Performance audit report

Progress with priorities for health information management and information technology

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Progress with priorities for health information management and information technology

Foreword

In October 2001, a report to the Ministry of Health by the Working to Add Value through E-information (WAVE) Advisory Board, known as the WAVE Report, brought together the health sector's recommendations for making more effective use of health information. The WAVE Report envisaged rapid change in 3 to 5 years, which is a demanding timetable.

In 2005, I considered that it was timely to look at the progress made by the Ministry of Health, District Health Boards, and the health sector. The sector's ability to access and exchange information quickly is increasingly important to the delivery of high quality health care, and Parliament's Health Committee has expressed concern about the extent of progress since the WAVE Report was published.

Because of difficulties and changes within the sector, there has been less progress on key initiatives than expected by the WAVE Report, the Ministry of Health, and the sector. Nonetheless, progress has been made and there have been benefits.

I acknowledge the standards work completed so far by the Health Information Standards Organisation and the strategic steps the Ministry of Health has taken with the sector.

The recommendations in Part 5 of this report should help the Ministry of Health and the sector to make faster progress with improving how they manage and use electronic health information.

It is essential that the whole sector support implementation of the *Health Information Strategy for New Zealand 2005*.

I thank staff in the Ministry of Health, District Health Boards, and Primary Health Organisations, and others we spoke to throughout the health and disability sector for their help during this audit.

K B Brady
Controller and Auditor-General

9 March 2006

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Discharge summary

A clinical note summarising the care of a patient about to be discharged after a stay in hospital, and sent to the primary care provider who will continue to care for the patient.

Discharge summaries may contain structured and free texts, clinical images, the results of investigations, and a record of the drugs prescribed.

District Health Boards

Organisations responsible for protecting, promoting, and improving the health and medical independence of a geographically defined population.

Each District Health Board funds, provides, or otherwise ensures the provision of services for its population.

Health Event Summary

Any clinical communication from one health provider to another:
• in the course of the clinical management of a patient;
• summarising the patient's current care, which enables other providers to share in and co-ordinate the care. This definition includes traditional referral and discharge letters, and a broader range of communications.

Health information

In relation to an identifiable individual, means information:
• about the health of that individual, including that individual's medical history;
• about any disabilities that individual has, or has had;
• about any health services or disability services that are being provided, or have been provided, to that individual; and
• provided by that individual in connection with the donation by that individual of any of their body parts or any bodily substances.

Health information standards

Standards that cover:
• data formats for records and their content;
• codes and other vocabulary for medical and health services terms;
• the interchange of data, for example, through messaging; and
• security and controlling access to information.

Health Information Strategy Action Committee

A committee accountable to the Minister of Health, with the role of providing governance, oversight, and leadership in implementing the *Health Information Strategy for New Zealand 2005*.

Health Information Standards Organisation (HISO)

The Ministerial Committee established to lead the preparation and implementation of information management and information technology standards for the health and disability sector.

Health Level Seven (HL7) messaging standards

Internationally-monitored standards for data supporting clinical patient care and the management, delivery, and evaluation of health services.

Health Practitioner Index

A national database holding information (for example, name, practising status, qualifications, and scope of practice) about health practitioners, non-practitioners (for example, hospital admission clerk, medical centre practice manager), health organisations, and health delivery facilities.

The Health Practitioner Index will let practitioners transfer, access, and manage health information electronically and securely.

Information management

Covers all business uses of information including collection, recording, storage, amendment, analysis, and exchange.

National Health Index

The National Health Index stores National Health Index (NHI) numbers. An NHI number is a unique identifier that is assigned to each person using health and disability support services in New Zealand.

A person's NHI number is stored along with that person's demographic details (name, address, date of birth, sex, New Zealand resident status, and ethnicity).

The NHI and associated NHI numbers are used to help with the planning, co-ordination and provision of health and disability support services.

New Zealand Health Information Service

A group within the Ministry of Health responsible for collecting and disseminating health-related data.

Patient management system (secondary care)/Practice management system (primary care)

The system used to keep track of patients. In the case of secondary care, the focus is usually on tracking the admissions, discharges, or transfers of patients.

In the case of primary care, the focus is on patient clinical information and maintenance of the register of patients.

Primary care

The first level of contact that individuals, the family, and community have with the national health system.

The care given is therefore general (that is, not specialist), comprehensive (covers physical and mental well-being, and includes both preventative care as well as medical treatment), continuing (in that an individual often visits and establishes an ongoing relationship with a particular general practice), and accessible.

Primary Health Organisations

The local structures through which District Health Boards implement the PrimaryHealth Care Strategy. Primary Health Organisations are not-for-profit provider organisations funded by District Health Boards to provide primary health care services for an enrolled population.

 A Primary Health Organisation provides services directly by employing staff or through its provider members.

Referral letter

A clinical note sent by a (usually primary) care provider to a specialist colleague (orthopaedic surgeon or cardiologist, for example) requesting assistance in the clinical management of a patient whose clinical condition is outside the general practitioner's ability or resources.

The contents of the referral may contain structured and free texts, clinical images, and the results of investigations.

Secondary care

Specialist care that is typically provided in a hospital setting.

Standards New Zealand

The body that establishes national, regional, and international standards and other specifications to improve the quality of goods and services; facilitates trade and commerce; and promotes safety, health and welfare.

Summary

In the modern high-technology environment, the ability to manage and exchange information quickly and securely is important. It is arguably even more important in the health and disability sector, because the quality of health services can depend on it.

Between 1991 and 2000 there were 3 successive health information strategies. Then, during 2001, for the first time a group from throughout the sector came together to consider information management and information technology needs. This group published its report in October 2001, entitled *From Strategy to Reality – The WAVE Project* (the WAVE Report).

The WAVE Report advised the Ministry of Health (the Ministry) of the sector's recommendations for making more effective use of health information. The report contained 79 recommendations, including the "Top 10" priorities for action, and envisaged rapid change in 3 to 5 years, which is a demanding timetable.

We decided it was timely, around 3½ years after the WAVE Report was published, to audit whether the Ministry and the sector had made the progress they expected to make towards more effective use of health information.

Reasonable and pragmatic response to the WAVE Report, but more impetus required

Under the devolved health sector structure introduced in 2000, progress with information management and information technology improvements relies on stakeholder involvement and collaboration throughout the sector.

Recognising this, from around mid-2002, the Ministry set out to work with the sector on implementing the recommendations in the WAVE Report.

Progress on the Top 10 priorities under 4 strategic steps

The Ministry concentrated on the Top 10 priorities identified in the WAVE Report by involving the sector in 4 strategic steps:

- strategic step 1 – supporting the priorities reflected in the WAVE Report through initiatives such as upgrading the National Health Index and setting up a Health Practitioner Index;
- strategic step 2 – preparing and implementing planning frameworks to co-ordinate and align the sector's improvements in information management and information technology;
- strategic step 3 – setting up and implementing stewardship arrangements, such as national and regional forums, to ensure that the sector's information

management and information technology improvements are appropriately overseen and guided by the interests of sector stakeholders;

- strategic step 4 – refreshing and implementing the sector's strategy for information management and information technology.

Much of the progress made was in setting up capability for longer-term benefits

Progress was made on key initiatives at national and District Health Board level under the first strategic step. At a national level, the Health Information Standards Organisations was involved in drawing up and implementing information standards. The Ministry upgraded the National Health Index, introduced a Health Practitioner Index, enhanced the Health Intranet, and drew up draft privacy, authentication and security standards for sharing information. District Health Boards focused on planning and progressing initiatives to build their capability to electronically exchange hospital discharge summaries and referrals with primary care providers.

Progress was made in preparing sector planning frameworks under the second strategic step. The Ministry sought to co-ordinate and align District Health Boards' planned activities to improve their information management and information technology. Common performance indicators on progress with implementing the WAVE Report were included in the District Health Boards' annual plans. The Ministry and the District Health Boards also prepared Information System Strategic Plans using a common framework.

Progress was made in setting up sector stewardship arrangements under the third strategic step. Several groups concerned with the stewardship of information management and information technology have been set up throughout the sector, including national and regional groups to co-ordinate capital investment. Stewardship arrangements are still evolving as the various groups mature and become more effective in linking and working together.

The *Health Information Strategy for New Zealand 2005* was published in August 2005 under the fourth strategic step.

Some early benefits from more effective information use have emerged

Most District Health Boards and just over half of Primary Health Organisations that responded to our survey believed that electronic information use in patient treatment had improved because of the initiatives progressed. Upgrading the National Health Index together with the introduction of standards for

capturing ethnicity data had most noticeably benefited information use. The benefits of other initiatives were not yet as clear, particularly for Primary Health Organisations.

Action was driven jointly by the Ministry and the sector in the absence of an organisation to provide effective independent strategic leadership

A sector team (overseen by an Advisory Board of sector representatives appointed by the Director-General of Health) produced the WAVE Report. In the view of the WAVE Advisory Board, the most important recommendation in the WAVE Report was to set up an independent organisation to lead sector information management and information technology capability. Establishing an organisation has taken a long time.

It was 26 months after the WAVE Report was published before the Health Information Standards Organisation (HISO) became operational in December 2003. HISO was not set up to be as independent of the Ministry as recommended by the working group that advised on setting it up. The Ministry had supported HISO with resources and through funding but HISO had not attracted the expected level of funding from the sector. Also, HISO had not had a strategic sector leadership role as envisaged by the working group.

After the publication of the new *Health Information Strategy for New Zealand 2005* in August 2005, HISO's role was broadened to undertake governance, oversight and leadership of implementing the strategy. HISO has been renamed the Health Information Strategy Action Committee and now has a strategic leadership role.

Action was not guided by a detailed plan with measurable objectives

The WAVE Report was a basis from which to take action rather than a detailed plan of action. When the WAVE Report was published, the Ministry considered that the sector was not in a position, culturally or structurally, to prepare a detailed plan for implementing the recommendations. Having just been through the process of compiling the WAVE Report, the Ministry believed that more time spent planning a detailed response would have damaged the sector's confidence in its own and the Ministry's ability to take action, and momentum would have been lost.

While the Ministry's response, working with the sector through the 4 strategic steps, was reasonable and pragmatic, some focus and impetus was lost by not having a detailed plan with measurable objectives.

Progress was generally less than expected, affected by changes in the sector and some difficulties

Some changes affecting the sector are likely to have slowed progress. Major changes in the structure of the health sector have taken place over the last 5 years, including decentralising decision-making to 21 community-focused District Health Boards and setting up 77 Primary Health Organisations under District Health Boards. These changes are likely to have slowed progress with information management and information technology improvements as District Health Boards and Primary Health Organisations have settled into their roles, and the information demands on them and their own information requirements have evolved.

Some changes affecting the sector have added impetus to progress. *The New Zealand Health Strategy*, *The Primary Health Care Strategy*, and *The New Zealand Disability Strategy* all highlight the importance of improving the sector's capability to manage and exchange high-quality information quickly and effectively. New funding arrangements for District Health Boards and Primary Health Organisations also depend on accurate information about health needs. External factors such as the increasing availability of broadband internet access have also helped.

Some difficulties have been encountered around effectiveness of leadership and clarity of responsibilities for improvements. While the Ministry had been prominent in driving certain initiatives, there were some areas where different parts of the sector would have liked more effective leadership from the Ministry. These included clearer strategic priority setting, quicker and more definitive decision-making, and greater empowerment. Most of the District Health Boards and Primary Health Organisations that responded to our survey believed that the absence of a written strategy defining responsibilities and accountabilities under the strategic steps had hindered progress.

There have been some difficulties with funding, and the sector's capacity for implementing changes. Funding pressures on the Ministry and District Health Boards have meant that the level of investment in information management and information technology following the WAVE Report is likely to have been less than anticipated. The sector's capacity for implementing changes alongside maintaining normal business has also been stretched.

There have been difficulties caused by District Health Boards' different levels of maturity in information management and information technology. This has sometimes limited progress. For example, some District Health Boards have patient management systems that were not designed for the sort of information

flows envisaged by the WAVE Report and need to be upgraded or replaced before the full benefits envisaged can be achieved.

The sector is now in a better position to more quickly address remaining information priorities

The *Health Information Strategy for New Zealand 2005* provides a good basis for the sector to build on the action that has been taken so far and make better progress. There is a good and improving technology base to build on, and culturally the Ministry and the sector are more prepared to lead and co-ordinate action together. The strategy needs to be quickly implemented, and some important issues on specific initiatives need to be quickly addressed.

Recommendations

In our view, our recommendations will hasten the implementation of the *Health Information Strategy for New Zealand 2005* and contribute to achieving the strategy's objectives.

Health Information Strategy Action Committee

We recommend that the Health Information Strategy Action Committee:

- obtain and act on regular feedback from stakeholders throughout the sector on how well it is undertaking its role and what it is achieving, to help ensure that it build and retain credibility with the sector;

- ensure that benchmark targets in the *Health Information Strategy for New Zealand 2005* are underpinned by more specific measures to assess whether the targets are being achieved, recognising the need not to overload the sector with performance indicators;

- ensure that all parts of the sector, including Primary Health Organisations, clinicians, and other health providers, are effectively consulted and involved in implementing the *Health Information Strategy for New Zealand 2005* Action Zones by ensuring that:
  - existing stewardship arrangements are used effectively to involve the sector; and
  - new mechanisms are put in place to effectively involve parts of the sector for which suitable mechanisms do not currently exist (for example, Primary Health Organisations);

- guide implementation of the *Health Information Strategy for New Zealand 2005* with a simple "road map" that is communicated to the sector, showing:
  - the integrated health information system that the sector is aiming for;
  - the overall implementation period;
  - where projects and initiatives fit in;
  - major milestones along the way; and
  - how benefits would build up for different parts of the sector and for patients;
- put in place an implementation plan for each of the *Health Information Strategy for New Zealand 2005* Action Zones;
- ensure that each Action Zone implementation plan is split into constituent projects, with specific measurable objectives and responsibilities, and realistic budgets and completion dates; and
- in compiling and overseeing implementation of the Action Zone plans, ensure that:
  - the funding and resources required to successfully implement improvements under each of the Action Zones are realistically assessed, and made available from throughout the sector;
  - the sector's capacity for undertaking the required changes is reviewed so that progressive goals and milestones are realistic and achievable;
  - external expertise is effectively contracted in (where required) to support the changes; and
  - clinicians are consulted, to ensure that activity is driven by business needs and remains clearly focused on better health outcomes.

Health standards sub-committee of the Health Information Strategy Action Committee

We recommend that the health standards sub-committee of the Health Information Strategy Action Committee:

- secure more funding and resources from the sector, for preparing, implementing, and evaluating standards; and
- monitor and report regularly to the sector on the funding and resources directed towards preparing, implementing, and evaluating standards, and on progress made.

Infrastructure sub-committee of the Health Information Strategy Action Committee

We recommend that the infrastructure sub-committee of the Health Information Strategy Action Committee:

- act quickly to make the Health Intranet more effective by addressing the operational issues that have been identified, including raising the profile and use of the network throughout the sector; and

- give priority to endorsing and launching the privacy, authentication, and security standards.

Ministry of Health

We recommend that the Ministry of Health:

- continue to support through funding and resources the work of the health standards sub-committee of the Health Information Strategy Action Committee in preparing, implementing, and evaluating standards;

- evaluate the effect of the ethnicity data protocols on data quality to assess if any further follow-up action, such as additional training, is needed;

- and District Health Boards resolve, as a priority, how to fund and procure appropriate Application Programme Interfaces to improve use of the National Health Index; and

- quickly finalise the guidelines for using the Health Practitioner Index, and communicate the availability of the guidelines to the sector to ensure that early benefits from the Health Practitioner Index are realised.

Part 1
Introduction

1.1   In this Part we describe the structure of the health sector before explaining the scope of our audit.

Structure of the health sector

1.2   The Minister of Health has overall responsibility for the health and disability sector. The Minister works through the Ministry of Health (the Ministry) to enter into accountability arrangements with District Health Boards (DHBs), determine the health strategy, and agree how much public money will be spent on delivering health services.

1.3   DHBs are Crown entities responsible to the Minister of Health (administration is through the Ministry). DHBs are responsible for establishing, funding, and monitoring Primary Health Organisations, which are in turn responsible for providing essential primary health services to a defined population. At a minimum, these services will aim to improve and maintain the health of the population, and restore people's health when they are unwell. (Appendix 2 has more information on the structure of the health sector.)

The WAVE Report

1.4   The ability of the health and disability sector (the sector)[1] to access and exchange information quickly is increasingly important to the delivery of quality health services.

1.5   In October 2001, a report commissioned by the Ministry from the Working to Add Value through E-information (WAVE) Advisory Board brought together the sector's recommendations to use health information more effectively. The report, *From Strategy to Reality – The WAVE Project* (the WAVE Report) was published in October 2001.[2] Since then, Parliament's Health Committee has expressed concern about the extent of progress. The WAVE Report envisaged rapid change in 3 to 5 years, which is a demanding timetable.

The scope of our audit

1.6   We decided it was timely, around 3½ years after the WAVE Report was published, to audit whether the Ministry and the sector had made the progress they expected to make towards more effective use of health information.

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1   Unless otherwise specified, when we refer to "the sector" we mean the health and disability sector shown in Appendix 2. As part of our audit we surveyed District Health Boards and Primary Health Organisations, and interviewed the other stakeholders listed in Appendix 1.

2   WAVE Advisory Board to the Director-General of Health, (October 2001), *From Strategy to Reality - The WAVE Project*, Health Information Management and Technology Plan, Wellington, ISBN 0 477 01957 9.

