

Health Information Strategy Action Committee

Action Zone 10 – Primary Care Information

Preliminary Scope and Approach

This document has been developed in consultation with the sector and portrays the scope, principles, key enablers and implementation approach for this Action Zone at a point in time. It should be used as a reference to inform and guide business and technical decision making for initiatives related to this Action Zone.

If you have any questions or require assistance please communicate with HISAC through enquiries@HISAC.govt.nz or write to:

The Action Zone Development Leader
HISAC Office
P O Box 5013
Wellington

Version 1.0

29 March 2007

Vision:

Excellence in information management supporting excellence in primary care.

Strategy:

Capture and use standardised primary health care information locally as part of normal activities. Use agreed evidence based indicators to support improved clinical governance and population health. Ensure that appropriate subsets of local information are available regionally and nationally and provide appropriate views of this information.

Version	Date	Author	Approver	Comment
0.1 Draft	13/10/2006	Cameron Inskeep		Initial working draft intended for limited focus group review.
0.2 Draft	30/11/2006	Cameron Inskeep		Updated with feedback from focus group review and executive summary completed.
Final Draft	3/3/07	Cameron Inskeep		Consistency check
1.0	27/03/07	S.Hunter		Release

Table of Contents

1	Table of Figures	4
	About this Document.....	5
	Executive Summary	7
2	What Happens Today	12
2.1	Current State Summary	12
2.2	Projects in Progress	13
2.3	Areas for Improvement.....	14
3	Achieving the Primary Care Information strategy	17
3.1	Introduction	17
3.2	Key Features	17
3.3	Conceptual Design.....	18
3.4	Links to Other Action Zones	32
4	Key Actions	35
4.1	Introduction	35
4.2	Maturity Model.....	35
5	Stakeholder Benefits.....	38
5.1	Introduction	38
5.2	Benefits.....	38
5.3	Indicators of Success	39
	Appendix A: Stakeholder Engagement	40
	Appendix B: Bibliography and References	42
	Appendix C: Examples of Existing Primary Care Systems	43

1 Table of Figures

Figure 1: Health Information Hierarchy - model for Action Zone 10	7
Figure 2: A Generic Process for Primary Care Information Systems.....	12
Figure 3: A Model of the Future Primary Care Information Environment.....	19
Figure 4: HIS-NZ Action Zone Relationships.....	33
Figure 5: Health Sector information use 'thermometer' diagram.....	38

About this Document

Action Zone document structure

The 2005 Health Information Strategy for New Zealand (HIS-NZ) identified 12 Action Zones as areas where effort should be focused over the next three to five years.

A '**Preliminary Scope and Approach**' (PS&A) document has been prepared for each Action Zone. The PS&A documents build the case for change, including benefits the Sector can expect to achieve and suggest an approach to implement the change.

Each individual PS&A document should be read in conjunction with the "HIS-NZ Implementation Approach" (a PowerPoint presentation). It describes common themes that have emerged from the PS&A work, the key enablers that are necessary to support a common approach to information management, and the priority areas where HISAC and the Sector can assist with implementing the Action Zones.

Action Zone 10: Primary Care Information

Action Zone 10 'Primary Care Information' seeks to improve the quality, use, and value of primary care information at local, regional and national levels. Such improvements in information management also need to support the continuous improvement of primary care services.

'Continuously improving quality using good information' is listed as key direction six of the Primary Health Care Strategy 2001. This key direction emphasises the need for all parties to work together to ensure that accurate and useful information is captured and shared, to support a population health focus in primary health care.¹

The focus of Action Zone 10 'Primary Care Information' is on improving clinical governance and population health through the effective use of primary health information. This includes the standards, data capture and information exchange mechanisms required for the Sector to derive real value from distributed primary care information.

Action Zone 10 was formerly called 'National Primary Care Collection'.

Acknowledgements

The contents of this document were influenced by:

- The contributions of the health professionals listed in Appendix A;
- Previous papers on the subject referenced in Appendix B.

Context

This document contains	This document does not contain
An overview of the current state of the sector with respect to primary care information.	Detailed definition of current-state processes.
A high level definition of an 'ideal' future state for primary care information.	Detailed system, policy or process design.
Identification of top-level requirements for future primary care information.	Detailed definition of user requirements.
A recommended approach for progressively implementing improved primary care information.	Detailed implementation plan, business case or cost/benefit analysis.
Qualitative definition of the benefits expected from improved primary	Quantitative definition of benefits. Detailed evaluation criteria or

¹ Primary Health Care Strategy 2002 pages 34-35.

Health Information Strategy Action Committee
Action Zone 10 Primary Care Information - Preliminary Scope and Approach

care information.	options.
-------------------	----------

Executive Summary

Vision, Strategy and Key Features

Strategy

The Vision for Action Zone 10 is: “Excellence in information management supporting excellence in primary care”.

The Strategy for moving Action Zone 10 Primary Care Information forward is to: “Capture and use standardised primary health care information locally as part of normal activities. Use agreed evidence based indicators to support improved clinical governance and population health. Ensure that appropriate subsets of local information are available regionally and nationally and provide appropriate views of this information”.

Overview – Health Information Hierarchy

A snapshot of HISAC’s view of Action Zone 10, Primary Care Information, is shown in the figure below, as informed by HIS-NZ, the Primary Care Strategy and by some current Sector thinking.

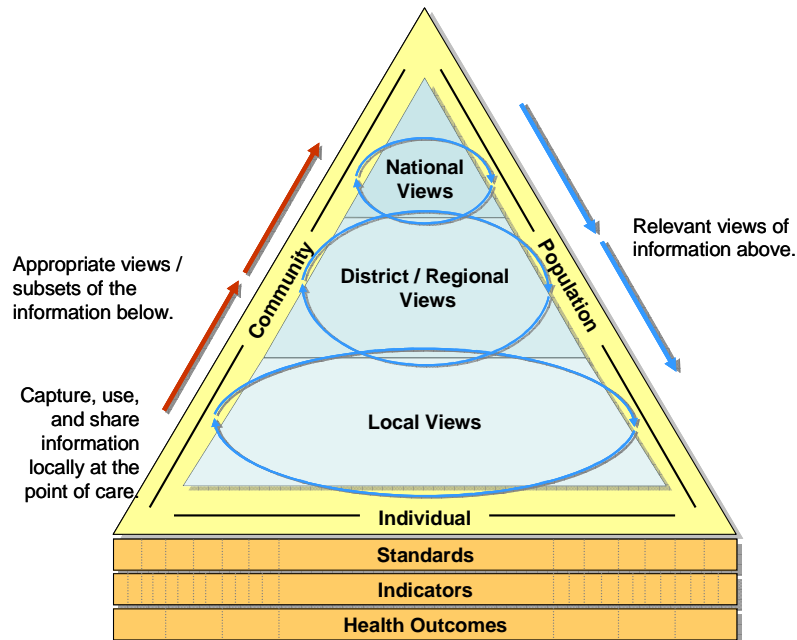


Figure 1: Health Information Hierarchy - model for Action Zone 10

The model places health care users (individuals, communities and populations) at the centre of all primary care information flows. It is built upon data standards, anchors such as the NHI an agreed health indicators that are aligned to achieve strategic health outcomes.

The main aspiration is to make information relevant and accessible within local systems to improve clinical governance, with the information requirements of other groups achieved as a by-product.

The model, termed the Health Information Hierarchy, is a Key Feature of Action Zone 12, the Anchoring Framework.

Design Principles

The following principles were used to guide the conceptual design:

- Detailed data is maintained, used and shared locally;
 - Relevant and appropriate information subsets flow upwards through groups that regularly use the information and help ensure its accuracy;
 - Relevant views of information held at any given level are available to the levels below, and to individuals, communities and populations;
 - Information flows are governed by agreed principles and processes;
 - Data collection is integrated effectively into every day work practices.
-

Conceptual Design

The major emphasis on enhancing primary care services in New Zealand, championed by the Primary Health Care Strategy, means that we need improved primary care information available at all levels of the Sector.

“HIS-NZ leads us to a distributed model for electronic health information where information is held at varying levels of detail according to the decisions that need to be made.”²

Information may be spread across many different physical information systems, with the richest and most detailed information about a health care user kept locally and it is linked and can be referenced electronically.

Components of the solution

Improvements to the primary care information environment can facilitate the achievement of the Key Features, through:

- Focused information systems;
- Appropriate information exchange;
- Evidence-based improvement;
- Coordinated care;
- Extended information capability;
- Appropriately standardised data.

Primary care information is distributed across many systems at different levels of the Sector. Each level should have the capability to access relevant and appropriate ‘views’ of primary care, at varying levels of detail, according to the decisions that need to be made.

Appropriate information views or subsets should flow upwards through groups that regularly use the information and ensure its accuracy. Relevant views of information held at any given level should be available to the levels below, and to individuals, communities and populations.

Evidence-based improvement requires reporting/feedback against evidence-based indicators, for health users to be actively engaged in decision making and for practitioners to have access to the tools and information necessary to improve clinical governance.

Coordination of care requires practitioners to be able to access relevant information about a patient’s condition, to perform regular prompted recall and review of patients and the ability to share updates on progress.

Increasing the overall participation rate for information sharing, particularly within primary care, is an important factor for reducing inequalities and improving outcomes.

Existing local systems and in particular the Practice Management Systems (PMS) used in general practice, offer valuable lessons on ways that good system design can help to achieve appropriately standardised data in primary care.

