections and systems. This will form the basis for standardised interfaces between systems. | An initial set of standards is endorsed by HISO and published. | 9/2010               |
| <b>Core National Data Standards</b>                 | <i>Embed core national data standards for reporting and transfer across all health care systems.</i>  | GPNZ/<br>NHITB                      | <i>Common data standards are widely used throughout systems in the New Zealand health sector.</i>  | <i>Core standards in use.</i>                                  | <i>6/2012</i>        |

**Table 4: Proposed investments in Work Stream 2: Continuum of Care**

| <b>Projects</b>     | <b>Objectives</b>   | <b>Sponsor</b>         | <b>National/regional implications</b>  | <b>Milestone</b>   | <b>Delivery date</b> |
|---------------------|---|------------------------|--|--|----------------------|
| <b>GP2GP</b>        | Transfer a patient's health care record from one GP system to another, electronically.                      | GPNZ/<br>NHITB         | Patients can move their complete health record between any GPs in New Zealand.                   | Electronic transfer in use.  | 11/2010              |
| <b>E-referrals</b>  | Phase 1: Implement electronic referrals for multiple DHBs.  | Auckland DHBs          | Generation 2 of e-referrals – will inform an improved standard for clinical content and process. | GPs can refer electronically to 25 services.                           | 6/2011               |
|                     | Phases 2 & 3: End-to-end e-referrals solution, including decision support.                                  | Auckland DHBs          |  | End-to-end electronic use.   | 12/2011              |
|                     | <i>Standardised e-referral templates are available.</i>   | <i>All DHBs</i>        | <i>All GPs have the capability to generate an e-referral to secondary care.</i>                  | <i>100% e-referrals between primary and secondary health services.</i> | <i>6/2012</i>        |
| <b>E-discharges</b> | Develop a transfer of care standard between secondary and primary/community care.                           | NICLG/<br>NHITB        | Clinically -led national standard agreed.  | Standard specified and agreed.   | Completed            |
|                     | <i>Implement the transfer of care standard. Allow GPs to upload information from the discharge summary.</i> | <i>GPNZ/<br/>NHITB</i> | <i>GPs will see the same format for discharge summaries across New Zealand.</i>                  | <i>E-discharge standard in use.</i>                                    | <i>6/2011</i>        |

Aside from the specific projects identified above, the Plan supports the following initiatives:

- access to relevant primary health care information by after-hours/emergency clinicians
- GP access to hospital-based clinical information

- use of telemedicine
- clinician access to patient information via wireless mobile devices
- patient/consumer access to their primary health care information, and access to electronic communication with their clinicians via a personal health portal or personal health record system.

**Table 5: Proposed investments in Work Stream 3: Safe Medications Management**

| <b>Projects</b>  | <b>Objectives</b>  | <b>Sponsor</b>                                   | <b>National/regional implications</b>   | <b>Milestone</b>               | <b>Delivery date</b> |
|--|--|--|---|--------------------------------|----------------------|
| <b>New Zealand Universal List of Medicines (NZULM)</b> | Create an NZULM to uniquely identify each medication and how it is packaged.                     | Ministry of Health                               | The NZULM becomes embedded within community and hospital pharmacy systems in the health sector. | Pilot use in pharmacy systems. | 12/2010              |
| <b>Medicines reconciliation</b>                        | Pilot of electronic medicines reconciliation on admission using two different software products. | Taranaki DHB/<br>Counties<br>Manukau DHB/<br>SMM | Will provide lessons learned about electronic medicines reconciliation for other DHBs.          | Pilot use in two DHBs.         | 6/2011               |
| <b>Community e-prescribing</b>                         | Pilot of community e-prescribing.  | Waitemata  | Will provide lessons learned about e-medications programme.                                     | Pilot in use in one area.      |                      |
| <b>E-medications</b>                                   | Pilot of e-medications (e-prescribing, e-administration and review).                             | Otago/Southland<br>SMM                           | Will provide lessons learned about e-medications for other DHBs.                                | Pilot completed                | 10/2010              |
| <b><i>E-medications roll-out</i></b>                   | <i>E-medications roll-out across primary and secondary health care services.</i>                 | <i>SMM</i>                                       | <i>Community e-prescribing is being progressed as a 2010/2011 project.</i>                      |                                |                      |