1.7   We examined whether:
- the Ministry had taken appropriate steps to lead the sector in responding to the WAVE Report (Part 2);
- the Ministry and the sector had improved the sector's ability to use health information effectively (Part 3);
- the pace and extent of progress had been as expected by the Ministry and the sector and in the WAVE Report (Part 4); and
- the Ministry and the sector had a well-formulated strategy for continuing to improve information management and information technology, supported by a well-formulated plan for implementing improvements (Part 5).

1.8   In Part 5, we make recommendations to help the Ministry and the sector to advance information management and information technology under the *Health Information Strategy for New Zealand 2005* (published in August 2005).

1.9   To inform the scope of our audit, we examined papers covering how the Ministry responded to the WAVE Report, and held preliminary unstructured interviews with Ministry personnel responsible for leading the implementation of the WAVE Report's recommendations. We also held unstructured interviews with a cross-section of people from throughout the sector who were affected by the implementation of the WAVE Report.

1.10   The WAVE Report contained 79 recommendations, including the "Top 10" priorities. The Ministry, working with the sector, concentrated on the "Top 10" priorities and addressed them by following 4 strategic steps. Our audit focused on the progress made by the Ministry and the sector in following the strategic steps. The steps were:
- strategic step 1 – supporting the priorities reflected in the WAVE Report through initiatives such as upgrading the National Health Index and setting up a Health Practitioner Index;
- strategic step 2 – preparing and implementing planning frameworks to co-ordinate and align the sector's improvements in information management and information technology;
- strategic step 3 – setting up and implementing stewardship arrangements, such as national and regional forums, to ensure that the sector's information management and information technology improvements are appropriately overseen and guided by the interests of sector stakeholders;
- strategic step 4 – refreshing and implementing the sector's strategy for information management and information technology.

1.11   Under the first strategic step, we examined progress with 8 initiatives central to enhancing the management and use of health information. They include the initiatives for which the Ministry received some additional funding and the largest WAVE initiatives undertaken by the Ministry and the sector. Figure 1 shows how the 8 initiatives we examined relate to the "Top 10" priorities identified in the WAVE Report.

1.12   We did not examine all health information advances within the sector after the WAVE Report. There were too many – covering systems spread throughout the sector – for us to examine all of them. For example, we did not look at finance, human resource, and other administrative information systems within the Ministry and DHBs, systems set up for enrolling patients with practitioners in Primary Health Organisations, or enhancements to the practice management systems of general practitioners.

1.13   As part of our audit, we conducted a survey of DHBs and Primary Health Organisations during April and May 2005. We surveyed managers responsible for improving information management and information technology, not health practitioners. Appendices 1 and 2 explain our audit methodology and the structure of the sector.

Figure 1
The initiatives we examined and the WAVE Report's "Top 10" priorities

1. Set up an independent organisation to lead information management/ information technology capability

Initiative we examined: Health Information Standards Organisation

In December 2002, the Minister of Health announced the formation of a national standards organisation (the Health Information Standards Organisation) to lead the creation and implementation of information management and information technology standards required for the health and disability sector.

2. Collect reliable ethnicity data

Initiative we examined: Protocols for gathering ethnicity data

In August 2002, the Ministry started work on a set of ethnicity data protocols that were issued in February 2004 to facilitate a standardised approach to collecting, recording, and using ethnicity data throughout the health and disability sector.

3. Implement the National Provider Index

Initiative we examined: Health Practitioner Index

The Health Practitioner Index is a tool for controlling which practitioners are authorised to access which health information. It is a national system holding information about health practitioners and non-practitioners (for example, hospital admission clerks and medical centre practice managers), handling health information, and about organisations providing health services and the locations of the facilities from which services are provided. Work began in 2003 and phased implementation is under way.

4. Fix up the National Health Index – allow primary provider access, improve ethnicity data

Initiative we examined: National Health Index (NHI)

The NHI is an index of information associated with a unique NHI number that each person using health and disability services in New Zealand should be assigned. In early 2003, the Ministry began a programme of work to upgrade the NHI and address issues such as people being registered more than once on the NHI with duplicate NHI numbers, poor online primary care access and limited public awareness about the NHI and its purpose.

5. Gather primary care information

Initiative we examined: National Immunisation Register

The National Immunisation Register is a system for tracking the immunisation status of children to inform delivery of vaccinations and provide information on local, regional, and national immunisation coverage. After work dating back to 2001, the register was used throughout DHBs for Meningococcal B vaccinations between July 2004 and June 2005. It is being made available to record other childhood immunisations.

6. Fix up pharmacy and laboratory data and provide primary care with access

No specific initiative examined – we looked at progress reported by DHBs in increasing the number of general practitioners using electronic prescribing and exchanging test orders and results with laboratories electronically. DHBs provided reports on progress in these areas in response to key performance indicators set in their annual plans.

7. Clean up messaging standards

No specific initiative examined – we looked at work on standards for electronic messages containing health information undertaken by the Health Information Standards Organisation.

8. Sort out Health Event Summaries – with data dictionaries, electronic discharges, and referrals

Initiative we examined: Electronic hospital discharges and patient referrals

DHBs have been focusing on building their capability to exchange hospital discharge summaries and referrals electronically, and key performance indicators in their 2003-04 and 2004-05 annual plans have required them to report on progress.

9. Launch health portal

Initiative we examined: New Zealand Health Network (Health Intranet)

Building on a concept first conceived around 1998 in South Auckland, the Ministry has been enhancing a Health Intranet to facilitate secure, interactive exchange of information between health providers and assist delivery of integrated health services.

10. Make integrated care work by: developing standards for data exchange, security and network infrastructure.

Initiative we examined: Standards for privacy, authentication, and security

The Privacy, Authentication, and Security Project has been running since 2003, with the objective of setting, in consultation with the sector, a set of privacy, authentication, and security standards to support the electronic exchange of health information, and deciding how to implement the standards.

Part 2
Response to the WAVE Report

2.1   In this Part, we:

- briefly explain the background to the WAVE Report; and
- discuss how the Ministry and the sector have responded to the WAVE Report.

Background to the WAVE Report

2.2   The strategic importance of information management and information technology to the delivery of health services was first indicated in 1991 when the Department of Health, as it was then known, published the *Health Information Strategy*. The Ministry updated the strategy in 1996 with the *Health Information Strategy for the Year 2000*.

2.3   In 2000, the Ministry produced a draft *Health Knowledge Strategy*, which reflected a strategic shift in the delivery of health services towards areas of highest benefit for the population and to tackling inequalities. To build on the *Health Knowledge Strategy*, the Ministry established the Working to Add Value Through E-Information (WAVE) Project.

Appointment of the WAVE Advisory Board

2.4   In December 2000, the Director-General of Health appointed a WAVE Advisory Board. The role of the WAVE Advisory Board was to facilitate the preparation and acceptance by the sector of a 3- to 5-year information management and information technology plan. The goal was to improve health outcomes through the effective use of health information at the least cost to the sector.

2.5   The WAVE Advisory Board included representatives from a range of sector interests. It was supported by a project executive and a core team of staff from the Ministry, DHBs, and the New Zealand Health Information Service.

2.6   By bringing together sector stakeholders through the WAVE Advisory Board, the Ministry was seeking to actively engage the sector in setting policy on information management and information technology.

Priorities for action identified in the WAVE Advisory Board's report

2.7   The WAVE Advisory Board published the WAVE Report in October 2001. The WAVE Report was broad in scope, looking at information management and information technology issues for all 21 DHBs, and some 13,000 other provider organisations in the sector. It considered more than 300 information systems and data sets.

2.8   The WAVE Report was not a detailed plan of action but presented the WAVE Advisory Board's advice on the main actions that the Ministry and the sector

should take to gain better value from the use of electronic health information. It contained 79 recommendations, including the "Top 10" priorities (see Figure 1 in Part 1).

2.9   Stakeholders from throughout the sector told us the WAVE Report provided a good basis for enhancing health information management and information technology, because it was a consolidated view of the sector's priorities, and was supported by the sector.

How the Ministry of Health and the sector have responded to the WAVE Report

2.10   The Ministry and the sector did not prepare a detailed plan with measurable objectives for implementing the WAVE Report, as we would have expected. Instead, the Ministry decided to work with the sector and concentrate action on the priorities of the WAVE Report by:

- setting up a health information standards organisation; and
- applying 4 strategic steps.

2.11   The Ministry told us that it chose to take this particular course of action because it considered the sector was not in a position, culturally or structurally, to plan a detailed implementation response. It did not want to lose the momentum generated by producing the WAVE Report, nor lose sector confidence in the ability of the Ministry to take action.

2.12   In our view, while the Ministry's response was reasonable and pragmatic, some focus and impetus was lost by not having a detailed plan with measurable objectives.

Setting up an independent health information standards organisation

2.13   In the view of the WAVE Advisory Board, the most important recommendation in the WAVE Report was to –

> … *set up an independent organisation to lead* [information management and information technology] *capability.*

2.14   The WAVE Advisory Board recommended that a New Zealand Health Information Standards Organisation should be set up as a Crown entity to determine sector information management and information technology standards, with a governing board appointed by the Minister of Health and the Minister of Finance.

2.15   The WAVE Advisory Board believed that such an organisation would effectively lead the sector's response to the WAVE Report, and bring about sector-wide collaboration and coherence to continuously improve systems and data quality over time. The organisation would do this by working to get agreement on important components such as common electronic languages and data sets.

2.16   The WAVE Advisory Board considered that, to ensure enough support from the sector and to continue momentum from the WAVE Report, the organisation should be independent of the Ministry.

Working group advises on establishing new organisation

2.17   When launching the WAVE Report in October 2001, the Minister of Health said that efficient information management was essential to the delivery of quality health care, and that, in an international context, New Zealand was seen as one of the leaders in "developing" and using health information.

2.18   The Minister said that, while New Zealand had made a good start with health information management, there was much room for improvement, and urged the sector not to lose the momentum behind the WAVE Report. The Minister noted that "a strong base for a successful response, which many of you [in the sector] have active roles in, can now be put in place".[1]

2.19   The Minister said a working group would be appointed to advise on establishing a health information standards organisation, and on priorities for information standards.

2.20   The working group was convened in November 2001. In March 2002, it recommended establishing a Crown entity – with a governing board, and able to employ staff – as the best option for establishing a health information standards organisation. The working group considered that a Crown entity would be seen as more independent and therefore more effective.

2.21   Another less preferred option was a Ministerial Committee, which the working group said had the advantage of being easily implemented.

The Health Information Standards Organisation was not as independent of the Ministry of Health as recommended by the working group

2.22   On receiving the working group's report, the Minister requested more information from the Ministry's Corporate Information Directorate about the options for establishing a health information standards organisation.

2.23   In November 2002, as part of a staged approach to implementing the working group's recommendations, the Ministry recommended that the health information standards organisation be established immediately – as a Ministerial Committee.

1   Opening address by the Minister of Health at the launch of the WAVE Report, 29 October 2001.

2.24   The Ministry considered that it was not feasible to establish a Crown entity (as recommended by the working group) because of funding constraints, and the time required to work through the establishment, governance, and long-term funding details. Sector stakeholders and the Ministry had also found it difficult to agree on the form, mandate, and funding for a Crown entity.

2.25   In December 2002, the Minister announced the establishment of the Health Information Standards Organisation (HISO) as a Ministerial Committee.

2.26   The Ministry's proposed staged implementation for HISO envisaged that the structure of the organisation would change from a Ministerial Committee to an independent organisation by 2004-05. This has not happened. It has taken time for the sector to recognise HISO as independent of the Ministry (reporting to the Minister of Health rather than the Ministry) and to attract the level of funding from the sector that was expected by the working group. In the meantime, the Ministry has supported HISO with resources and with funding, providing funding beyond what it originally expected (see paragraphs 2.31 to 2.35).

The Health Information Standards Organisation "opened for business" 25 months after the WAVE Report was published

2.27   The Ministry expected that HISO Committee members would be appointed within one month of the Minister's announcement in December 2002, and meet for the first time in January 2003.

2.28   There was a delay caused by post-election activity at the time and, while the HISO Committee's terms of reference were being prepared, sector nominations were sought and a draft Health Information Standards Plan was prepared in consultation with the sector as a starting point for HISO's work programme.

2.29   Members were appointed in April 2003, after the sector submitted candidates. The HISO Committee's first meeting in June 2003 was aligned with the launch of the draft Health Information Standards Plan.

2.30   HISO was formally established by notifying the House of Representatives in July 2003, as required by the New Zealand Public Health and Disability Act 2000. After putting in place processes based on Standards New Zealand practice and identifying priority standards that needed to be prepared, HISO "opened for business" in December 2003 – one year after the Minister's announcement that HISO would be a Ministerial Committee, and 25 months after the WAVE Report was published (see Figure 2).

Funding from the sector, and staffing, have not yet reached the expected levels

2.31   The working group noted that HISO must establish and maintain credibility with the sector and that one indicator of credibility would be the amount of resources allocated to the organisation. The working group suggested that HISO should have an annual operating budget of between $800,000 and $1 million.

Figure 2
Timeline for setting up the Health Information Standards Organisation

2001 Oct	WAVE Report published
Nov	Ministerial Committee on setting up a health information standards organisation convened
Dec	
Jan	
Feb	
Mar	Ministerial Committee recommends setting up HISO as Crown entity
Apr	Minister requests more information on implementation options
May	
2002 Jun	
Jul	
Aug	
Sep	
Oct	
Nov	Ministry advises Minister to set up HISO as Ministerial Committee
Dec	Minister announces establishment of HISO as Ministerial Committee
Jan	Drafting National Health Information Standards Plan
Feb	Nominations for HISO Committee members sought from the sector
Mar	
Apr	HISO Committee members appointed
May	
2003 Jun	HISO Committee meets for first time and draft National Health Information Standards Plan published
Jul	
Aug	
Sep	Work on standards processes and secondment of staff
Oct	
Nov	
Dec	HISO "opens for business" starting work on standards and endorsing ethnicity data protocols

25 months

* The HISO Committee Chairman informed the Minister of Health that HISO "opened for business" from 1 December 2003.

2.32   In the financial year that HISO "opened for business" (July 2003 to June 2004), the Ministry provided funding of $300,000, with the balance of up to $800,000 expected to come from the sector. Funding in subsequent years of up to $800,000 a year was expected to come entirely from the sector.

2.33   So far, the sector has not provided the expected funding to support HISO and the Ministry has continued to give the organisation up to $300,000 a year.

2.34   Figure 3 compares the working group's main recommendations for staffing and funding with how HISO was set up. It shows that HISO has had resources well below those recommended by the working group and planned by the Ministry.

2.35   HISO's effectiveness relies on sector acceptance and support, not just with funding but also in responsiveness to, and engagement in, work to prepare standards. Recently, HISO has found the sector more responsive and engaged, and the sector has committed to providing more funding, although this is still well below the recommended and planned amounts.

Figure 3

Funding and staffing of the Health Information Standards Organisation

The Ministry has continued to support HISO but the organisation has not had the funding or staff numbers recommended by the working group.

Recommendation of the working group	How HISO was set up	
$100,000 establishment capital and an estimated annual operating budget of $800,000 to $1 million.	Ministry to provide initial funding, as there were funding pressures on the Health Funding Package.*	
Existing sector funding (the Health Funding Package before its distribution to DHBs) was considered the most viable option for initial funding, with HISO to examine alternative sustainable funding models after this. The working group noted that it was uncertain, given the nature of the sector, whether there was any realistic alternative other than Government funding.	**PLANNED** $225,000 in 2002-03 for establishing HISO and first 6 months.	**ACTUAL** Not used because of delay.
	$800,000 in 2003-04 — made up of $300,000 for secretariat and working group member costs funded by the Ministry, and $500,000 for standards activities funded by the sector.	$236,000 spent by HISO. Funded by the Ministry. No funding from the sector.
	$800,000 a year from 2004-05 directly funded by the sector.	$217,365 spent by HISO. Funded by the Ministry. Some funding committed by the sector.
Chief Executive Officer or Company Secretary and 4-5 staff.	After initial staffing by temporary contract and secondment from Standards New Zealand, one Programme Manager appointed in September 2004, and one Project Support Officer appointed in November 2004.	

* The Health Funding Package is funding agreed in advance (rather than the Government making annual adjustments).

The Health Information Standards Organisation has not had a strategic sector leadership role

2.36   Since it was established, HISO has focused on its core task of leading the preparation and implementation of sector information standards (see Figure 4). This was identified in the WAVE Report as necessary for consistent and effective use of health information. In Part 3 we discuss HISO's progress with this task.

