Regional Chronic Care Management

Information Systems Requirements

Midland Region District Health Boards

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Table of Contents

1 Executive Summary

The impact of chronic conditions on population health, health inequalities and the burden it places on the health system are well documented. Effective management of the growing implications of chronic disease is a national priority.

A regional approach to the management of chronic conditions is a high priority for the DHB General Managers of Planning and Funding (GMs) in the Midland Region. Midland Region DHB Chief Information Officers (CIOs) and GMs have agreed that high level information system requirements need to be defined and agreed at a regional level as a pre-requisite to the implementation of technology solutions. This document summarises those high level requirements.

Requirements for information systems to support chronic care management (CCM) in the Midland Region have been informed by key regional and national strategies, as well as extensive consultation with stakeholders.

Requirements were considered in two main areas: the IS capabilities specifically related to CCM, and the supporting enablers that support access to information and systems across stakeholder groups. Through the analysis it was clear that:

- CCM encompasses a wide range of general clinical activity and therefore information systems that support general clinical activity will support CCM, and

- CCM requires the coordination of services and the implementation of supporting systems primarily at a local and district level. There are requirements that need regional capability but in most cases a local or district approach, supported by regional collaboration, rules and standards will work best.

- The need to consider change of business process and clinical practice needs to be considered ahead of any IS implementation.

The IS capabilities required are as follows.

Information flows between providers require the exchange of key information between clinicians through the automated messaging of referrals, discharges, transfers of care, outpatient clinic letters and appointment details / status updates. This was considered to be the top priority by the majority of stakeholders. Definition of messaging standards and technical capability requirements could be usefully progressed at a regional level. Implementation would need to be done at a local level and the impact on clinical practice clearly understood and managed.

Provision of electronic *Clinical Decision Support* is a key enabler and is already well advanced in the Midland region. These systems must be patient focused and meet the needs of the local stakeholder and therefore need to be

implemented locally, while also supporting district and regional requirements and the appropriate usage of data for analysis and planning.

A widely accessible **Core Clinical Record** needs to provide access to core clinical information at an individual patient level for primary and secondary services: laboratory results, radiology results, medication history, referrals, discharges, transfers of care, contacts and interactions across primary and secondary services, and alerts and flags for patients with chronic conditions from across the region. Access to the record, appropriate to the role of the user, needs to be provided to all stakeholders including the individual patient.

This was considered to be a high priority by the majority of stakeholders. Implementation of a core clinical record should focus on interactions at a district level, and for tertiary services, and would incorporate the objectives of the current Regional Diabetes Information System (RDIS) project. There is benefit to be gained from initiating a regional project to define standards and capability that can support and guide local and district investment.

All clinical stakeholders should have access to integrated **Chronic Care Information Systems.** Support for a coordinated team based approach to care that works across organisational boundaries is a critical requirement. Thus non GP providers must be catered for with similar levels of patient management and clinical system capability. Initiatives to improve system capability and access to an integrated chronic care record need to be led at a PHO level with support at a district level.

Data Analysis and Reporting capability needs to be supported through seamless access to data and reports at a local, district, or regional level as appropriate to support service planning and operational management activities. To enable this, agreement of regional data architecture and reporting requirements should be reached first. This would support subsequent implementation of data analysis and reporting capability and local, district and regional levels.

Self Care systems and tools facilitate self management at a variety of levels. There is already significant activity in this area with the utilisation of the Flinders model of self care and patient held records in some settings. Empowering the patient is a key objective and more comprehensive systems such as electronic personal health records will be an important enabler. These are generally seen as inevitable but not imminent and the common view is that it is important to get the health system right first and focus on access to clinical information and systems by health providers.

A variety of **Tele-health** capabilities can facilitate the provision of healthcare in a remote fashion for consumers with chronic conditions. The use of videoconferencing, remote viewing of images / scans and even email enables care to be delivered at a distance. In a similar fashion such technologies can also facilitate the provision of education to providers and tie in with formal continuing education programmes.

The supporting enablers are as follows.

Strong and explicit **Leadership and Governance** is needed to drive a health system focus on the patient, guide the collection and use of data and information systems capability at both a regional and district level, ensure that the information and system needs of all stakeholders are considered, and ensure buy in and adherence to the principles and access rules that are established. Leadership and governance requirements need to be addressed upfront.

Healthcare providers are notoriously busy and deal with high workflows. The **Usability, Performance and Availability** of systems is critical. Desirable features include integration or accessibility of functionality, avoidance of duplicate data entry, and the use of data derived as a byproduct of clinical activity.

Integration of health data and access to it across stakeholders is a critical requirement. **Privacy and Security** principles must comply with current privacy legislation but equally should not unreasonably prevent or hinder integration of information. Principles, security standards and access rules must be established that define how access to patient data and systems at a district and regional level is to be governed and managed. A privacy framework could be developed by the region.

Cost effectiveness and Collaboration are important principles. District and regional initiatives should leverage the systems, infrastructure and knowledge that already exist across the region.

Access to basic **IT and network infrastructure** is a fundamental prerequisite for CCM in the Midland region. Information and systems need to be accessible by all stakeholders from a range of devices and locations. It has been noted that the level of IT capability varies widely across stakeholders in the Midland region.

These requirements provide a sound understanding of the high level information system requirements that exist at a local, district and regional level. They will provide a basis on which to make decisions regarding the priority of initiatives and the approach that should be taken to meet key requirements in a cost effective and coordinated manner.

2 Background

The impact of chronic conditions on population health, health inequalities and the burden it places on the health system are well documented. Effective management of the growing implications of chronic disease is a national priority.

The Midland Region consists of five District Health Boards (DHBs) – Bay of Plenty, Lakes, Tairawhiti, Taranaki and Waikato. Midland Region DHBs have recognised that there is much to gain in a collaborative approach to the planning and delivery of some services and initiatives[1]. A regional approach to the management of chronic conditions is a high priority for the DHB General Managers of Planning and Funding (GMs) in the Midland Region.

The Midland Region has regional strategies for Cardiac Disease, Diabetes and Renal Disease. A regional approach to selecting and implementing effective information systems and technology is a crucial factor in the success of these strategies. It is also important to ensure that these systems are capable of evolving to support the management of other chronic conditions.

Midland Region DHB Chief Information Officers (CIOs) and GMs have agreed that high level information system requirements need to be defined and agreed at a regional level as a pre-requisite to any solution implementation. The approach is to document high level requirements with a focus on those elements of information systems that are required to facilitate CCM at a regional level.

HIQ Limited (HIQ) have been contracted by the GMs and CIOs to undertake the high level requirements analysis and a stocktake of current systems and functions in place across the Midland Region, and to recommend an implementation approach.   This document comprises the high level requirements analysis and summary of current state.

HIQ is a not-for-profit, public health sector, Information Technology (IT) services organisation wholly owned by Taranaki DHB and Capital and Coast DHB. HIQ provide all of the IT services to Taranaki DHB and are an active participant in the Midland Region CIO group. This requirements analysis has been led by Darren Douglass and Dr Kanaka Ramyasiri.