**Table 6: Proposed investments in Work Stream 4: Clinical Support**

| <b>Projects</b>   | <b>Objectives</b>   | <b>Sponsor</b>    | <b>National/regional implications</b>  | <b>Milestone</b>                     | <b>Delivery date</b> |
|---|---|-------------------|--|--------------------------------------|----------------------|
| <b>Regional Clinical Data Repository (CDR)</b>                                      | <i>Implement a clinical data repository in each region.</i>   | <i>Region CEO</i> | <i>Will allow views across CDRs and role-based access on the basis of federated authentication.</i>  |                                      |                      |
| <b>Hospital laboratory</b>  | Replace old hospital laboratory system.   | Waikato           | Will allow laboratory services to be provided to other DHBs directly if required.<br><i>Note: Canterbury LabNet successfully provides services to four DHBs.</i> | New system in use.                   |                      |
| <b>Regional Picture Archive Communication System (RIS)/PACS</b>                     | Implement PACS archive for the Central region, allowing images to be shared, and economies of scale for DR/back-up. | Central region    | Will help make radiology a regional clinical service to reduce individual DHB vulnerability.   | Radiologists can operate regionally. |                      |
| <b>Regional Radiology Information System / Picture Archive Communication System</b> | Implement common RIS and PACS solution for three DHBs.  | Auckland DHBs     |  | One instance in use in three DHBs.   |                      |

Aside from the specific projects identified above, the Plan supports the following initiatives:

- implementation of national specialty systems, starting with cardiac surgery (supported by the Cardiac Surgery Network) and then reviewing oncology, renal and paediatrics
- implementation of a standard assessment tool for elderly services (InterRAI)
- consolidation of hospital pharmacy systems regionally
- consolidation of hospital and school-based dental systems regionally or nationally.

**Table 7: Proposed investments in Work Stream 8: Safe Sharing Foundation**

| <b>Projects</b>   | <b>Objectives</b>   | <b>Sponsor</b>    | <b>National/regional implications</b>  | <b>Milestone</b>                 | <b>Delivery date</b> |
|---|---|-------------------|--|----------------------------------|----------------------|
| <b>Information Sharing Framework</b>                        | Develop a framework for shared care, with help from consumers.  | NHITB             | Better sector understanding of patient information issues, leading to a common implementation framework and guidelines for confidentiality and access. |                                  |                      |
| <b>Health Information Security Framework</b>                | Implement the recently endorsed standard for security of health information.                            | NHBBU             | The patient's information will be protected appropriately when stored, viewed or transferred.  |                                  |                      |
| <b>Health Identity Programme (Recipient Provider Index)</b> | Replace the NHI, HPI and Address Register with a new national system (includes Medical Warning System). | Ministry          | Improves reliability and data quality of NHI; links clinicians, organisations and facilities.  | Old NHI and HPI system replaced. | 7/2012               |
| <b>Connected Health</b>                                     | Allow clinical users access to patient information across a region.                                     | Midland/<br>NHITB | Midland region to provide the lead, with the other three regions following.  | Midland Network goes live        | 9/2011               |

# Appendices

## Appendix 1: Models, Information, Applications and Infrastructure

Each component of the Information Model referred to in section 2.4 is expanded in the following discussion.

### Clinical/business model

The clinical and business model that health sector information solutions need to support will be developed through long-term health service planning. Some of the expected benefits are likely to include:

- reducing patient harm
- improving the timeliness of preventive actions and interventions
- reducing unnecessary medical and/or surgical intervention
- developing standard clinical and business models for national services
- enabling patient self-management – making the patients co-producers of their own health care to take the burden away from a diminishing and ageing health workforce
- developing multidisciplinary care plans to manage complex long-term conditions
- improving quality and efficiency through greater standardisation and consistency of service delivery
- developing economies of scale to achieve sustainable and cost-effective services in the face of growing demand.