² Page 13, Health Information Strategy for New Zealand 2005

Required Standards	<p>A number of information standards are required to support the conceptual design outlined for the Primary Care Information Action Zone:</p> <ul style="list-style-type: none">• Information sharing agreements;• Evidence-based indicators;• Health event summaries;• Clinical code sets;• Sector data model/data dictionary;• Electronic patient file transfer.
<hr/>	
Current Situation	
<hr/>	
Definition	<p>Over 50,000 health users visit general practice services every day in New Zealand, with approximately 1,700 being admitted to hospital each day. Many more thousands of health user visits are made daily to pharmacists, dentists and other parts of primary care.</p> <p>Across all primary care services and organisations, little is known about these interactions, or the incidence, severity and patterns of treatment for particular conditions or diseases.</p>
The Primary Care Information Environment	<p>Other than some national payment systems and the National Immunisation Register (NIR), there is currently very little national access to primary care data. The interactions between primary care and secondary care (hospitals), especially in patterns of treatment for chronic conditions, are poorly understood and measured. Information sharing beyond organisational boundaries is limited.</p> <p>The ability for Primary Health Organisations (PHOs) to derive real value from information held by constituent organisations is often hampered by inconsistencies in the way data is captured and difficulties in accessing relevant information.</p> <p>Community care contains a multitude of health and disability services ranging from practitioners with sophisticated computer systems, to others with none.</p>
Projects in Progress	<p>A selection of primary care information systems projects under way are listed below:</p> <ul style="list-style-type: none">• 'T.H.E' Apollo Trial involving Harbour PHO, HealthLink, MedTech and the Apollo Medical Centre;• The Regional Diabetes Information Store involving Waikato DHB and Pinnacle;• Get Checked II involving the clinical services directorate (being rolled out to participating DHBs and PHOs);• Key Directions involving the clinical services directorate and DHBNZ;• The National Data View for CVD/diabetes involving the clinical services directorate.

Challenge Definition

The engagement process undertaken by HISAC identified a number of challenges and opportunities relating to the primary care information environment:

- Primary care teams, PHOs and other stakeholders cannot reliably access the information required to demonstrably improve health care quality and outcomes for their respective populations;
 - Patients and primary care practitioners cannot reliably access individual health information needed for decisions about care and self management;
 - It can be difficult to access high quality evidence-based information needed for care and to continuously improve the quality of services;
 - It is difficult for practitioners to access relevant information needed to coordinate the provision of care;
 - There are significant variations in information management capability, particularly in the wider primary care community;
 - Clinical and administrative data is not consistently defined and recorded.
-

Implementation Challenges

Significant challenges in the long term care management information environment include:

- PMS system changes;
 - Primary care representation;
 - Establishing trust;
 - Ownership of information.
-

Key Actions

Overview

How and when individual organisations achieve the desired capabilities set out in this document will vary considerably based on their starting point, organisational priorities and capability to change. National prioritisation and funding also plays a role.

Maturity Model

A 'maturity model' for the primary care information environment groups desired capabilities along with suggested responsibilities. It is intended as a reference guide for implementation planning.

- Level 1 – Individual Care;
 - Level 2 – Improved Exchanges;
 - Level 3 – Co-coordinated Care;
 - Level 4 – Local Quality Loops;
 - Level 5 – Patient Centric Systems.
-

Stakeholder Benefits

Patients and individuals

The benefits of improved primary care information to health users include:

- Proactive interventions that improve health outcomes and reduce disparities;
 - Evidence-based decisions on care and treatment leading to better and earlier treatment options for patients;
 - Greater coordination of care between practitioners;
 - Receiving consistent advice and treatment;
 - Improved support for self management.
-

Care Services and Organisations	<p>The benefits of improved primary care information to care services and organisations include:</p> <ul style="list-style-type: none">• Improved access to relevant patient information;• Improved ability to coordinate patient care activities;• Agreed clinical indicators that support improved clinical governance.
Population Health Organisations (e.g. DHBs and PHOs)	<p>The benefits of improved primary care information to population health organisations include:</p> <ul style="list-style-type: none">• Improved visibility on the health needs of populations and progress in addressing these.
Funding agencies/Policy/ Research Organisations	<p>The benefits of improved primary care information to funding agencies, policy and research organisations include:</p> <ul style="list-style-type: none">• Improved information on the effectiveness of services;• Increased 'episode of care' views available;• Streamlined access to information.
IT System Vendors	<p>The benefits of improved primary care information to IT system vendors include:</p> <ul style="list-style-type: none">• Consistent guidelines and standards.
Next Steps	
Broader Consultation and Input	<p>It is important that Sector input to this Action Zone continues and is incorporated into the approach. Implementation leads and other interested parties not involved to date should have the opportunity to comment and help develop the implementation approach.</p>
Standards Development & Approval	<p>Accepted Sector standards are a key to supporting widespread improvements in the primary care information environment.</p> <p>Evidence-based indicators for primary care that support improved clinical care, quality and outcome measurement are required nationally, starting with priority long term conditions.</p> <p>The indicators should be agreed between participating groups wherever possible. Overseas experiences could provide a starting point for indicators to be used locally. Indicators need to include business rules to ensure consistent recording of data.</p>
The HISAC Change Programme	<p>HISAC has an important role to play working with the Sector to improve the information environment for the management of long term conditions:</p> <ul style="list-style-type: none">• Leadership – determining priorities, direction setting and stimulating change (e.g. acting as a solution broker, determining acceptance criteria, and communicating ideas/success);• Governance – project endorsement and participating in governance of Sector projects as appropriate;• Oversight – measuring progress.

2 What Happens Today

This section introduces primary care information, and provides an overview of the current state of the supporting information environment in New Zealand. It then goes on to discuss a sample of projects in progress and to identify areas that present opportunities for improvement.

2.1 Current State Summary

The Information Environment

Over 50,000 health users visit general practice services every day in New Zealand, with approximately 1,700 are admitted to hospital each day. Many more thousands of health user visits are made daily to pharmacists, dentists and other parts of primary care.

Across all primary care, little is known about these interactions, or the incidence, severity and patterns of treatment for particular conditions or diseases. Other than some national payment systems and the National Immunisation Register (NIR), there is currently very little national access to primary care data. The interactions between primary and secondary care (hospitals), especially in patterns of treatment for long term conditions, are poorly understood and measured.

Primary Health Organisations (PHOs) and their associated Managed Service Organisations (MSOs) have significant clinical and utilisation data in general practice. The ability to derive real value from this information is often hampered by inconsistencies in the way data is captured and difficulties in accessing relevant information. Information sharing beyond organisational boundaries is limited.

Community care contains a multitude of health and disability services. The technical capability of community care settings range from services with sophisticated computer systems, to others with none.

Generic Process

The operation of primary care information systems can be represented by a generic process diagram, as shown below.

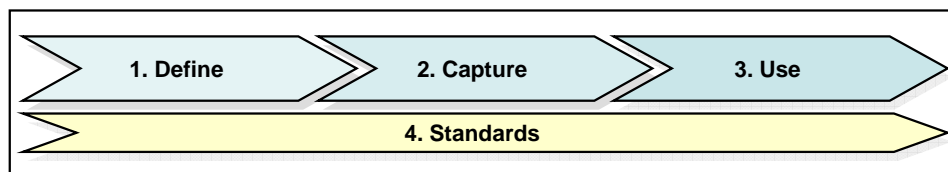


Figure 2: A Generic Process for Primary Care Information Systems

The following points describe each of the process steps shown above, with specific reference to the primary care environment.

Define:

Establishing the information requirements of primary care participants, then implementing a solution that delivers on these requirements.

Capture:

Capturing primary care data at source and storage in local systems. This step can also include non-direct capture of primary care data (e.g. survey).

Use:

Querying primary care data stores directly and/or receiving relevant data. This

step is where effective systems convert raw data to valuable information.

Standards:

Common descriptions and standards for primary care data capture, storage and exchange. Standards underpin all process steps.

Existing Systems

Different systems have evolved in New Zealand to support the capture, use, and exchange of primary care information today. The capability and extent of collaboration varies considerably across primary care services in New Zealand.

Some examples of existing systems are listed in Appendix C, along with relevant clinical or technology standards. Where practical, examples are presented with reference to the generic process previously outlined.

2.2 Projects in Progress

Introduction

A sample of current primary care information projects that are currently in development is provided below.

Apollo Pilot

The trial is a joint initiative involving Harbour PHO, HealthLink, MedTech and the Apollo Medical Centre in Albany. The aim of the pilot is to develop a nurse-led CVD and Diabetes programme based upon evidence-based guidelines.

Supporting information systems were designed for nurse led clinics, clinical pathways and care packages, integration with ancillary providers, clinical and PHO monitoring and evaluation.

Some notable features of the information system design include the use of Practice Management Systems (PMS) as a local 'primary care information hub', the extensive electronic communication achieved between health practitioners and the generation of event summaries to the PHO.

Regional Diabetes Information Store

The Regional Diabetes Information Store (RDIS) is a joint initiative between Waikato DHB and the Pinnacle Group MSO. The project will allow practitioners in primary care services and organisations to view patient event histories that include secondary care data and vice versa. This will provide practitioners with a more complete picture of the patient's health at the point of consultation.

The system will bring together data from a variety of sources and present this data in a consistent format securely across the internet. This project will start life with a subset of the available data and it is envisaged that care services and organisations will be willing to contribute more data when they realize the benefits of the project. It is hoped that the various reports including the patient event summary will be made available via the Health Network.

Get Checked II

Represents a significant upgrade on the existing Get Checked programme. Drivers for change include an update to the diabetes guidelines, problems with the present system, a desire for better integration with other datasets and the need for an improved technical architecture.

Key principles for the upgrade include maintaining a PHO focus, incorporating scalability, extendibility for other clinical priorities and making the upgrade an 'open source'.

Notable features of the information system design include the use of a consistent data schema, flexibility over the messaging formats used and the focus on using information to improve clinical governance.

Primary Health Care Strategy:

Key Directions for the Information Environment

The project is being jointly led by the Ministry of Health and DHBs and aims to develop a framework to support information environment investment decisions across the Sector to meet the aims of the Primary Health Care Strategy. This includes:

- Identifying what aspects of the information environment should be deliberate, coordinated and collectively achieved;
- Facilitating the sharing of what we have already learned individually, so as to articulate approaches based on our collective experience;
- Developing a vehicle that enables continual learning and collaborative information solutions. The main themes currently being pursued are population health, targeting care to individuals (including self management), performance improvement and evidence and care coordination. Secondary health care is out of scope.

Business Case: National Data View CVD/Diabetes

The Ministry of Health is preparing a business case for establishing a national data view of cardiovascular disease (CVD)/diabetes information.

The purpose is to provide a nation-wide capability to analyse CVD and diabetes clinical, utilisation and risk data by enabling users (practitioners, PHOs, DHBs, MOH, research organisations, etc.) to:

- Specify and access views of data (within established privacy rules) across datasets for further analysis;
- Access pre-configured reports that meet many users' decision making requirements;
- Design query reports that meet their individual requirements;
- Access patient-specific information required to support care across settings (beyond core primary health care settings into hospital-based care settings).