Consultation across all key stakeholder groups has informed and validated the requirements. The aim is to better understand what requirements exist at a local, district and regional level and how initiatives across the region can support a regional vision and deliver benefits for the full range of stakeholders. These requirements will then be used in subsequent projects to inform solution design and detailed functional requirements.

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[1] Midland District Health Boards Regional Collaboration Principles, August 2007

2.1 Chronic Care Management

Chronic Care Management (CCM) is a proven approach for people with specific progressive conditions, ones where progression can be significantly reduced by straightforward and usually inexpensive interventions. Modifiable conditions include diabetes, unstable angina, ischemic heart disease, chronic congestive heart disease and COPD or "smokers lung", and asthma.[2]

CCM approaches acknowledge that current methods of healthcare delivery are more equipped to cater for acute conditions than the more holistic management of chronic conditions. Conditions such as diabetes and ischaemic heart disease need to be managed proactively throughout the disease spectrum, from measures to prevent the onset of the condition, through to slowing progression and avoiding complications. Ways of achieving this encompass regular reviews, use of evidence based best practice care, and alternative models of service delivery that often involve more care in the community.

One significant enabler for chronic care management will be the intelligent application of information technology within healthcare. Examples of this include electronic clinical decision support tools, electronic prompts, reminders, electronic patient records, and data analysis capability to support planning and population health initiatives.

2.2 Key Reference Strategies

Requirements for information systems (IS) to support CCM in the Midland Region have been informed by key regional and national strategies, as well as extensive consultation with stakeholders. A bibliography is included in Appendix C and a glossary in Appendix E.

The key regional and national strategies are described below.

2.2.1 Primary Health Strategy

The 2001 Primary Health Care Strategy vision carries a greater focus on population health and the reduction of health inequalities. "The need for accurate information will increase as we move to public funding based on the needs of an enrolled population"

The strategy identifies 5 key areas where information and information sharing is particularly needed:

1. Needs assessment and effective service funding, planning, delivery and monitoring.

2. Co-ordination of provider activities and patient care.

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[2] Plan for Chronic Care Management in Counties Manakau, 2001-6

3. Improving the continuity of care between episodes of illness and treatment.

4. Clinical decisions about the care and treatment options available, and their likely efficacy for individuals.

5. Processes for monitoring and improving the quality of care.

2.2.2 Primary Health Care Strategy: Key Directions for the Information Environment

Key Directions defines a strategy for an information environment within NZ that will support the Primary Care Health Strategy.

The role of self care is emphasised, and the possibilities of utilising technologies as enablers where appropriate.

The five key capabilities identified were:

1. Supporting self-care by individuals, whanau, families and communities.

2. Identifying and responding to population health needs.

3. Supporting tailored care.

4. Enabling the co-ordination of care and integration of services.

5. Improving performance and evidence-based decisions.

These capabilities align very closely with the care of patients with long term conditions. Information System components are then identified that align with these capabilities.

2.2.3 Midland Regional Diabetes Strategy and Implementation Plan

There were a number of issues identified within this strategy as requiring a regional approach:

- a shift to community based services,

- co-ordination across the service continuum,

- information management systems,

- an audit process, and

- regional networking to maximise access to expertise.

One of the recommendations was the development of the regional diabetes information strategy which encompassed:

- population Health needs assessment information on current and future disease rates and risk,

- integration of primary and secondary care patient record systems,

- identification of PHO enrolled population risk profiles,

- clear patient care pathways within the multidisciplinary team, and

- continuity of care management across the continuum of care.

The Regional Diabetes Information Service (RDIS) has arisen as a key information system deliverable which encompasses:

- providing patient specific decision support to clinicians,

- practitioner benchmarking,

- providing an integrated approach to diabetes care in rural areas, and

- integrate health data between primary, and secondary and tertiary services within the DHB districts and between Midland DHBs.

The implementation plan suggests that the Waikato RDIS which is currently in development will ultimately be scalable across the Midland region and will interface with existing secondary and primary systems without excessive effort.

2.2.4 Cardiac Services Plan for the Midland Region

In terms of information requirements, the 2006 Cardiac Services plan identified key areas to be progressed:

- monitoring of use of interventions and health services for planning and evaluating health services, and

- more accessible data related to primary and rehabilitation services.

The report suggests agreement to a common clinical information management platform within the Midland region.

In addition, the regional implementation of PACS has been identified as particularly relevant to the cardiology service.

2.2.5 Renal Service Plan

The renal service plan 2004 proposes a chronic renal failure program to be made available to PHOs to facilitate:

- identification of 'at-risk' patients,

- diagnostic tools,

- recommended treatment options,

- when to refer patients to a nephrologist, and

- multidisciplinary renal team support.

Information management was identified as a significant current shortfall to be addressed, an example being the significant amount of reporting data that is currently collated manually.

3 Scope

3.1 In Scope

3.1.1 Chronic Conditions

The requirements analysis specifically focused on high profile conditions that currently have regional strategies, where lifestyle is a major contributor.

Diabetes Mellitus, lifestyle related Cardiovascular disease, and Renal disease were the initial priority conditions to be targeted within this study.

The consultation process reinforced that these were the priority conditions for the Midland Region. Additionally, primary and secondary Mental Health services were highlighted as important and growing priorities.

It was also highlighted during the study that information systems need to support processes related to the management of chronic illness in general. The nature of many of the elicited requirements was not confined to specific diseases.

3.1.2 Consultation and research

Analysis was conducted through structured interviews and targeted research, as follows:

- interviews with key stakeholder groups as agreed with GMs (see Appendix B for a complete stakeholder list),
- Counties Manakau DHB workshop, and
- literature review (see Appendix C for a Bibliography, Appendix E for a Glossary).

3.2 Out of Scope

- Chronic Conditions other than those included in scope (see above),
- requirements related to models of chronic care or business processes other than those pertaining to specific information systems,
- detailed requirements analysis at a functional level,
- solution design (other than at a conceptual level), and
- product selection and implementation.

3.3 Assumptions

- GMs, through their established communications with stakeholders in their districts, have communicated to all stakeholders the priority of Chronic Care for the region and that a regional approach, inclusive of all stakeholder groups, is to be taken to selecting and implementing systems.

- The Cardiac Services Plan, Regional Diabetes Strategy and Implementation Plan and the Renal Services plan provide the basis and reference point for the requirements analysis.

4 Methodology

A formal business analysis approach was used in completing the requirements analysis. Four key stages were completed:

4.1 Enterprise Analysis

To understand the context of the sector and the Midland region, key documents outlining service strategies and current major initiatives were reviewed.

The Cardiac Services Plan for the Midland Region (2006), the Midland Regional Diabetes Strategy (2004) and associated Midland Regional Diabetes Implementation Plan (2007) were the key reference documents for the region, while at a national level the Primary Health Care Strategy (2001) and the Key Directions (2007) documents provided further strategic perspective.

4.2 Requirements Elicitation

Specific requirements were gathered across the full range of key stakeholders. This was achieved through structured stakeholder interviews and workshops using a standard interview template (see Appendix C), and further document analysis.