### Information

Information is an essential ingredient of an effective clinical and business model. Information acts as the memory aid, or prompt, for good health care. Computerised information management allows data to be selected and presented in the right context and at the right time to make it useable. Information supports good clinical decision-making and enables:

- a planned approach to a patient's care
- the patient to be involved in their own care
- practitioners to measure outcomes and improve their clinical practice over time
- research into new and better treatments.

The National Health IT Plan endorses information solutions that support the following functions and their associated outcomes:

- clinical decision support – providing the practitioner with a clear set of diagnostic or treatment options, including the use of evidence-based clinical practice guidelines
- clinical pathways – providing the practitioner with an evidence-based plan on which to formulate the patient’s individual care plan
- national collections – measuring outcomes, recording the use of procedures and medications, and recording mortality and cancer incidence
- screening – checking otherwise healthy individuals and referring them for early intervention, where appropriate, to help prevent the onset of chronic illness or loss of life
- immunisation – applying preventive treatment to avoid the onset of communicable diseases
- quality indicators and clinical audits – measuring the quality of care and benchmarking the practitioner or practitioner team to a recognised standard of care
- primary care – recognising the importance of high-quality primary health care data and processes as the anchor for delivering effective patient care.

## Applications

Applications are the software tools used to process and manage information. They are the means by which data is computerised and digitally presented. Applications typically perform specialised functions and support specific processes that are required to be adhered to. Hence a finance system enshrines the doctrine of double-entry bookkeeping and helps ‘freeze the process’ around this methodology to prevent arithmetic errors.

Administrative and medical applications have the potential to do the same, except that the rules are not yet clearly defined. Medical applications are in a period of rapid development and increasing functionality. The downside of this evolutionary process is that the requirements keep changing and it is hard to pick winners.

Applications are divided into two broad types: clinical applications, which support patient care, and business support applications, which support traditional business functions such as financial accounting, payroll and procurement.

## Infrastructure

Infrastructure is the foundation upon which applications are run. It makes up the roads and railway tracks of computer systems. Without strict standards in this area, chaos can ensue. To illustrate this point, imagine a New Zealand rail service with three different gauges of track. This would mean that each engine and carriage could only run on its own section of track. When moving to a different-sized track the wagons would have to be unloaded and then reloaded on to a different track. Engines and carriages could not be re-used on other tracks without considerable delays and costs involved in conversion. A standard gauge railway track provides a seamless heavy transport infrastructure throughout the country. The same principle is the reason why a nationally standardised IT Health infrastructure is so important.

A standardised infrastructure will allow more efficient deployment and utilisation of infrastructure. It will reduce fragmentation and inconsistency, improve ability to audit and maintain security, support greater reliability of service, allow a choice of standards-compliant applications and services, and will be more cost effective.

## Appendix 2: Audience

The audience for the Plan is wider than just the IT community. The Plan will require considerable investment, so it is targeted at key decision-makers. It will require the support of those who are directly affected by it, but it will also be influenced by many parties involved in the use of information to improve the quality of health care. Table A1 summarises the main audience.

