



Progressing And Transforming Health

Regional Information Strategy 2010 to 2020

The PATH to the Future

8 December 2009



HE MIHI

E nga iwi, e nga reo, e nga mana tena ra koutou katoa.

Tuatahi: nga mihi aroha ki to tatou matua nui I te rangi mo te aroha e homai kia tatou te kanohi ora e nga wa katoa.

Tuarua: Nga mihi aroha kia ratou e hinga mai e hinga atu nei, kia koutou nga tini mate e wheturangitia ki te kaihanganga o te rangi me te whenua haere.haere.haere atu.

Ka huri kia tatou nga kanohi ora tena koutou, tena koutou, tena tatou katoa.

FOREWORD FROM THE NORTHERN REGION CEOs

We are pleased to endorse Progressing and Transforming Health (PATH), the Regional Information Strategy 2010 to 2020 for the northern region. PATH sets out the direction for health information for the decade ahead.

Information management, systems and services are vital enablers of the clinical and business strategies of the DHBs and other health organisations in the region. In the ten year period covered by this information strategy, our DHBs and their community partners will face many challenges, including greater demand from growing and ageing populations who are experiencing increasing chronic conditions.

At the same time as volume and complexity is increasing, the economic environment will require the delivery of quality care with constrained resources. Not only will funding be limited, but workforce shortages will also challenge our ability to deliver care safely and consistently.

In this environment of escalating demand and shrinking resources, significant changes are needed in the way we deliver care. It will not be possible to continue to work in the same way as in the past. We require new models of care to successfully meet the health needs of our populations.

Information management, systems and services offer a critical opportunity for us to develop new ways of working and to change our processes to adapt to the future needs. Clinicians, managers and information services personnel will need to work in partnership to develop innovative new clinical and business processes and the IT systems which will support them.

This plan provides the strategic direction for information management, systems and services and will guide us in making successful and sustainable changes.

We urge you to follow this PATH.



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CEO, Waitemata DHB



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REGIONAL INFORMATION STRATEGY SUMMARY

OVERALL VISION

The Regional Information Strategy for the period 2010 to 2020 (RIS10-20) supports the transformation to new models of care. Strategies across key information areas underpin the development of a person centred model and better, sooner, more convenient healthcare.

Common regional clinical and business objectives inform the vision and approach for each key area. In combination these objectives present a compelling case for the need to change the current approach to information management, systems and services.

Person centred health information will empower people, general practice teams and the wider clinical team to effectively manage care through appropriate access to and use of shared and trusted electronic health records and care plans. From the basis of enhanced information about the person, the region's population health information will be advanced through agreed principles of data collection, sharing and linking (with other agencies) to enable effective clinical decision making and to support planning and funding decisions. This move to shared information where people work with the same core set of data is a fundamental change from previous information strategies which relied solely on the exchange of information; an approach that provided clinicians with little certainty that they had complete and up to date information to care for their patients.

To deliver new models of care, effective knowledge management tools and capabilities will provide awareness of, and easy access to general information, skills and experience. Planning, recruitment and education of the northern region healthcare workforce will be improved through the sharing of regionally consistent, up to date capacity, capability, utilisation and forecasting information. Managers and staff will be able to interact online to support recruitment, employment, development, pay and transfer processes with minimum waste and duplication. Business information will facilitate better performance with an enhanced capability to cost, analyse and report on clinical, financial and volume data. Clinicians will have relevant and useful financial and management information, at the point of care, to inform clinical decision making and to drive the best use of resources. Transformation requires users to have appropriate access to fast, intuitive, robust, stable and trustworthy information systems and services. This will ensure they can participate effectively in the health system, regardless of what they do, where they are and when they require access to these systems.

RIS10-20 acknowledges the significant challenges in achieving this overall health system change. It frames the PATH forward with a set of supporting principles to guide implementation, funding considerations, and roadmaps to illustrate the move from strategy to action.



STRATEGY FOCUS AREAS

RIS10-20 provides strategic direction on information management, systems and services in the northern region. It aligns with national, regional and district information strategies and is a key enabler for primary, community and secondary care organisations to achieve their clinical and business objectives.

While significant progress has been made in the previous five years, this new regional information strategy is designed to support new models of care and associated clinical and business strategies over the next ten years. The immediate future will see increasing emphasis on delivery of care in the primary and community sector, through new mechanisms such as devolution of services from secondary care, multi disciplinary teams, and Integrated Family Health Centres. In future, people will become informed consumers, managing their own care, and accessing personal electronic health records which they will share with their general practice team and the wider clinical team.

An underlying core principle of RIS10-20 is that it will deliver single, regional DHB systems to support common clinical and business processes in the region, with primary and community care organisations actively encouraged and supported to use these systems.