2.3 Areas for Improvement

2.3.1 Specific challenges and impacts

The points below describe the challenges to implementing the Primary Care Information strategy.

Individual Health Information

The challenge is that patients and primary care services and organisations cannot reliably access individual health information needed for decisions about care and self management.

This affects patients and primary care services and organisations.

The impacts are:

- Health care services and organisations may be consulted inappropriately;
- Health outcomes for individuals are not optimal.

Information on Services

The challenge is that primary care teams, PHOs and other stakeholders cannot reliably access the information required to demonstrably improve care quality and outcomes for their respective populations.

This affects patients, primary care services and organisations, PHOs, DHBs, the Ministry of Health, and other government agencies and NGOs.

The impact is that:

Information is difficult to access when developing and reviewing services for policy development and to conduct research.

Evidence-Based Decisions

The challenge is that it can be difficult to access high quality evidence based information needed for care and to continuously improve the quality of services.

This affects patients, practitioners and primary care services and organisations.

The impacts are:

- Individuals and populations are not always 'empowered' with the knowledge needed to participate effectively in care and treatment decisions;
 - Practitioners must invest considerable time staying abreast of the latest developments and clinical guidelines; and
 - There is limited feedback on outcomes and potential treatment gaps.
-

Coordinated Care

The challenge is that it is difficult for care services and organisations to access relevant information needed to coordinate the provision of care.

This affects health users, primary care services and organisations, PHOs/MSOs and DHBs.

The impacts are:

- Coordination along the continuum of care is restricted;
 - Individual health users do not receive coordinated services between multiple care services and organisations.
-

Information Management Capability

The challenge is that there are significant variations in information management capability, particularly in the wider primary care community.

This affects health users, care services and organisations, PHOs/MSOs and DHBs.

The impacts are:

- Many community based services and NGOs do not have adequate information management support;
 - Little information is available on the nature and effectiveness of services delivered in the wider primary care community.
-

Non Standardised Data

The challenge is that clinical and administrative data is not consistently defined and recorded.

This affects care services and organisations, PHOs/MSOs, DHBs and the Ministry of Health.

The impacts are:

- It is difficult to effectively combine, aggregate, or share information, particularly clinical information, with certainty (e.g. electronic patient file transfer between PMS);
 - It is difficult to link primary care data with other key data sets as appropriate (e.g. inpatient, outpatient and pharmacy data).
-

2.3.2 General challenges to implementing the strategy

Practice Management System (PMS) Changes

The collective requirements of the Sector to make PMS changes may be greater than the capability of PMS vendors to develop and test these changes. Additionally, the requirements of different organisations may conflict, thereby increasing the challenge for PMS vendors. As a result, larger Sector groups who are able to directly fund developments may be more successful at implementing change than smaller groups, including the PMS users themselves.

To overcome this challenge, there needs to be a forum and process for establishing overall Sector priorities around PMS changes in conjunction with PMS vendors. The forum should also play a role in ensuring PMS changes are well coordinated into releases, e.g. the regular 1 July release date used with some secondary care systems.

Primary Care Representation

“Primary care’ is composed of a large number of representative groups and diverse stakeholders. The number and diversity of such groups presents a significant challenge to engagement with primary care around strategic or operational Sector initiatives. Cost and time limitations regularly prevent adequate primary care input, with a consequent negative impact on the success of such initiatives.

To overcome this challenge, primary care needs to organise itself in a way that facilitates efficient and effective engagement. The recent establishment of the Primary Care Information Management Group (PCIMG) and the National Vendor Forum (NVF) represent significant steps forward towards improving primary care representation.

Establishing Trust

Major distrust exists between some organisations and individuals in the Sector about how information that is provided may be used (e.g. for competitive gain, or for punitive purposes).

Overcoming such distrust requires careful progress, supported by policies and agreements covering what information will be exchanged and for what purpose.

Ownership of Information

Issues around ownership of information and informed patient consent need to be resolved to facilitate continuum of care approaches. GPs and pharmacists operate as private businesses and have invested in local systems/data collection. Some view the information they hold as their intellectual property and/or have concerns about how the information may be used. Vendors may also be reluctant to share information collected through their proprietary products because of competition concerns.

In each case, discussions need to take place with the appropriate representative groups to understand the issues and jointly discover solutions. An improvement in the way patient consent is obtained and the nature of the consent obtained is likely to help.

3 Achieving the Primary Care Information strategy

3.1 Introduction

This section describes Key Features of the Primary Care Information Action Zone. These Key Features are anchored in HIS-NZ and also align to the relevant goals and objectives of the New Zealand Health Strategy, and the Primary Health Care Strategy.

The section also outlines a conceptual design for the Action Zone. It then goes on to describe key relationships to other Action Zones.

3.2 Key Features

HISAC envisages that improved primary care information includes these Key Features:

Key Features

- The primary care data required at local, regional and national levels is clearly defined in terms of purpose, descriptions, formats and coding and is underpinned by a shared standard Data Definition Repository³
 - Detailed primary care information is stored locally, with relevant and appropriate information subsets flowing through to other groups that regularly use the information and who help ensure its accuracy;
 - Relevant views of information held at any given level are available to the levels below and to individuals, communities and populations (e.g. understanding of the resources used and outcomes achieved in reducing inequalities);
 - Relevant information on the effectiveness and utilisation of primary care services can be accessed locally, regionally and nationally;
 - Evidence-based indicators (clinical and administrative) are agreed and used at each level to provide feedback and create a learning environment (e.g. standardised indicators as inputs to clinical decision support tools for individuals, communities and populations);
 - Investment in local systems, along with appropriate education and training, is targeted to ensure information is used to support improved clinical governance and population health (e.g. the ability to view local Maori populations with diabetes and to benchmark treatment results against averages for similar populations);
 - Valid access requests for primary care data are streamlined by agreed principles and processes in a way that fulfils practitioner responsibilities concerning the confidentiality of health data;
 - High quality diagnostic and treatment information is available to support practitioners and patients in making decisions about the care and treatment options available and their likely efficacy;
 - Detailed data is captured by practice management systems or similar as a by-product of normal day-to-day activities, not as an additional administrative task;
 - Expanded use of core index data such as the National Health Index (NHI) and Health Practitioner Index (HPI) in primary care medical event summaries.
-

³ The purpose of this repository is to manage the coding of data held in New Zealand health information systems by providing a shared registry of concept definitions, coding nomenclature and minimum data set definitions.

3.3 Conceptual Design

Introduction

The major emphasis on enhancing primary care services in New Zealand, championed by the Primary Health Care Strategy, means that we need improved primary care information available at all levels of the Sector.

“HIS-NZ leads us to a distributed model for electronic health information where information is held at varying levels of detail according to the decisions that need to be made.”⁴

Information may be spread across many different physical information systems, with the richest and most detailed information about a patient kept locally, but it is linked and can be referenced electronically.

Design Principles

The following principles were used to guide the conceptual design:

- Detailed data is maintained, used, and shared locally;
 - Relevant and appropriate information subsets flow upwards through groups that regularly use the information and help ensure its accuracy;
 - Relevant views of information held at any given level are available to the levels below and to individuals, communities and populations;
 - Information flows are governed by agreed principles and processes;
 - Data collection is integrated effectively into every day work practices.
-

Components of the solution

Improvements to the primary care information environment can facilitate the required outcomes through:

- Focused information systems;
 - Appropriate information exchange;
 - Evidence-based improvement;
 - Coordinated care;
 - Extended information capability;
 - Appropriately standardised data.
-

⁴ Page 13, Health Information Strategy for New Zealand 2005

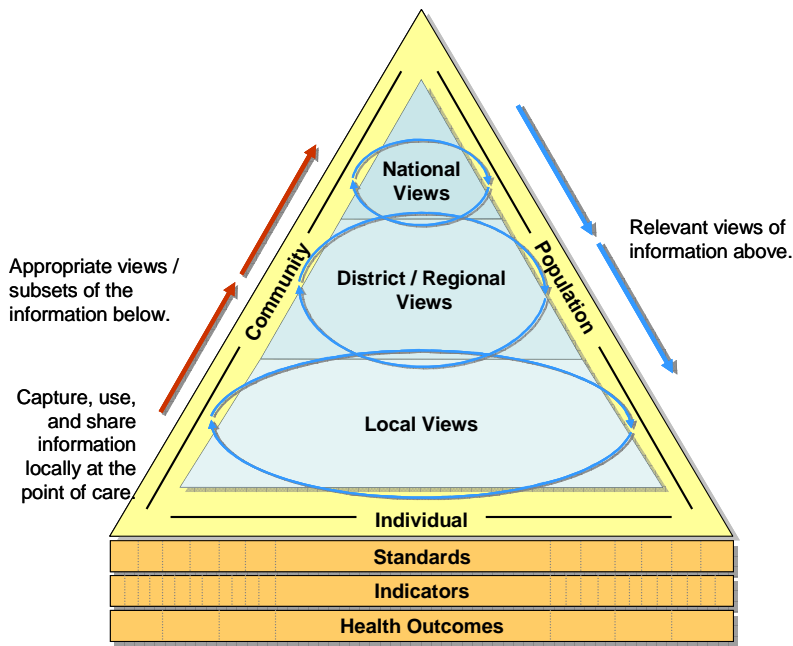


Figure 3: A Model of the Future Primary Care Information Environment

Overview of the Model

The Health Information Hierarchy model, depicted above, is a Key Feature of Action Zone 12, the Anchoring Framework. It places health users (individuals, communities and populations) at the centre of all primary care information flows. It is built upon data standards, anchors such as the NHI and agreed indicators that are aligned to achieve strategic health outcomes. The goal is to make information relevant and accessible within local systems to improve quality of care and health outcomes, with the information requirements of other groups met as a by-product. The following sections describe each of the Design Components listed above. Examples of Existing Primary Care Systems are provided in Appendix C.