**Table A1: Audience: decision-makers, influencers and those directly affected**

| Decision-makers<br>(funders)   | Influencers  | Directly affected   |
|--|--|---|
| <ul style="list-style-type: none"> <li>▪ Minister of Health</li> <li>▪ NHB</li> <li>▪ C level executives in DHBs (CEO, CFO, COOs)</li> <li>▪ Primary health care leadership</li> <li>▪ Boards of DHBs</li> <li>▪ PHARMAC</li> <li>▪ ACC</li> <li>▪ Ministry of Health</li> </ul> | <ul style="list-style-type: none"> <li>▪ Privacy Commission</li> <li>▪ Health and Disability Commissioner</li> <li>▪ The Treasury</li> <li>▪ Other government ministries and ministers</li> <li>▪ Academics</li> <li>▪ Reference groups</li> <li>▪ Professional bodies (eg, RNZCGP, responsible authorities)</li> <li>▪ Consumers/patients</li> <li>▪ NGOs</li> <li>▪ Other health committees</li> </ul> | <ul style="list-style-type: none"> <li>▪ DHB CIOs and their teams</li> <li>▪ CIOs of PHO/management services organisations</li> <li>▪ Health IT vendors</li> <li>▪ Shared service agency(ies)</li> <li>▪ NHB information delivery and operations</li> </ul> |

## Appendix 3: Business Case Evaluation Criteria

The following criteria were developed to assist the Board in evaluating business cases (all business cases with a capital value greater than NZ\$500,000).

**Table A2: Business case evaluation criteria**

| <b>Criterion</b>   | <b>Questions asked to evaluate criteria</b>  |
|--|--|
| <b>Alignment with the National Health IT Plan</b>        | <p>Does this fit well with the functionality required?</p> <p>Does it have wider implications for use elsewhere in the health sector?</p> <p>Is it a mainstream application already widely accepted?</p> <p>Is this project an innovation where we are looking for innovation?</p> <p>Does it align with strategic NHB/NHITB priorities?</p> |
| <b>Clinical and management leadership and engagement</b> | <p>Does this project have strong sponsorship and buy-in from clinical leadership and management?</p> <p>Has a single project sponsor (accountable for the delivery of benefits) been clearly identified to support the project?</p> <p>Does the implementation team demonstrate commitment and capability?</p>                               |
| <b>Project risk</b>                                      | <p>Is the project likely to succeed?</p> <p>Is there a robust project management approach, and is there commitment to this approach?</p> <p>What is the organisation's past track record in delivering similar projects?</p> <p>Have privacy issues been considered, evaluated and addressed?</p>  |
| <b>Vendor track record and reliability</b>               | <p>Does the vendor have a good track record of implementation and support? Have referees checked out satisfactorily?</p> <p>Have referees checked out satisfactorily and have face-to-face meetings with vendors been carried out successfully?</p>  |
| <b>Fit to application and technology architecture</b>    | <p>Is this a good fit to existing infrastructure?</p> <p>Does it meet software certification standards and interfacing standards?</p> <p>Does the solution reduce overall complexity?</p>  |
| <b>Cost effective</b>                                    | <p>Is this the most cost-effective solution (capital expenditure and operating expenditure over five years)?</p> <p>Have other more cost-effective options been considered (eg, outsourcing)?</p>  |
| <b>Risk if does not proceed</b>                          | <p>Is there a compliance risk?</p> <p>Is this a replacement for a system that is / will no longer be supported?</p>  |

## Appendix 4: Guiding Design Principles

Any successful health information solution has to harness people, processes and technology in the right balance.

The overall guiding principles are that the Plan:

- is all-of-sector focused
- has a greater emphasis on regional and national systems
- aligns strongly with other sector initiatives
- relies on trust in the information held.

The following set of guiding principles will help those directly involved to understand the approach. A number of these principles were developed in April 2009 as part of a draft Joint District Health Boards and Ministry of Health Work Plan for Information Management and Technology.

### People guidelines

- The community are involved in, understand and support the appropriate use of electronically stored personal health information.
- Health practitioners have clearly defined roles when collecting, using and sharing personal health information.
- People are more involved in the collection and use of their personal health information.

### Implementation guidelines

- Clinicians are integral to the development, implementation and ongoing use of health information solutions.
- Information requirements for new or redesigned services are taken into account early in the planning process.
- Improvements in information systems are prioritised to enable clinicians to optimise their resources (time, facilities and equipment) and focus on the delivery of quality health care.
- Administrative processes are simplified and automated wherever possible.
- Management information (eg, reporting against external contracts) is a by-product of day-to-day administrative and clinical work processes (and not an end in itself).