The focus areas for the strategy were defined through a process of district-based workshops followed by smaller targeted workshops with invited subject matter experts. They are:

- Person Centred Health Information
- Population Health Information
- Knowledge Management
- Workforce Information
- Business Information
- IT Infrastructure & Services

PERSON CENTRED HEALTH INFORMATION

The vision for Person Centred Health Information is to establish a person-centric, single, regional Electronic Health Record (EHR). This will be shared by, and will integrate care between, the key stakeholders in a person's care: the person themselves; their general practice team; their wider clinical team. It is envisioned that the EHR could also be used by a wide range of other healthcare providers involved in the person's care.

The person will access their electronic health record to review their personal health information such as lab results, to update their information such as care plan goals, or to make appointments or consult electronically with their GP.

The EHR will be made available through the implementation of a regional Health Management Information System (HMIS), providing a single record shared by the person, their general practice team and the wider clinical team. The HMIS is not a monolithic, all-encompassing system that does everything; it will be required to interface to a range of specialist systems such as laboratory, radiology, pharmacy, national systems such as NHI, and to community providers such as NGOs and mental health providers.

To achieve high quality health care and improve patient safety, by 2014 New Zealanders will have a core set of personal health information available electronically to them and their treatment providers regardless of the setting as they access health services. (Health Information Strategy Advisory Committee (HISAC) Vision 19 May 2009)

The clinical systems strategy of the last ten years has been to exchange information between separate silos of primary, community and secondary care. For the next ten years, the clinical strategy is shared care, where the person, primary, community and secondary caregivers work together for quality health outcomes. The new model of care is focused on person-centric care, including the expert patient and managed self care. An example of this new model of care is the Integrated Family Health Centre which is a key component of national, regional and local strategic plans. The model is also reflected in the proposed devolution of services to primary care. In this model, primary, community and secondary care are no longer separate silos but are merged. The future IT strategy envisions an electronic health record system to support and enable this core health information sharing between person, primary, community and secondary care giver.

POPULATION HEALTH INFORMATION

The vision for Population Health Information is agreed principles of data collection, sharing and linking (with other agencies) to enable improvement in clinical decision making and to support planning and funding decisions that are translated into action and reviewed for effectiveness.

Available population health data is of poor quality, fragmented and not easily accessed. Individual practitioners can, after major effort, collect and report on some of the population health information some of the time, but none can take a district wide or regional comprehensive and aggregated view of population health status, trends and determinants of ill health and wellness.

The strategy includes:

- Collaborating across primary, community and secondary care, Ministry of Health and the health IT industry to establish clear standards, principles and processes relating to the collection and sharing of population health information.
- Building a regional Population Health System (PHS) collecting information primarily from regional Electronic Health Records that delivers actionable health data to health care providers.
- Implementing approaches to enable primary, community and secondary care to easily and systematically collect accurate population health data, and receive timely feedback to drive evidence based clinical action.
- Developing guidelines that clearly describe data governance and privacy, and the different levels of access, aggregation, and reporting of population health information.

KNOWLEDGE MANAGEMENT

The vision for Knowledge Management is to provide easy access to information, skills and experience and to build the capacity and motivation to act in the best interests of people and our communities.

The Knowledge Management strategy is based upon the Information & Knowledge Management framework developed for the metro Auckland DHBs. The objective of this framework is to provide insight to the requirements and priorities for processes and information systems that capture, store, index and provide easy access to documents, web content, staff and service directories and workflows. This ensures people have access to the right information at the right time.

Implementation of the proposed Knowledge Management strategy will assist with compliance with the Public Records Act, and reduce inefficiencies and wasted productivity arising from people trying to find who to contact and the information they need to perform their roles.

WORKFORCE INFORMATION

The vision for Workforce Information is to enable the appropriate planning, recruitment and education of the northern region healthcare workforce through the sharing of regionally consistent, up to date capacity, capability, utilisation and forecasting information across primary, community and secondary care. It will provide managers and staff with the ability to interact online to support recruitment, employment, development, pay and transfer processes with minimum waste and duplication.

The strategy includes:

- Assisting organisations to achieve their workforce requirements by providing a repository of standard, comprehensive, complete and quality workforce planning information for the region.
- Providing a single, regional integrated and comprehensive Human Resources Management System (HRMS). This will have a common staff identifier, a standard integrated staff record, and on-line forms and workflow, to enable the transfer and sharing of staff information between organisations. The HRMS is to be made available to primary and community care organisations who wish to use it.
- Provision of an online community of interest that allows past, current and future staff to share their work, career and personal interests. This online community will enable staff to seek opportunities, and to register their plans and goals. It will include close links to the regional recruitment website, and functionality that enables voluntary tracking of past and prospective employees and career planning and career pathways on how a person can migrate from one career to another.