Figure 4
HISO's work from December 2003 to August 2005

HISO has concentrated on its core task of preparing and implementing standards
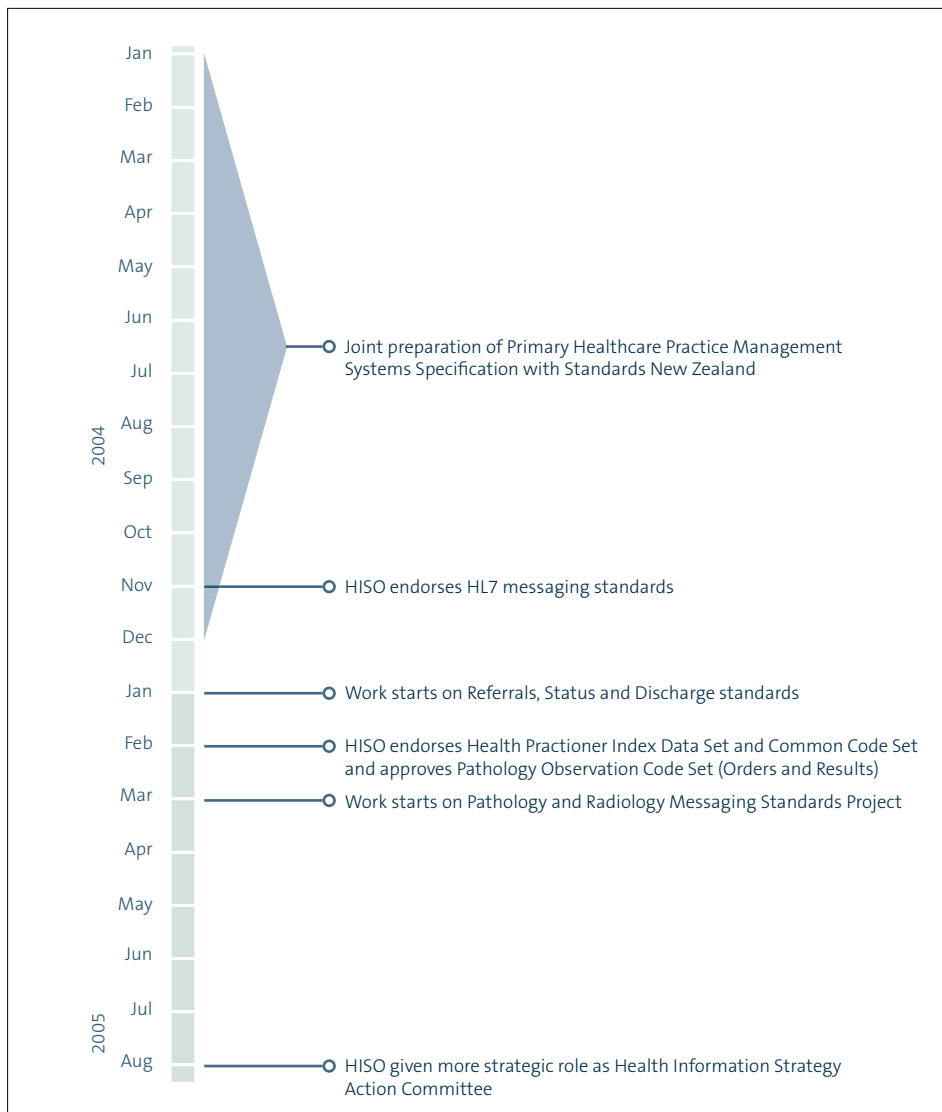
2.37   The working group noted that, to achieve the goals of the WAVE Report, HISO would need to show some leadership in the overall direction of information management and information technology, and provide strategic advice to the Ministry.

2.38   The terms of reference for HISO included sector leadership only in standards work. HISO has not assumed a broader strategic sector leadership role so far, partly because it has not had sufficient resources. However, the role of HISO has been widened to be more strategic as part of the *Health Information Strategy for New Zealand 2005* (see paragraphs 3.55-3.58).

Working with the sector on a joint response to the WAVE Report – 4 strategic steps

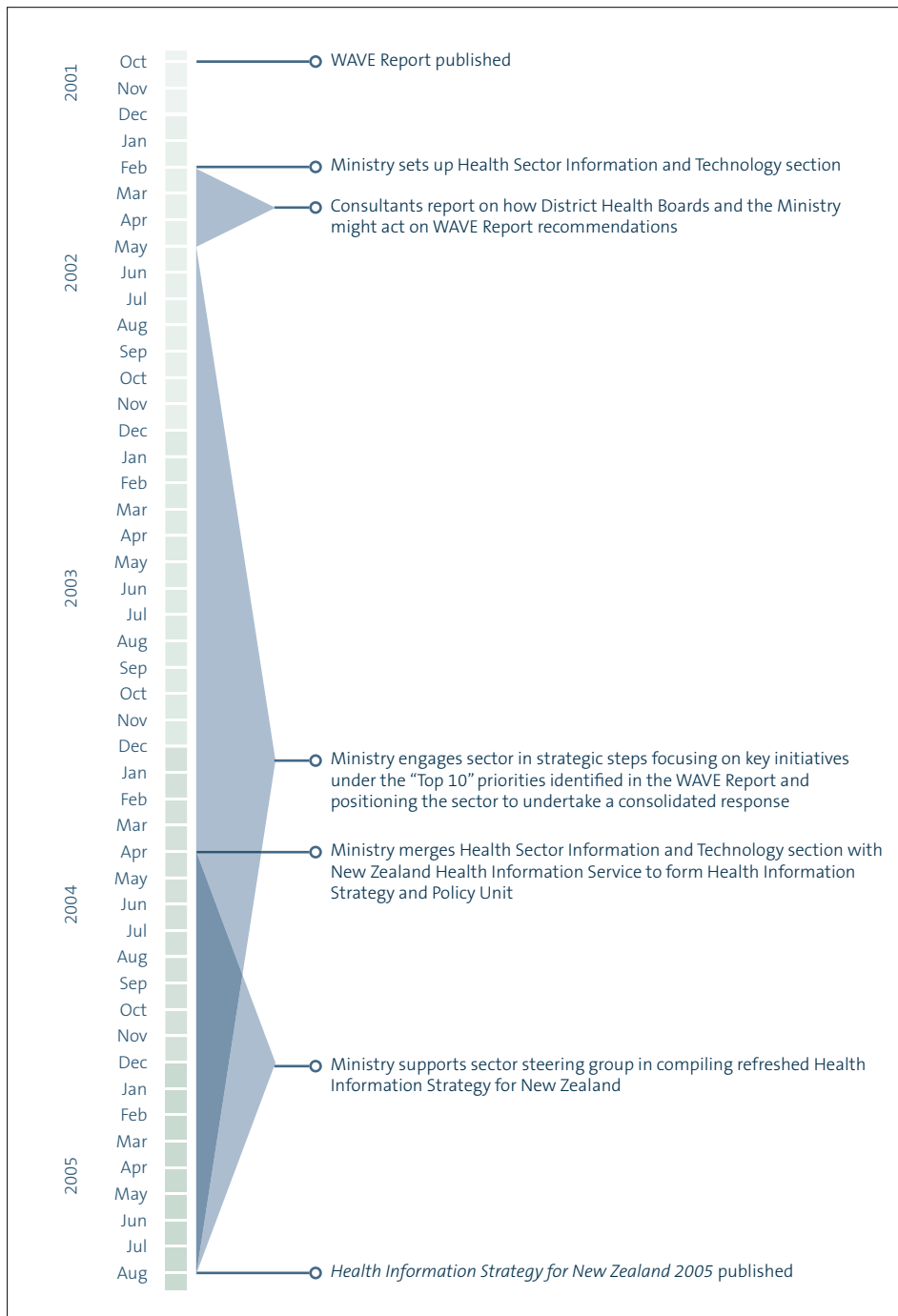2.39   At the same time as HISO was being set up, the Ministry worked with the sector (see Figure 5) on a strategic response to the WAVE Report. This response was designed to build sector confidence and set up the structures needed for the sector to undertake a consolidated response.

2.40   In February 2002, to provide strategic leadership, the Ministry set up a Health Sector Information and Technology section within its Corporate Information Directorate.

2.41   About the same time, the Ministry commissioned consultants to analyse the recommendations of the WAVE Report and propose how DHBs and the Ministry might meet their respective accountabilities. The consultants found 3 main areas for action. These were:
- enhancing relationships and accountability;
- improving the quality and completeness of data; and
- implementing new processes and functionality.

2.42   The Ministry concluded that it needed to work with DHBs to effect sector improvement. Under the devolved health sector structure introduced in 2000 (see Appendix 2), progress in improving information management and information technology relies heavily on stakeholder engagement and collaboration within the sector.

2.43   From mid-2002, the Ministry worked with the sector on 4 strategic steps, which focused on important infrastructure initiatives and on building collaboration (see paragraph 1.10). In Part 3 we discuss progress under the strategic steps.

Figure 5
Timeline for the Ministry of Health's response to the WAVE Report

2001	Oct	WAVE Report published
	Feb	Ministry sets up Health Sector Information and Technology section
2002	Apr	Consultants report on how District Health Boards and the Ministry might act on WAVE Report recommendations
2004	Jan	Ministry engages sector in strategic steps focusing on key initiatives under the "Top 10" priorities identified in the WAVE Report and positioning the sector to undertake a consolidated response
	Apr	Ministry merges Health Sector Information and Technology section with New Zealand Health Information Service to form Health Information Strategy and Policy Unit
2005	Dec	Ministry supports sector steering group in compiling refreshed Health Information Strategy for New Zealand
	Aug	*Health Information Strategy for New Zealand 2005* published

30

2.44   Since July 2004, under the fourth strategic step, the Ministry has supported the sector in producing the *Health Information Strategy for New Zealand 2005* to advance action on the priorities in the WAVE Report. The Health Information Strategic Policy Group, created by merging the Health Sector Information and Technology section with the New Zealand Health Information Service, has undertaken this work.

2.45   To get their views on the 4 strategic steps, we surveyed the Chief Information Officers of 20 of the 21 DHBs[2] and the Ministry. Most (16 out of 21) said that it had been clear the Ministry was following the strategic steps.

2.46   Two-thirds of Chief Information Officers (14 out of 21) believed that the strategic steps had been the right steps to take, and most (20 out of 21) believed that the initiatives progressed under the first strategic step had been the right ones to work on first.

2.47   The majority of Chief Information Officers believed that they had been adequately involved in determining the strategic steps, and two-thirds felt that they had been adequately involved in implementing the strategic steps.

2   Northland District Health Board did not have a Chief Information Officer at the time of our survey.

Part 3
Progress under the strategic steps

3.1   In this Part, we examine the progress the Ministry has made with the sector in using the 4 strategic steps to improve on information management and information technology.

3.2   We conclude that there has been progress under all of the strategic steps and we discuss the main benefits noticed by District Health Boards and Primary Health Organisations. Much of the progress so far has been capability-building towards realisation of longer-term benefits.

Progress on certain initiatives under strategic step 1

3.3   Strategic step 1 involved supporting the priorities reflected in the WAVE Report through work on certain initiatives. We looked at the progress on 7 national initiatives and 1 DHB initiative that were central to enhancing the management and use of health information.

3.4   The national initiatives were:

- setting up HISO;
- preparing ethnicity data protocols;
- setting up the Health Practitioner Index;
- upgrading the National Health Index;
- setting up the National Immunisation Register;
- enhancing the Health Intranet; and
- the Privacy, Authentication, and Security Project.

3.5   The DHB initiative was to improve on DHBs' ability to exchange electronic discharges and referrals. The 8 initiatives are described further in Figure 1.

3.6   The progress made on these initiatives has included:

- introducing standards;
- upgrading the National Health Index and introducing the Health Practitioner Index;
- building a secure network for exchanging information;
- introducing the National Immunisation Register to track immunisations; and
- improving the ability of DHBs to electronically exchange hospital discharge summaries and referrals with other health providers.

Introduction of standards by the Health Information Standards Organisation

3.7   So far, HISO has endorsed 2 sets of standards, driven or participated in the creation of 3 other sets, and started a wider standards-setting programme.

3.8   The first standards endorsed by HISO were a set of protocols written by the Ministry to facilitate a standardised approach to collecting, recording, and using ethnicity data in the sector. Ethnicity data can be used to improve decision-making to reduce health inequalities for ethnic groups. HISO endorsed the ethnicity data protocols in December 2003, and the Ministry issued them in February 2004.

3.9   The Ministry provided the initial training on the ethnicity data protocols for some DHBs and Primary Health Organisations through a series of Train the Trainer workshops in November 2004. Those trained at the workshops are expected to pass on the training to collectors, recorders, and users of ethnicity data. The Ministry plans to provide ongoing training to the other DHBs and Primary Health Organisations.

3.10   All Primary Health Organisations are required to collect information on the ethnicity of their patients. DHBs and Primary Health Organisations have agreed on a national target – accurately stated ethnicity data for 95% of the enrolled population of a Primary Health Organisation. Not all Primary Health Organisations meet the target yet but progress is being made. For example, in 2003, 10.6% of the records in the National Health Index database had no ethnicity stated or the ethnicity recorded as "other". In 2005 the figure had decreased to 6.9%.

3.11   To gauge the effectiveness of the protocols, the Ministry is designing a framework to assess the quality of ethnicity data sent to national collections. This will include providing feedback to DHBs, Primary Health Organisations, and the Ministry's Executive Team. HISO is also surveying the sector to gauge how well the protocols are used, and what training is needed to support their implementation.

3.12   As well as endorsing the ethnicity data protocols, HISO has:
- endorsed international standards for electronic messages containing health information as standards for health messaging in New Zealand;
- driven the preparation of, and endorsed, standards for data to be held in a new database of health practitioners (the Health Practitioner Index);
- driven the preparation of, and approved, standards for ordering and reporting the results of pathology tests; and
- participated in the joint preparation and publication of a set of standards for primary care practice management systems with Standards New Zealand.

3.13 HISO has a full work programme ahead, including work on standards for electronic hospital discharge summaries and referrals, and a set of standards for interactive communication between general practitioners' practice management systems and external services. Notably, in December 2004, HISO organised a summit attracting representatives from throughout the sector as part of work to facilitate setting standards for electronic hospital discharge summaries and referrals.

Upgrading the National Health Index and introducing the Health Practitioner Index

3.14 Patient care is complex and patients typically receive health services from a wide variety of health practitioners in different settings. Important information relating to individual patients is often held in a number of independent clinical information systems, such as those operated by general practitioners, pharmacies, laboratories, and hospitals.

3.15 Since the WAVE Report was published, the Ministry has made progress with 2 key databases for identifying patients and health practitioners – the National Health Index and the Health Practitioner Index. The databases enable patients to be accurately identified for treatment purposes and information relevant to an individual patient's care to be shared between health practitioners in a controlled way.

3.16 In upgrading the National Health Index and setting up the Health Practitioner Index, the Ministry has undertaken assessments to make sure that individual privacy is protected in assigning and using these identifiers, consistent with the provisions of the Privacy Act 1993.

National Health Index

3.17 The National Health Index is a database of information associated with a unique identifying number (an NHI number) that should be assigned to each person using health and disability services in New Zealand. Health practitioners have been using NHI numbers for more than 20 years.

3.18 The National Health Index does not record information about an individual's health. Details on record include the person's name, address, date of birth, sex, New Zealand resident status, and ethnicity. All the information associated with the NHI number is designed to accurately identify individuals receiving treatment and link them with their medical records.

3.19   Problems have occurred, and the National Health Index has been upgraded in some areas from time to time. In March 2003, the Ministry began a programme to upgrade the National Health Index and address issues such as:

- patients being registered more than once on the National Health Index and having duplicate NHI numbers;
- no online primary care access; and
- limited public awareness about the National Health Index and its purpose.

3.20   The upgrade has included:

- a 12-month programme to resolve duplication, which identified more than 125,000 duplicate NHI numbers within the 7 million records;
- the addition of new information to help identify individuals, such as place of birth, address history, and ethnicity history[1];
- an improved online search engine to enable more accurate searching for individuals on the National Health Index;
- web-based application, known as NOAH (NHI Online Access for Health), allowing read-only access to the National Health Index from the computer of an authorised provider (for example, a general practitioner);
- new software for more efficient management of the National Health Index through linking and unlinking records;
- a training programme for National Health Index users delivered to some DHBs and Primary Health Organisations at the same time as the training in ethnicity data protocols through a series of Train the Trainer workshops; and
- a public awareness campaign, including a brochure and poster approved by a consumer advisory group and distributed to all general practitioner and hospital waiting areas, material for Primary Health Organisations, and information on the Ministry's website.

3.21   As well as these improvements to the National Health Index, DHBs and Primary Health Organisations have agreed on a national target that 70% of a Primary Health Organisation's enrolled population have an NHI number. Counties Manukau DHB has achieved a 90% target.

Health Practitioner Index

3.22   A national database of health practitioners' details has been a priority for the sector for more than 2 decades. In response, the Ministry has recently set up the Health Practitioner Index.

3.23   The Health Practitioner Index is a national system for holding information about health practitioners and non-practitioners (for example, hospital admission clerks

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1   People can give different answers when asked what their ethnicity is. An ethnicity history records these changes, making it easier to access the right individual's health information.

and medical centre practice managers) who handle health information. It will hold information such as the practitioner's identifying number, name, practising status, qualifications, and scope of practice. The Health Practitioner Index will also hold details of organisations providing health services, and the location of facilities from which services are provided.

3.24   The Health Practitioner Index is a tool to enable appropriate linking of health sector people with each other and with health information, and for controlling which practitioners are authorised to access which information. For example, when the Health Practitioner Index is fully set up, a doctor involved in the care of a particular patient might be able to access certain information about that patient's care, but another type of health professional such as a physiotherapist may not have the authority to see the same information.

3.25   Initial work on the Health Practitioner Index is complete. It is being progressively populated with data and made available to DHBs and other organisations within the sector.

Building a secure network for sharing information

3.26   The Ministry has been working on a Health Intranet to facilitate secure, interactive exchange of information between health providers, and to help with the delivery of integrated health services.

3.27   The Health Intranet originated in South Auckland around 1998. It was a network connecting local general practitioners and hospital clinicians, and let them access Ministry systems such as the National Health Index. It was expanded and went "live" in November 1999. The first users included the 4 largest DHBs, and general practitioner groups in South Auckland and Christchurch.

3.28   In 1999, the New Zealand Health Information Service established a governance body, the Health Intranet – now Health Network – Governance Board (Governance Board). As of April 2003 (the latest figures available), there were 131 users of the Health Intranet, including all 21 DHBs, some general practitioners, and a range of other health providers.

3.29   In May 2003, the Governance Board approved a connection enabling access to the Health Intranet from a separate secure messaging system used by most general practitioners.