### Technology guidelines

- Information is recorded, stored, viewed and managed electronically throughout the health system.
- Electronic information is centred on each individual patient/consumer.
- Information solutions use nationally adopted and agreed standards whenever possible; international standards for data definitions and exchange of health information are used wherever possible.

- Clinical delivery tasks are made easier and safer through the use of supportive technologies (such as clinical decision support systems).
- Systems and processes are consolidated and run as shared services wherever possible.
- Privacy is by design.

## **Appendix 5: Regional Solutions Versus National Solutions**

### **Regional governance is more likely to succeed**

One of the biggest implementation risks the Plan faces is the lack of effective governance for regional (and national) IT solutions. Governance requires leadership and focus, and the Board believes this is more likely to occur within the smaller groupings of the regions, where relationships between executives and clinicians are already established.

Governance groups associated with DHB executive groups, primary health organisations (PHOs) and clinical networks already exist. Regional Service Plans are being developed with regional clinical and executive governance. Tapping into existing relationships within a region and linking up with pre-existing regional initiatives will speed up the process of implementation, and will also reduce risk.

Lessons from the United Kingdom have shown that regional approaches to the electronic control of health records, as implemented in Wales and Scotland, have proved more successful than the national 'top-down' approach taken in England.

### **Systems do not yet have proven technical scalability**

Candidate systems for regional repositories and regional production systems are not yet proven in some cases. For example, the product supporting the Auckland region results repository has had issues with scaling to manage effective response times. Other systems are designed to be multi-organisational but have not yet been implemented in this configuration. Some systems, such as the Picture Archive Communication System, require large bandwidth (1 Gb/sec) to operate effectively as a service, and this bandwidth is not yet widespread nationally.

### **Security and privacy of patient information is more easily controlled**

National collections and national systems have a stigma attached to them from a privacy perspective. Patients and clinicians are suspicious of who is looking at their information when it is collected nationally. Repositories of clinical data rely on trust. Clinicians and patients within a region can understand how and why their data needs to be shared within a region; they feel more ownership and control over their information. For this reason, it is less risky to have the privacy debate over regional repositories, rather than take on the harder task of trying to justify national repositories.

## **There is support for regional patient flows around regional tertiary centres**

Approximately 10 percent of patients are referred for services between DHBs. These patients may be high-needs patients, or acute patients who need services beyond their DHB of residence. The lack of ability to easily share or access the patient's information within a region leads to inefficiency, delays and potential patient safety issues.

## **Regional solutions support innovation and competition**

The health IT environment should reflect differing population and workforce needs and priorities between regions. An adaptive environment is needed – one that responds to changing needs and allows for the development of different ways of solving the same problem. This will still be within a framework of national standards to ensure that the solutions, although different, can allow data to be shared.

This approach also avoids lock-in by any one vendor or product. Different regional solutions can provide leverage over vendors who do not perform – the threat is that they lose the whole region. Also, the engagement model for vendors is simpler and easier: for some products they will have four regions to deal with rather than 20 DHBs and associated providers.

## **Regional implementations will be faster**

The sequencing and timing of implementations are important because each region is starting from a different point. The Plan needs to build on each region's strengths and promote centres of excellence (proven solutions). This approach builds on existing capacity, knowledge and infrastructure. Regional centres of excellence can then be used as a model for other regions when their timing suits. Regions will potentially 'compete' to achieve the goals of the Plan, and other regions will not want to be left behind.

The risk of implementing systems nationally is that the lead time is often very long because it takes longer to set up, align processes and roll out the solution. Lengthy lead times are a source of frustration for investors and end users, who can quickly revert to local solutions when they sense that their expectations are not being met. Large system implementations are also, by their very nature, riskier and harder to manage.