BUSINESS INFORMATION

The vision for Business Information is to provide business systems that will support common and standard business operations and processes, particularly in the areas of financial management information systems (FMIS), decision support, business intelligence, data warehousing, key performance indicator reporting, procurement, facilities management and asset management.

Currently organisations use a variety of processes and systems, data collection is fragmented, and consistent analysis is difficult. It is difficult to provide clinicians with useful financial information at the point of care to inform clinical decision making that drives the best use of resources. Management of facilities and assets is inadequate for the health business, which is very capital intensive.

RIS10-20 proposes a standardisation of business processes, data definitions, coding and reporting outputs, such as a single chart of accounts, end of month cut-off dates, invoice approval processes and single product catalogue, supported by a regional system. A key starting point is to implement one instance of FMIS for the region's DHBs and offer appropriate services for primary and community care from this platform for finance, procurement and supply chain.

IT INFRASTRUCTURE & SERVICES

The vision for IT Infrastructure & Services is to provide people with appropriate access to fast, intuitive, robust, stable and trustworthy information systems and services so they can be an effective participant in the health system, regardless of who they work for, where they are and when they require access to these systems.

The strategy includes:

- Establishing a single northern region DHB IT service organisation to support a regional EHR, regional population health and business information systems, and offer services to primary and community care.

- Developing and delivering a set of shared, integrated and consistent IT services including information system, infrastructure and communication services that are accessible to all health workers and support the key strategies outlined in RIS10-20.
- Establishing Service Level Agreements that clearly define the services to be delivered and associated performance expectations.
- Developing capacity planning and capability to anticipate and accommodate growth, new facilities and new projects.
- Developing a limited set of data centre facilities in the region to support regionally shared systems and protect these core information assets with strong security measures.
- Evaluating “Open Source” solutions before selecting proprietary solutions and move towards “Open Source” where it makes sense, in order to provide required IT services within the constrained funding environment and to lower the total cost of ownership.

The IT Infrastructure & Services strategy is designed to support the RIS10-20 vision for regional integrated systems for electronic health record, population health, knowledge, workforce and business information, as well as maintaining current service levels.

SCOPE AND STRUCTURE OF RIS10-20

RIS10-20 provides strategic direction on information management, systems and services, to primary, community and secondary care organisations in the northern region for the next ten years.

The document is in two parts with part one, 'Supporting Transformation', presenting the context and specific strategies to achieving the desired future state. Part two, 'Implementing the Strategy', outlines the major aspects to be considered in delivering the regional information strategy.

PART ONE – SUPPORTING TRANSFORMATION

Clinical vignettes from today and a story of the future present the compelling case for change to enable the sharing of care between a person and their key caregivers.

National and regional clinical and business objectives present the context for each focus area and the overall information strategy.

Focus areas describe in detail the information strategy for that area, and reflect feedback from the numerous stakeholders who contributed to the development of this strategy.

PART TWO – IMPLEMENTING THE STRATEGY

'Strategy to Action' describes the need for a clear and coordinated approach to implementing each focus area.

Focus areas are underpinned by a set of principles which guide the implementation and ensure safe sharing of information, effective use of IT resources, good IS governance and practical change management.

Also presented are a series of roadmaps and projects to be undertaken in each focus area over the ten year period of the strategy. The roadmaps provide continuity from the previous information strategy, RISSP04, to this new information strategy, RIS10-20. Significant RISSP04 regional projects already in progress or imminent, such as electronic referrals, will be completed and are highlighted on the roadmaps. RIS10-20 projects are sourced from the individual focus area strategies and indicate future projects.

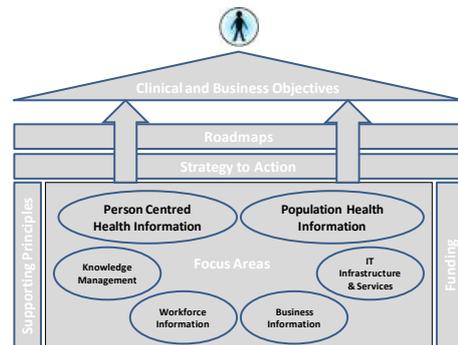
It is expected that northern region DHBs, PHOs and other organisations will use RIS10-20 to develop and prioritise annual operating plans and budgets and for working together collaboratively on projects to progress towards achieving the overall strategy.

Information projects arising from this strategy must be affordable and justified by significant and measurable improvements in performance of the health system as a whole. RIS10-20 describes the approach to ensure this strategy is achievable within the bounds of current northern region health spend.

It is expected that part two of the strategy will evolve and adapt to sector changes.