3.3.1 Focused Information Systems

Introduction

Primary care information is distributed across many systems at different levels of the Sector. Each level should have the capability to access relevant and appropriate 'views' of primary care, at varying levels of detail, according to the decisions that need to be made. The idea of 'focused systems' provides an important backdrop to ideas presented later around information exchange. Some examples are listed below of different primary care systems and the views they provide.

Local Views

These systems are rich in clinical information about individual health consumers and locally enrolled populations. They primarily support the delivery of personalised care for individuals at the 'coal face' and population health approaches for locally enrolled populations. Groups include PHOs, GPs, pharmacists, dentists, residential care facilities, NGOs and community care services.

District/Regional Views	<p>These systems largely consolidate primary care information from local systems for district and regional decision making. They support funding decisions, service delivery and coordination of care for populations within districts and regions.</p> <p>Groups include some DHBs, shared support agencies, etc.</p>
National Views	<p>These include core systems that provide shared data (e.g. NHI) and consistent business processes (e.g. payment) to the Sector. Also included are existing national collections (e.g. National Minimum Data Set) that provide a national view of key data sets needed to support outcomes such as monitoring, policy development and research.</p> <p>Groups involved include the Ministry of Health and ACC.</p>

3.3.2 Appropriate Information Exchange

Introduction	<p>The appropriate exchange of 'static' data sets will provide improved primary care information at all levels of the Sector. The sharing of 'live' data sets to support coordinated care is discussed below.</p> <p>Appropriate information views or subsets should flow upwards through groups that regularly use the information and ensure its accuracy. Relevant views of information held at any given level should be available to the levels below and to individuals, communities and populations. Information flows should be governed by agreed principles and processes and facilitated by aligned incentives.</p>
---------------------	--

Appropriate Views or Subsets

Clarity of purpose

The starting point for any information request should be clarity of purpose in how the information will be used to improve care and/or health outcomes. This is necessary to ensure information is not collected purposelessly. Information needs to be made available to health practitioners and health users about goals and benefits, to address concerns and also to involve them in the process.

Upwards 'filtering' of information

When information subsets flow upwards through groups that regularly use the information, both accuracy and the value derived from each exchange is improved.

Accuracy is high, as there is an intrinsic understanding of incoming data with errors resolved locally. Value is increased as local and regional information facilitates effective feedback (e.g. ways to improve clinical governance) and empowers devolved decision making (e.g. population health approaches).

The information environment

Ensuring appropriate information subsets are available for assessing service delivery, for policy development and for research, is supported in an information environment where:

- The primary care data required at different levels is clearly defined in terms of purpose, descriptions, formats, and coding;
 - Detailed data is captured by practice management systems or similar as a by-product of normal day-to-day activities delivering care, rather than as an additional administrative task;
 - Appropriate subsets of local data flow up through organisations that value its accuracy and use it for service delivery and / or quality improvement;
 - Effective services and programmes that deliver local value are available
-

and used as vehicles for collecting good information;

- The information needed for preventative and long term care is readily available to improve population health and overall health gains;
 - The information needed to understand disparities in need, access, interventions, and outcomes is readily available (e.g. ethnicity, age, gender, location, socio-economic status);
 - The information needed to understanding effectiveness (outcomes achieved relative to source used) is readily available for service design and policy development.
-

Relevant Views

Facilitating appropriate access

A commonly expressed criticism about many current primary care information stores and national collections in particular, is that information flows in but not out again. Ensuring that primary care information held at any level is available as appropriate to the level(s) below improves involvement from participants, and facilitates collective learning.

The need for relevant views applies even within PMSs, where there is room for considerable improvement in the way data is accessed and presented.

Appropriate access should extend to individuals, communities and populations, not least because they are most concerned about the accuracy of information held about them.

The information environment

Ensuring relevant and appropriate views of information are shared is supported in an information environment where:

- The needs of wider user communities are actively sought and included in the design and enhancement of primary care systems;
 - Information is readily accessible and presented effectively as views from local systems;
 - Information captured and held at any level is available as appropriate views to the level(s) below (e.g. populations, practices, individuals);
 - Information is delivered in a format that provides real value including appropriate volumes, personalisation and timing of information;
 - Information management capability is factored into the choice of format (e.g. appropriate query/extract functionality for MSOs, pre-analysed data for smaller PHOs, PMS integration for GPs).
-

Principles, Policies and Processes

Agreeing the ground rules

Significant 'grey areas' exist today on what constitutes appropriate exchanges of primary care information. Issues around patient consent, privacy, ownership and appropriate use all contribute to an environment of uncertainty and sometimes a reluctance to share information.

A set of agreed principles, policies and processes covering the exchange and use of primary care information would help to streamline appropriate information exchanges.

The information environment

Ensuring one-off and ongoing information exchanges are streamlined by agreed principles, policies and processes is supported in an information environment where:

- There are adequate efforts to engage the public in debate around what constitutes appropriate information exchange;
 - There is clarity on for what purposes data should be shared and with whom, including any explicit restrictions of use;
 - There is clarity on when it is appropriate to share patient and/or
-

practitioner identifiable data;

- The principles, policies, and processes are widely understood, are transparent to the public, and are supported by appropriate governance structures that include real health user representation;
 - Informed health user consent underpins information exchanges achieved through effective 'opt-in' or 'opt-out' approaches;
 - Standard templates/examples help fast track the development of contracts and memorandums of understanding to facilitate appropriate information exchanges.
-

Aligned Incentives

Effective contracts and funding

The appropriate exchange of primary care information is facilitated in an environment where contracts and funding arrangements provide the right incentives.

Effective contracts and funding, particularly with regard to encouraging coordinated care, is covered in Action Zone 7, Management of Long Term Conditions.

The information environment

The alignment of funding and contracts to provide incentives for care coordination and the exchange of information, is supported in an information environment where:

- Incentives compensate for effort and are aligned to the provision of quality data;
 - Incentives are provided to teams of organisations and individuals (e.g. if a GP provides poor quality Get Checked data to their PHO they will be alerted);
 - Incentives support the sharing of successful programmes and information systems;
 - Accountability for the quality of information is aligned with control over the information.
-

3.3.3 Evidence-Based Improvement

Introduction

Evidence-based learning at all levels (clinical, service and policy) is necessary for continuous quality improvement and improved outcomes in primary health care.

Evidence-based improvement requires reporting and feedback against evidence based indicators, health users to be actively engaged in decision making, and care services and organisations to have access to the tools and information necessary to improve clinical governance. A collective learning environment is also necessary to encourage participation and ensure success.

Agreed Indicators

Indicators underpinning quality care

Improved quality in primary care services includes the application of best practice clinical standards and the overall patient experience. Using agreed indicators would provide the basis for objective evidence and feedback on the quality of care delivered to patients.

Evidence-based indicators support patients by reflecting the best medical evidence of what actually works. Chosen carefully, indicators can support the information needs of many different groups beyond actual care delivery through the exchange of appropriate information subsets. The PHO Monitoring Framework provides a foundation for further work on developing

quality indicators for primary care.

Standards supporting indicators

Meaningful assessments and comparisons of quality require information to be recorded consistently. Each indicator needs supporting business rules and standards for correctly recording information (e.g. how to apply code sets).

The information environment

Continuous quality improvement using evidence based indicators is supported in an information environment where:

- Primary care quality domains and supporting evidence based-indicators are agreed between participating groups;
- The indicators chosen help improve clinical governance, particularly for priority long term conditions and provide valuable information on primary care services to the wider Sector;
- The indicators chosen support population health approaches and tracking progress towards health outcomes;
- The indicators chosen and incentives offered do not punish groups dealing with difficult populations;
- The indicators chosen are supported by business rules and standards that drive the correct recording of results;
- Business rules are implemented within local systems to facilitate the correct recording of results as part of normal care activities;
- The implementation of indicators is a collaborative effort between participants, with joint planning and adequate time to prepare;
- The appropriate exchange of indicator results ensures relevant information on the utilisation and effectiveness of primary care services can be accessed locally, regionally and nationally.

Empowered Health Users

Health users' knowledge of their own condition(s) and personal health information underpins successful self management and practitioner interaction. This is especially important for long term conditions, where effective self management and informed interactions with practitioners, can directly translate into improved health outcomes.

Programmes that empower health users and the supporting information environment are covered further in Action Zone 7, Management of Long Term Conditions.

The information environment

Ensuring individuals and populations are 'empowered' with the knowledge needed to participate effectively in care and treatment decisions is supported in an information environment where:

- Effective educational resources for self management are readily available to patients;
- Patients have appropriate access to their own health information;
- Effective support is available to assist with self management;
- Care plans are effectively used for patient self management and to reinforce patient goals.

Improved Clinical Governance

Defining clinical governance

The Department of Health (DoH) in the UK defines clinical governance as "...a framework for continuous quality improvement and safeguarding high

standards of care, by creating an environment in which excellence in clinical care will flourish.”⁵

The DoH identify four main elements to clinical governance:

- Clear lines of responsibility and accountability for clinical care;
- Clear policies aimed at managing risk;
- Procedures to identify and remedy poor performance;
- A comprehensive programme of quality improvement activities.

Clinical decision support

Clinical decisions are typically made in a consultation setting where time is limited and a focus on the individual patient is paramount. This requires high quality diagnostic and treatment information to be available in real time, as needed, to support practitioners and health users in making decisions about the care and treatment options available and their likely efficacy.

Support for clinical decision making and the supporting information environment is dealt with more fully in Action Zone 7, Management of Long Term Conditions.

The information environment

Creating a setting for excellence in clinical care to flourish is supported in an information environment where:

- Evidence-based guidelines are embedded into daily clinical practice (e.g. through decision support tools and system prompts) to support clinical decisions;
- Indicators support the delivery of better quality care against proven, evidence based criteria (e.g. appropriate use in clinical audits);
- Primary care users are involved in the design and enhancement of local systems;
- Local systems make visible the health needs of enrolled populations, and progress in addressing these (e.g. viewing local diabetic Maori population treatment performance against guidelines);
- Local systems support proactive individual interventions (e.g. reminder that Mrs X needs a diabetes check);
- Training and education on local systems improves the value of the systems investment and ensures consistent use across staff;
- Relevant and personalised feedback is available (e.g. PHOs providing feedback to GPs on using Get Checked data);
- Key feedback is integrated with local systems to drive workflow and actions locally.