3.30   Primary Health Organisations also use the Health Intranet to share funding information with the Ministry.

3.31   The Governance Board is responsible for policies and procedures, and ongoing review and management of security, communication, and user authentication standards.

3.32   In 2002, the Ministry commissioned Standards New Zealand to prepare and publish a Health Network Code of Practice on exchanging electronic health information over a secure network. The Governance Board subsequently adopted this code of practice, and prepared security policies for users and standards for service providers.

3.33   Health sector users of applications such as Health Payments, Agreements and Compliance (part of the Ministry), and Accident Compensation Corporation claims systems, which can be accessed through the Health Intranet and other network connections, must have a digital certificate. This is an electronic "passport" that establishes a user's credentials and is used for security purposes. For example, a digital certificate is used to verify that a user sending a message is who they claim to be. More than 3000 digital certificates have been issued, covering a large proportion of the sector. Digital certificates are available free to those wishing to join the Health Intranet, and the Ministry is looking at ways of expanding the use of digital certificates.

3.34   The Ministry is also using a Privacy, Authentication, and Security Project to prepare a set of codes of practice, guidelines, and standards that are fundamental to ensuring appropriate safeguards continue to apply to the electronic exchange of health information. This will consolidate and build on existing safeguards such as the Health Network Code of Practice, and the Governance Board's policies and standards.

Building capability to track immunisations

3.35   In 1995, the national Immunisation Strategy proposed a national immunisation system that would address some of the reasons for poor immunisation coverage. A subsequent report by the National Health Committee in 1999 recommended a package of measures to improve immunisation coverage, including setting up a database of immunisations.

3.36   The National Immunisation Register was introduced in July 2004 as part of a national immunisation project to provide accurate data on a child's immunisation status, and information on local, regional, and national immunisation coverage. The register was initially used to track Meningococcal B vaccinations and is now being expanded to record other childhood vaccinations. Using the register, general practitioners receive information on the immunisation status of patients direct to their desktop computers. The National Health Index number is included on the register.

Building capability for electronic exchange of hospital discharge summaries and referrals

3.37   Our survey showed that the majority of DHBs have given high to medium priority to improving their information management and information technology since the WAVE Report was published. Priorities have included the capability of hospitals to electronically notify general practitioners of patient discharges, and for practitioners to electronically refer patients for treatment.

3.38   The sector uses a Referral, Status Report, and Discharge Summary system for exchanging these types of electronic messages. The number of messages exchanged using this system grew from around 80,000 a month to 150,000 a month between July 2004 and September 2005. DHBs are the main users of the delivery system for electronic discharge summaries, and use is also growing among accident and medical centres, general practitioners, and specialist practitioners.

3.39   Some DHBs have been using this system for several years to electronically send hospital discharge summaries. Some are extending their existing capability. For example, Counties Manukau DHB notifies general practitioners within 40 minutes of their patients being discharged. Other DHBs cannot yet send hospital discharge summaries electronically, but several are introducing the service, or plan to in the next few years with their new clinical information and patient management systems.

3.40   Referrals are more complex, and no DHB has in place yet a fully-functioning referrals management system capable of connecting to the messaging system. Several DHBs have systems planned and expect to implement them soon.

Progress on sector planning frameworks under strategic step 2

3.41   Strategic step 2 involved preparing and implementing planning frameworks to co-ordinate and align the sector's improvements in information management and information technology.

3.42   The Ministry has sought to co-ordinate and align DHBs' plans for information management and information technology.

Introducing Information System Strategic Plans using a common framework

3.43   A national Information System Strategic Plan (ISSP) framework has been prepared by the Ministry and agreed collectively with the DHBs' Chief Information Officers.

Under the framework, published in April 2003, the objectives of ISSPs produced by all DHBs are to:

- link implementation of systems to business objectives;
- schedule implementation of systems to match business priorities and budgets; and
- make better strategic use of information management capabilities.

3.44   Using the framework, ISSPs are to be prepared and updated in parallel with annual plans, and are to be approved by the Ministry. In August to September 2004, the Ministry commissioned a review of DHBs' first ISSPs by an independent consultant with knowledge of health information management and DHB information technology planning. This review concluded positively on the ISSPs for all DHBs, indicating they were making progress in better planning for improvements to their information systems. Figure 6 summarises the conclusions from the review, the most common areas of strength and areas where ISSPs could be improved.

Figure 6
The Ministry of Health's analysis of District Health Boards' first Information System Strategic Plans

Conclusion from review	No. of DHB ISSPs*
Good/excellent basis on which to build an annual Information System strategic planning cycle	8
Useful document in guiding developments at DHBs	5
Excellent basis for further alignment and development in the coming year	3
Clear programme of development for hospital provider services/DHB	2
Sets out a clear strategic path for the development of Information Systems in the DHB	1
Areas of strength in DHB ISSPs	**No. of DHB ISSPs***
Analysis of the strategic environment	18
Consistency between District Annual Plans and ISSPs	14
Commitment to regional collaboration	14
Management principles to guide developments	13
Coverage of needs of primary care	7
Areas where DHB ISSPs could be improved	**No. of DHB ISSPs***
Governance arrangements for information systems, particularly obtaining and sustaining executive and clinician support	15
Work to support national systems, for example, the National Health Index upgrade and the Health Practitioner Index	11
Focus on information systems associated with primary care organisations	11
Information on how an ISSP is to be funded	11
Rationale for project selection	10

* Out of a total of 21 DHBs.

Indicators of progress included in DHB annual plans

3.45   Since they were established in 2001-02, every DHB has had to prepare an annual plan setting out priorities for delivering health services to meet the needs of the populations they serve. These annual plans include objectives and key performance indicators agreed with the Ministry.

3.46   In 2003-04 and 2004-05, the annual plans included a common set of key performance indicators on progress made to implement some of the recommendations of the WAVE Report. DHBs were to report every 6 months against these indicators. Figure 7 summarises our analysis of the main activities reported by DHBs against the key performance indicators.

Figure 7
Progress reported by District Health Boards against key performance indicators

2003-04 and 2004-05	
Key performance indicator	A qualitative report on progress towards improving online access to clinical knowledge bases and clinical guidelines or protocols.
Reported activities	Almost all DHBs reported that hospital clinicians had access to clinical knowledge databases, guidelines and protocols to varying extents, mostly through local intranets and Internet connections. Some DHBs reported that they had, or were in the process of extending, access to primary sector clinical staff.
Key performance indicator	A qualitative report on progress made towards implementing an electronic referral letter and hospital discharge summary notification functionality between hospital and general practitioners.
Reported activities	DHBs are at different stages in their ability to send hospital discharge summaries electronically. Some have been able to do this for several years or are extending existing capability. Several are introducing the service or plan to in the next few years with their new clinical information and patient management systems.
	Referrals are more complex, and no DHB yet has in place a fully functioning electronic referrals management system. Several DHBs have electronic referral systems under way and expect to implement them soon.
2004-05	
Key performance indicator	A qualitative report on progress towards increasing the number of general practitioners using electronic prescribing.
Reported activities	Many DHBs reported that their practices had the capability to generate and send prescriptions electronically using Practice Management Systems.

	While many practices generated prescriptions electronically, none sent them electronically. Some DHBs reported legislative constraints such as prescriptions requiring a signature.
Key performance indicator	A qualitative report on progress towards increasing the number of general practitioners using electronic laboratory test ordering and receiving electronic laboratory results.
Reported activities	Most DHBs reported that all or most of their practices received laboratory results electronically, sometimes downloaded directly to practice management systems. Few DHBs reported practices ordering laboratory tests electronically, although some noted that practice management systems had this functionality and they were looking into using it by setting up electronic ordering systems. Some DHBs also noted that standards for laboratory test coding were required.
2005-06	
Key performance indicator	A qualitative report on progress towards implementation of the 12 *Health Information Strategy for New Zealand 2005* Action Zones (see paragraphs 3.51 and 3.52) that the DHB's ISSP has scheduled for the 2005-06 year.
Reported activities	DHBs are to report on these measures quarterly.

Progress on sector stewardship arrangements under strategic step 3

3.47 A number of stewardship groups have been set up within the sector to make sure that the sector's information management and information technology activities are appropriately overseen and guided by the interests of sector stakeholders. Some of the main Ministry, DHB, primary care/practitioner, and industry groups, and their purposes, are shown in Figure 8. The Figure includes national and regional groups to co-ordinate capital investment in information systems.

3.48 There are many groups that need to work together effectively for the stewardship arrangements to function as they were intended to. We note that the stewardship arrangements are still evolving as the various groups mature and become more effective in linking and working together. For example, the DHB New Zealand Information Group was set up to provide better links between the DHB Chief Information Officer forum and the DHB Chief Executive Officer group.

Figure 8
**Overview of sector stewardship arrangements**

Ministerial Committee	
Health Information Strategy Action Committee	Provides, governance, oversight, and leadership of the sector in implementing the *Health Information Strategy for New Zealand 2005*.
	Three sub-committees responsible for infrastructure (including privacy, authentication, and security), health information standards (including continuing work on standards under the name of HISO); and national data collections.
Ministry of Health groups	
Information Liaison Group	Manages changes to the administration, payment and information support systems that the Ministry provides for DHBs under a national agreement.
	Provides input to the Ministry's short-term information projects.
	Supported by regional DHB analyst sub-groups.
National Capital Committee	Advises on capital investment within the sector. The Minister must approve all information system investments more than $3 million.
	Supported by Regional Capital Groups, which must support investments more than $500,000. The Director-General of Health must approve investments between $500,000 and $3 million.
Ministry-Accident Compensation Corporation Information Group	Facilitates collaboration between the Ministry and the Accident Compensation Corporation on improvement and investment activity within the health and disability sector.
The Primary Care Practice Management System (PMS) Vendor Forum	Provides liaison between the Ministry and the sector for changes in primary care systems.
Health Network Governance Board	Sets standards and oversees the operation of the Health Intranet network.
District Health Board groups	
DHB New Zealand's DHB CEO – Ministry Deputy Director-General Group	Co-ordinates collaborative discussion between DHBs and the Ministry on national issues and policy decisions.
DHB New Zealand's Information Group	Provides oversight and advice for DHB Chief Executive Officers on information.
	Directs the efforts of Chief Information Officers and other relevant groups.
	Streamlines information efforts and investment.
	Provides a mechanism for external groups to engage with DHBs collectively.
DHB Chief Information Officer Forum	Advises the DHB New Zealand Information Group on information strategy.

Privacy Officers Forum	Promotes a uniform approach to implementing Privacy legislation.
The National Service Improvement Group	Provides guidance for DHBs on national service improvement initiatives.
Primary care/practitioner groups	
The Independent Practitioner Association Council (IPAC) Strategic Information Group	Provides input to information management and technology issues on behalf of IPAC membership (IPAs and Primary Health Organisations). Seeks to build relationships and promote primary care engagement in information management activity.
The Primary Care Information Managers Group	An informal group including general practice and Primary Health Organisation managers for trouble-shooting primary care information management issues, sharing knowledge, and improving sector relationships.
The Royal New Zealand College of General Practitioners Information Technology Working Party	Meets periodically to identify key practice management system and medical communication issues from a general practitioner and general practice perspective.
Industry groups	
New Zealand Health IT Cluster Incorporated	To represent the interest of the New Zealand Healthcare Technology industry in uniting with hospitals and health providers, research, development and manufacturing groups.
Health Informatics NZ (HINZ)	A national, not-for-profit organisation whose focus is to facilitate improvements in business processes and patient care in the health sector through the application of appropriate information technologies.
NZ Health Level 7 User Group (NZHUG)	A national forum dedicated to the achievement of interoperability in health services information systems. It is focused on the evolving HL7 International Standard, but not limited to it.

Progress on refreshing and implementing the sector's strategy for information management and information technology under strategic step 4

3.49   The Ministry told us the sector is about 5 years along a 20-year path to reach fully integrated health information management and information technology capability (see Figure 9).

Figure 9
Path to integrated health information management and information technology
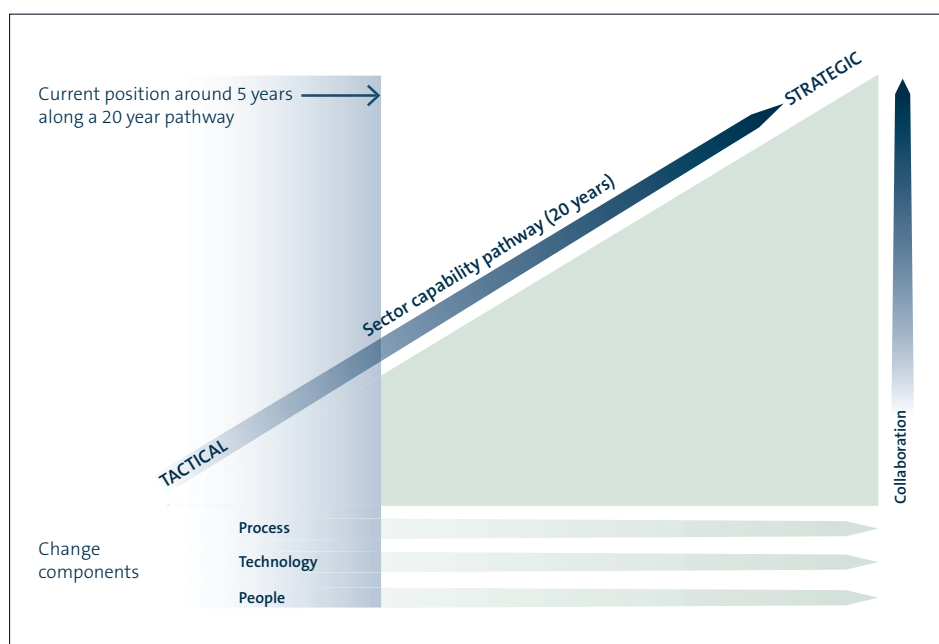
3.50   The Ministry recognises that the sector, as well as increasing its technical capability, must continue to enhance the capability of its people, business processes, and culture. The Ministry has designed a new health information strategy to achieve this.

The *Health Information Strategy for New Zealand 2005* provides a framework for consolidated sector action

3.51   The *Health Information Strategy for New Zealand 2005* was compiled by a sector steering committee supported by the Ministry, and published in August 2005. The strategy takes stock of the sector's information management and information technology capability, and provides a framework for consolidating action to continue to improve it.

3.52   In our view, the *Health Information Strategy for New Zealand 2005* builds on the WAVE Report by setting 12 information management and information technology priorities (known as "Action Zones") for the sector to focus on in implementation planning in the next 3 to 5 years. The Action Zones reflect many of the priorities in the WAVE Report (see Figure 10) and others that have become more prominent since the report was published. The strategy outlines how these priorities will continue to be addressed.

Figure 10

The *Health Information Strategy for New Zealand 2005* **Action Zones and priorities from the WAVE Report**

Action Zone*	Description	WAVE Report priority taken forward
National network strategy	To improve the quality and speed of sector communications	*Make integrated care work by developing standards for data exchange, security and network infrastructure*
National Health Index promotion	To improve National Health Index data quality and accessibility, helping more parts of the sector to connect together using the index as an identifier	*Fix up the National Health Index*
National Provider Index implementation	To implement identifiers that can be used for consistently referencing practitioners, agencies and facilities in the health and disability sector, supporting communication of health information and collaboration in a secure and trusted manner	*Implement the National** Provider Index*
e-Pharmacy	To enable prescribing clinicians to monitor and track the dispensing of medications they prescribe and ultimately prescribe medications electronically	*Fix up pharmacy and laboratory data*
e-Labs	To enable diagnostic tests to be electronically ordered, and then monitored and tracked from the point of ordering to reviewing results	
Hospital discharge summaries	To expand the network of providers that hospitals send summaries to (for example, to residential care providers), and extend summaries to include outpatient visits and ultimately community services	*Sort out Health Event Summaries*
Electronic referrals	To agree a standard minimum data set for referrals between providers	
National primary and community care collection	To improve the available national and regional information on effectiveness and use of primary and community care services	*Gather primary care information*
National system access	To improve access to national data collections on the activity and effectiveness of health and disability services and the well-being of New Zealanders	*Launch health portal*
Chronic care and disease management	To increase the capability for information systems to provide decision support for the management of chronic conditions at local, regional, and national levels, initially focusing on diabetes and cardiovascular disease	*These Action Zones build on other areas highlighted in the WAVE Report*
National outpatient collection	To put in place a national collection system for hospital outpatient data	
Anchoring framework	To prepare a framework for a national data dictionary, providing a common language for sharing and analysing information electronically (for example, comparing the relative effectiveness of different treatment patterns for cardiovascular disease)	

* From the *Health Information Strategy for New Zealand 2005.*

** Now the Health Practitioner Index.

3.53   The *Health Information Strategy for New Zealand 2005* proposes an evolutionary approach to setting up an electronic health record distributed at local, regional, and national levels, with the most detailed information about a patient kept locally. It focuses on the communication and connectivity required for the sector to use and share this information effectively to deliver better health outcomes.

3.54   Parts of the sector with less capability will need support while the more capable parts of the sector continue to evolve. To this end, the *Health Information Strategy for New Zealand 2005* sets broad benchmarks for improving on information-sharing capability in different parts of the sector.

The Health Information Strategy Action Committee will provide governance, oversight, and leadership

3.55   The *Health Information Strategy for New Zealand 2005* recognises that clear governance will be needed to keep the strategy on track. It proposes that a governance group be established to fulfil this function.

3.56   The Minister for Health has done this by revising the role of HISO in August 2005 and renaming it the Health Information Strategy Action Committee.