The stakeholders to be consulted were defined and agreed with the GMs and included DHB Planning and Funding Portfolio Managers, DHB Providers, CIOs, Primary Health Organisations (PHOs) and other primary care support agencies, and key technology vendors.

4.3 Requirements Analysis and Documentation

The findings from the requirements elicitation were analysed and documented. Requirements have been consolidated and organised based on a functional breakdown of key information system capabilities.

4.4 Requirements Communication

This requirements document has been circulated to all key stakeholders and findings summarised and presented in a series of workshops.

5 Requirements

5.1 Background and Context

High level information and systems requirements were gathered through extensive stakeholder consultation and background research, with a focus on those elements of CCM information and systems that are required at a regional level. High level requirements were typically consistent across all stakeholders

Key questions centred around:

- IS enablers and requirements for CCM,

- current IS capability,

- governance, leadership, and privacy.

A key theme that emerged during the consultation is that CCM encompasses a wide range of general clinical activity. Information systems that support general clinical activity will therefore support CCM. Gaps in general clinical IS infrastructure are often the priority areas to be rectified for effective CCM.

5.1.1 Information System Requirements

High level IS requirements have been considered in two main areas. The IS capabilities specifically related to CCM, and the supporting enablers that support access to information and systems across stakeholder groups.

There is a degree of interdependency between these capabilities and therefore any approaches should refer to the requirements as a whole.

IS Capabilities include:

- information flows between providers,

- electronic Clinical Decision Support,

- a widely accessible Core Clinical Record,

- primary care information systems,

- data analysis and reporting,

- Self Care systems and tools, and

- telehealth and education capabilities.

Supporting Enablers include:

- leadership and governance,

- usability, performance and availability,

- privacy and security,

- cost effectiveness and collaboration, and

- IT and network infrastructure.

5.1.2 Regional vs. District vs. Local

CCM requires the coordination of services and the implementation of supporting systems primarily at a local and district level.

There are requirements that need regional capability but in most cases a local or district approach, supported by regional collaboration, rules and standards will work best. Where there is a significant degree of commonality between local, district and regional requirements a coordinated regional response is likely to work best.

5.1.3 Requirement Priority

Through the consultation some requirements were considered a higher priority than others. Priority is based on the perceived positive impact of meeting the requirement and the ability to implement the required capability. For example electronic discharge and referrals is considered a high priority as it would have a high positive impact and could be implemented within current environments. Conversely personal health record tools are a low priority, given that while they also have a high impact, implementation would be more difficult in the short to medium term. Clearly requirement priority will change over time.

The current requirement priority is indicated in the requirements using a rating of High, Medium, or Low.

5.2 IS Capabilities

5.2.1 Information Flows between stakeholders

CCM and clinical practice in general is evolving towards multidisciplinary approaches to care which place increased demands for information sharing in order to achieve effective coordinated care. For example diabetes patients require a range of health care workers to provide assessments and treatments.

However current information flow capability between primary and secondary care even in the traditional GP – Specialist context is generally limited across the region. Key information flows such as discharge summaries, clinic letters and referrals are generally manual in the region with consequent delays in transmission which negatively impact approaches to coordinated and integrated care. While it must be noted that in many cases clinical practice is a constraint, technology can support improved information flows.

Such key information interchanges must be delivered through timely electronic messaging between clinical systems that supports a focus on the wellbeing of the patient. This was considered to be the top priority by the majority of stakeholders.

Definition of messaging standards and technical capability requirements could be usefully progressed at a regional level. Implementation would need to be done at a local level.

Requirement	Priority
5.2.1.1 Exchange of key information between clinicians must be delivered through the automated messaging of referrals, discharges, transfers of care, outpatient clinic letters and appointment details / status updates.[3]	H
5.2.1.2 Exchange of key information must be based on agreed data standards. Information must be coded where appropriate.	H

[3] The electronic transfer of referrals, discharges and clinic letters, and the creation of an integrated clinical record were commonly considered the top priorities across stakeholders. It was commented that these were a higher priority than providing shared access to a common primary/chronic care patient record.

5.2.1.3 Exchange of key information must be timely, reliable and accurate.[4]	H
5.2.1.4 Information must be exchanged across all stakeholders and not just between chronic disease specific secondary services and general practice. Information exchange with tertiary and other secondary services and community providers/NGOs is essential in ensuring a focus by all stakeholders on the wellbeing of the patient.	H
5.2.1.5 Information must be exchanged with service and lifestyle coordinators within DHB, PHO or NGOs where they have a role in coordinating care.	H
5.2.1.6 Clinical practice must support improved information flows and the need to change business process must be considered ahead of any technology change. The implementation of any technology, such as electronic messaging, must be an enabler of improved clinical practice.	H
5.2.1.7 Referrals should be based on agreed standard processes and guidelines. Consistency in referring practices should be supported by regular feedback.	M
5.2.1.8 Where appropriate, referrals should be automated based on adherence to agreed criteria and processes.	L
5.2.1.9 Where booking rules allow, it should be possible to directly book specialist appointments online based on agreed criteria and access rules, eg. ECG, respiratory, radiology, stress test etc.	L

5.2.2 Electronic Clinical Decision Support

There is already significant activity surrounding the provision of electronic clinical decision support capability within the Midland region. Provision of electronic clinical decision support capability will be a key enabler.

Local requirements differ between organisations and locations. Decision support systems must be patient focused and meet the needs of the local stakeholder and therefore need to be implemented locally. Decision support systems should also support district and regional requirements and the capture of data for analysis and planning purposes.

There is potential value in taking a regional approach in managing the relationship with BPAC to coordination implementations and maximise value for money.

Requirement	Priority
5.2.2.1 Patient specific decision support must be provided to primary care clinicians at point of care, integrated within their existing systems and processes.[5]	H
5.2.2.2 Local requirements differ between organisations and locations. Decision support systems must meet the needs of the local clinician.[6]	H
5.2.2.3 Decision support systems should support district and regional requirements and the capture of data for analysis and planning purposes.	H
5.2.2.4 Decision support systems should not be specific to a particular chronic condition but support multiple conditions and be capable of evolving to meet the changing needs of CCM by primary care. The initial focus for decision support systems is diabetes, cardiovascular and renal disease.	H
5.2.2.5 Decision support systems must comply with national guidelines and standards and ensure that the advice given is reliable and accurate	H
5.2.2.6 Decision support systems should provide: • support for provider workflow including referral management, • access to evidence based guidelines , • real time advice and alerts based on defined rules, • identification and flagging of individuals with chronic conditions, • patient care planning ,	H

[5] Clinician decision support is seen as the starting point for supporting effective management of chronic conditions by primary care clinicians. The Best Practice tool has emerged as the default standard for the region and will be implemented widely in 2008.

[6] Decision support is a local requirement, not a regional requirement. It should however cover the needs of all primary care providers including NGOs and care coordinators

- data that forms part of the patients ongoing record (typically within a PMS),

- context sensitive educational material for clinician and patient, and

- data for analysis and planning.