Collective Learning

The information environment

Collective learning within and between organisations is supported in an information environment where:

- Relevant reports and easy-to-use query capabilities allow individuals and groups to check progress against health goals;
- Constructive feedback is provided through ‘local quality loops’, where individuals learn to improve quality;
- Challenges are handled openly with a focus on improving care;
- Information, on the effectiveness of different approaches (e.g. access, resources used, and health outcomes for populations), is consistently shared beyond organisational boundaries;
- Analytical resources are used as appropriate to identify areas for

⁵ Clinical governance and the drive for quality improvement in the new NHS in England (Scally and Donaldson, *BMJ* 1998;317:61-65 1998).

collective improvement;

- Teams are able to compare results in treating specific conditions;
 - Access to key national data sets supports Sector learning (e.g. avoidable hospitalisation and mortality);
 - Quality systems include mechanisms to identify systematic problems.
-

3.3.4 Coordinated Care

Introduction

Among the challenges within the Sector is facilitating coordination of care. This requires care services and organisations to be able to access relevant information about a patient's condition, regular prompted recall and review of patients and the ability to share updates on progress.

Direct Exchanges of Relevant Information

Mechanisms

The direct exchange of relevant patient information between health care services and organisations and with the patient is a central component of coordinated care. Mechanisms such as referring and discharging patients provide the basis for a structured exchange of patient information, while verbal communication between practitioners (e.g. phone calls) is also considered to be good practice. Such communications facilitate 'care teams' working together and with patients.

There has been progress within the Sector toward implementing electronic referral, status and discharge solutions (RSD). Refer to Action Zone 6, eDischarges and Action Zone 8, eReferrals. Only considerations specific to primary care are discussed here.

The information environment

The direct exchange of summary information for provision of care is supported in an information environment where:

- Patient information and updates on progress can be exchanged effectively between secondary care, wider primary care (e.g. community pharmacists), and community care/NGOs involved in direct patient care (e.g. palliative care nurses);
 - Communication formats are sufficiently flexible to deal with variations in service capability (e.g. electronic document to GP and paper document to community care service);
 - Electronic communications support direct updates of clinical systems (e.g. update of PMS from discharge summary);
 - Information technology is used to improve the care of patients in the community, thereby reducing referrals and travel (e.g. remote observation of elderly patients using telemedicine).
 - There is a clear process for the direct exchange of patient information and for compliance with the process.
-

Electronic Patient File Transfer

Current process

There is currently no process for transferring a patient's electronic file between PMS installations, or between practices using the same commercial software system. When a patient moves, a practice has to print out the whole record plus all the attachments such as referral letters, discharge summaries and consultant letters. Often these are kept as scanned images so each time they are printed out and rescanned it degrades the quality.

The current process is time-consuming for all practices and can result in the effective 'loss' of the detailed historical record, as only summary information

is generally keyed into the receiving PMS.

Electronic file formats

Different generic file formats are available to transfer patient files:

- Image files – are the equivalent of photocopy or print file and cannot be readily searched for meaning by a computer;
- Unstructured data files – such as ASCII text or a word processor file can be searched for key words;
- Structured data files – that integrate data directly between systems (e.g. an allergy recorded in the sending system will appear in the allergy list in the receiving system, post-transfer).

Exchanging image or unstructured data files is relatively easy to achieve and would replace the need for the current print and re-scan process. However, only the exchange of structured data between PMS systems will ensure the continuing usefulness of historical records.

Challenges moving structured patient files

Moving an entire structured electronic patient file between PMS systems is a particular challenge, mainly because of differences in the way information is recorded within the patient record itself. These differences can potentially compromise patient safety in areas such as medication, allergies and workflow ('call and recall').

'GP2GP' projects in the UK and Canada have experienced significant challenges in this area. Specifying standards for structured data transfer and developing the capability within PMS systems to 'map' accurately to these is a major undertaking. The size, number and format of attachments associated with patient files have also been problematic, along with challenges associated with third party document management systems.

A range of potential solutions

A range of potential solutions are:

- Exchanging attachments as image files (e.g. scanned results and letters), that can be 're-attached' in the receiving system and accompany the existing paper file;
- Exchanging a combination of image files and unstructured data files (e.g. consultation notes) that are then 'attached' in the receiving system and which supplement or replace the existing paper file;
- The export and import of a patient's entire history between practices using the same commercial software system and structured proprietary file formats;
- Using a standard structured file/messaging format to exchange core summary data between systems, perhaps based on primary care event summaries, with the full details available via image and/or unstructured data files;
- Using a standard structured file/messaging format to exchange a patient's entire history between practices, across a range of commercial software systems.

The information environment

The transfer of electronic patient files between practices is supported in an information environment where:

- A protocol exists for inter-practice record transfer specifying obligations and the process to be followed;
- There is a standard file/messaging format that supports the structured exchange of data between PMS installations;
- PMS systems have the capability to export and import data using a standard file/messaging format;
- Transferred data is sufficiently standardised to ensure patient safety and

quality of care.

**Primary Care
Information 'Hubs'**

Different primary care systems

Primary care information systems can vary considerably in terms of scale, functionality and the extent of information sharing. Examples range from paper based recording by many community providers, through to the single PMS installation used by West Coast DHB to support GPs.

Information 'hubs' and organised groups

An emerging theme among primary care systems is the idea of primary care information 'hubs', where systems support the information needs of organised groups. Examples include a GP's PMS system also supporting community care services, PMS systems being hosted by a PHO/MSO and the West Coast DHB example mentioned above.

Drivers for greater system co-operation can include coordinated long term care management, PHO efforts to support clinical governance and the IT needs of practitioners.

Primary care information 'hubs' can involve significant culture change, particularly in general practice, pharmacy, physiotherapy etc, where a small business model exists. Information sharing is more prevalent among interdependent groups.

Flexibility based on circumstance

Decisions on the appropriate level of co-operation for primary care systems are typically made based on the level of trust and capability present. Other factors, such as funding contract ceilings and existing infrastructure, are also significant. Regardless of the actual design approach chosen, the requirements largely remain the same.

The information environment

Access to local stores of rich primary care data to improve coordinated care is supported in an information environment where:

- Information access and use is based on informed patient consent;
- Information systems are robust and well managed;
- Information systems support evidence-based monitoring of the progress of individuals and populations, including progress in reducing inequalities;
- Information systems support 'complete pictures' of local populations (e.g. the ability to ensure all new babies are enrolled with a practitioner and to track their health outcomes);
- Information systems support appropriate access by wider primary care (e.g. community pharmacists), secondary care, community care, NGOs involved in direct patient care and by health users;
- Updates occur through local systems, with any summary stores dynamically updated;
- Appropriate standards ensure information is recorded consistently and can be effectively exchanged;
- Users of information systems are provided with the necessary education and training.

**Health Event
Summaries**

Relevance to primary care

Patient-centred care requires health information to follow the patient so that it is available wherever and whenever it is needed to support care delivery. For example, if a person with cardiovascular disease presents to a local GP suffering chest pains while on holiday, that GP would have immediate access to a summary of the patient's health record. Examples of what the doctor could be informed of include any drug allergies, current medications and

previous treatments. Such information would help ensure that appropriate treatment can begin immediately.

To achieve this requires a core summary of clinically relevant information related to health status and history to be accessible on a 'need to know' basis wherever a patient presents. This could be achieved through appropriate views of health event summaries. Achieving such a capability is particularly relevant to primary care because of the diversity of the Sector, and the wide range of information systems in particular.

Appropriate views of health event summaries will not replace the need for more detailed information on a patient's condition within local systems. Instead, it represents a complementary summary data set for use when detailed information is not available, or it is not appropriate to share detailed information.

A conceptual model, architectural options, and issues of consent and privacy for health event summaries are covered in Action Zone 12, the Anchoring Framework.

Improving health outcomes

Making appropriate views of health event summaries available to practitioners and care services and organisations would improve care by ensuring information is available when needed to support decision making. It would help to prevent decisions that may cause risk of harm and would assist with coordination of care, by providing a clinical picture of a patient's health status and history.

Providing patients with access to their own summary health information would enable them to take more responsibility for their own health and care.

The information environment

Providing a relevant summary of a patient's health information to practitioners and care services and organisations on a 'need to know' basis is supported in an information environment where:

- A core summary of health information is available wherever a patient presents;
- Information is exchanged on the basis of informed consent with appropriate provisions for emergency situations;
- Data is added or amended in source systems with updates flowing through to the health event summaries;
- Appropriate 'views' of the information are available to practitioners and care services and organisations across organisational boundaries.

3.3.5 Extended Information Capability

Introduction

The focus of HIS-NZ is on the communication and connectivity to use and share distributed information, in order to improve health outcomes. Increasing the overall participation rate for information sharing, particularly within primary care, is important for reducing inequalities and improving outcomes.

*"As a sector we need to support those with less developed capability so that they can evolve, while at the same time allowing more capable organisations to continue to evolve."*⁶

This section describes opportunities to extend information management and sharing across primary care, including where collaboration with other Action Zones should be undertaken. It also highlights the implications for the information environment to support expanded capability.

⁶ Page 14, Health Information Strategy for New Zealand 2005

Extended Reach

Diverse organisations

There are a large number of diverse organisations participating in primary care with different levels of information capability. Organisations are likely to evolve capability differently according to their starting points and priorities. Each needs to take responsibility for their strategic information planning and development. At each stage, an organisation must also develop capabilities in its people, culture and business processes.

Commonalities

Each organisation faces unique challenges around information and there are also common areas of need across groups such as community care, long term/residential care and wider primary care.

To improve, practitioners need to be able to access relevant information about patients who are transferred into their care. They also need to be able to share patient information when patients refer to other services such as GPs or hospitals and to receive appropriate updates on progress thereafter.

Direct investment in these common priority areas will improve health outcomes and indirectly improve the primary care information available.