PART ONE - SUPPORTING TRANSFORMATION

1. HEALTH INFORMATION IN THE FUTURE



1.1 VIGNETTES FROM TODAY

The following series of vignettes describe real life experiences of the health system as provided by clinicians and patients. These vignettes reflect the current state and are a powerful demonstration of the need for action.

PATIENT ACCESS TO PATIENT NOTES

A 65 year old man, on warfarin requiring regular INRs and dose adjustment, is about to leave in his campervan with his wife for six months touring NZ. He asks how he gets INR tests done, who monitors this, and how he gets new prescriptions. He wants his notes to carry with him.

(Provided by Dr Michael Clarke)

PERSON CENTRED ELECTRONIC HEALTH RECORD

A 72 year old woman transferred down from Northland. She has been under specialists for investigation of R hip pain and also hearing problems. She and her family request further investigation in Auckland and an opinion on what has happened to date. It takes three letters and two phone calls to get the relevant information sent down from Whangarei. The information comes as a fax which then has to be scanned into the GP system. The GP then refers to ADHB but cannot attach scanned documents and so has to print out the GP letter and patient information. The information is then faxed and paper copies destroyed. After two weeks the GP receives a standard paper letter stating that the patient is on the waiting list. That letter is scanned by the GP receptionist who then destroys the paper copy.

(Provided by Dr Jim Kriechbaum)

EMERGENCY CARE

A 21 year old female solo mother has Bipolar disorder, and develops a new seizure disorder. She has transferred to another GP, but returns after three years with increasing depression and three seizures over three months. Her notes are requested and arrive but can't be integrated into her record. She is referred to Neurology APH and Psychiatry MMH and attends different community A and Ms in the next week - neither is aware of her depression, suicidal thoughts, seizures or medication. She is admitted to AED with a severe seizure, they do not have the referral or any prior notes. Same day readmitted to MMH EC with a further

seizure, they have no access to primary care or AED records, further investigations and lumbar puncture done.

(Provided by Dr Michael Clarke)

MULTIPLE CARERS

A 67 year old woman visited her GP after extensive bowel surgery. She had had complications and still had a drain in her abdominal wall. The GP had no information and had not received the discharge summary. She was having treatment on the ward and from District Nursing of which the GP had no information. She has since discharge seen a private oncologist who gave her some options of treatment for the future. She wanted to discuss these with her GP but he had received nothing from the specialist.

(Provided by Dr Jim Kriechbaum)

GP TO GP TRANSFER

A 55 year old man with complicated medical history and six active classifications and five medications transfers from another GP who also uses Medtech. His notes are received by the new GP as a single file via Healthlink but do not populate the PMS. The GP then has to manually enter the classifications and medications before the GP can give the patient his medications.

(Provided by Dr Jim Kriechbaum)

MEDICINES MANAGEMENT

A 74 year old woman with Heart Failure is admitted to hospital - she is on eight medications. While in hospital her medication dosages are changed. She returns to the GP for review and a repeat script. The GP has to read all her medications in the discharge letter, cross check against the GP list in the PMS and change the dosages before writing her new script.

(Provided by Dr Jim Kriechbaum)

PATIENT SAFETY AND QUALITY OF CARE

A GP referred a patient to General Medical Outpatients because of palpitations and a proposal from a previous outpatient letter to perform an Exercise Tolerance Test which had not been done. The referral mentioned "the attached ECG", but there was no ECG attached. The previous outpatient letter was from nine years ago.

(Provided by Dr Ross Boswell)

PATIENT EXPERIENCE

A 45 year old woman with a past history of cervical astrocytoma treated in 1981 via surgical laminectomy and radiotherapy. In 1999 was treated for Hurthle's Cell carcinoma via total thyroidectomy. Has an annual appointment with Endocrinology, Neurology and Neurosurgery at ADHB, as well as regular MRIs, to monitor spinal cord changes and neurological function.

- On 15 Jan saw the GP to request a prescription for Thyroxine. The GP noted it was some time since the last blood test.
- On 16 Jan had blood taken at DML.