3.57   The role of the Health Information Strategy Action Committee is to provide governance, oversight, and leadership of the sector in implementing the *Health Information Strategy for New Zealand 2005*. In doing so, among other tasks, the Health Information Strategy Action Committee has the task of ensuring sector ownership and responsibility for the strategy, ensuring transparency and co-ordination of implementation, and reviewing and auditing progress.

3.58   The Health Information Strategy Action Committee has 3 sub-committees responsible for:
- infrastructure (including privacy, authentication, and security);
- health information standards (including continuing work on standards under the name of HISO); and
- national data collections.

Main benefits noticed by District Health Boards and Primary Health Organisations

3.59   Through our survey, we asked DHBs and Primary Health Organisations to what extent the strategic steps taken by the Ministry had helped with improvements to their information management and information technology. We also asked them about the extent to which specific initiatives had improved their use of information.

District Health Boards – co-ordination has improved, although there is room for further improvement

3.60   Most DHBs believed that the strategic steps taken by the Ministry had helped with their information management and information technology to some extent. Over all DHBs, sector stewardship arrangements have been slightly more beneficial than sector planning frameworks (see Figure 11). Most DHBs believed that the strategic steps, especially sector stewardship arrangements, had improved co-ordination (see Figure 12), although most (16 out of 21) also believed that DHB information management and information technology enhancements could be better co-ordinated.

Figure 11
Usefulness of sector stewardship arrangements and sector planning frameworks
DHBs believe that sector stewardship arrangements have been slightly more beneficial than sector planning frameworks
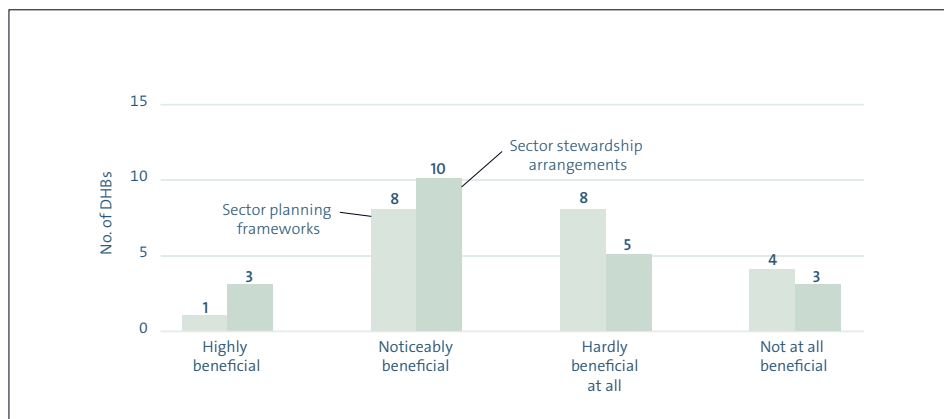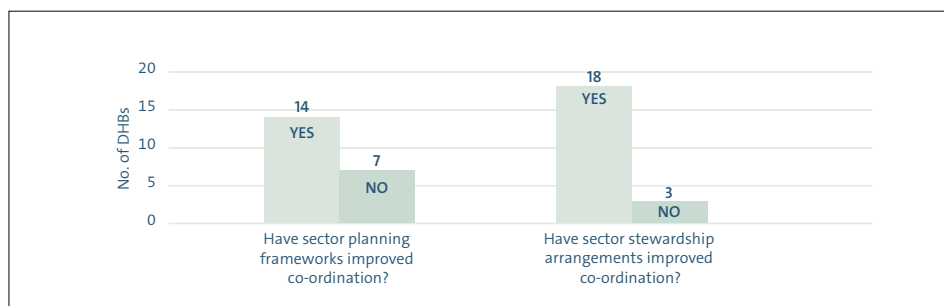

Figure 12
Usefulness of the strategic steps
Most DHBs believe that the strategic steps have improved co-ordination, especially sector stewardship arrangements

3.61   As an indication of improved co-ordination at DHB level, 14 out of 21 Information System Strategic Plans indicated a commitment to regional collaboration. Three DHBs – Auckland, Counties Manukau, and Waitemata – have formed the Auckland Alliance, which has produced a regional Information System Strategic Plan. There are also other examples of collaboration emerging; for example, between West Coast, Southland, and Otago DHBs, who have formed SouthernALLIANCE.

3.62   To help promote co-ordination, DHBs are required to demonstrate that they have considered collaboration when investing in information system enhancements. For capital expenditure on information systems worth more than $500,000, a regional capital expenditure group must support the business case.

3.63   Our survey showed that the strategic steps taken by the Ministry had fewer benefits for Primary Health Organisations. Most of the Primary Health Organisations that responded believed there had been hardly any benefit to their information management and information technology from the strategic steps. Most Primary Health Organisations did not believe that the strategic steps had improved co-ordination, and most (94%) believed that enhancements were not adequately co-ordinated for them.

Specific initiatives have yielded some early benefits, but the benefits of others are yet to be seen

3.64   About two-thirds of DHBs (13 out of 20) and slightly more than half (53%) of the Primary Health Organisations that responded to our survey believed that electronic information use in patient treatment had improved because of the initiatives we examined.

3.65   We asked DHBs (see Figure 13) and Primary Health Organisations (see Figure 14) about the extent to which each initiative had improved their use of information.

Specific initiatives have yielded some early benefits

3.66   Most DHBs and most of the Primary Health Organisations that responded to our survey believed that the National Health Index upgrade had noticeably improved information use and become a more reliable and useful patient identifier. Benefits cited by specific DHBs and Primary Health Organisations included increased access to the National Health Index, and improved assignment of NHI numbers through more reliable searching of the database, and therefore fewer duplicates.

3.67   National statistics show that the rate of creation of duplicate NHI numbers throughout all DHBs has reduced significantly since the beginning of 2003 (see Figure 15).

Figure 13

Extent to which initiatives have improved information use for District Health Boards

Some initiatives have improved use of information noticeably more than others
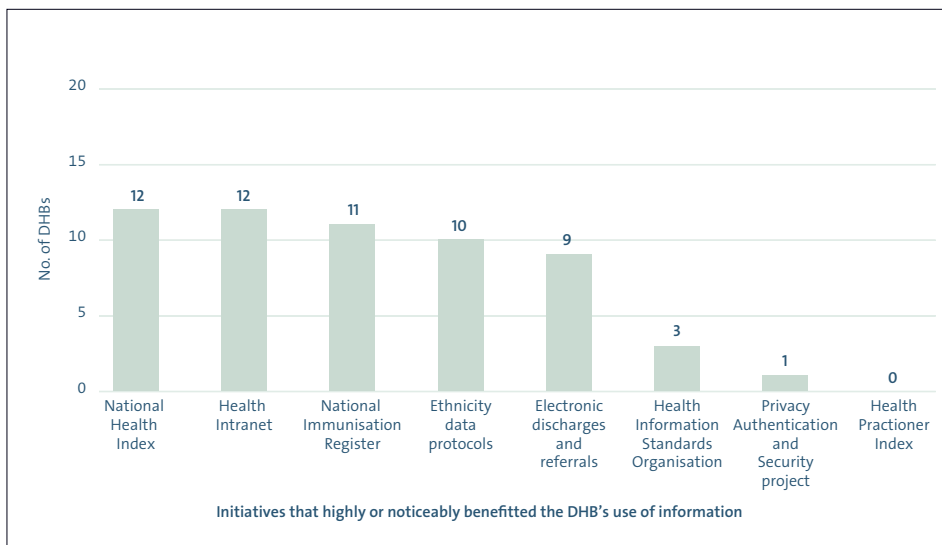

Figure 14

Extent to which initiatives have improved information use for Primary Health Organisations

Ethnicity data protocols and the National Health Index have improved the Primary Health Organisations' use of information much more than other initiatives
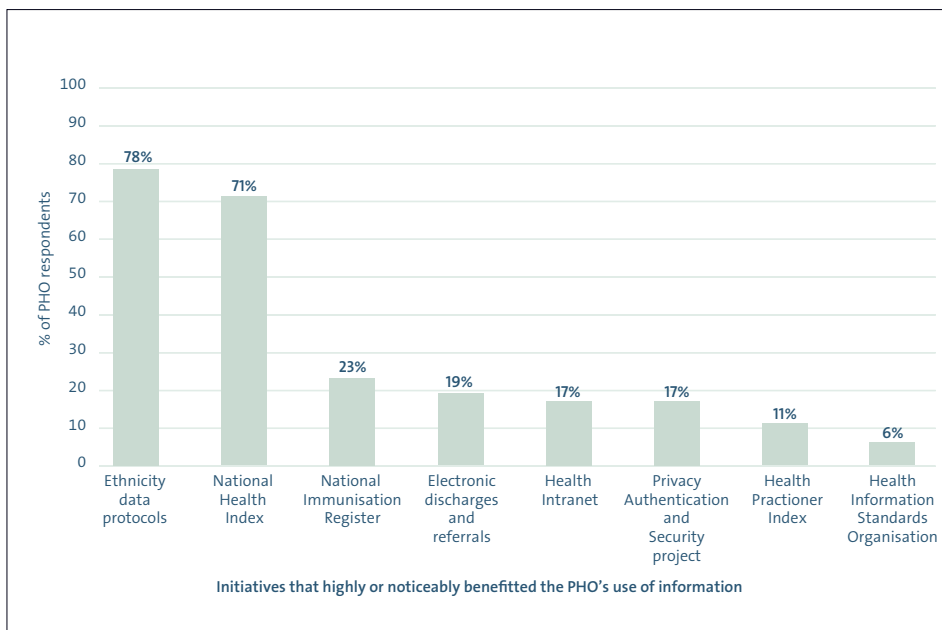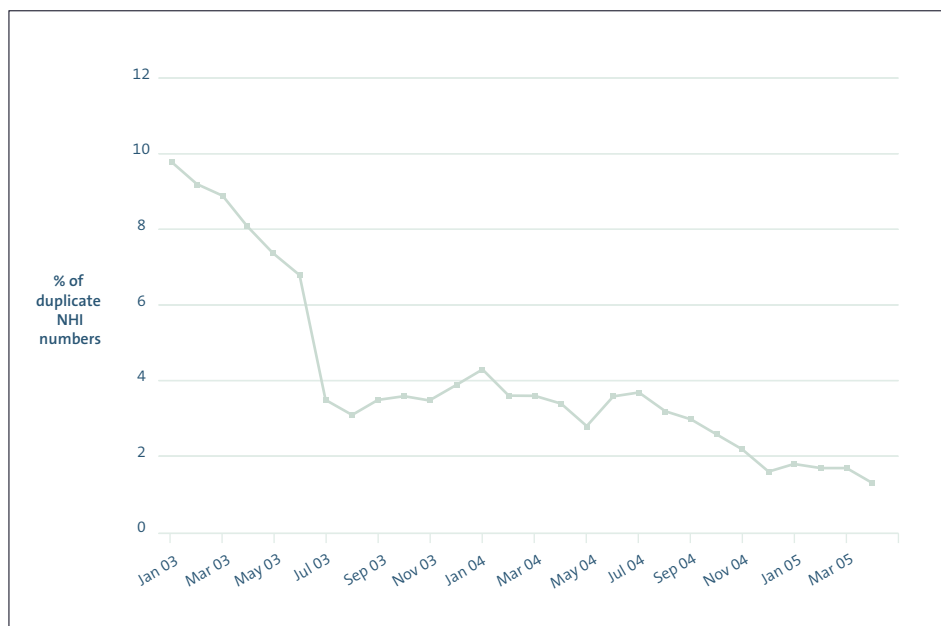
Figure 15

Duplicate National Health Index numbers throughout District Health Boards

The rate of creation of duplicate National Health Index numbers throughout all District Health Boards has reduced significantly since the beginning of 2003

3.68   There was a noticeable drop in the duplication of NHI numbers in July 2003, at the beginning of the first full year that most Primary Health Organisations were operational. Around this time, the Ministry's National Health Index contact centre updated its methods for helping practices identify whether patients had existing NHI numbers. The duplicate reduction exercise under the National Health Index upgrade programme was also ongoing.

3.69   Most DHBs believed that enhancing the Health Intranet and setting up the National Immunisation Register had noticeably improved their information use.

3.70   There are pockets where the Health Intranet has been set up as a vital tool for exchanging information. For example, in South Auckland where it originated, it is used by a small group of general practitioners to access Ministry services such as the National Health Index, hospital services such as cardiology and radiography (with electrocardiographs and X-rays available online), and other local services such as laboratory results.

3.71   Benefits of the Health Intranet cited by other DHBs included secure access to payment information and national frameworks, and improved connectivity.

3.72   Around half of the DHBs and most of the Primary Health Organisations that responded to our survey believed that the ethnicity data protocols issued by the Ministry had noticeably improved information use. Benefits cited by specific Primary Health Organisations included improved data collection. Around half of the DHBs also believed that extending their ability to electronically share discharges and referrals had noticeably improved their information use, and 8 reported that the number of hospital discharges they sent electronically had increased.

The benefits of some initiatives had yet to be seen, particularly by Primary Health Organisations

3.73   The benefits of other initiatives had not yet been seen by DHBs and Primary Health Organisations. Most DHBs and most of the Primary Health Organisations that responded believed that setting up HISO and the Health Practitioner Index, and the Privacy, Authentication, and Security Project had hardly improved their information use at all. For the Health Practitioner Index and the Privacy, Authentication, and Security Project, this was understandable as they had yet to reach most DHBs and Primary Health Organisations.

3.74   Most of the PHOs that responded to our survey had also yet to see noticeable benefits from the Health Intranet and extending electronic discharges and referrals. The National Immunisation Register had also not yet noticeably improved information use for most of the Primary Health Organisations that responded, although when we conducted our survey they were only just gaining access to it.

3.75   Notwithstanding the results of our survey, the Ministry told us that the sector was on the way to achieving improved health outcomes facilitated by information technology in primary care. We accept that that there were signs that the use of electronic information at primary care level is increasing. For example:

- the use of electronic messaging for exchanging hospital discharges summaries, patient status reports and referrals is growing (see paragraph 3.38);

- when using the National Immunisation Register, general practitioners receive information on the immunisation status of patients direct to their desktop computers (see paragraph 3.36);

- DHBs report that all or most of their practices receive laboratory results electronically, sometimes downloaded directly to practice management systems (see Figure 7); and

- in March 2005, the Accident Compensation Corporation launched an incentive package paying general practices to lodge claim forms using broadband Internet access. This has led to more practices subscribing to broadband and an increase in the proportion of claim forms lodged electronically to 71% in November 2005, up from 55% at about the same time in 2004.

Part 4
The rate of progress since the WAVE Report was published

4.1   In this Part, we discuss:

- how a changing environment has affected the rate of progress;
- difficulties encountered since the WAVE Report was published; and
- whether the rate of progress has been as expected in the WAVE Report, and by the Ministry and the sector.

A changing environment has affected the rate of progress

4.2   The WAVE Report was published in an environment of health sector reforms and advances in technology. There have been other changes affecting progress with information management and information technology improvements.

Restructuring the sector, particularly establishing Primary Health Organisations, is likely to have slowed progress

4.3   Major structural changes to the organisation of health and disability services, initiated by the New Zealand Public Health and Disability Act 2000, have been introduced during the past 5 years.

4.4   Between 2000 and 2002, decision-making was decentralised to 21 community-focused DHBs responsible for the purchase and provision of health services. Also, between July 2002 and January 2005, 77 Primary Health Organisations were set up under DHBs. Primary Health Organisations grouped together doctors, nurses, and other health professionals to provide essential primary health services to defined populations. DHBs are responsible for funding and monitoring Primary Health Organisations.

4.5   This re-structuring is likely to have slowed progress with information management and information technology improvements as DHBs and Primary Health Organisations have settled into their roles, and the information demands on them and their own information requirements have evolved. For example, we found that awareness of the WAVE Report and of subsequent changes under the Ministry's strategic steps approach was low among Primary Health Organisations, including those that had been set up for at least a year.

4.6   Slightly less than half of the Primary Health Organisations (47%) responded to our survey, with a slightly higher response rate from smaller and more recently set up organisations.

4.7   It had been unclear to most (94%) of the Primary Health Organisations that the Ministry had been following the strategic steps to implement the WAVE Report. Two-thirds (66%) did not know whether the strategic steps had been the right steps to take, and most (94%) believed that the Ministry had not adequately engaged them in implementing the strategic steps.

4.8   Lack of awareness of the WAVE Report and how it had been implemented was also the main reason cited by some Primary Health Organisations for not responding to our survey.

4.9   The Ministry has updated the sector on progress with health information initiatives after the WAVE Report through liaison with sector stewardship groups, speeches at the annual e-health conference, and quarterly newsletters. Our survey indicates that these mechanisms have not been effective in engaging Primary Health Organisations and raising their awareness of progress after the WAVE Report.

New health strategies and funding arrangements emphasise the importance of information and are likely to have spurred progress

4.10   During the past 5 years, the Ministry has introduced new health strategies emphasising the importance of information as a tool underpinning the delivery of better health outcomes.

4.11   *The New Zealand Health Strategy* published in December 2000, *The Primary Health Care Strategy* published in February 2001, and *The New Zealand Disability Strategy* published in April 2001 all emphasise the importance of the sector being able to manage and exchange high-quality information quickly and effectively. New funding arrangements for DHBs and Primary Health Organisations also depend on accurate information about the health needs of defined populations of people.

Increasing broadband availability has helped

4.12   Information technology is renowned for rapid change in terms of innovation, the increased capability of hardware and software, and price accessibility. The emergence of broadband Internet access, allowing large volumes of data to be sent or received at high speed, was not covered in the WAVE Report. However, this area has since advanced as part of wider health network and e-government initiatives.[1] Broadband Internet access makes sharing information easier and quicker; for example, between remote hospitals and between general practitioners, hospitals, and other providers.