5.2.2.7 Cultural best practice must also be facilitated.	H
5.2.2.8 Providers must have access to trusted sources of information and guidelines, as well as decision support capabilities	H

5.2.3 A widely accessible Core Clinical Record

All providers should have access to core clinical information for primary and secondary services: laboratory results, radiology results, medication history, referrals, discharges, transfers of care, contacts and interactions, and alerts and flags, for patients with chronic conditions from across the region. Access to the record, appropriate to the role of the user, needs to be provided to all stakeholders including the individual patient.

This was considered to be a high priority by the majority of stakeholders.

However opinion suggested that detailed information such as consultation and progress notes need not constitute part of this record. Thus not all patient record information held by providers should be replicated in a core clinical record – such information should be messaged between providers as appropriate and necessary. The core clinical record should be designed from a patient perspective.

Implementation of a core clinical record should focus on interactions at a district level, and for tertiary services outside the district, and would incorporate the objectives of the current Regional Diabetes Information System (RDIS) project. There is benefit to be gained from initiating a regional project to define standards and guide local and district investment

Requirement	Priority
5.2.3.1 All stakeholders must have access to a core set of clinical information at patient level across primary and secondary	H

services at district and regional level[7] [8]as appropriate. The core elements are:

- laboratory results,

- radiology results and images,

- medication history (including hospital and community dispensing and prescribing),

- referrals, discharges, transfer of care,

- contacts and interactions across primary and secondary providers, and

- alerts and flags for those patients with chronic conditions.

- Immunisation history

5.2.3.2	Appropriate access to core clinical information must ultimately be provided to the patient. The core clinical record should be designed from a patient perspective.	H
5.2.3.3	Data must be integrated from all stakeholders and use the patient NHI as the primary index. Interfacing with the HPI must also be supported.	H
5.2.3.4	An agreed data standard, covering content and format, should be agreed and implemented across Midland Region to facilitate consistent access to data.	H
5.2.3.5	Data must support national standards and nationally mandated datasets where appropriate.	H
5.2.3.6	Data must be derived as a by-product of clinical practice.	H
5.2.3.7	Data should be available in real time.	H

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[7] Having access to an integrated core clinical record at district level yields the most benefit given that most patient interactions occur within a district. There is though benefit to extending this capability to a regional level to cater for tertiary referrals and other patient flows and this should be considered up front.

[8] The electronic transfer of referrals and discharges, and the creation of an integrated core clinical record were commonly considered the top priorities across stakeholders. It was commented that these were a higher priority than providing shared access to a common primary/chronic care patient record.

5.2.3.8 Access to the core clinical record should support rather than replace traditional communication processes, and traditional handovers of patient care between providers.	H
5.2.3.9 Access to core clinical information at a district or regional level should be integrated with existing clinical systems eg. from within the clinical decision support system or practice management system.	M

5.2.4 Chronic Care Information Systems

Effective chronic care requires information systems that ensure ready access to key data on individual patients as well as populations of patients.

GPs and Hospital providers generally have access to some functionality via patient management systems and electronic health records. However many primary care providers lack even basic functionality.

Support for a coordinated team based approach to care that works across organisational boundaries is a critical requirement. Thus non GP providers must be catered for with similar levels of patient management and clinical system capability.

All clinical stakeholders should contribute data to, and have access to, an integrated chronic care record where access is consented by the patient.

Initiatives to improve system capability and access to information need to be led at a PHO level with support at a district level.

Requirement	Priority
5.2.4.1 Support for a coordinated team based approach to care that works across organisational boundaries[9] is a critical requirement. Thus non GP providers must be catered for with similar levels of patient management system and	H

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[9] Most primary care services are at a district / PHO level and the need to coordinate services and share patient level information beyond the given PHO or district in this respect is best met through improved referral processes. There is value in allowing access to the primary care record to secondary care based coordinators, but integrating the full clinical records of primary and secondary providers is not a major requirement.

clinical system capability.

5.2.4.2 Overall care coordination for individuals with chronic conditions should reside in primary care. Care coordination must be supported by access to reliable and timely case management systems and information.[10] The role of care coordinators in screening and proactive management must be supported by information and systems.	H
5.2.4.3 Information systems must support the use of clear patient care pathways and continuity of care within the multi-disciplinary team.	H
5.2.4.4 All clinical stakeholders should have access to an integrated chronic care record[11] that provides:	H

- identification and flagging of individuals with chronic conditions,

- access to chronic care review and disease coding data,

- consultation, referral and secondary service discharge history,

- recall prompts and alerts based on defined rules,

- patient care planning,

- identification of lead provider/care coordinator,

- referral and case management,

- access to decision support systems, and

- support for proactive health promotion, prevention,

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[10] The consultation highlighted that care coordination roles exist in multiple organisations (DHBs, PHOs and NGOs) and do not always coordinate the full range of services an individual is accessing (eg. Retinal screening, podiatry, community services etc..). This may be an area where clarity in business processes and structures and/or improved information and technology capability is needed.

[11] An integrated chronic care clinical record is a local or district requirement and should cover the needs of all primary and community care stakeholders including NGOs, care coordinators, pharmacists etc..

screening activities.

5.2.4.5	Data must be integrated from all stakeholders and use the patient NHI as the primary index. Interfacing with the HPI must also be supported.	H
5.2.4.6	Local requirements differ between organisations and locations. Chronic care clinical systems must meet the needs of the local clinician.	H
5.2.4.7	Chronic care clinical systems should support district and regional requirements and the capture of data for analysis and planning purposes.	H
5.2.4.8	Chronic care clinical systems must comply with national guidelines and standards as appropriate.	H
5.2.4.9	Good data quality must be facilitated by source systems such as primary care practice management systems. For example good coding of diagnoses should be facilitated.	H
5.2.4.10	Chronic care clinical systems should be capable of evolving to meet the changing needs of CCM by primary care.	M
5.2.4.11	Transfer of patient records between primary practice patient management systems must be possible electronically.	L

5.2.5 Data Analysis and Reporting

Access to good quality data and the ability to generate useful information through the analysis and reporting on such data is required by DHBs, PHOs and other stakeholders. Although this already occurs to a certain extent, there are shortfalls and variations of capability within the region. This impacts the ability of stakeholders to monitor and plan the provision of services in the sphere of CCM.

There is a need to be able to seamlessly access data and reports at a local, district, or regional level as appropriate to support service planning and operational management activities. To enable this, agreement of regional data architecture and reporting requirements should be reached first. This would support subsequent implementation of data analysis and reporting capability and local, district and regional levels.