The information environment

Improved information management capability assisting interaction with local communities is supported in an information environment where:

- There is support to increase 'connectivity', access to services and information sharing (e.g. fund aged care facility access to needs assessments tools for community services);
- Care services and organisations are able to access relevant information about patients (e.g. mobile and palliative care nursing services need to be part of long term care teams, with appropriate access to key health event summaries);
- Practitioners and health workers are able to participate in a standardised referrals process with two way information flows (e.g. GP updates to Plunket nurses);
- Care services receive appropriate updates on progress (e.g. providing discharge summaries to pharmacists, community nurses etc);
- There is support for 'wellness' and preventative based approaches to health (e.g. appropriate information standards for nurse based community care);
- Practitioners and health workers have appropriate IT support;
- Smaller organisations are able to leverage the information capability and economies of scale of larger organisations;
- PHOs and general practice work collaboratively, sharing information with pharmacists, community groups, NGOs, etc to deliver services;
- Technology solutions are matched to the capability and needs of the organisation (e.g. use paper based systems where appropriate for simple cost effective interventions);
- Technology solutions support quality community based services and personal contact as appropriate (e.g. mobile data card and laptop for a Maori health worker reaching high need populations);
- Investment in information capability is targeted based on need (e.g. aged residential care involves complex patients with high need and pharmaceutical risks);
- Investment in information capability is targeted at organisations directly involved in patient care, which need integration with the wider health system (e.g. rest homes);
- Investment in information capability and services offered improves the information available on the utilisation and effectiveness of services offered (e.g. facilitating basic operational metrics and quality reporting in

residential care).

3.3.6 Appropriately Standardised Data

Systems Design

Learning from past experience

Existing local systems, in particular the PMS systems used in general practice, offer valuable lessons on ways that system design can help to achieve appropriately standardised data in primary care.

Flexibility both within and between PMS systems has resulted in inconsistencies in the way data is referenced and stored. Allowing flexibility, particularly around the way clinical data is stored, greatly complicates later information exchange.

Appropriate standardisation

Standardisation of local data does not necessarily improve care. It can impact on the flexibility of the consultation, takes up time and does not work well with acute cases. Another consideration is the change management effort required to support standardisation.

Accordingly, appropriate standardisation will take into account the likely impact of standards on the quality of care and on the organisations and individuals involved.

The information environment

Primary care systems design, facilitating standardised data input and exchange, is supported in an information environment where:

- Standardisation efforts focus on core data that is likely to be exchanged/required beyond the current episode of care (e.g. recording standardised clinical data for long term care management);
- Standard processes and guidelines are used as appropriate to support the consistent capture of data;
- Codification of diagnosis/treatment, etc is simplified for the user, with selections supported by 'behind the scenes' system mapping;
- Adequate training is provided in the use of standardised code sets and other aspects of local systems that underpin standardisation;
- Data entry is simplified (e.g. use of radio buttons), with field level validation in local systems;
- Data capture mechanisms ensure consistency (e.g. the use of imbedded forms technology for long term care);
- Data extraction facilitates standardisation (e.g. mapping of PMS data into a standard format during extracts);
- There is PHO/MSO/DHB involvement as appropriate during the installation of local systems.

Linking Data Sets

Islands of information

For disparate systems in the Sector to share information, there need to be anchors such as the national health index (NHI), the health practitioner index (HPI) and standards.

The concepts around using anchors and standards to link data sets are dealt with more fully in Action Zone 2, NHI Promotion, Action Zone 3, HPI Implementation and Action Zone 12, the Anchoring Framework.

The information environment

Linking primary care data to other key data sets as appropriate, is supported in an information environment where:

- All primary care health practitioners use the NHI to identify patients;
-

- Local systems use the HPI to identify practitioners/care services and organisations;
 - Contracts and incentives encourage use of the NHI and HPI across primary care;
 - Health users understand how the NHI benefits them and have access to their NHI details so that they can verify accuracy and supply it on request to practitioners;
 - NHI look-up systems for primary care practitioners are widespread, fast and easy to use;
 - Primary care practitioners and care services and organisations are able to create/update a NHI when needed, preferably using demographic data in local systems;
 - Medical event summaries include the NHI, HPI and any other core index data, to facilitate the later search and exchange of information as appropriate;
 - Sector data dictionaries/schemas are developed with reference to a central standard (e.g. an international EHR standard), used widely by local systems and collectively maintained/governed by participants;
 - On-line forms server(s) provides a means of updating and delivering standard forms for use in primary care systems.
-

3.3.7 Standards

Introduction

A number of information standards are required to support the conceptual design outlined for Primary Care Information. These standards are necessary to support interoperability and the meaningful exchange of information between systems.

Information Sharing Agreements

The development of standard information sharing agreements (e.g. general practice/PHO, PHO/DHB) with supporting policies and processes would help streamline valid one-off requests and ongoing information sharing.

Evidence-Based Indicators

Evidence-based indicators that support improved clinical care and outcome measurement are required nationally, starting with priority long term conditions.

The indicators should be agreed between participating groups wherever possible. Overseas experiences could provide a starting point for local indicators. Indicators need to include business rules to ensure consistent recording of data.

Existing initiatives in this space such as 'Leading for Outcomes', and the 'PHO Performance Management Program', should be leveraged, with a greater focus on improving clinical governance.

Health Event Summaries

The types and content of health event summaries needs to be defined and standardised event summary schemas developed to support this. Relevant information needs to be owned by contributing parts of the Sector for this information to be up-to-date and trusted (e.g. primary care owns the primary care component).

Clinical Code Sets

The codification of diagnosis and treatment in primary care needs to be standardised, starting with the codes needed to support event summaries and the evidence-based indicators agreed for priority conditions.

**Sector Data Model /
Data Dictionary**

A common Sector data model and a data dictionary are required to support system interoperability through common descriptions and format. The starting point is the information needed to support the evidence-based indicators agreed for primary care.

Effectively enforcing standards at the messaging/information exchange level is more feasible in the short to medium term than enforcing standards in and around the way data is stored in clinical systems.

The adoption of an international EHR standard (e.g. CEN13606 standard) could assist with ongoing attempts to standardise data, by providing a master reference for developing local dictionaries. Ideally, any EHR standard would handle health, wellness and disability information.

**Electronic Patient
File Transfer**

A standard file/message format is needed to support the structured exchange of full patient files between PMS installations. The transferred record needs to be readable and to preserve as much of the structure of the original record as possible, to reduce the need to re-key information.

The GP2GP record transfer project in the UK has used HL7v3 as the standard electronic message format for each PMS supplier to map its own data structures to. This approach focuses on standardising 'outbound' data around common general practice data attributes including:

- Encounters (e.g. a surgery consultation, a letter received from outside the practice, an investigation result, etc);
 - Names for these encounters (e.g. home visit, surgery consultation, telephone encounter, etc);
 - Headings within these encounters;
 - Complex clinical constructs (e.g. investigation batteries, blood pressure results, etc);
 - Code mappings (e.g. from various sets of medication codes).
-

3.4 Links to Other Action Zones

Introduction

The strategy, key features and conceptual model outlined for the Primary Care Information Action Zone may require components to be in place from a number of other HIS-NZ Action Zones.

The 'jigsaw' diagram below illustrates the relationship between the Action Zones.

The Action Zones can be divided into three categories:

1. The enabling Action Zones, together with Zones 2 and 3, contribute to the technology framework that will eventually be implemented for HIS-NZ;
2. Action Zones 4 through 10 provide functional solutions to improve patient care and operational efficiency;
3. Action Zones 7, 9, 10 deliver care and collect information for national purposes, including analysis and research.

The interrelationship between the Action Zones is a profound part of the overall Primary Care Information strategy and HIS-NZ and must form the foundation for the approach set out in this document.

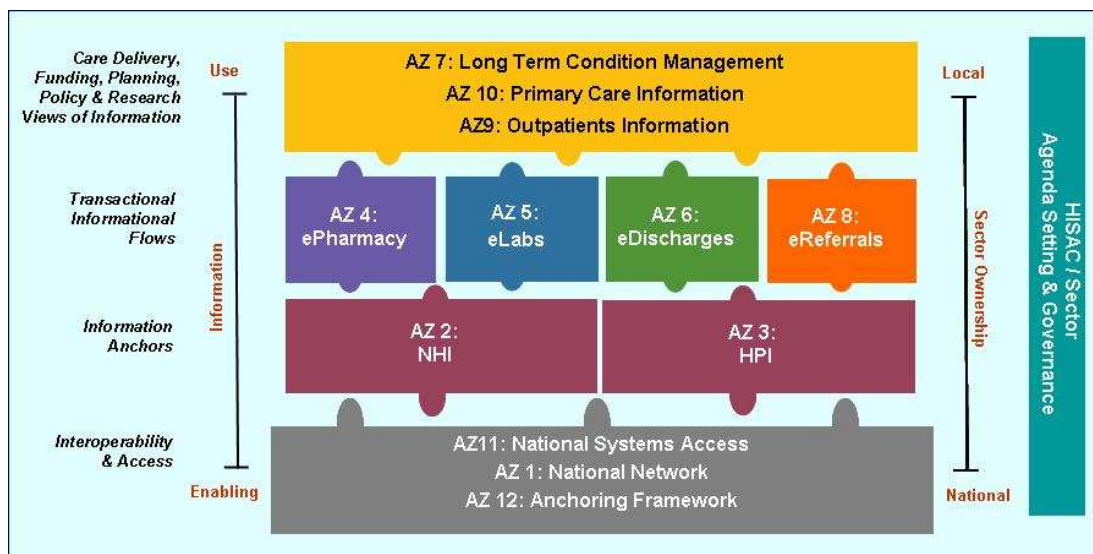


Figure 4: HIS-NZ Action Zone Relationships

Action Zone 1 – National Network Strategy

Due to the security requirements surrounding personal health data, it is likely that transmission of such information between practitioners will need to take place on a secure Health Network.

The reach of the Network is particularly important when exchanging information with the wider primary care, community care services and organisations and NGOs.

Action Zone 2 – NHI Promotion

Individuals receiving care within the New Zealand health system are identified by their NHI number. Currently, use of the NHI is neither uniform nor sufficiently widespread, and this impacts on the ability to exchange primary care data and to carry out effective research.

Action Zone 3 – HPI Implementation

Care services and organisations within the New Zealand health system are to be identified by a set of identifiers known as the Health Practitioner Index (HPI) – made up of practitioner ID, organisation ID and facility code.