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1   We have separately examined progress with e-government initiatives and will publish a report on the subject in 2006.

4.13   The availability of broadband Internet access to the health sector has increased with the PROBE (PROvincial Broadband Extension) initiative. The Ministry of Education and the Ministry of Economic Development jointly set up PROBE to give high-speed Internet access to all schools and provincial communities. The Ministry was represented on the PROBE steering group and requirements for securely transmitting health data were included as part of the initiative.

4.14   In areas like the West Coast, the local DHB is pushing ahead with improving its information management and information technology capability using the opportunity created by having broadband Internet access through the PROBE initiative.

The Meningococcal B epidemic has hastened progress with the National Immunisation Register

4.15   In mid-2002, a programme of vaccinations to help reduce the rate of Meningococcal B disease was scheduled, with a start date in July 2004. This gave the National Immunisation Register a very clear business focus and hastened work to implement it.

4.16   Deadlines for setting up and implementing the register became driven by the requirement to begin the programme of vaccinations, and initial implementation became focused on the systems required for recording vaccinations. To meet drug-licensing requirements for the Meningococcal B vaccine, the Ministry had to be able to record all vaccinations in a database within 24 hours of a vaccination being given, including those given at primary care practices and at schools.

Difficulties encountered since the WAVE Report was published

4.17   Our survey of DHBs and Primary Health Organisations, and our discussions with the Ministry and other stakeholders within the sector, highlighted some difficulties in improving information management and information technology since the WAVE Report was published.

4.18   There have been difficulties with leadership and responsibility, funding and resourcing, and rationalising the different levels of information management and information technology maturity between DHBs. Most DHBs (16 out of 20) and most Primary Health Organisations (94%) that responded to our survey reported having encountered difficulties.

Effectiveness of leadership and clarity of responsibilities

4.19   The sector told us it would have liked more effective Ministry leadership in some areas, and greater clarity about responsibilities and accountabilities.

While the Ministry has been driving many initiatives, there are areas where the sector would have liked more effective Ministry leadership

4.20   Our survey indicated that there was general recognition in DHBs that the Ministry had been prominent in driving all but one of the initiatives[2] we examined. Depending on the initiative, between 16 and 21 out of the 21 DHBs believed that the Ministry had so far been driving each initiative, either on its own or jointly with the sector. The exception was work on the ability to exchange electronic discharges and referrals, where DHBs believed that their Chief Information Officers, Chief Executive Officers, and HISO had mostly driven this initiative. We note that the WAVE Report recommended that DHBs should be putting in place the systems to ensure hospitals and health service providers could connect, and electronically share information such as referral letters and discharge summaries.

4.21   Most (around 90%) of the Primary Health Organisations that responded to our survey also thought that the Ministry had been driving the upgrade of the National Health Index and setting up the National Immunisation Register. However, the Ministry had been less prominent in leading the other initiatives. Opinion was split on whether the Ministry or DHBs had been driving the preparation and implementation of ethnicity data protocols. For the remaining initiatives, most Primary Health Organisations (around two-thirds) thought that there had been no clear leadership from the Ministry or DHBs.

4.22   The sector representatives we spoke to commonly expressed the view that, in some respects, the sector would have liked the Ministry to exert more effective leadership after the WAVE Report. Some DHBs commented that they would have liked more leadership in strategic priority setting and expert advice. A few industry representatives commented that they would have liked to have seen quicker and more definitive decision-making from the Ministry, for example, in processing business cases and letting contracts to advance initiatives. Some Primary Health Organisations and general practitioner representative groups commented that they would have liked more leadership in supporting and integrating primary care with activity to implement the WAVE Report recommendations by empowering them to take action.

There is some confusion in the sector about responsibilities and accountabilities

4.23   Most DHBs (15 out of 21) and most Primary Health Organisations (81%) that responded to our survey believed that the absence of a written strategy defining responsibilities and accountabilities had hindered progress.

2   Figure 1 lists the initiatives we examined.

4.24   The Ministry has provided information on roles and responsibilities at a strategic and project level, but most (18 out of the 20 that responded to this question) DHBs we surveyed believed that roles and responsibilities for improving information management and information technology throughout the sector had not been adequately defined.

4.25   There was also some confusion about accountabilities. Eight out of 21 DHBs indicated that they were unclear about how they were expected to monitor and report on their progress with information management and information technology improvements. Most (16 out of 21) also believed that the key performance indicators in their annual plans had not been effective in prompting action and assessing the effect of action.

4.26   Like the DHBs, most Primary Health Organisations (78%) believed that roles and responsibilities for improving information management and information technology throughout the sector had not been adequately defined. There was also confusion about accountabilities at Primary Health Organisation level, with around three-quarters indicating their DHB had not set them clear requirements for improving information management and information technology.

4.27   As noted earlier, DHBs are responsible for funding and monitoring Primary Health Organisations but few (4 out of the 18 that responded to this question) said that they had specified information management and information technology capability requirements in Primary Health Organisation contracts. Around half of the DHBs (7 out of 15 that responded to this question) required Primary Health Organisations to regularly report on progress with improving their information management and information technology.

Funding and resourcing difficulties

4.28   In our view, the investment in information management and information technology since the WAVE Report is likely to have been less than expected. The sector has had difficulty resourcing improvements while continuing with normal business. DHBs and the Ministry have had some problems recruiting and retaining suitably experienced staff.

Funding pressures have meant that the level of investment is likely to have been less than expected by the WAVE Advisory Board

4.29   Based on initial work by the WAVE Advisory Board, the Ministry estimated that it would cost the sector between $60 million and $100 million to implement the WAVE Report's recommendations.

4.30   The Ministry did not separately allocate funding for implementing the WAVE Report. Funding for national projects was sought on a project-by-project basis, and DHBs were expected to implement the WAVE Report's recommendations from existing funding allocations.

4.31   The overall level of sector investment to implement the WAVE Report is not known, but is likely to have been less than the estimated $60 million to $100 million.

4.32   The Ministry has invested around $4 million in upgrading the National Health Index, and $2.7 million in setting up the Health Practitioner Index. It has spent another $6.6 million on the National Immunisation Register (although not directly referred to in the WAVE Report, it contributes to primary care information). The Ministry has also funded HISO up to $300,000 a year.

4.33   Twelve out of the 16 DHBs that reported having encountered difficulties indicated in their survey returns that funding improvements in information management and information technology since the WAVE Report had been a problem. Many DHBs have been operating at a deficit and referred to funding pressures which meant that information management and information technology initiatives had to compete for funding with other health service initiatives. The combined operating deficit of the 21 DHBs has been reducing in the last 3 years. Some Primary Health Organisations also referred to difficulties with funding work in information management and information technology.

The sector's capacity for making improvements alongside existing business information demands has become stretched

4.34   It is unlikely that additional funding of information management and information technology improvements at DHB level would have led to greater progress among all DHBs.

4.35   Eleven out of the 20 DHBs that responded indicated that, if additional funding was available, they had the capacity to undertake extra improvements to their information management and information technology. However, the other 9 DHBs indicated that they did not.

4.36   Smaller DHBs in particular felt overstretched because they have the same information demands as larger DHBs, but fewer resources.

4.37   Some DHBs expressed frustration that their ability to respond to the WAVE Report and the initiatives had been less than the expectation inherent in the report, and continued to be less.

4.38   The capacity of Primary Health Organisations and general practitioners to improve on their information management and information technology, while meeting

their existing demands for business information, was also stretched. Many Primary Health Organisations were still setting themselves up to provide the service use data required by their contracts, which some were not yet able to fully provide. General practitioners run independent businesses focused on patients, and many considered new information initiatives as an added compliance cost without providing any positive advantage to their business.

4.39   Looking ahead, Chief Information Officers estimated that around 30 information initiatives were likely to place demands on DHBs in the next 2 years. Chief Information Officers believed that DHBs were able to respond to about 2 initiatives a year, alongside the ongoing operational demands of the DHB.

Recruiting and retaining expertise had sometimes been a problem for District Health Boards and the Ministry

4.40   Four of the 16 DHBs that reported having encountered difficulties said that recruiting and retaining suitably qualified information management and information technology staff had been a problem. This was partly because of a shortage of available skills in the market, and partly because of the remuneration they were able to offer.

4.41   The New Zealand Health Information Service within the Ministry's Corporate Information Directorate, which is leading strategic information changes, had also encountered some resourcing difficulties. It had used contracted and seconded staff to provide interim expertise as it had built up the team to work on strategic changes and support the implementation of the *Health Information Strategy for New Zealand 2005*.

District Health Boards' different levels of maturity in information management and information technology

4.42   Some DHBs expressed the view that the different levels of information management and information technology maturity in DHBs had limited progress. For example, the West Coast DHB had old patient management systems that had not been designed for the sort of information flows envisaged by the WAVE Report. Until these systems are replaced, the full benefits envisaged by the WAVE Report will not be achieved. The West Coast DHB was replacing its patient management system as part of wider information management and information technology improvements.

4.43   When Counties Manukau DHB collaborated with neighbouring DHBs, it found that being further ahead in information management and information technology meant waiting for the other DHBs to catch up before the full benefits of collaboration could be realised.

Progress with the key initiatives has generally been less than expected

4.44   The WAVE Report envisaged rapid change in 3 to 5 years, which is a demanding timetable. For example, the National Programme for Information Technology in the United Kingdom's National Health Service has an 8-year timetable, from 2002 to 2010.

4.45   We looked for measurable objectives and targets to use as a baseline to assess the rate and extent of progress made by the Ministry and the sector.

4.46   In planning individual initiatives such as the National Health Index upgrade, the Ministry set milestones for phases in the work. We used these milestones to assess whether the speed and extent of progress had been as expected by the Ministry.

4.47   We used views expressed to us by the sector to assess whether progress so far had been as expected by the sector.

4.48   Some of the recommendations from the WAVE Report relating to the key initiatives had specific and measurable timetables. We used these timetables to assess whether progress had been as expected by the WAVE Advisory Board.

Progress had generally been less than expected by the Ministry

4.49   For 5 national initiatives, we compared milestone dates achieved against those planned in the Ministry's original business cases or project management plans for the initiatives. In all cases, the milestone dates achieved were later than those originally planned. Initiatives such as the Health Practitioner Index and the National Immunisation Register had been revised along the way.

4.50   Within its portfolio of information projects, the Ministry had identified that the top risk to project delivery was undertaking too many projects with too few resources. The Ministry had identified that this was placing appropriate planning, thorough monitoring of delivery, and quality at risk.

Upgrading the National Health Index

4.51   The Ministry's programme to upgrade the National Health Index started in March 2003, with an expected completion date of 31 December 2004. The programme was completed in November 2005. It included a number of projects. Figure 16 shows that some of the major component projects had taken longer than originally planned by the Ministry.

4.52   The main delays had been to the online search engine and the NHI Online Access for Health (NOAH) application, which allows online access to the National Health Index. Interdependencies meant that the delays on these projects sometimes affected the other component projects.

Figure 16
Completion of component projects of the National Health Index upgrade

Component projects of the National Health Index upgrade were completed later than planned

Component project	Planned* completion date	Actual** completion date	Difference (months)
Training programme	Nov 2004	Dec 2004	+ 1
Duplicate resolution programme	Jun 2003	Sep 2003	+ 3
Public interactions to raise awareness	Dec 2004	Apr 2005	+ 4
Redesign of Link Manager application for linking and unlinking records	Aug 2004	Apr 2005	+ 8
New information fields:			
• Phase 1	Dec 2003	Dec 2003	0
• Phase 2	Jul 2004	Apr 2005	+ 9
NHI Online Access for Health (NOAH)	Oct 2003	Oct 2004	+ 12
New search engine	Nov 2003	Dec 2004	+ 13
Overall programme	**Dec 2004**	**Nov 2005**	**+ 11**

* Dates taken from May 2003 Programme Execution Plan.

** Dates taken from Programme Status Reports.

4.53 The main causes of the delays were:

- extended prototyping of the online search engine to address technical issues; and

- protracted contract negotiations with the NOAH software developer, and difficulties with engaging users in testing and piloting.

4.54 The original budget for the National Health Index upgrade programme was $2.9 million. Extra resource requirements caused by the delays and changes over time to the scope of the programme had increased the budget by $1.1 million to a total of $4 million. The main changes were related to a software application called Link Manager. Extra licences had to be purchased and additional features added for managing National Health Index records.

4.55 Some upgrades had been removed from the scope of the project. For example, upgraded Application Programme Interfaces were removed in early 2005 because the estimated cost was more than had been budgeted for. The interfaces would have fully integrated NOAH with general practitioners' systems, and enabled full functionality from the new search engine. In Part 5 we discuss this further.

Ethnicity data protocols

4.56   In August 2002, the Ministry scoped an ethnicity data improvement project with the main objective of enabling better decision-making to reduce health inequalities by collecting and storing standardised, accurate ethnicity data.

4.57   Key outputs from the project were a set of protocols for collecting ethnicity data, a training package for collectors, and a set of indicators for monitoring data quality. The protocols and training package were produced later than expected (see Figure 17). However, they were well received by the sector. Overall, the 88 representatives from DHBs and Primary Health Organisations who received the initial training rated it as having provided them with the necessary knowledge to train others.

Figure 17
Planned and actual completion dates for ethnicity data protocols

Ethnicity data protocols were completed later than planned

Activity	Planned* completion date	Actual** completion date	Difference (months)
Protocols endorsed by HISO	Sep 2003	Dec 2003	+ 3
Notification of protocols to key stakeholders	Sep 2003	Feb 2004	+ 5
Implementation of training programme	Nov 2003	Nov 2004	+ 12
Publication of quality indicators	From Nov 2003	Ongoing	+ 21***

* Dates taken from July 2003 implementation path.

** Dates taken from HISO minutes, published protocols, and training evaluation report.

*** As at August 2005.

4.58   The Ministry told us that delays were caused by the need to ensure sector acceptance and support. Work continues on the quality indicators.

Setting up the Health Practitioner Index

4.59   After work in mid-2002 to confirm the need and sector support for the Health Practitioner Index, the Ministry set out to create the index as a database covering health practitioners, organisations and physical health service delivery facilities.

4.60   The business case in June 2003 proposed implementing the database of practitioners in January 2004, followed by implementation of the database of organisations and facilities in April 2004.

4.61   Under a revised, phased approach, implementation of both databases started in June 2005, with completion planned for September 2005 (see Figure 18).

Figure 18
Planned and actual completion dates for the Health Practitioner Index

The Health Practitioner Index was completed later than planned

Activity	Planned* completion date	Actual** completion date	Difference (months)
Request for proposals issued	Jun 2003	Jan 2004	+ 6
Preferred vendor selected	Aug 2003	Jun 2004	+ 10
HPI populated with practitioner data 'go-live'	Jan 2004	Phased implementation Jun 2005-Sep 2005	+ 15-20
Organisations and facilities indices 'go-live'	Mar 2004		

* Dates taken from June 2003 Business Case, signed off in September 2003.

** Dates taken from Project Status Reports.

4.62   When the Health Practitioner Index went "live" in June 2005, it had been populated with data on 3 types of practitioner (pharmacists, dentists, and occupational therapists) and was available to the Accident Compensation Corporation.

4.63   The Ministry plans that the Health Practitioner Index will eventually hold data on 15 types of practitioner. Data agreements were being finalised with the organisations responsible for registering the remaining 12 types of practitioner, which will allow their data to be used in the Health Practitioner Index. Data on more types of practitioner will gradually be added to the Health Practitioner Index as data agreements are signed.

4.64   The Ministry plans to make the Health Practitioner Index available to all DHBs and other organisations in the health sector that need to authenticate practitioner access to their applications and information. By November 2005, Health Practitioner Index data had been made available to Hutt Valley DHB, the Medical Council of New Zealand, Accident Compensation Corporation, the Pharmacy Council of New Zealand, the Dental Council of New Zealand, the Occupational Therapy Board, and Health Payments, Agreements and Compliance (part of the Ministry).

4.65   The Health Practitioner Index is a complex project, both technically and because it depends on data from stakeholders throughout the sector and the preparation of standards from HISO. Specifying the complex requirements for the databases took longer than expected, and delayed putting out the requests for proposals for creating the databases.

4.66   The proposals exceeded the Ministry's budgeted costs and planned timeframes, and negotiations were extended to arrive at an affordable solution before a developer was appointed.

4.67   There have also been delays in securing support from some of the practitioner registration authorities and signing data agreements with them. These

complications and delays have resulted in the expected cost of the Health Practitioner Index rising from $2.1 million in the original business case to $2.7 million.

Privacy, authentication, and security standards

4.68   In July 2002, the Ministry drew up terms of reference for the Privacy, Authentication, and Security Project, and a project management plan was prepared in July 2003. The objective of the project was to prepare, in consultation with the sector, a set of privacy, authentication, and security standards to support electronic exchange of health information, together with a rationale for implementing the standards.

4.69   The Ministry and the Accident Compensation Corporation jointly sponsored the project. They agreed that common privacy, authentication, and security standards were required throughout the sector as a priority to avoid different and conflicting approaches by planned system work such as the Health Practitioner Index, National Health Index upgrade, and the National Immunisation Register.

4.70   The Ministry and the Accident Compensation Corporation also hoped that the initiative would demonstrate leadership to the sector, and that the sector in general would adopt the privacy, authentication, and security standards as New Zealand health standards.

4.71   Work on the standards and the rationale for their implementation was contracted out at a cost of $269,000, jointly and equally funded by the Ministry and the Accident Compensation Corporation, with delivery scheduled for December 2003. There were some delays and, in March 2004, the joint Ministry and Accident Compensation Corporation steering group accepted the standards framework.