- On 17 Jan GP contacted patient to increase daily dose of Thyroxine and advised patient to have another blood test in approximately one month.
- On 16 Feb patient attended the Thyroid Clinic at ADHB. The clinic receptionist checked GP details which were out of date. Patient advised name and address of current GP. Blood was taken at this clinic appointment.
- On 23 Feb the GP phoned to ask the patient to have a repeat blood test. The patient advised that they had had a blood test the week prior at the Thyroid Clinic, and that they would arrange for the Clinical Record Department to fax a copy of the latest blood test result. The patient contacted the CRD and requested them to fax the result to the GP. They did so, except that they sent the result to the patient's previous GP on the basis of the out of date information in the computer system.
- On 28 Feb the patient's endocrinologist dictated a clinic letter to the GP, however the clinic receptionist had not updated the GP details in the computer system, and so the letter was addressed and sent to the patient's previous GP. The letter contained up to date information regarding blood test results.
- On 6 March the patient attended the Neurology Clinic at ADHB. The clinic receptionist checked the GP details, which were out of date. The patient advised the name and address of her current GP. The receptionist updated the computer system, but did not update the patient label on the form that the specialist used to record clinic notes. At the end of the appointment, the specialist dictated a letter to the patient's previous GP, on the basis of the out of date information recorded on the patient label. In addition, the receptionist did not follow standard practice and print out a 'front sheet' with the patient's new details, for the patient to sign and verify that the details are now correct, so that the history of the change is recorded in the patient record.
- On 9 March the GP contacted the CRD and requested a copy of the patient's most recent blood test results. The CRD processed this request, and sent the results to the current GP, as the computer system now contained up to date GP information.
- On 12 March the Transcription Service processed the dictation from the Neurology Clinic appointment. The GP details recorded in the dictation did not match the updated GP details in the computer system, therefore the transcriptionist had to spend additional time to investigate and ensure that the correct GP details were typed into the clinic letter.
- On 16 March the clinic letter was signed off by the Neurologist and sent to the current GP.

(Provided by Anonymous Patient)

A WHANAU ORA EXPERIENCE

I really looked hard at my Dad one day and realised the pain he was actually hiding from us all. When I asked about it, he said, 'the doctor knows, daughter, it's ok, I'm going to get an operation soon.' 'But Dad, you've been getting worse for years, you're practically crippled because you can only walk with a frame, and now you can't live on your own anymore, Dad, that's not right, I'm going with you next time.' The GP told us, he rang the hospital many times to talk to the vascular surgeon about Dad's veins. I asked, 'does that make a difference for his sore hip and knees?' And he also made a referral to the hospital for Dad to get a check for a hip and knee.

We went to the next hospital appointment at North Shore Hospital and the orthopaedic surgeon said 'yes, Dad definitely needs a hip,' but didn't know anything about the vascular people. The next appointment was at rheumatology at Waitakere Hospital - Dad was in so much pain, they admitted him. He loved it because they gave him steroids to reduce the acute inflammation and he had a pain free weekend. It was there that he found out he should always take his 8 pain pills every day, otherwise the pain breaks through the barrier (none of us quite understood what this was). Nobody knew if he was going to get an operation and later, we got a

letter to say he needed to visit the heart doctor. That's when we found out Dad had congestive heart failure, but Dad said he felt fine. They didn't know when he would get an operation. Weeks later, we went to another appointment with the surgeon, and then Dad had to go to an appointment with an anaesthetist. We just went round and round and round. We asked everyone when the operation was going to be, but no one knew, and no one talked to anyone. We couldn't understand how one department wouldn't know Dad had been in hospital for pain relief - they'd always be surprised. Dad said one day 'whenever he goes to the bank, everyone can get his money up on screen and everyone knows his last transaction, even if he only withdrew a dollar.'

Dad waited over five years for his operation, and boy, what a difference it finally made to his life. He can walk around the neighbourhood now, and get his own Sunday papers. It's all good.

(Provided by Whanau Member)

PUT THE PATIENT AT THE ABSOLUTE CENTRE OF YOUR SYSTEM OF CARE

In its most authentic form, this rule feels very risky to both professionals and managers, especially at first. It means the active presence of patients, families, and communities in the design, management, assessment, and improvement of care. It means total transparency. It means that patients have their own medical records and that restricted visiting hours are eliminated. It means, "Nothing about me without me."

(Donald Berwick, President and Chief Executive Officer, Institute for Healthcare Improvement. speech to NHS Live Conference 1 Julv 2008. BMJ 2008;337:a838)

1.2 STORY OF THE FUTURE

A DAY IN THE LIFE OF A GP IN THE YEAR 2020

I start my day by reviewing my priority cases, appointments and any urgent messages. At my desk, I quickly authenticate to the health network using voiceprint recognition and am immediately presented with a dashboard of important information and messages about patients on my watchlist and my day planner listing appointments.

The virtual open office shows that our practice cardiologist is working from home today but is available for tele-consults and ECG readings. I also note that one of my home monitored chronic condition patients has a few of their bio-parameters outside the trigger range, and that they have sent through the last week's trends. Through the on-line open scheduling system, the patient has arranged to see me tomorrow morning.

My first patient is a 65 year old man on regular warfarin for AF. The man had left a message a few days earlier via MyHealthInfo, the secure online patient portal, advising that he was leaving for a six month trip travelling

around NZ in his campervan. He was after a quick health check before departing and to find out how to monitor blood results and adjust his warfarin dose while away.