Requirement	Priority
5.2.5.1 Access to robust data for analysis and planning is a requirement for all stakeholders. There is value in being able to seamlessly access data at local, district or regional level as appropriate.[12]	H
5.2.5.2 Health planners, funders and managers must have access to robust data for [13] • quantifying, measuring and monitoring changes in chronic care and outcomes across a defined population and region over time, • improving the strategic and operational management of chronic disease, • guiding and evaluating health service planning and purchasing, • population health needs assessment, analysis and reporting, • identification of PHO enrolled population risk profiles, • quantifying, measuring, monitoring and targeting the use of interventions and health services, • quantifying, measuring and monitoring the performance of service providers, • practitioner benchmarking, • support cardiovascular and diabetes risk assessment and management programmes.	H
5.2.5.3 Clinical audit capability is required by clinical stakeholders	H

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[12] The requirement to access data for analysis and planning is common across all stakeholders, although the specific data required will differ. Starting with the common requirement to access to data and then catering for the differences may allow a more integrated and effective solution to be designed. Focusing on the differences first is more likely to result in multiple solutions based on organisational and stakeholder boundaries and be a barrier to integration.

[13] Health Service Providers require similar data to enable them to monitor and improve the operational management of the services they deliver. This requirement exists at a local (and possibly district) level but not at a regional level.

for a variety of uses including:

- highlighting the impact of a variety of factors on the local population e.g. geography, treatment strategies,

- identifying trends, and

- monitoring caseloads, including outpatient analysis.

5.2.5.4 Data must be integrated from different levels of service within primary, secondary and tertiary diabetes services.   H

5.2.5.5 Agreed data architecture and standards, covering content and format, should be agreed and implemented across Midland Region to facilitate analysis and access to data. Agreed data standards must be able to evolve and expand to include all chronic conditions of interest. Diabetes and Cardiovascular Disease are the initial priorities.   H

5.2.5.6 Data must include and support national standards and nationally mandated datasets and reporting. For example DHB Performance Indicators, Get Checked, PHO Performance Programme Service Utilisation and Clinical Indicators   H

5.2.5.7 Access to data for analysis and planning, and the expertise and resources to use that data effectively, must be supported for all stakeholders.   H

5.2.5.8 The use of clinically derived data for analytical purposes must be clearly highlighted and explicitly defined upfront.   H

5.2.5.9 Existing sources of data for analysis and planning should be leveraged as appropriate and not replicated at regional level. For example, local datasets such as those within a practice management system will remain the best source of data for local decision making, and national datasets provide an ability to benchmark nationally that a regional dataset cannot.   H

5.2.5.10 Data is not required to be available for analysis and planning in real time. It should however be available in a timely fashion appropriate to its intended use. (eg. Data used for monitoring performance must be available in time to inform and influence changes in performance).   H

5.2.5.11 Data and reports should be accessible in industry standard formats for access by a range of technology   H

tools. They should be accessible in a range of formats appropriate to the users, such as dashboard reporting, multi level drill down, published reports (PDF or Word format), datasheets and pivot tables

5.2.5.12	Ad-hoc reporting must be supported.	H

5.2.5.13   Reporting should be available for operational management of service provision, including: **H**

- reporting, eg. to highlight consumers who are overdue for screening / recall,

- targeting groups of patients according to need and cost effectiveness of interventions,

- quantifying, measuring, monitoring and targeting the use of interventions and health services,

- quantifying, measuring and monitoring the performance of service providers,

- practitioner benchmarking,

- support the cardiovascular and diabetes risk assessment and management programmes, and

- information on referral patterns, attendances and DNAs from secondary service provider to GP.

5.2.5.14   Reports should always specify the source of the underlying data, the author and the date and time the report was created.   **L**

5.2.5.15   Access to data at the appropriate level for reporting must be automated for users and not require intervention by a third party.   **L**

5.2.5.16   Sharing of reports and datasets for offline analysis must be supported.   **L**

5.2.6 Self care systems and tools

Effective self management support acknowledges the empowerment of the patient in managing their health. This is reflected in current NZ Health Strategy and supported by Midland region stakeholders. There is already significant activity in this area with the utilisation of the Flinders model of self care and patient held records in some settings.

Empowering the patient is a key objective and more comprehensive systems such as electronic personal health records will be an important enabler. However, while the individual may have greater ownership of their own health outcomes they must also have trust in a coordinated and effective health system. It is important to get the health system right first and focus on access to clinical information and systems by health providers and reducing inequalities of healthcare delivery.

There are some information tools that may facilitate self management at a variety of levels. The provision of relevant reliable disease information and self assessment tools are examples of simple resources. More comprehensive systems such as electronic personal health records are generally seen as inevitable but not imminent and the common view is that it is important to get the health system right first and focus on access to clinical information and systems by health providers.

Requirement	Priority
5.2.6.1 Information and systems should be implemented that empower an individual and their family/whanau to manage their condition and foster ownership. However, while the individual must have accountability for their own health they must also have trust in a coordinated and effective health system. It is important to get the health system	M

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[14] It was a common view through the consultation process that empowering patients to own and manage their own condition was a key objective. Business processes and strategies are already being implemented (eg Flinders training and patient held care plans) in support of this goal. The requirement to support coordination of health services is also a high priority and must be addressed through improved information flows and access to integrated data between providers.

right first.[14] [15]

5.2.6.2 Individuals should have access to information about their own health eg. patient held care plans, and online access to appropriate information in provider health records.	M
5.2.6.3 Individuals should have online access to quality, trusted education and reference information including risk assessment tools, care planning tools and lifestyle advice. Appropriate online information should also be available in brochure form.	M
5.2.6.4 Individuals should have online access to view and update administrative details and view and book appointments.	L
5.2.6.5 Individuals should have the ability to administer their own records to grant or restrict access and add personal health content such as self monitoring information.	L
5.2.6.6 Individuals should have the ability to share their experiences and join peer support networks using a suitable online environment.	L

5.2.7 Tele-health and education capabilities

A variety of technological capabilities can facilitate the provision of healthcare in a remote fashion for people with chronic conditions. The use of videoconferencing, remote viewing of images / scans and even email enables care to be delivered at a distance.

In a similar fashion such technologies can also facilitate the provision of education to providers and tie in with formal continuing education programmes.

The infrastructure required to support increased tele-health needs to be assessed. Initiatives will be best provided at a district or local rather than regional level.

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[15] The implementation of self care capability should sit with primary care and be considered a local or district level requirement (as is the case with primary care clinical systems).

Requirement	Priority
5.2.7.1 Technology and systems should enable and support access to specialists and collaboration between stakeholders across distance.[16] Consultations for some remote consumers need to be facilitated via robust teleconferencing capability.	M
5.2.7.2 Information systems must ensure that providers are supported in remaining current in their knowledge and skills including skills in behavioural change and patient education.[17]	M
5.2.7.3 Systems should support remote monitoring of patients.	L
5.2.7.4 Online interactions such as e-mail consultations should be captured and linked to the patient record.	L

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[16] Some telemedicine initiatives are in place particularly in Mental Health and Paediatrics through the use of video-conferencing while e-mail exchange of information between clinicians, and between clinicians and patients is commonplace

[17] Requirements around education did not emerge as a major priority during the consultation process. Outside of the context of information systems, education and workforce development is a major priority both regionally and nationally and it is likely that further requirements will emerge.