## **Regional implementation creates significant opportunities for economies of scale**

Consolidation of key systems from 20 DHBs down to four regional entities still represents a significant opportunity for economies of scale and cost sharing and avoids the risk of putting 'all the eggs in one basket'. It also represents an opportunity to co-ordinate disaster recovery, where one region can potentially provide backup for another.

This approach also supports long-term scalability and a pooling of technical resource and support resources for 24/7 fault coverage.

### **Some systems are best run nationally**

Where strong national clinical governance exists, or where national standardisation of a service makes sense, national solutions will be adopted. Candidate systems are those areas of high specialisation but relatively low volumes of patients (eg, renal, oncology, cardiothoracic).

Health Benefits Limited is planning to implement a small number of business support systems nationally; for example, a national product catalogue for procurement could be supported by a national finance system.

## Glossary

The items in this list relate specifically to the National Health IT Plan. Where possible, they have been referenced to specific sources.

| Term or abbreviation                                | Meaning   |
|---|---|
| <b>ACC</b>  | Accident Compensation Corporation: this provides comprehensive, no-fault personal injury cover for all New Zealand residents and visitors to New Zealand.   |
| <b>Better, sooner, more convenient primary care</b> | The Government initiative to deliver a more personalised primary health care system that provides services closer to home and makes Kiwis healthier.<br><i>Reference: Ministry of Health</i>  |
| <b>Clinical pathway</b>                             | A method of defining a set of steps, regardless of care setting, that describes a patient's journey through the health care system in order to best use the available multidisciplinary resources and apply best evidence to aid decisions at each point of intervention.   |
| <b>Connected Health</b>                             | A programme that aims to establish an environment for the safe sharing of health information by delivering standards, frameworks and core network components to create a foundation for an interconnected health network in which applications can interoperate.  |
| <b>Data centre</b>                                  | A climate- and power-controlled facility used to house computer systems and associated components, such as telecommunications and storage systems.  |
| <b>DHB</b>  | District Health Board: the 20 DHBs in New Zealand were established by the New Zealand Public Health and Disability Act 2000 and are responsible for ensuring the provision of health and disability services to populations within a defined geographical area. They are bodies corporate owned by the Crown and are required to operate in a transparent manner. |
| <b>E-discharge</b>                                  | A means of sending information electronically about a consumer's medical discharge from a health care organisation. The term usually relates to the end of treatment at one health care provider's location.  |
| <b>E-medication</b>                                 | An electronic record of a patient's medication chart, showing all medications ordered, prescribed, administered and reviewed, and the medication history.   |

| Term or abbreviation                         | Meaning   |
|--|---|
| <b>E-prescribing</b>                         | E-prescribing or electronic prescribing involves the use of computers to generate prescriptions, often with the assistance of computerised decision support.<br><i>Reference: National Health IT Board</i>  |
| <b>E-referral</b>                            | A means of sending information electronically in relation to transferring a consumer's medical requirements to another or complementary medical provider such as a specialist or GP.<br><i>Reference: National Health IT Board</i>  |
| <b>GP2GP</b>                                 | General Practitioner to General Practitioner: a project that seeks to provide general practices with the capability to safely and securely transfer patient records electronically from one general practice to another to ensure a continuum of care when a patient chooses to move between GPs.   |
| <b>Health Benefits Limited</b>               | Health Benefits Limited is responsible for the efficient and effective provision of administrative support and procurement services to DHBs through national shared service arrangements. The success of Health Benefits Limited will be judged over time by the generation of savings for redistribution to frontline health services.<br><i>Reference: Health Benefits Limited</i>  |
| <b>Health Information Security Framework</b> | Formerly known as the Authentication and Security Standard and replacing the Health Network Code of Practice, this is a set of standards designed to support organisations and practitioners holding personally identifiable health information, to improve the security of information so that such information can be produced, stored, disposed of and shared in a way that ensures confidentiality, integrity and availability. The Framework specifies the minimum policy standards and technical requirements to best enable organisations to achieve this aim. |
| <b>Health IT Cluster</b>                     | An alliance of New Zealand organisations interested in health IT, comprising software and solution developers, consultants, health policy makers, health funders, infrastructure companies, health care providers and academic institutions.<br><i>Reference: Health IT Cluster</i>   |
| <b>Health Quality and Safety Commission</b>  | The Health Quality and Safety Commission is being established as a Crown agent under the Crown Entities Act 2004, independent of the health system's regulatory, funding and performance monitoring functions, to help improve public safety and service quality across the health sector.<br><i>Reference: Ministry of Health</i>  |
| <b>HISNZ</b>                                 | Health Information Strategy of New Zealand 2005: the strategy governed by the Health Information Strategy Action Committee. The Strategy identified 12 action zones needed to be in place to create more effective and efficient working solutions for the health and disability sector.  |