I receive an alert to my desktop advising me that he has arrived and is viewing a public health video on CVD being streamed to the knowledge hub in the waiting area. Arriving at the practice, he had swiped his credit card at the kiosk, which pulled up his latest demographic information. He advised a change of emergency contact and proxy authority which was updated on the MyHealthInfo access point in the reception area.

With the patient now in my consulting room, I touch the person icon on the screen and am linked directly through to the regional Health Management Information System and the patient's full electronic health record. On the main notes screen I can see the message regarding the trip, the demographic updates, and screening information and reminders of recalls due. I take the opportunity to update his smoking status and can see that he is due for a PSA and glucose test, which are added to his blood test form.

I also notice that he has started taking a new medication since I last saw him. At a glance I can see which of my colleagues ordered it and when, as the entry is stamped with the date and ordering provider's name.

I reassure him that he can log onto MyHealthInfo from any location using his secure logon, view his INR and other results, and also recent discharge summaries and out-patient letters.

He is aware of how to adjust his warfarin but I remind him that he can leave a note in his electronic health record that my general practice team will see, or he can email us, phone us, or consult a local Practice who will also be able to access the information on his electronic health record.

He asks for a back up copy and we select relevant parts of his record that are downloaded onto a portable memory device for him to view later and take with him on his trip.

My next patient is a 72 year old Maori woman who is transferring from Northland part way through an investigation of hip pain and is presenting to me for the first time, accompanied by her daughter, a current patient of mine.

Her notes have been transferred from her previous GP in Kaitaia, and despite using a different Practice Management System, because structures and definitions of data have been agreed and standardised across the country, her detailed notes have been fully integrated into my system. Her regular medications are showing, all her lab tests are in her inbox, and her full notes are available for me to review and edit.

Her daughter, who is an authorised proxy for her mother, is able to view Healthpoint and knows that the waiting time at Auckland Public Hospital (APH) is four weeks for Specialist Review in orthopaedics, and has a preference for a particular specialist, having read their special interests.

The daughter and other approved members of the Northland whanau have been checking the woman's cholesterol levels and reviewing the Post GP Visit Summary, showing medication changes and other pertinent visit information.

I am able to access her entire electronic health record via the HMIS and see the specialist letters and discharge summaries from Northland documenting her progress to date.

She requires a referral so I open an e-referral form, which auto populates from past notes, and then I fill in the clinical fields following prompts that ensure accurate grading by orthopaedics. I submit the referral and receive a notification of receipt. I let her know that she can track her referral through MyHealthInfo and will be able to see when the appointment will be within the next 1-2 days.

They wonder whether a private referral would be quicker. I reassure them that they will know how long the wait will be within two days and can always be referred to a private orthopaedic surgeon. I remind her that the private specialist will also have access to all her past out-patient letters, discharge summaries, lab results, and that I can simply divert the referral to a private specialist if she wishes.

The daughter mentions that her mother is very pleased that members of the Northland whanau can check on-line how her health is. The whanau can view videos of her health issues and treatments to help their understanding and ability to assist with her care. As a grandmother, the woman also has proxy rights for her grandchildren to check they are all up to date on their immunisations.

The woman also wants to check who has been accessing and viewing her own EHR and so will look at the list from home and decide if any visits should be marked as confidential.

She leaves happy that she knows what is happening and can track and be in control of her whanau ora.

I take ten minutes to follow up a request from a 34 year old female patient of mine who has logged into MyHealthInfo concerned about a changing freckle and has answered a questionnaire that changes based on her responses, tailoring itself to the information provided. Once finished she submitted the questionnaire with a click and printed off the reference materials to read. She is now quite worried and so has used the online scheduling system to book an appointment noting 'sooner, if possible'. As the system is set up to notify schedulers when an appointment becomes available for an individual who may wish to be seen sooner than originally scheduled, she has been emailed and has now confirmed an appointment for tomorrow. I have also asked her to text me an image of the area of concern.

This patient is also the authorised proxy for her children and has access to certain MyHealthInfo functions within their records. She has a daughter who is diabetic and is able to enter that child's glucose readings through the flow-sheet section of her daughter's MyHealthInfo. She has mentioned to me in the past how great the online systems are and how much she can accomplish from home by just going to one place, and how much time and phone-calls this saves her. She also feels much more in control of her own and her family's health.

My next patient then arrives; a 21 year old solo mother with bipolar disorder who has developed a new seizure disorder and increased depression. She attends my practice for the first time in three years having been to another GP during that time.

Her notes have been transferred from her previous GP and have been fully integrated into my record system. From the dashboard summary screen that opens when I open her notes, I immediately see she is overdue her cervical smear, and her children's vaccinations are overdue. I view the pharmacy dispensing repository and see that the prescription for anti-psychotics that were prescribed by her last GP, as stated in the notes, was never dispensed.