5.3 Supporting Enablers

5.3.1 Leadership and Governance[18]

Strong and explicit leadership and governance is needed to drive a health system focus on the patient, guide the collection and use of data and information systems capability at both a regional and district level, ensure that the information and system needs of all stakeholders are considered, and ensure buy in and adherence to the principles and access rules that are established. Successful clinical initiatives require strong clinical championing.

Leadership and governance requirements need to be addressed upfront.

Governance must appropriately represent all key stakeholder groups. It should be based on a partnership between primary and secondary providers and funders and the community. The focus is on empowering the individual and the integration of health data across stakeholders within a framework that supports population health outcomes.

Requirement	Priority
5.3.1.1 A partnership model between primary and secondary care providers and funders and the community, with a focus on population health benefits and empowering the patient must be adopted.	H
5.3.1.2 Strong and explicit leadership and governance is needed to guide the collection and use of data and information systems capability at a regional and district level, ensure that the information and system needs of all stakeholders are considered, and ensure buy in and adherence to the principles and access rules that are established.[19]	H

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[18] These requirements focus specifically on governance of information systems. Governance requirements for CCM encompass a wider range of business and clinical requirements that are not included here however it is likely that the structures used to meet the information system governance requirements would be the same as those used to meet other requirements. This model has been used for the existing LDT's.

[19] The consultation process has shown that there is currently a lack of distinction and agreement on who "owns" access to data at an individual patient level. While the DHB has overall responsibility for population health, PHOs have that same responsibility for their enrolled population and are closer to CCM as chronic care clearly sits in the community setting delivered by a primary heath care team. The requirement for integration and access

| 5.3.1.3 | Governance must appropriately represent all key stakeholder groups from across the region. Key stakeholder groups include[20] | H |

- Consumers,

- Health planners and managers,

- Primary care clinicians,

- Clinical specialists,

- Kaitiaki,

- Community representatives,

- Data Owner, and

- Data Custodian/Steward.

| 5.3.1.4 | Governance of the management and use of local information and systems must remain with the local organisation. District and regional governance is concerned with information and systems needs across stakeholders. | H |

| 5.3.1.5 | It must be recognised that local and district needs will differ across the region and it will be necessary to cater for those, while seeking regional consistency. | H |

| 5.3.1.6 | National guidelines and legislative requirements must be adhered to. | H |

| 5.3.1.7 | The motives for data collection, analysis and aggregation need to be clearly communicated and agreed with all stakeholders and the public. | H |

| 5.3.1.8 | To ensure that clinical data is captured in a way that supports subsequent decision making and avoids duplications, standards need to be developed. | H |

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to data at a district and regional level indicates though that a governance structure that crosses organisational boundaries is needed. This is achievable at a district level and, while difficult, still possible and desirable at a regional level.

[20] Local Diabetes Teams or similar existing structures may provide the basis for governance at a district level.

5.3.2 Usability, Performance and Availability

Healthcare providers are notoriously busy and deal with high workflows. Therefore access to information and systems needs to be unobtrusive and facilitate workflow rather than impose a time overhead. Anything less than this in terms of performance and design will obstruct uptake and confidence in such tools.

Various aspects of system design were raised as desirable features to aid usability and performance such as integration or accessibility of functionality via existing practice management systems where possible, avoidance of duplicate data entry, and the use of data derived as a byproduct of clinical activity for administrative purposes where possible.

Such requirements were consistent across all stakeholders and will need to be considered and met on a case by case basis.

Requirement	Priority
5.3.2.1 Access to information and systems must be unobtrusive and facilitate clinician workflow. Immediate value needs to be provided through real time workflow improvements wherever possible.	H
5.3.2.2 Systems must be responsive and reliable. Real time systems and information (online where possible) are critical during a consultation.	H
5.3.2.3 Duplicate entry of data and superfluous navigation steps must be avoided.	H
5.3.2.4 Administrative data must be generated as a by-product of clinical practice.	H
5.3.2.5 Systems should not be specific to a particular chronic condition but support multiple conditions and be capable of evolving to meet the changing needs of CCM.	H
5.3.2.6 Access to information and systems must integrate with existing systems (where they exist) and not require additional authentication or navigation steps.	M
5.3.2.7 Access to information and systems is required in a variety	M

of settings and should be supported on a range of devices. A common and consistent approach to the design of user interfaces will support district and regional approaches and benefits.

5.3.3 Privacy and Security

A variety of views were expressed on how privacy and security requirements should be met. It is apparent that principles, security standards and access rules must be established that define how access to patient data and systems at a district and regional level is to be governed and managed. A privacy framework could be developed by the region.

Integration of health data and access to it across stakeholders is a critical requirement. Privacy and security principles must comply with current privacy legislation but equally should not unreasonably prevent or hinder integration of information.

Some stakeholders suggested the messaging of patient information between providers rather than utilising large shared repositories. While this might bypass some of the potential privacy debates it is clear that repositories of some core clinical data is a high priority and will require a clear framework to deal with privacy requirements.

Requirement	Priority
5.3.3.1 Principles, security standards and access rules must be established that define how access to patient data and systems at a district and regional level is to be governed and managed. Management and use of local information and systems should remain with the local organisation.	H
5.3.3.2 Integration of health data and access to it across stakeholders is a critical requirement whilst complying with current privacy legislation.	H
5.3.3.3 Security and Privacy standards must comply with legislative requirements while supporting access to information by a dispersed, diverse and mobile stakeholder group.	H

5.3.3.4 The identity of an individual must be established and verified before access to information and systems is granted. Where appropriate identity management controls should be integrated with the users existing systems. H

5.3.3.5 Information and systems must support role based access so that an individual user is able to access information relevant to their role, but prevented from accessing information that is inappropriate. H

5.3.3.6 Access rules must take into account: H

- the population health benefit to be gained through integrating and sharing the data,

- the benefit to individual health outcomes to be gained through integrating and sharing the data,

- what data should be shared and accessed, by whom, under what circumstances and how (information flows between providers, or shared views / repositories),

- ensuring that data is only used for the purpose it was intended,

- cultural considerations[21],

- the privacy of the individual and the role of the patient in managing their own care, and

- commercial and data ownership[22] considerations,

5.3.3.7 Access to data and systems in accordance with access rules must be enabled by default and automated where possible. Access to data outside of these rules must have the explicit agreement of the data owner, data custodian/steward and individual (if the data is at individual level). H

5.3.3.8 Breaches in access to data must be proactively audited and measures to address breaches must be explicit. H

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[21] Ensuring that cultural issues and considerations are included has emerged as a major requirement.

[22] Concerns around data ownership have emerged through the consultation as a significant barrier to information sharing and integration.

Requirement	Priority
5.3.3.9 Consumers must be informed how data is going to be utilised at the time of enrolment / registration of a given service / PHO etc.	H
5.3.3.10 The implementation and operational management of principles, security standards and access rules must be practical and sustainable.	H

5.3.4 Cost effectiveness and Collaboration

District and regional initiatives should leverage the systems and infrastructure that already exist and build on that investment. A collaborative approach needs to be adopted across the region in relation to the implementation and ongoing support and development of systems.