4.72   The contract outputs included a proposed "road map" for advancing work on privacy, authentication, and security standards, recommending immediate publication of the standards framework and further work with the sector to enhance and adopt the standards between March 2004 and May 2005.

4.73   The Ministry decided that the complexity of the proposed standards framework meant that it needed to be reworked so it could be implemented by the sector. Since March 2004, the Ministry had been working the framework into a set of privacy and security standards for the sector, with codes of practice for developers, providers, and users of e-health applications, and network and telecommunication service providers.

4.74   A lack of resources has delayed the completion of this work. However, the Ministry finalised the standards in January 2006, and plans to launch them around mid-2006. Codes of practice and guidelines will be prepared when requested by the sector.

Setting up a National Immunisation Register

4.75　　In April 2001, the Ministry produced a business case for a project to set up an immunisation database at a cost of up to $1.25 million, progressively extending a reporting and enquiry service to immunisation providers by December 2002.

4.76　　A prototype immunisation database was successfully completed in July 2002. An independent project review recommended a pause to realign the project with broader business needs. Initial approval of the project focused on the information technology component, and the scope did not encompass wider business needs.

4.77　　Because of the July 2002 review, the Ministry decided to establish a National Immunisation Register by modifying Kidslink (a system created by Counties Manukau DHB to track immunisations). The budget for preparing and distributing access to the National Immunisation Register was $5.27 million.

4.78　　The first project plan for the National Immunisation Register was produced in June 2003. Under this plan, the roll-out was scheduled to begin in Counties Manukau in November 2003 with Kidslink being put on the National Immunisation Register.

4.79　　The project plan was revised in April 2004 by adding the requirements needed for recording Meningococcal B vaccinations. Under the revised plan, using the National Immunisation Register for Meningococcal B vaccinations started in Counties Manukau DHB in July 2004 and finished in June 2005 with Nelson Marlborough DHB. As at November 2005, more than 2.8 million Meningococcal B vaccinations had been recorded on the National Immunisation Register.

4.80　　The National Immunisation Register went "live" for other childhood immunisations in Counties Manukau in April 2005, and the Ministry expected the expanded National Immunisation Register to be available throughout the rest of the country by December 2005. As at November 2005, the National Immunisation Register had cost $6.6 million.

Progress has generally been less than expected by the sector

4.81　　Within the DHBs, Primary Health Organisations and bodies representing general practitioners that we spoke to, there was some frustration that the initiatives progressed after the WAVE Report had not yet more directly and demonstrably improved the delivery of health services. There was a feeling that improvements seen so far had come more from local improvements driven by funding and operational needs rather than from the initiatives.

4.82　　A common view was that it was not clear what some of the initiatives meant for health providers or how they helped health providers deliver better health outcomes.

4.83   Sector representatives from primary care were included on HISO and the steering groups for the National Health Index upgrade and Health Practitioner Index projects. However, our survey showed that among Primary Health Organisations there was poor awareness of the objectives of HISO, the Health Practitioner Index, the Privacy, Authentication, and Security Project, and the Health Intranet. Those who were aware of these initiatives were frustrated that the Health Practitioner Index and the Privacy, Authentication, and Security Project were taking a long time.

4.84   The Health Intranet has also made less progress than expected by many within the sector. Users connect to the Health Intranet by subscribing to a Health Intranet service provider accredited by the Health Intranet Governance Board (now called the Health Network Governance Board).

4.85   While there is support for the Health Intranet in principle as a network for securely exchanging health information, the DHBs and Primary Health Organisations that we spoke to noted that it is not widely used by them or by general practitioners, outside of providing information to the Ministry.

4.86   The Health Intranet is seen as having excessive security requirements, being too costly and slow, and not giving access to enough useful applications. Most general practitioners and hospitals use a separate secure messaging system, provided by an accredited Health Intranet service provider and which can be linked into the Health Intranet, to exchange Health Event Summaries and laboratory and radiology results.

4.87   Some DHBs (for example, West Coast and Canterbury) are also using alternative networks to exchange clinical information, which they find cheaper and faster than the Health Intranet. Although these networks include generally accepted security safeguards they may not fully comply with the Health Network Code of Practice.

Progress has generally been less than expected by the WAVE Advisory Board

4.88   It was not possible to fully analyse whether progress to implement all of the recommendations of the WAVE Report had been as expected. Many of the recommendations were not defined enough to be measurable.

4.89   We analysed the few recommendations relating to the key initiatives where timescales were specified, to assess whether the intended action had happened as quickly as expected. We present our analysis in Figure 19. It shows that progress to implement these recommendations had generally been slower than expected in the WAVE Report. The notable exception was general practitioner use of electronic clinical software, where the expected progress was achieved.

Figure 19
Progress on measurable recommendations from the WAVE Report

Activity	WAVE Report's expectation	Progress
Capability for connectivity between hospital and health providers	DHBs should implement capability including that for electronic exchange of referral letters and discharge summaries within 2 years.	Eight DHBs send more than 60% of hospital discharges electronically. DHBs that do not currently have the capability are introducing it or are planning to introduce it with new systems. No DHB exchanges more than 10% of patient referrals electronically, but several are working on electronic referral systems.
	Expected by October 2003.	*Implementation ongoing.*
Standards for Health Event Summaries (electronic discharges and referrals)	Preparing standards for transmitting Health Event Summaries between providers during the next 6 months, starting use within 12 months, distributed within 3 years.	In consultation with the sector, the Health Information Standards Organisation began working on standards in late 2004. It expects to complete and release the standards in early 2006.
	Expected by October 2004.	*Expected early 2006.*
Encouraging general practitioners to use electronic clinical record software	Supporting and encouraging general practitioners not currently using electronic clinical record software to do so within the next 12 months.	A survey by the Royal New Zealand College of General Practitioners in 2003 indicated that 99% of practices were using specifically designed practice management system software.
	Expected that by October 2003, 71% of general practitioners would be using electronic practice management systems to record and store some clinical data.	*The survey showed that in 2003, 72% of general practitioners used their practice management system to store full clinical notes.*
Encouraging hospitals to implement clinical data repositories.	Encouraging hospitals to implement clinical data repositories or an integrated clinical interface within 3 years.	DHBs are at various stages of improving their systems for holding clinical data. In their 2003-04 and 2004-05 annual plans, a third of DHBs reported investing in new or upgraded patient management and clinical information systems.
	Expected implementation by October 2004.	*Implementation ongoing.*
Running an awareness campaign on the National Health Index.	Running an awareness campaign on the National Health Index.	Awareness information was included in enrolment information for Primary Health Organisations in 2002. National Health Index brochure and poster distributed to hospitals and general practitioners' waiting rooms in April 2005. Also articles placed in publications such as *New Zealand Doctor*.
	Expected by December 2001.	*Poster and brochure distributed in April 2005.*

Part 5
Giving more impetus to achieving future benefits

5.1   In this Part, we describe how the sector is positioned to realise future benefits. We also make recommendations to help the Ministry and the sector.

5.2   Through the *Health Information Strategy for New Zealand 2005*, the Ministry and the sector have an opportunity to give greater impetus to information management and information technology improvements. The Ministry and the sector need to actively push the strategy with clear governance and commitment, and follow implementation plans that are properly resourced and managed. Some issues wtih specific initiatives need to also be addressed quickly.

The sector is positioned to realise future benefits

5.3   The sector is well-placed to make better progress by building on the existing technology base and working within a cultural environment that is now more prepared for consolidated action. There will also be benefits from the sector's ability to link and share information more effectively and securely, because of the initiatives implemented and under way.

The sector has a good and improving technology base

5.4   New Zealand is acknowledged internationally as being ahead of other countries in some aspects of health information management and information technology.

5.5   A survey of doctors conducted by Harris Interactive Incorporated in 2000 found that 52% of general practitioners in New Zealand sometimes used electronic medical records, ahead of Canada (14%), the United States (17%) and Australia (25%), and just behind the United Kingdom (59%). More recently, a survey by the Royal New Zealand College of General Practitioners in 2003 indicated that almost all (99%) of the general practitioners that responded used a practice management system to help with recording patient and clinical consultation details, and running the business.

5.6   In April 2003, the interim research report on Australia's proposed national health information network (HealthConnect) noted that New Zealand was clearly well ahead of Australia in its implementation and use of electronic health records in primary care. The report said that New Zealand's investment in health information management infrastructure had positioned the country as a world leader. This infrastructure included the National Health Index, a national clinical coding system for primary care and hospitals, the early adoption of a standard for health messaging, and a national health intranet supported by privacy legislation and a national Health Information Privacy Code.

5.7   The new *Health Information Strategy for New Zealand 2005* recognises that some parts of the sector are more advanced than others in using technology to deliver clinical services and for administrative processes. These include secondary care providers in hospitals, DHBs, the Ministry, and national agencies. The strategy also recognises that different parts of the sector have very different levels of information systems' capability, and community providers and long-term residential care providers tend to have less capability.

5.8   The sector's ability to exchange information is improving. Hospital and DHB systems are converging and becoming less fragmented as DHBs implement new systems and upgrade existing systems in areas such as patient and clinical management. Networks for securely exchanging information are evolving, and access to these networks is improving.

The Ministry of Health and the sector are more prepared than in the past to join together in leading and co-ordinating consolidated action

5.9   Our interviews highlighted that there had been some tentativeness by both the Ministry and DHBs about who should lead the implementation of information management and information technology improvements since the WAVE Report. In the devolved environment of the health system where DHBs have a high degree of independence, there was a sense that the Ministry and DHBs had been and were still building up trust in being able to work together confidently.

5.10   Our interviews highlighted that, although some tensions remained, the culture in the sector seemed to be changing, with stronger leadership of information management and information technology improvements seen as critical to future progress. DHBs, Primary Health Organisations, and general practitioners seemed more prepared than in the past to look to the Ministry for leadership. They wanted more effective leadership in setting priorities and co-ordinating consolidated action, and in supporting and empowering them to take action. In turn, the Ministry seemed more confident in taking the strategic lead and driving strategies and initiatives with close involvement by DHBs and the wider sector.

Key initiatives underpinning the sector's ability to link and share information more effectively and securely are set to deliver benefits

5.11   The National Health Index upgrade, the Health Practitioner Index, and the Privacy, Authentication, and Security Project are initiatives underpinning the sector's ability to link and share information effectively and securely.

5.12 Upgrading the National Health Index has already improved its reliability and usefulness in identifying patients. Further improvements are planned under the *Health Information Strategy for New Zealand 2005*. These include improvements to data quality, increasing the availability of the National Health Index, and work on using it effectively to support population health initiatives.

5.13 Like the National Health Index for identifying patients, the Health Practitioner Index will ensure that clinicians and others can securely identify with whom they are exchanging health information, and easily communicate with them. After a phased introduction of the Health Practitioner Index in 2005, further planned improvements under the *Health Information Strategy for New Zealand 2005* include extending its use to records such as hospital discharge summaries, health messages, and standard datasets.

5.14 The framework of standards for privacy, authentication, and security that the Ministry has been working on to support electronic exchange of health information is nearly complete.

Recommendations to help the Ministry and the sector

5.15 Building on the progress made so far, the *Health Information Strategy for New Zealand 2005* provides an opportunity for the Ministry, DHBs, and the sector to give greater impetus to information management and information technology improvements.

Clear governance and commitment

5.16 We consider that the governance, oversight, and leadership role of the Health Information Strategy Action Committee, and how well that role is undertaken, is critical to successfully implementing the *Health Information Strategy for New Zealand 2005*.

Recommendation 1
We recommend that the Health Information Strategy Action Committee obtain and act on regular feedback from stakeholders throughout the sector on how well it is undertaking its role and what it is achieving, to help ensure that it build and retain credibility with the sector.

5.17 The Health Information Strategy Action Committee is accountable to the Minister of Health, and the Ministry will support it with resources to ensure that the strategy is successfully implemented. The Health Information Strategy Action Committee will produce an annual business plan and report on progress with the sector's implementation of the strategy every 6 months to the Minister and stakeholders.

5.18   In our view, progress reports need to clearly demonstrate whether the implementation of the strategy is delivering the expected benefits. The benchmark targets in the new *Health Information Strategy for New Zealand 2005* are a good starting point for evaluating whether the strategy is being successfully implemented but need to be underpinned with more quantifiable measures.

Recommendation 2

We recommend that the Health Information Strategy Action Committee ensure that benchmark targets in the *Health Information Strategy for New Zealand 2005* are underpinned by more specific measures to assess whether the targets are being achieved, recognising the need not to overload the sector with performance indicators.

5.19   The *Health Information Strategy for New Zealand 2005* also recognises that commitment from the sector will be needed. In our view, it is essential that the whole sector supports the strategy for it to be successful. As well as ensuring that the strategy is funded, DHBs will need to be prepared to take on responsibility for leading some of the Action Zones, the Ministry will need to be prepared to give DHBs responsibility, and Primary Health Organisations and primary care providers will need to be more organised in engaging with the strategy.

5.20   Our work highlighted that parts of the sector, particularly Primary Health Organisations and general practitioners at primary care level, do not feel adequately engaged in information management and information technology improvements, and do not have a clear picture of how they benefit delivering health services. For example, most (72%) of Primary Health Organisations that responded to our survey believed that the Ministry had not adequately involved them in shaping the *Health Information Strategy for New Zealand 2005*. This is despite sector representatives, supported by the Ministry, compiling the strategy in consultation with sector groups such as the Independent Practitioners Association Council.

Recommendation 3

We recommend that the Health Information Strategy Action Committee ensure that all parts of the sector, including Primary Health Organisations, clinicians, and other health providers, are effectively consulted and involved in implementing the *Health Information Strategy for New Zealand 2005* Action Zones by ensuring that:

•   existing stewardship arrangements are used effectively to involve the sector; and

•   new mechanisms are put in place to effectively involve parts of the sector for which suitable mechanisms do not currently exist (for example, Primary Health Organisations).

Sound and properly resourced implementation plans

5.21   The *Health Information Strategy for New Zealand 2005* indicates that the 12 Action Zones within it provide the basis for a sector implementation plan. Our survey and interviews indicated that there was support throughout the sector for a practical and sustainable sector implementation plan for information management and information technology improvements. The strategy includes an overall implementation "road map". In our view, this needs to be expanded and supported by detailed implementation plans for each of the strategy's component Action Zones.

5.22   The "road map" and the Action Zone implementation plans are more likely to be successfully implemented if they are prepared in keeping with the principles of good business planning. They should be simple, specific, realistic, and complete. Taking each of these principles in turn, our work has highlighted some important issues that should be addressed.

A simple "road map" should guide implementation of the *Health Information Strategy for New Zealand 2005*

5.23   A good implementation plan is simple in that it is easy to understand and to act on, communicating its contents easily and practically.

5.24   Most of the people we spoke to throughout the sector agreed that a simple "road map" showing the integrated health information system that the sector was aiming for would be useful in communicating and clarifying understanding.

Recommendation 4

We recommend that the Health Information Strategy Action Committee guide implementation of the *Health Information Strategy for New Zealand 2005* with a simple "road map" that is communicated to the sector, showing:
*   the integrated health information system that the sector is aiming for;
*   the overall implementation period;
*   where projects and initiatives fit in;
*   major milestones along the way; and
*   how benefits would build up for different parts of the sector and for patients.

Action Zone implementation plans should be specific

5.25   A good implementation plan includes specific actions and activities, with specific dates of completion, specific people responsible, and specific budgets.

5.26   We consider that the Action Zone implementation plans for the *Health Information Strategy for New Zealand 2005* should be very specific to avoid confusion about roles and accountabilities and unclear funding arrangements, as encountered after the WAVE Report. The strategy contains high-level objectives, steps, and timelines for the Action Zones. It notes that specific goals will be defined during work on projects under each Action Zone. We consider that the strategy needs to be underpinned by more detailed and specific implementation plans for each Action Zone.

5.27   On funding, the *Health Information Strategy for New Zealand 2005* notes that the Action Zones will need focused effort and resources. It identifies 3 funding sources. These are re-allocating existing capital funds in the sector to the Action Zones, directing money set aside for future projects to the Action Zones and, where it is made available, allocating new money to the Action Zones. We consider that it is vitally important that realistically assessed levels of funding are met with resources from throughout the sector.

Action Zone implementation plans should be realistically based on the sector's capacity for change

5.28   A good implementation plan includes realistic goals, budgets, and milestone dates.

5.29   Part 4 of our report describes how the sector's capacity for information management and information technology improvements has become stretched. In our view, the implementation plans for the *Health Information Strategy for New Zealand 2005* Action Zones must be based on staged goals, budgets, and milestones, which are assessed as realistically achievable within the sector's capacity.

Action Zone implementation plans should be focused on business needs

5.30   A common view among the DHBs, Primary Health Organisations, and bodies representing general practitioners that we spoke to was that information management and information technology improvements had not been focused clearly enough on meeting the information needs of clinicians. The *Health Information Strategy for New Zealand 2005* emphasises that health information must support the delivery of health care.

5.31   We consider that Action Zone implementation plans for the *Health Information Strategy for New Zealand 2005* should be prepared and executed in close consultation with clinicians, including those in the primary care sector. This will help to ensure that improvements under the Action Zones are driven by business needs and remain focused clearly on delivering better health outcomes.

Recommendation 5

We recommend that the Health Information Strategy Action Committee put in place an implementation plan for each of the *Health Information Strategy for New Zealand 2005* Action Zones.

Recommendation 6

We recommend that the Health Information Strategy Action Committee ensure that each Action Zone implementation plan is split into constituent projects, with specific measurable objectives and responsibilities, and realistic budgets and completion dates.