| Term or abbreviation                                  | Meaning   |
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| <b>HISO 2010</b>                                      | Health Information Standards Organisation 2010: HISO aims to support and promote the development, understanding and use of fit-for-purpose health information standards to improve the New Zealand health system.<br><i>Reference: National Health IT Board</i>   |
| <b>HPI</b>  | Health Practitioner Index: a national system comprising three separate indexes for practitioner (Common Person Number), organisation and facility. The HPI will help New Zealand's health sector find better and more secure ways to access and transfer health-related information.  |
| <b>Management services organisation (MSO)</b>         | An organisation owned by a group of physicians, a physician hospital joint venture, or investors in conjunction with physicians. In some cases the hospital owns the service bureau that sells various management services to medical staff. MSOs generally provide practice management and administrative support services to PHOs, individual physicians or small group practices. One purpose of MSOs is to relieve physicians of non-medical business functions so that they can concentrate on the clinical aspects of their practice. |
| <b>Ministerial Review Group</b>                       | This group was commissioned by the Minister of Health to review the New Zealand public health system and make recommendations to improve its quality and performance. Released in July 2009, the Group's report, <i>Meeting the Challenge</i> , includes 170 recommendations on reducing bureaucracy and improving frontline health services in the public health and disability sector.<br><i>Reference: Ministerial Review Group Report</i>   |
| <b>National Health IT Board</b>                       | The role of the National Health IT Board is to provide leadership on the implementation and use of information systems across the Health and Disability Sector. The National Health IT Board is a subcommittee of the National Health Board and is charged with ensuring that health sector policy is supported by appropriate health information and IT solutions. The Board succeeds the Health Information Strategy Advisory Committee.<br><i>Reference: National Health IT Board</i>  |
| <b>National Health Workforce Plan</b>                 | Health Workforce New Zealand is a sub-committee of the National Health Board and was formed to address the issues faced in health sector workforce development. Its aim is to provide a single, co-ordinated response to improving our ability to train, recruit and retain our health workforce. To this end, it has developed the National Health Workforce Plan.<br><i>Reference: National Health Workforce</i>  |
| <b>National Information Clinical Leadership Group</b> | This group was established in September 2009, comprising nominated members from a range of professional bodies and colleges, providing leadership and support for clinicians in New Zealand. Its role has extended to providing clinical leadership input to the National Health IT Plan and engaging in a wide range of clinical process and information solutions.<br><i>Reference: National Information Clinical Leadership Group</i>  |