Criticism has been noted at the lack of such collaboration in the past, especially given the relatively small size of many of the entities concerned.

Requirement	Priority
5.3.4.1 Information systems at a regional level must recognise the local and district systems and infrastructure that are in place and seek to build on that investment. Current initiatives should also be leveraged where possible.	H
5.3.4.2 A regional or district approach should be adopted to the implementation and ongoing support/maintenance/development of systems where it has the potential to support information sharing or save/share costs through economies of scale, without compromising local needs.[23] Avoidance of "re-inventing the wheel" in each district is a potential driver for regional initiatives, which does not necessarily mean that eventual systems that are implemented have to be "regional" systems.	H

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[23] The implementation of decision support systems is currently an opportunity for a regional or district approach.

5.3.4.3 Information systems should be implemented incrementally where possible to reduce risk and spread costs. Systems should be capable of evolving to support changing needs and a broad CCM approach across stakeholder groups. | H

5.3.5 IT and network infrastructure

Ubiquitous access to information and systems is a fundamental prerequisite for CCM in the Midland region. Information and systems need to be accessible by all stakeholders from a range of devices and locations. It has been noted that connectivity in some rural settings is problematic or of poor quality.

Access to basic IT and network infrastructure is a fundamental enabler. It has been noted that the level of IT capability varies widely across stakeholders in the Midland region.

Requirement	Priority
5.3.5.1 All stakeholders must be supported by reliable IT and network infrastructure.	H
5.3.5.2 Information and systems must be accessible from any location. Access by mobile providers must be supported and is a key requirement.	H
5.3.5.3 Stakeholders who provide services in remote areas must have the ability to work when there is limited connectivity or no connectivity.	H
5.3.5.4 Information systems must integrate with existing systems and infrastructure wherever possible. Standardised infrastructure must be used where possible.	H
5.3.5.5 Organisations should utilise managed infrastructure where appropriate e.g. shared hosting to increase IS capability, without compromising privacy and data ownership.	M
5.3.5.6 Information and systems should be able to be accessed	M

via a range of devices.

5.3.5.7 Existing mobile phone technology should be leveraged in providing information to stakeholders eg text messages reminding patients of their next appointment. M

Appendix A: Current State

Capabilities	Details
Primary Health Practice Management System Capability	MedTech32 predominantly, with Profile, MyPractice and Houston VIP also employed within GP practices. Some non GP providers also utilising such PMSs. Some shared infrastructure and hosting is employed by Rotorua General Practice Group (RGPG) practices.
Decision Support	BPAC has been selected by a number of PHOs as a preferred electronic clinical decision support platform. There are significant trials and implementations of the BPAC decision support tool throughout the region within primary care.
Hospital Patient Management System / Clinical Record Capability	Lab / Radiology results, Clinic Letters and Discharge Summaries are generally available electronically within hospital clinical systems.
Shared Laboratory Repository - Primary Secondary	Most districts have separate community and secondary laboratory repositories. A combined repository which holds both community and hospital derived lab results exists in the Bay of Plenty.
Specialised Disease Registers / Databases	A specialist diabetes database application is currently in use in Waikato.
Electronic Discharge Summaries messaged to GPs	Taranaki DHB currently electronically messages all inpatient discharge summaries to GP PMSs. This is under development in other Midland districts. Some technical issues regarding the formatting of results upon arrival at the GP system are impeding usage in other districts. An approach of installing and managing dedicated terminals in a hospital ED to facilitate the collection and transmission of information to primary care has been tried in Taupo.
Electronic Referral Capability	Some electronic referral systems are being utilised or under development within the region. An example includes electronic referrals to healthy lifestyle coaches within Rotorua.
Shared Primary Record	North Waikato PHO is employing a shared primary record which is utilised by all non GP providers, and updates the GP PMSs. A shared web based record is being developed by Pinnacle Group Ltd.
Regional Diabetes Information Service	A regional diabetes information service is being developed within Waikato in conjunction with Pinnacle. It will consolidate data from a variety of sources and interface with various existing clinical systems.
Secure messaging	Secure email based messaging amongst selected secondary and primary providers is being utilised within Rotorua.
Web Accessible Reporting	Web based reporting functionality provided to Pinnacle PHOs

Managed Services	Pinnacle Group Ltd provide managed services, including IT infrastructure and reporting, to PHOs throughout the Midlands region including Waikato, Kawerau, Taupo, Taranaki, (Thames?), and Turanganui PHOs. Southlink provides managed services, including some IS services, to some PHOs in the Bay of Plenty region.
Consumer Kiosks	Kiosks containing localised provider information and simplified risk self assessment tools are being trialled within the Waikato PHO / Pinnacle.

Appendix B: Midland Region Stakeholders

The following individuals participated in, and contributed to, the development of these requirements.

Participant	Role/Organisation
Mike Agnew	Portfolio Manager, Bay of Plenty DHB
Phil Back	Portfolio Manager, Bay of Plenty DHB
Kelly Bullen	Portfolio Manager, Bay of Plenty DHB
Sian Erasmus	Clinical Nurse Specialist Diabetes, Bay of Plenty DHB
Orana Harris	Nga Mataapuna Oranga PHO, Bay of Plenty
Richard Harrison	Information Analyst, PIP, Bay of Plenty
Andy Humphrey	GP Liaison, Bay of Plenty DHB
Vincent Kihirini	Group Exec Officer Nga Kakano Foundation, Bay of Plenty
Helen Mason	GM Planning and Funding, Bay of Plenty DHB
Donna McArley	Western Bay of Plenty PHO
Leanne Morehu	Te Ao Hou PHO, Bay of Plenty
Michelle Murray	Portfolio Manager, Bay of Plenty DHB
Marja O'Connor	Eastern Bay of Plenty PHO
John Porima	Consultant Nga Kakano Foundation, Bay of Plenty
Martin Steinmann	Nga Mataapuna Oranga PHO, Bay of Plenty
Roger Taylor	Western Bay of Plenty PHO
Cynthia Turuwhenua	Portfolio Manager, Bay of Plenty DHB
Peng Voon	Business Leader Medical Services, Bay of Plenty DHB
Jennifer Anastasi	Clinical Manager, Rotorua General Practice Group
Eugene Berryman-Kamp	CEO, Health Rotorua PHO
Nic Crook	Diabetologist and General Physician, Lakes DHB
Wendy Gifford	Clinical Nurse Specialist, Diabetes, Lakes DHB
Gail Goodfellow	Portfolio Manager, Lakes DHB
Suzanne Gower	Portfolio Manager, Lakes DHB