Recommendation 7

We recommend that the Health Information Strategy Action Committee, in compiling and overseeing implementation of the Action Zone plans, ensure that:

- the funding and resources required to successfully implement improvements under each of the Action Zones are realistically assessed, and made available from throughout the sector;
- the sector's capacity for undertaking the required changes is reviewed so that progressive goals and milestones are realistic and achievable;
- external expertise is effectively contracted in (where required) to support the changes; and
- clinicians are consulted, to ensure that activity is driven by business needs and remains clearly focused on better health outcomes.

Quickly addressing issues on specific initiatives

5.32   Our work identified some important issues relating to the initiatives we examined, which need to be addressed.

The setting of health standards needs to be better resourced and the effects of standards need to be evaluated

5.33   HISO had difficulty attracting sector funding for preparing and implementing standards, and did not achieve the funding and staffing levels recommended by the working group that advised on setting up HISO. Also, partly because it was relatively recently that standards began to be endorsed or approved, there had been little follow-up of how successfully standards were being implemented. For example, although work on data quality indicators is under way, the effect of the ethnicity data protocols in improving ethnicity data quality has not been evaluated.

Recommendation 8

We recommend that the health standards sub-committee of the Health Information Strategy Action Committee secure more funding and resources from the sector, for preparing, implementing, and evaluating standards.

Recommendation 9

We recommend that the health standards sub-committee of the Health Information Strategy Action Committee monitor and report regularly to the sector on the funding and resources directed towards preparing, implementing, and evaluating standards, and on progress made.

Recommendation 10

We recommend that the Ministry of Health continue to support through funding and resources the work of the health standards sub-committee of the Health Information Strategy Action Committee in preparing, implementing, and evaluating standards.

5.34   We support the work the Ministry has in hand to produce ethnicity data quality indicators.

Recommendation 11

We recommend that the Ministry of Health evaluate the effect of the ethnicity data protocols on data quality to assess if any further follow-up action, such as additional training, is needed.

Buying upgraded Application Programme Interfaces to get full functionality from the improvements to the National Health Index should be a priority

5.35   Some of the Chief Information Officers we interviewed were concerned that the full improved functionality from the upgrades to the National Health Index was not available to users because the estimated cost was greater than expected for a key component. They told us that upgraded Application Programme Interfaces for DHBs were needed. Without these, users could not use all of the new fields included in the National Health Index for searching and matching NHI numbers, and general practitioners had to access the NHI Online Access for Health (NOAH) application separately rather than it being integrated with their practice management systems.

5.36 The Application Programme Interfaces had been removed from the NHI Upgrade Project in early 2005 while the question of whether the Ministry or DHBs were responsible for funding them was resolved. The Ministry does not have a plan for when and how the Application Programme Interfaces will be upgraded. In our view, the Ministry should give priority to resolving this issue with DHBs.

Recommendation 12
We recommend that the Ministry of Health and District Health Boards resolve, as a priority, how to fund and procure appropriate Application Programme Interfaces to improve use of the National Health Index.

Guidelines on using the Health Practitioner Index are urgently needed

5.37 Introduction of the Health Practitioner Index is under way. However, the sector was poorly informed about how the Health Practitioner Index was to be used. Preparing user guidelines is part of the Ministry's work programme, and it is holding ongoing discussions and workshops with the sector on how the Health Practitioner Index might be used.

5.38 We support the work that the Ministry has under way. In our view, these guidelines need to be finalised and communicated to the sector quickly to ensure that early benefits from the Health Practitioner Index are realised.

Recommendation 13
We recommend that the Ministry of Health quickly finalise the guidelines for using the Health Practitioner Index, and communicate the availability of the guidelines to the sector to ensure that early benefits from the Health Practitioner Index are realised.

Enhancing the Health Intranet and finalising the Privacy, Authentication, and Security Project need to be given added impetus

5.39 The Health Intranet has a poor profile in the sector, which is restraining the intranet's use as an effective network for exchanging health information. In March 2004, the Health Intranet Governance Board, which is to be subsumed within the Health Information Strategy Action Committee's infrastructure sub-committee, considered operational issues facing the Health Intranet. It identified 6 main challenges facing the network. These were cost, technology, application availability, system integration, training and awareness, and promotion and marketing.

5.40   Recommendations under each challenge were proposed in a paper to the Governance Board. Although there has been some progress, such as improved access to the Health Intranet for some Primary Heath Organisations, and general practitioner take-up of broadband access being encouraged, generally progress with addressing the challenges has been limited since March 2004.

5.41   We support the Health Intranet Governance Board being subsumed within the Health Information Strategy Action Committee infrastructure sub-committee. We also support the work that this sub-committee has under way to address the operational issues facing the Health Intranet.

Recommendation 14

We recommend that the infrastructure sub-committee of the Health Information Strategy Action Committee act quickly to make the Health Intranet more effective by addressing the operational issues that have been identified, including raising the profile and use of the network throughout the sector.

5.42   The Privacy, Authentication, and Security Project is taking a long time to complete. The Ministry recognised that the standards, codes of practice, and guidelines that it will deliver were urgently required when the project began in July 2003. The Ministry finalised the standards in January 2006, and plans to launch them in mid-2006. We consider that the Ministry should give priority to this important project.

5.43   We support the privacy, authentication, and security standards being prepared.

Recommendation 15

We recommend that the infrastructure sub-committee of the Health Information Strategy Action Committee give priority to endorsing and launching the privacy, authentication, and security standards.

Appendix 1
Our audit methodology

Our methodology combined existing evidence from the Ministry of Health's (the Ministry) documentation and data with new evidence collected through semi-structured interviews and a survey of District Health Boards (DHBs) and Primary Health Organisations.

Using existing evidence – review of Ministry documentation

We reviewed strategic documents relating to how the Ministry had approached implementing the recommendations of the WAVE Report to understand what action the Ministry and the sector had taken and why. The documents included presentations used by the Ministry to communicate its approach to the sector, the Ministry's annual reports, progress updates given to the Health Committee and overarching strategies such as *The New Zealand Health Strategy*, *The Primary Health Care Strategy* and *The New Zealand Disability Strategy*. We also reviewed available literature on information management and information technology capability in New Zealand compared to other countries.

We reviewed Ministry documents to understand how each of the initiatives had evolved and progressed. The documents we reviewed included Ministry business cases, implementation plans and progress reports for each initiative.

Using existing evidence – analysis of Ministry data and reports from District Health Boards

Where Ministry data was available to quantify progress and the effect of initiatives, we gathered and analysed it. For example, we analysed Ministry data on the trend in the number of duplicate National Health Index numbers created by District Health Boards (DHBs) as an indicator of the effect of the National Health Index upgrade programme. We also used Ministry data on use of the Health Intranet and reviewed surveys conducted on behalf of the Ministry to quantify general progress with information management and information technology capability in the sector. The surveys included one by the Royal New Zealand College of General Practitioners giving the proportion of general practitioners using electronic practice management systems for recording clinical data.

To quantify progress with electronic discharge and referral capability in DHBs, we analysed the reports on progress with implementing the WAVE Report recommendations that DHBs were required to submit to the Ministry as part of the key performance indicators in their annual plans. We also analysed the strengths and weaknesses of DHBs' plans for improving their information management and information technology capability as identified by the Ministry through its review of DHBs' first Information System Strategic Plans.

Collecting new evidence – semi-structured interviews

We conducted around 30 semi-structured interviews, mainly between April and June 2005. Interviews covered principal stakeholders within the Ministry and throughout the sector, and listed in the table below. Our framework of questions covered awareness of the WAVE Report and how it had been implemented so far, what progress had been made, the effect that the initiatives were having and how information management and information technology improvements were being taken forward.

In the Ministry of Health we interviewed:

· the Director-General;

· the Deputy Director-General Corporate and Information, Deputy Director-General Sector Policy and Deputy Director-General Clinical Services; and

· staff within the Corporate and Information Directorate, including leaders, advisors and project managers from the New Zealand Health Information Service responsible for strategy and implementing the key initiatives.

In the sector we interviewed:

· the Chairperson of the Health Information Standards Organisation and the Health Network Governance Board;

· Chief Executive Officers, Chief Information Officers and Planning and Funding Managers within District Health Boards;

· Chairpersons, Chief Executive Officers, General Managers and Information Systems Managers within Primary Health Organisations;

· representatives of The Royal New Zealand College of General Practitioners and some general practitioners;

· representatives of the Independent Practitioners Association Council;

· staff of the Accident Compensation Corporation;

· representatives of HealthLink;

· representatives of the New Zealand Health IT Cluster representing organisations interested in health IT (software and solution developers, consultants, health policy makers, health funders, infrastructure companies, health care providers, and academic institutions); and

· members of the WAVE Advisory Board.

Most of the interviews were with 2 or more interviewees and were held in the offices of the stakeholders in Wellington, Auckland, Christchurch, or Greymouth. Each interview lasted between one and 2 hours. The key points were noted and reviewed for all interviews, to make links and draw out themes.

Collecting new evidence – survey of District Health Boards and Primary Health Organisations

During April and May 2005, we conducted an electronic survey of all DHBs and the Ministry, and all 75 established Primary Health Organisations. Our survey was targeted at managers responsible for enhancing information management and information technology, not health practitioners. The purpose of the survey was to gather their opinions on whether implementing the recommendations from the WAVE Report was resulting in more effective use of health information.

For DHBs, 2 copies of the survey were sent out in each case to the Chief Information Officer and the Planning and Funding Managers. One copy of the survey was sent to either the Chairperson, Chief Executive Officer, or General Manager of each Primary Health Organisation.

The survey included a mixture of "closed" questions requiring a yes, no, or don't know response and "open" questions allowing a free text response, covering opinions on:

- the strategic steps taken by the Ministry;
- the key initiatives progressed;
- the effect so far of activities under the strategic steps and key initiatives;
- monitoring and reporting of progress (DHBs only); and
- continued implementation of information management and information technology improvements.

As well as the Ministry's response, we received a response from 20 of the 21 Chief Information Officers in the DHBs. At the time of our survey, Northland DHB did not have a Chief Information Officer.

We also received a response from 18 of the 21 Planning and Funding Managers in DHBs, including 7 joint responses on behalf of both the Chief Information Officer and the Planning and Funding Manager. There was a very high degree of consistency between the opinions expressed by Chief Information Officers and Planning and Funding Managers, and we have presented the Chief Information Officer responses in this report.

Just under half (47%) of Primary Health Organisations responded to the survey. Many did not complete the survey as they had limited awareness of the WAVE Report, the strategic steps and the key initiatives. Also, many of those who did respond submitted a response compiled by their managed services organisation, through which they contracted for information services. There was a slight response bias towards more recently established, smaller Primary Health Organisations from the South Island, including one response on behalf of 13 Primary Health Organisations.

Appendix 2
Structure of the health and disability sector

The health and disability sector after the New Zealand Public Health and Disability Act 2000 was enacted, showing key information and funding flows, is presented below.
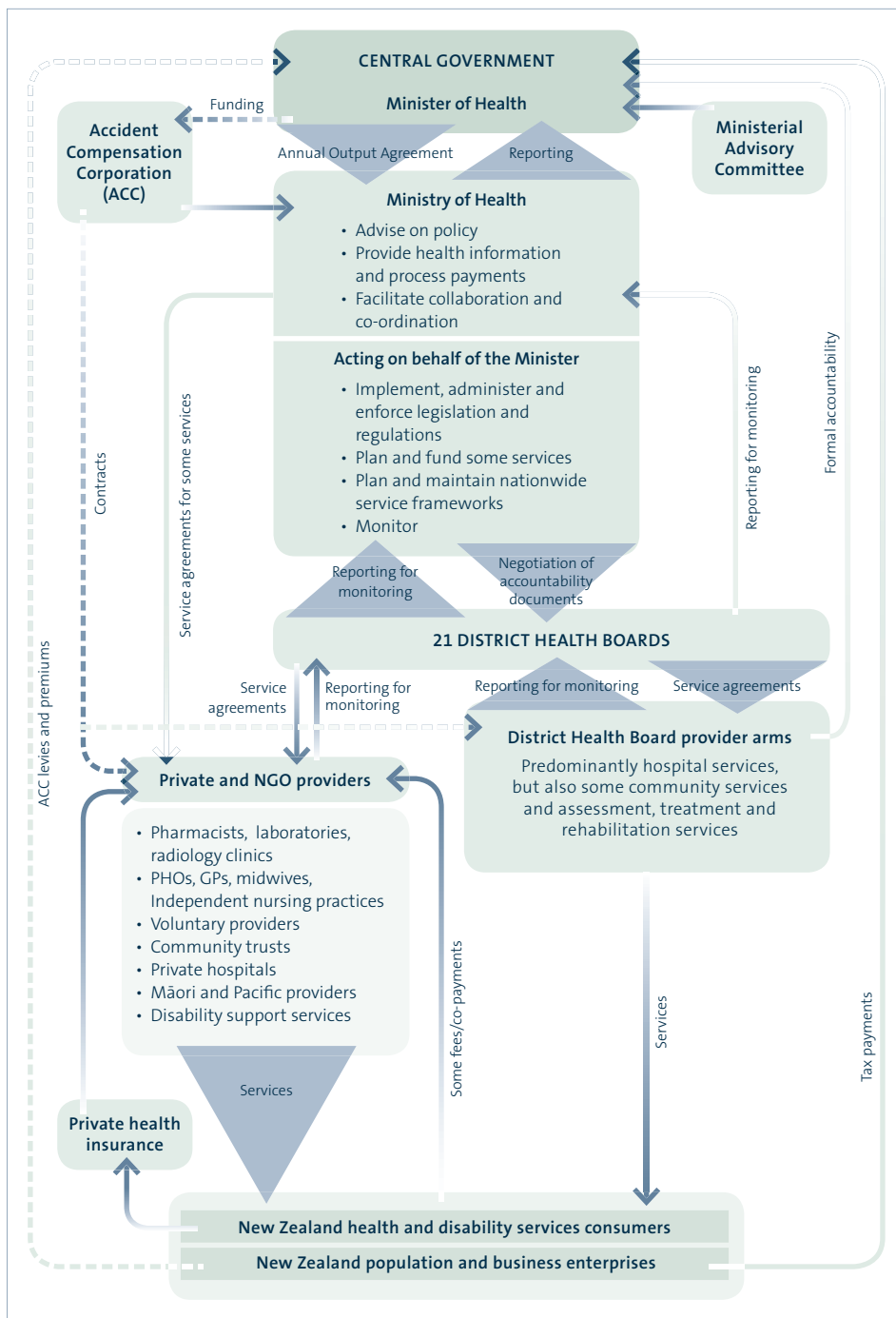
Minister of Health

The Minister of Health has overall responsibility for the health and disability support system. The Minister works through the Ministry of Health to enter into accountability arrangements with District Health Boards, determine the health strategy, and agree how much public money will be spent on the public delivery of services.

Ministry of Health

The Ministry of Health has as number of functions. For example, the Ministry:

- provides policy advice on improving health outcomes, reducing inequalities and increasing participation;
- acts as the Minister's agent;
- monitors the performance of District Health Boards, and other health sector Crown entities;
- implements, administers and enforces relevant legislation and regulations;
- provides health information, and processes payment;
- facilitates collaboration and co-ordination within and throughout sectors;
- provides nationwide planning and maintenance of service frameworks; and
- plans and funds public health, disability support services and other services that are retained centrally.

District Health Boards

District Health Boards are Crown entities responsible to the Minister of Health (administration is through the Ministry). Each board has up to 11 members, 7 of whom are elected by the community. A minority of members (up to 4) are appointed by the Minister of Health.

In recognition of the Crown's partnership with Māori, each board must have at least 2 Māori members, and preferably a greater number if Māori make up a higher proportion of a DHB's population. There are 21 District Health Boards.

District Health Boards are responsible for planning, funding and ensuring the provision of health and disability services to a geographically defined population. District Health Boards provide hospital (and some community-based) services.

District Health Boards are responsible for improving, promoting and protecting the health and independence of their populations. Boards must assess the health and disability support needs of the people in their regions, and manage their resources appropriately in addressing those needs.

Central government provides broad guidelines on what services the District Health Boards must provide, and national priorities have been identified in *The New Zealand Health Strategy*. A range of providers including public hospitals, non-profit health agencies, iwi groups or private organisations can deliver services.

Funding is allocated to District Health Boards using a weighted population-based funding formula.

Since the New Zealand Public Health and Disability Act was passed in late 2000, District Health Boards have been progressively devolved greater responsibilities, and in 2003 they took on responsibility for services for older people with disabilities. This means that District Health Boards are responsible for all services except public health, disability support services for people with long-term disabilities (largely those aged under 65) and some national contracts; these areas are the responsibility of the Ministry of Health.

Primary Health Organisations and other service providers

Service providers – including acute hospitals, some services such as assessment, treatment and rehabilitation services, and most public health services – come under the wing of District Health Boards, while general practitioners, Primary Health Organisations, rest homes and midwives are independent and are contracted to supply services by District Health Boards or the Ministry.

District Health Boards are responsible for establishing, funding and monitoring Primary Health Organisations, which are responsible for providing a set of essential primary health care services to a defined population. At a minimum, these services will include approaches directed towards improving and maintaining the health of the population, as well as first-line services to restore people's health when they are unwell.

Accident Compensation Corporation

The Accident Compensation Corporation is a Crown entity. It provides universal accident insurance cover, injury prevention services, care management, and medical and other care and rehabilitation services and its responsibilities are:

- preventing injury;
- collecting accident insurance premiums;
- determining whether claims for injury are covered by the scheme and providing entitlements to those who are eligible;
- paying compensation;
- buying health and disability support services to treat, care for and rehabilitate injured people; and
- advising the Government.

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Other publications issued by the Auditor-General recently have been:

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