| Term or abbreviation                 | Meaning  |
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| <b>NGO</b>                           | Non-government organisation: a legally constituted organisation with no participation by or representation from any government department. Where NGOs are funded totally or partially by government, the NGO maintains its non-governmental status by excluding government representatives from membership in the organisation.  |
| <b>NHB</b>                           | National Health Board: this board works within the Ministry of Health, consolidating the national planning and funding of all IT, workforce planning and capital investment. Seven of the ten members are doctors and nurses, who represent clinical leadership in the public health service. The NHB is influential in how New Zealand's health services are developed.<br><i>Reference: Ministry of Health</i>   |
| <b>NHI</b>                           | National Health Index: the national collection of health care user demographic data (of which the NHI number is the unique identifier). The NHI is primarily used to identify individuals within the New Zealand health system, especially within electronic systems.<br><i>Reference: Ministry of Health</i>  |
| <b>NZULM</b>                         | New Zealand Universal List of Medicines: a dictionary of authoritative and standardised information on medicines in New Zealand, providing a single repository for practical and commonly used information about medicines.  |
| <b>Patient administration system</b> | An application responsible for recording and reporting the administrative details of a patient in a hospital setting. It tends to include details such as the patient's name, home address, date of birth and each contact with the outpatient department or admission and discharge.  |
| <b>Patient vitals</b>                | The core summary health record of high clinical value information such as current medications, current problem list, current allergies and patient demographics. It is part of the shared care record.   |
| <b>PHARMAC</b>                       | Pharmaceutical Management Agency of New Zealand: PHARMAC is part of the New Zealand medicines system, working to improve New Zealanders' access to, and optimal use of, medicines.<br><i>Reference: PHARMAC</i>  |
| <b>PHO</b>                           | Primary health organisation: these organisations are funded by DHBs to provide essential primary health care services to those people who are enrolled with a PHO. PHOs bring together doctors, nurses and allied health professionals (such as Māori health workers, health promotion workers, dieticians, pharmacists, physiotherapists, psychologists and midwives) in the community to serve the health needs of their enrolled populations. Varying widely in size and structure, they are not-for-profit organisations providing services directly by employing staff or through provider members. |

| Term or abbreviation   | Meaning   |
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| <b>Population health</b>   | Population health has been defined as ‘the health outcomes of a group of individuals, including the distribution of such outcomes within the group.’ It is an approach to health that aims to improve the health of an entire population. Populations may be defined by locality, biological criteria such as age or gender, social criteria such as socioeconomic status, or cultural criteria such as whānau.                       |
| <b>Practice management system</b>  | A software suite that deals with the day-to-day operations of a general medical practice or other clinical practice. It captures clinical and business information for the purposes of managing patient appointments, billing and clinical record keeping.  |
| <b>QI4GP</b>   | Quality Information for General Practice: an initiative that seeks to develop the best way for patient information to be gathered, collated and used so that people get safe, effective and efficient care throughout the health system. It is a ‘grass roots’ initiative, driven by general practice, which has been given seeding funding by the Ministry of Health. It has now been replaced by the Patients First group.          |
| <b>Radiology Information System / Picture Archive Communication System</b> | The system that supports diagnostic imaging and result reporting.   |
| <b>Recipient Provider Identity</b>   | This project aims to increase the availability and accuracy of patient and provider identity information, in order to improve clinical service delivery. The project provides foundation building blocks, including a new technology platform for the National Health Index (ie, a patient identifier), the Health Practitioner Index (ie, practitioner, organisation and facility identifiers), and a standardised address register. |
| <b>RNZCGP</b>  | Royal New Zealand College of General Practitioners: a professional body and postgraduate educational institute. It provides ongoing educational support and training for GPs and sets standards for general practice.<br><i>Reference: RNZGP</i>  |
| <b>Shared service organisation</b>   | See Health Benefits Limited.  |
| <b>SMM</b>   | Safe Medicines Management: a national programme to address significant issues regarding the safe use of medications. The initial goal is to implement electronic medicine reconciliation at the point of entry and exit to and from hospital care. This programme supports e-prescribing, dispensing and medicine reviews in the hospital, and extends to the community.  |

| Term or abbreviation       | Meaning   |
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| <b>Vulnerable services</b> | A vulnerable clinical service is one where there are sustainability problems of a clinical or financial nature, now or in the future.<br><i>Reference: Central Region Technical Advisory Services Limited</i>   |
| <b>WAVE 2001</b>           | Working to Add Value through E-information (WAVE): a health information strategy from 2001. The strategy's intention was to improve health outcomes through the effective use of health information at the least cost to the sector. This was expected to be achieved through common standards, languages, methodologies and other techniques, and a new approach to health organisation. |