Widespread adoption of the HPI would help enable effective care coordination (e.g. recorded in all health event summaries).

Action Zone 6 – eDischarges

The information contained in hospital discharge summaries provides the basis for a GP or other primary/community practitioner to confidently resume care of an individual and is also helpful to other members of a patient’s care team.

Action Zone 7 – Management of Long Term Conditions

The focus on priority conditions such as CVD and diabetes means the largest potential for gain will come from focusing on primary and secondary care settings. Proactive identification and treatment for long term care is centred in primary care and requires certain information systems competence and the availability of relevant primary care information.

Action Zone 8 – e Referrals

The basis for a structured exchange of patient information between practitioners is a functional and reliable referrals solution. This provides the mechanism for all practitioners involved in a patient’s care to be kept up to date with information about the patient’s condition and treatment.

Action Zone 12 – Anchoring Framework

In their Initial View for Action Zone 12, HISAC commits the Sector to develop and implement a framework for the identification, prioritisation, coordination and governance of key enablers for information sharing and interoperability within the Sector, including (but not limited to) standardised architectural and data models, business processes, information technologies and usage principles and policies.

Key Features of Action Zone 12, relating to the flow of health information around the Sector, include:

- The Health Information Hierarchy, which is a model for shared distributed health information, including principles and conceptual architectures for information capture and sharing;
- Health Event Summaries, related to individuals' and patients' health care events, are the starting point for improved information sharing across the Sector;
- The Interoperability Framework defines the standards, policies and information specifications enabling meaningful, secure, consistent, reliable and cost effective capture and sharing of information.

Interoperability between individual health information systems requires an 'Enterprise Architecture' within which compliant systems can interact and share data, such as key event summaries.

4 Key Actions

4.1 Introduction

The Key Features and conceptual design outlined above for Action Zone 10, sets the direction for a future Primary Care Information environment. The capabilities of individual organisations will impact on their ability to uptake this Action Zone. National prioritisation and funding also plays a role.

This section outlines an implementation approach by way of a maturity model by grouping key desired capabilities with suggested responsibilities.

4.2 Maturity Model

Level 1 – Individual Care

National

- There are adequate efforts to engage the public in debate around what constitutes appropriate information exchange;
- Quality systems include mechanisms to identify systematic problems;
- Attachments from an electronic patient file held in a PMS are exchanged as image files that can be 're-attached' in the receiving PMS system and accompany the existing paper file;
- NHI look-up systems for primary care practitioners are widespread, fast and easy to use.

District/Regional/Local

- Local systems support proactive individual interventions;
- Analytical resources are used as appropriate to identify areas for collective improvement;
- Constructive feedback is provided through 'local quality loops', where people can and want to learn to improve quality;
- Data capture mechanisms ensure consistency (e.g. the use of imbedded forms technology for long term care);
- There is PHO/MSO/DHB involvement as appropriate during the installation of local systems.

All levels

- Effective services/programmes that deliver local value are offered and used as vehicles for collecting good information;
 - Incentives compensate for effort and are aligned to the provision of quality data;
 - Effective educational resources for self management are readily available to patients;
 - Smaller organisations are able to leverage the information capability and economies of scale of larger organisations;
 - There is support to increase 'connectivity', access to services and information sharing across primary care.
-

Level 2 – Improved exchanges

National

- 'Shrink wrap' contracts and memorandums of understanding are available to facilitate appropriate information exchanges;
 - Information access and use occurs is based on informed patient consent;
 - Access to key national data sets supports Sector learning;
 - A combination of image files and unstructured data files are used to exchange electronic patient records between PMS installations;
-

- Primary care practitioners are able to create/update a NHI when needed, preferably using demographic data in local systems.

District/Regional/Local

- Effective support is available to assist with self management;
- Local systems make visible the health needs of enrolled populations and progress in addressing these;
- Teams are able to compare results in treating specific conditions;
- There is a clear process for the direct exchange of patient information and for compliance with the process;
- Data extraction facilitates standardisation (e.g. mapping of PMS data into a standard format during extracts).

All levels

- Accountability for the quality of information is aligned with control over the information;
 - Appropriate subsets of local data flow up through organisations that value its accuracy and use it for service delivery and/or quality improvement;
 - The needs of wider user communities are actively sought and included in the design/enhancement of primary care systems;
 - Updates occur through local systems with any summary stores dynamically updated;
 - Data entry is simplified (e.g. use of radio buttons) with field level validation in local systems;
 - Contracts and incentives encourage use of the NHI and HPI across primary care;
 - On-line forms server(s) provides a means of updating and delivering standard forms for use in primary care systems.
-

**Level 3 –
Co-ordinated Care**

National

- There is clarity around which data is shared and with whom, including any explicit restrictions of use;
- Appropriate standards ensure key information is recorded consistently and can be effectively exchanged;
- Standard processes/guidelines are used as appropriate to support the consistent capture of data;
- The export and import of a patient's entire history is possible between practices using the same commercial software system with structured proprietary file formats.

District/Regional/Local

- Key feedback is integrated with local systems to drive workflow and actions locally;
- PHOs and general practice work collaboratively, sharing information with pharmacists, community groups, NGOs, etc to deliver services;
- Information on the effectiveness of different approaches is consistently shared beyond organisational boundaries.

All levels

- Information captured and held at any level is available as appropriate views to the level(s) below;
 - Incentives support the sharing of successful programmes and information systems;
 - Informed health user consent underpins information exchanges achieved
-

through effective 'opt-in' or 'opt-out' approaches;

- Primary care quality domains and supporting evidence-based indicators are agreed between participating groups;
 - Sector data dictionaries/schemas are developed with reference to a central standard, used widely by local systems and are collectively maintained/governed by participants.
-

**Level 4 – Local
Quality Loops**

National

- The principles, policies and processes underpinning information exchanges are widely understood and are transparent to the public;
- A standard structured file/messaging format is used to exchange core summary data from a patient's electronic file, between PMS installations;
- Practitioners are able to participate in a standardised referrals process with two-way information flows.

District/Regional/Local

- Indicators support the delivery of better quality care against proven, evidence-based criteria (e.g. appropriate use in clinical audits);
- Electronic communication supports the direct updates of clinical systems.

All levels

- The information needed to understanding effectiveness is readily available for service design and policy development;
 - Patient access to their own health summaries;
 - The implementation of indicators is a collaborative effort between participants with joint planning and adequate time to prepare;
 - Appropriate 'views' of the information are available to practitioners across organisational boundaries.
-

**Level 5 – Patient
Centered Systems**

National

- A standard structured file/messaging format is used to exchange a patient's entire history between practices, across a range of commercial software systems;
- Appropriate views of health event summaries are available wherever a patient presents.

District/Regional/Local

- Evidence-based guidelines are embedded into daily clinical practice (e.g. through decision support tools and system prompts);
- Patient information and updates on progress can be exchanged effectively between secondary care, wider primary care and community care/NGOs involved in direct patient care.

All levels

- The information needed to understand disparities in need, access, interventions and outcomes is readily available;
 - The indicators chosen help improve clinical governance, particularly for priority chronic conditions and provide valuable information on primary care services to the wider Sector;
 - Health user access to appropriate quality information on care services and organisations is improved.
-

5 Stakeholder Benefits

5.1 Introduction

Moving Primary Care Information forward

HIS-NZ represented benchmark targets for different parts of the Sector, with respect to use of information systems, with the following 'thermometer' diagram.

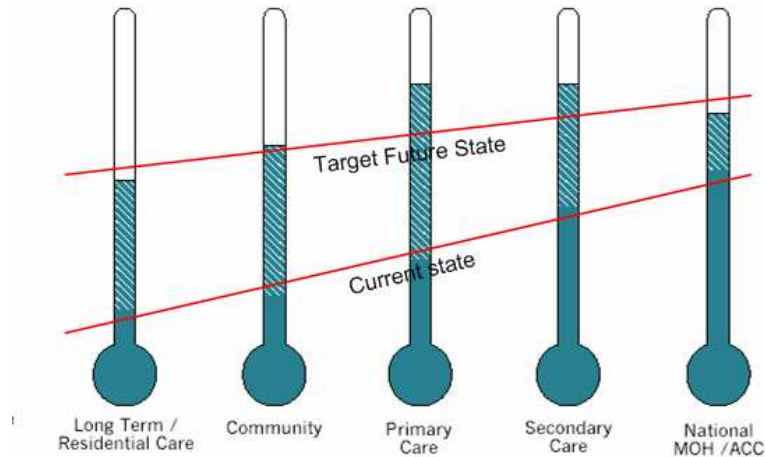


Figure 5: Health Sector information use 'thermometer' diagram

Achieving the strategy for Primary Care Information will help lift the capability of long term/residential care, community care and wider primary care toward the target future state.

5.2 Benefits

Consumers

The benefits of improved primary care information to health users include:

- Proactive interventions that improve health outcomes and reduce disparities;
- Evidence-based decisions on care and treatment, leading to better and earlier treatment options for patients;
- Greater coordination of care between practitioners;
- Receiving consistent advice and treatment;
- Improved support for self management.

Health Practitioners

The benefits of improved primary care information to health practitioners include:

- Improved access to relevant patient information;
- Improved ability to co-ordinate consumer care activities;
- Agreed clinical indicators that support improved clinical governance.

Population Health Organisations (e.g. DHBs and PHOs)

The benefits of improved primary care information to population health organisations include:

- Improved visibility on the health needs of populations and progress in addressing these.

Funding agencies/Policy/Research Organisations	<p>The benefits of improved primary care information to funding, policy and research organisations include:</p> <ul style="list-style-type: none"> • Improved information on the effectiveness of services; • Increased 'episode of care' views available; • Streamlined access to information.
IT System Vendors	<p>The benefits of improved primary care information to IT system vendors include:</p> <ul style="list-style-type: none"> • Consistent guidelines and standards.