Participant	Role/Organisation
Lisa Hughes	Rotorua GP Liaison, Lakes DHB
Gillianne Meek	Associate Director of Nursing, Lakes DHB
Jeremy Mihaka-Dyer	CEO, Taupo PHO
Johan Morreau	Medical Director & Paediatrician, Lakes DHB
Vanessa Russell	Portfolio Manager, Lakes DHB
Mary Smith	GM Planning and Funding, Lakes DHB
Rosemary Viskovic	Portfolio Manager, Lakes DHB
Alex Wheatley	CIO, Lakes DHB
Mike Williams	General Practitioner, Rotorua
Roger Willis	General Practitioner, Rotorua
Keith Wright	Portfolio Manager, Lakes DHB
Harry Barber	CIO, Tairawhiti DHB
Virginia Brind	Portfolio Manager, Tairawhiti DHB
Keriana Brooking	Turanganui PHO
Helene Carbonatto	GM Planning and Funding, Tairawhiti DHB
Ian Diamond	Business Support Analyst, Tairawhiti DHB
Bruce Duncan	Chief Medical Advisor, Tairawhiti DHB
Shirley Keown	Turanganui PHO
Karen Lorigan	Group Manager, Adult Services, Tairawhiti DHB
Albie Stewart	Turanga Health
Caroline Thompson	Ngati Porou Hauora
Jocelyn Tracey	Ngati Porou Hauora
Sandra Boardman	GM Planning and Funding, Taranaki DHB
Andrew Brock	Pinnacle Taranaki PHO
Rosemary Clements	Clinical Ambulatory Service Manager, Taranaki DHB
Warwick Gilchrist	Portfolio Manager, Taranaki DHB
Lesley Kelly	Te Tihi Hauora O Taranaki PHO

Participant	Role/Organisation
Lee McManus	Nurse Manager, Outpatients, Taranaki DHB
Narius Patel	Pinnacle Group Limited
Dean Raven	Tui Ora
Hayden Wano	Hauora Taranaki PHO, Tui Ora
Trish Anderson	Practice Manager/Consultant, Hauraki PHO
Revathi Balakrishnan	Strategic Planner, Waikato DHB
Shelley Campbell	CEO Waikato PHO
Peter Dunne	**Clinical Director, Diabetes Service, Waikato DHB**
Karina Elkington	Portfolio Manager, Waikato DHB
Hugh Kininmonth	CEO, Hauraki PHO
John Macaskill-Smith	CEO Pinnacle Group Ltd
Neil McKelvie	**Service Manager, Medicine, Waikato DHB**
Brett Paradine	GM Planning and Funding, Waikato DHB
Linda Rademaker	GP Liaison Waikato DHB,
Regan Webb	Analyst, Waikato DHB
Waikato Local Diabetes Team	Waikato Local Diabetes Team
Wayne McLean	CEO, North Waikato PHO
Julie Wilson	Senior Funding Manager, Waikato DHB
Steve Creed	**Programme Manager, Key Directions**
Sandy Dawson	Chief Clinical Advisor, Sector Capability and Innovation Directorate, Ministry of Health
Dougal McKechnie	**HISAC**
David Thompson	**Enigma**
Murray Tilyard	**BPAC NZ**

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Appendix D: Interview Template

Background and Current State

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General

- Organisation.
- Highest priority chronic conditions.
- Current CCM related initiatives and structures.
- Major initiatives envisioned in the near future.

Information Systems

- Current data collections for chronic conditions particularly for diabetes, CVD.
- Local databases in place.
- Current systems and technology used to support CCM.
- Technological initiatives in progress.
- Electronic decision support tools used currently?
- Current IS capabilities for primary care providers. MT32 etc?

Current stakeholders

- General Practitioners
- Secondary Medical Specialist
- Any specialist care coordination type roles?
- Secondary Diabetes Nurse Specialist service
- Secondary Cardiac Care / rehab Nurse Specialist service
- Practice Nurses
- Other primary care Nurses
- Allied: - Podiatry, others

What IS infrastructure do they

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currently employ?	
Current shortfalls in chronic care management. Business process shortfalls: - Screening – prevalence, risks, complications? - Difficult processes? Referrals, transfers of care - Lack of care integration? - Inequalities in care IS Capability shortfalls: - Lack of population data? - Lack of access to data – records and referrals? - Lack of access to clinical evidence and guidelines?	

Vision for CCM

Special requirements with respect to CCM and the systems that could assist CCM in the future. Other stakeholders / structures / models of care that are envisaged. - Multidisciplinary approaches - Integrated care approaches - New services What IS capability might be required to support these?	

Clinical requirements and possible IS enablers along the disease continuum - Checklist

Stage of care	Clinical Requirements and possible IS enablers
Prevention & Health Promotion - Educational tools	

- Decision Support tools - Data collection and audit - Other	
Screening - Electronic Decision support - Data collection and audit - Other	
Self Management - Personal Health Records - Educational and Management tools - Remote technologies - Other	
Disease Management / Primary Care - Electronic Decision support - Data collection and audit - Telemedicine enabling technologies - Other	
Complicated Care / Specialist Management - Electronic Decision support (secondary care) - Data collection and audit - Telemedicine technologies – e.g. remote secondary specialist consultations	
Which of these above initiatives and requirements would be of the highest priority?	

Generic High Level Requirements

Privacy, Security and Identity management	
Usability, Performance and availability.	

Appendix E: Glossary

CarePlus

Care Plus is a nationwide primary health care initiative which provides additional funding to PHOs for people who have to visit GPs or practice nurses more frequently due to chronic conditions, acute medical or mental health needs, or terminal illnesses. It is to replace the High Use Health Card.

Get Checked

A national program funded by the Ministry of Health to provide free annual check to diabetes patients by a GP or GP practice nurse.

One of the objectives of the program is to update information in the diabetes register which is used for clinical audit and planning.

HealthRight

This is a chronic care management framework developed for use in the Pinnacle network of PHOs. It was designed to be locally adaptable in order to reflect the priorities, existing resources, budget and defined needs of the individual PHOs and even communities within PHOs.

Information systems requirements are encompassed within the HealthRight framework.

HEHA

The Healthy Eating Healthy Action (HEHA) is a national strategic approach to improving nutrition, increasing physical activity and reducing obesity for all New Zealanders. Implementing HEHA will help to reduce some type 2 diabetes and CVD, but also may assist in preventing some cancers and assist with alleviation of some symptoms of arthritis.

Lets Beat Diabetes (Counties Manakau DHB)

Let's Beat Diabetes is a five year plan within the Counties Manukau district to reduce the burden of diabetes by instituting a variety of changes within the community taking a holistic approach. It also recognises the significant existing activity within the district regarding type II diabetes. An example of one of the initiatives was the reduction of sugar content in some locally supplied soft drinks.

PHO Performance Programme

The PHO Performance Programme was designed by primary health care representatives, DHBs and the Ministry, and aims to improve the health of enrolled populations and reduce disparities in health outcomes through supporting clinical governance and continuous quality improvement processes within PHOs.

PIP

The Bay of Plenty Primary care information plan initiative is investigating a variety of information requirements for primary care and the interface between primary and secondary care.

Regional Diabetes Information System

The Waikato Regional Diabetes Information (System) (RDIS) is under development currently. It is intended to support the collection and dissemination of patient information at a patient and population level, integrating data from a variety of sources and systems. For example the Pinnacle BISI system and the DHB secondary provider WRDS system. (Davys A – MRDIP)