I invite my colleagues from Neurology at Auckland Public Hospital (APH) and Psychiatry at Middlemore Hospital (MMH) to review the care plan of my patient on-line and consider whether they wish to see the patient, knowing they can update the shared care plan accordingly.

I also explain how to mark records as 'sensitive' in the electronic health record so that she can be secure in the knowledge that only myself (her GP) and anyone else she grants access will see the note on the recent episode.

She is subsequently seen after major seizures at a private community Accident and Emergency, and then referred to MMH Emergency arriving unconscious via ambulance. Each point of contact has a view of her care plan / referrals, her dispensed medications, all recent laboratory data, and past outpatient records and discharge summary in real time through the regional electronic health record.

This ensures no investigations need be repeated, accurate and safe changes can be made to her medication, alterations in the urgency for her out-patient review can be made seamlessly, and all information is relayed back to her primary care team.

My fourth patient of the day is a 45 year old female with past cervical spine astrocytoma and Hurthle's cell carcinoma of the thyroid who requires regular follow-up at neurology, neurosurgery and endocrinology outpatient clinics, with regular neuro imaging and frequent blood tests to monitor her condition and adjust thyroid treatment.

As she attends her out-patient appointments she is content in the knowledge that she is able to track and view all of her appointments and read her outpatient letters, follow new referrals and ensure that all follow up is completed.

Each blood test she has is available to all her carers through the regional EHR and all medication changes can be checked by any provider by linking through to the pharmacy dispensing repository if she forgets a name or dose of any medication.

She also knows that the information in her primary care record has been updated on the EHR for all of her current authorised providers and carers to access.

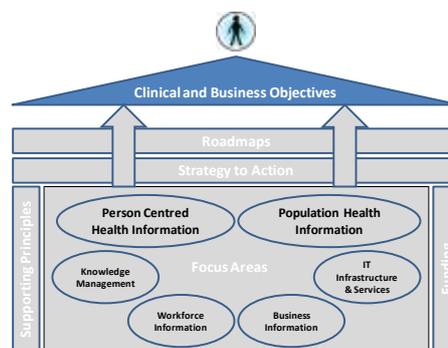
As she attends her appointments she knows that the correct letter will arrive at the correct GP, with the correct information in an appropriate timeframe as there has been no waste of time chasing correct information.

I note that my first appointment after lunch at 2pm is a family conference for an 83 year old male. He has many concurrent problems and is under the care of five specialists for his brittle diabetes, lymphoma, recent heart attack, and undiagnosed neurological complaints, and is very frail now. His family who are mostly local want to discuss his future care, as they don't believe their mother, who lives with him can cope any longer, even with all the home help they have. However they have got mixed messages from some clinics.

Members of his multi-disciplinary team and his son from London will web conference in to my PC in my room to take part. The elderly patient, his wife, their locally based daughter, and myself will be in the consulting room. The web translator is available as well. As usual, the front-desk has booked out a 15 minute slot after this conference to allow for post meeting planning and updates to the shared care plan.

As I have a network meeting at 6pm this evening on Management of Long Term Conditions, I ask the practice Programme Manager to run some progress reports including a report on patients with key chronic conditions but not yet in a programme. Her report focuses on all patients with appropriate SNOMED-mapped diagnoses who are not already involved and who have not previously opted out. Using MyHealthInfo message capability, we send out emails and texts to the target group and will follow up with phone-calls and a template letter inviting participation.

2. CLINICAL AND BUSINESS OBJECTIVES



2.1 NATIONAL OBJECTIVES

NEW ZEALAND HEALTH STRATEGY

RIS10-20 has been developed with reference to national strategies, principles and health priorities.

The current New Zealand Health Strategy is based on seven underlying principles that the Government sees as fundamental. Those principles are to be applied across the sector and be reflected in any new strategies or developments:

- Acknowledging the special relationship between Maori and the Crown under the Treaty of Waitangi.
- Good health and wellbeing for all New Zealanders throughout their lives.
- An improvement in health status of those currently disadvantaged.
- Collaborative health promotion and disease and injury prevention by all sectors.
- Timely and equitable access for all New Zealanders to a comprehensive range of health and disability services, regardless of ability to pay.
- A high-performing system in which people have confidence.
- Active involvement of consumers and communities at all levels.

Additional strategies sit under the umbrella of the New Zealand Health Strategy and some of these are: The New Zealand Disability Strategy, Primary Health Care Strategy, Palliative Care Strategy, Health of Older People Strategy, Maori Health Strategy, Good Oral Health, for All, for Life: The Strategic Vision for Oral Health in New Zealand, Sexual and Reproductive Health Strategy, Pacific Health and Disability Action Plan, Te Kōkiri: The Mental Health and Addiction Action Plan 2006-2015, intersectoral strategies, health issues and services strategies and other work arising from the New Zealand Health Strategy.