5.3 Indicators of Success

Focused Information Systems	<ul style="list-style-type: none"> • Systems with the capability to deliver a particular 'view' of primary care, at varying levels of detail, according to the decisions that need to be made.
Appropriate Information Exchange	<ul style="list-style-type: none"> • Availability of required data at different levels; • Accuracy of data exchanged between levels; • Availability of 'relevant views' of data to levels below; • Agreed principles, policies and processes covering the exchange and use of primary care information; • Contracts and funding agreements that provide incentives for care coordination and the exchange of information.
Evidence-Based Improvement	<ul style="list-style-type: none"> • Agreement of national evidence-based indicators for primary care; • Business rules are implemented within local systems to facilitate the correct recording of indicator results; • Implementation of evidence-based guidelines into daily clinical practice (e.g. through decision support tools and system prompts); • Use of effective educational resources for self management by patients; • Availability of relevant reports and easy-to-use query capabilities that allow individuals and groups to check progress against health goals. • Ability to compare results in treating specific conditions.
Coordinated Care	<ul style="list-style-type: none"> • Uptake of electronic referrals and discharges; • Access to key event summaries; • Information sharing agreements between organisations.
Extended Information Capability	<ul style="list-style-type: none"> • Computerised record keeping and internet connectivity; • Access to the health intranet.
Appropriately Standardised Data	<ul style="list-style-type: none"> • Availability of information between organisations.

Appendix A: Stakeholder Engagement

The following stakeholders were among those consulted during the investigations that led to this document.

HISAC

- Paul Cressey – HISAC
 - Harry Pert – Ranolf Medical Centre / RGPG
 - Kari Lloyd – formerly of HISO
 - Ad van der Tol – HISAC ISC
-

MoH

- Aivalu Lemuelu – MoH
 - Andrew Holmes, Vicki McLaughlin, Steve Creed – MoH CSD
 - Jim Primrose – MoH CSD
 - Sandy Dawson – MoH CSD
 - Angela Pidd / Kalash Mohan – NZHIS.
-

DHB

- Kim Arcus – formerly CM DHB Chronic Care Management
 - Ron Easthope - C&C DHB
 - Kanaka Ramyasiri – HIQ
 - Alan Grainer / Linda Rademaker / Malcolm Lundie / Richard Ward / Dipre Tamitaea / Marty Rodgers / Peter Dunn / Paul Docherty / Haidee Davis / Ruth Rhodes / Jan Goddard - Waikato DHB
 - Jo-Ann Jacobson and others – HB DHB
-

Primary Care

- Harley Aish & PCIM Members
 - Ken Leech / Paul Roseman – Procare
 - Sam Jacobs / Karl Cole – Harbour PHO
 - Fiona Thomson / Chris Walmsley – RGPG
 - Brett Anderson / Narius Patel / David Mapleson - Pinnacle
 - Martin Taylor – HealthCare Providers
 - Jan Clare / Andrea Shirtcliff – Pharmacy Council
 - Donna McArley - WBOP PHO
 - Alan Bligh – SouthLink
 - Cathy O'Malley / David Carmine / Michael Howard – WIPA
 - Murray Tilyard / Kaye Baldwin – BPAC NZ / Best Practice
-

NGOs

- Jo Fitzpatrick / Kristen Berger – Women's Health Action
 - Paul Baigent / Jenny Price / Brenda Hynes – Plunket
-

Other

- Inga Hunter – Massey University
 - Tom Bowdon – HealthLink
 - Peter Sergent – MedTech
 - Marion Clark – Nursing Council
-

Appendix B: Bibliography and References

This document has predominantly been developed from direct engagement with the Sector. However, a number of papers, documents and other points of reference were used in the preparation of this document. Particular reference was made to the following:

- “Health Information Strategy for New Zealand 2005”, August 2005, Health Information Strategy Steering Committee, ISBN 0-478-29639-8 (Booklet), ISBN 0-478-29640-1 (Internet).
- “The Primary Health Care Strategy”, February 2001, Ministry of Health, ISBN 0-478-24306-5 (Booklet), ISBN 0-478-24307-3 (Internet).
- “Action Zone 10 – Primary Care Information: Indicative Scope”, version 1.00 Final Draft, HISAC Office, HISAC, 8 June 2006.
- “Progress with Priorities for Health Information Management and Information Technology”, March 2006, Office of the Auditor General, ISBN 0-478-18151-5 (Booklet).

Appendix C: Examples of Existing Primary Care Systems

Standards

- A contract is used between DHBs and PHOs that specifies standard reporting requirements (summarised in part I.16) for: Details of Consumer Register; Changes to Practitioners; Service Utilisation; Immunisation Services; Rural Premium, Yearly Report; Māori Health Action Plan; Health Promotion and Services to Improve Access; and Quality Indicators.
- The Health Records Standard NZS 8153:2002 published by Standards NZ. This is a voluntary standard developed to provide appropriate levels of documentation and management of health records in NZ.
- The Primary Healthcare Practice Management Systems Specification SNZ PAS 8170:2005 published by Standards NZ. This is a voluntary specification developed to help refine existing systems and ensure compatibility and standardisation. It has not been widely adopted.
- The HL7 health messaging standard has been endorsed by HISO for use where appropriate. The version most commonly used in the past for primary care information exchange has been v2.3.1 with limited rollouts of v2.4 and also of v3.0.
- HISO has recently completed development of a Messaging Standard for Referrals, Status and Discharges, together with a RSD Business Process Standard and an accompanying Implementation guide. These documents are available on-line at www.hiso.govt.nz/publications

Code sets/classifications used by primary care providers include:

- Read Diagnostic Codes
- Pharmac Schedule/Data Table
- MIMS (pharmaceutical)
- ACC Tables (sports, occupations, and regions)
- Geo Codes (Critchlow)
- Demographic Tables (RNZCGP)
- MOH ethnicity data set
- HealthPAC Schedules

Practice Management Systems (PMS)

- Define: PMS processes and fields effectively control what primary care data is captured in general practice. ACC, the MoH, and users influence PMS design to varying degrees.
- Capture: The vast majority of primary care data capture occurs at source via PMS systems or similar. Major variations exist between, and to a lesser extent within, PMS systems in terms of the data captured and how it is stored.
- Use: Significant information is available to primary care providers through direct queries or summary reports. Feedback provided by the Primary Care Information Management Group suggests this is an area where considerable improvements could be made.

ACC

- Define: ACC primary care information requirements are largely stipulated in the ACC45 claims form.
 - Capture: ACC receives ACC45 claims from primary care providers mainly by way of preinstalled claims forms in the PMS. Claims can also be submitted via a web form, or on paper. ACC aggregate data nationally by way of an XML message from either the PMS &/or web form to a central gateway.
-

	<ul style="list-style-type: none">• <u>Standards</u>: A subset of the Read codes is used for clinical diagnosis.
National Immunisation Register (NIR)	<ul style="list-style-type: none">• <u>Define</u>: The NIR sets out information requirements for PHOs/primary care providers covering vaccination event data.• <u>Capture</u>: The capture of NIR data is based on messaging of data from primary care PMS systems to the NIR after each vaccination event. DHBs also submit relevant data to the NIR.• <u>Use</u>: Access to and use of the NIR is possible via web browser and the NZ Health Network.• <u>Standards</u>: Messaging and data standards are specified around HL7.
'Get Checked'	<ul style="list-style-type: none">• <u>Define</u>: Data requirements are specified by the MoH for PMS vendors on: blood-glucose levels; eye checks; and if their feet, their cholesterol level and their blood pressure have been checked.• <u>Capture</u>: Information is captured using templates/forms installed in the PMS, as does Harbour PHO's COPD Asthma programme. In several cases the forms 'pre-populate' with some PMS data with the balance input manually. The use of forms is largely a response to data inconsistencies between PMS systems and installations.• <u>Use</u>: Feedback reports such as those used by SouthLink Health at the provider level, as well as aggregate reports at the DHB and MoH levels.
WIPA & RGPG	<ul style="list-style-type: none">• <u>Capture</u>: WIPA have an 'Integrated Query Engine' (IQE) that facilitates remote request and capture of data from General Practice PMS systems. HealthLink is used as the data transport mechanism and currently supports MedTech32 and Profile. A similar solution is in place with the RGPG and is made possible by standardised fields and coding in the PMS systems used.
West Coast DHB	<ul style="list-style-type: none">• <u>Capture</u>: West Coast DHB capture primary care directly into a centralised regional database via a single PMS installation on a central server, with remote access by GPs supported via a Citrix Server client.
ProCare	<ul style="list-style-type: none">• <u>Capture</u>: Use advanced forms technology to extract clinical data in XML format from PMS systems for use in their clinical programmes.• <u>Use</u>: The data is analysed to determine key demographics, health status, utilisation of primary care resources, and health outcomes achieved.
Harbour PHO	<ul style="list-style-type: none">• <u>Capture</u>: Capture PMS data through a combination of HL7 messaging and XML extracts to a SQL server database.• <u>Use</u>: Indexing and relational database capabilities allow direct querying across different data sets.
Counties Manukau DHB	<ul style="list-style-type: none">• <u>Capture</u>: Capture and aggregate data regionally using forms installed in the PMS and an adapted version of the 'Get Checked' message format. Where providers are connected to the Health Intranet this results in a real time message being received.• <u>Use</u>: Counties Manukau share primary care information with secondary clinicians, and has feedback reports at the practice, PHO and DHB level (e.g. identify high need and eligible individuals, communities, and populations for programmes).

-
- Pinnacle MSO**
- Capture: Use a data warehouse system called 'BISI' that collates all Pinnacle held health consumer (individual, community, and population) demographic and consultation data.
-

- Best Practice and Advocacy Centre (BPAC)**
- Use: Provide feedback to GPs on utilisation data for pharmaceuticals and laboratory tests.
-

- Pegasus Health**
- Pegasus Health has a system that exchanges summary information between primary and secondary clinicians for regular/chronic consumers.
-

- HealthStat**
- Capture: Aggregate near real time information from a large random sample of New Zealand general practices. All data is anonymous. Data entered by medical practitioners into their PMS is automatically transmitted over a secure network for analysis by CBG Research.
 - Use: Provide online access to a wide range of graphs, tables and analyses that display current and historical primary care data. To use HealthStat you need a subscription, or to be a HealthStat contributing practice.
-

- Enigma**
- Capture: Aggregate data from PMS installations of their 'Predict CVD/Diabetes' screening tool to a secure database managed by the PHO/MSO. Only non-identifiable information is used for research purposes.
 - Use: Share population risk information across participating PHOs and DHBs.
-