HEALTH PRIORITIES DETERMINED BY GOVERNMENT

The 2009/10 Health Targets reflect the current priority health areas the government is focusing efforts on:-

- Shorter stays in Emergency Departments.
- Improved access to elective surgery.
- Shorter waits for cancer treatment.
- Increased immunisation.
- Better help for smokers to quit.
- Better diabetes and cardiovascular services.

NEW ZEALAND HEALTH INFORMATION STRATEGY

The history of information strategic planning at the national level is extensive and includes the 1991 Ministerial Strategy, 1996 Ministerial Strategy, 1999 Health Funding Authority Strategy, 2001 WAVE Report and the 2005 Health Information Strategy New Zealand (HIS-NZ) document. All strategies identified certain common issues including poor data quality, lack of standards, gaps in primary care data, accessibility and information exchange problems, lack of coordination between data collections and systems, and problems with national data systems and governance. RIS10-20 supports HISNZ and other national information initiatives including QI4GP, Key Directions, NSDP, and PHO Performance Indicators.

In July/August 2008, the Ministry of Health announced their intention to review the 2005 HIS-NZ document. In order to ensure alignment between national and regional information strategic planning, the northern region CIOs sought the engagement and support of the Ministry of Health in the development of RIS10-20. As a result, RIS10-20 has been developed with the active participation of the Ministry of Health, including attendance of senior representatives of the Ministry of Health Information Directorate in most workshops.

Workshops also referenced the July 2009 report of the Ministerial Review Group (the 'Horn Report') which notes that primary health care is an important component of health system performance and that "change will continue under the government's *Better, Sooner, More Convenient* policy which aims to see more personalised primary care, closer to home that takes pressure off our hospitals". Other key references include the Health Management System Collaborative (HMSC), and the Health Information Strategy Advisory Committee (HISAC). The direction and strategies set out in RIS10-20 are aligned with these national activities.

2.2 REGIONAL OBJECTIVES

NORTHERN REGION

The northern region, comprising the four DHBs of Northland, Waitemata, Auckland and Counties Manukau, caters for a population of around 1.6 million people. In total the four DHBs employ over 20,000 people or over one third of the New Zealand DHB workforce.

The DHBs are responsible for funding and providing a diverse range of health and disability services and specialties including medical, surgical, obstetric, assessment, treatment and rehabilitation for older people, mental health, community and disability services, across multiple locations.

The DHBs fund 26 Primary Health Organisations (PHOs) across the region to provide essential primary health care services to people enrolled with the PHO. The PHOs bring together doctors, nurses and other health professionals (such as Māori health workers, health promotion workers, dieticians, pharmacists, physiotherapists, psychologists and midwives) in the community to serve the health needs of their enrolled populations.



NORTHERN REGION HEALTH STRATEGY

The following describes health priorities determined by the northern region DHBs as reflected in various district strategic plans. RIS10-20 is aligned with and supports these strategic objectives and health priorities.

Auckland District Health Board

Auckland DHB has defined the following health outcomes based on priority needs:

1. Reduced occurrence of diabetes, cardiovascular disease, and cancer. Reduced number and severity of complications arising from these conditions.
2. Reduced inequalities in Maori health status by implementing Treaty of Waitangi responsibilities and preserving the rights to protection and to self determination.
3. Reduced inequalities for Pacific people, disabled people, refugee communities, and people living in poverty.
4. Better outcomes in the health of older people.
5. Better outcomes in child health.
6. Better outcomes in mental health.
7. Increased independence of disabled people, older people and others with high support needs so they participate in their communities.

Counties Manukau District Health Board

Counties Manukau DHB has adopted an overarching 'triple aim' philosophy with a focus on population health, individual patient experience of care, and cost efficiency. This philosophy underpins all strategies and delivery of the following outcomes:

1. Improve community well being.
2. Improve child and youth health.
3. Reduce the incidence and impact of priority conditions.
4. Reduce health inequalities.
5. Improve health sector responsiveness to individual and family/whaanau need.
6. Improve the capacity of health sector to deliver quality services.

Northland District Health Board

Northland DHB has the following strategic goals:

1. Create an environment that stops people getting diabetes, slows its progression, reduces its impact and improves the quality of life for those diagnosed with diabetes.
2. Reduce the incidence of cardiovascular disease.
3. In line with the NZ Cancer Control Strategy, Northland DHB will reduce the incidence and impact of cancer and reduce inequalities with respect to cancer.
4. Improve oral health in Northland.
5. Minimise waiting times for elective services.

Waitemata District Health Board

Waitemata DHB has identified the following long term priorities:

1. Improve the quality of our performance in delivering health services.
2. Reduce the impact of long term conditions.
3. Improve health services outside of hospitals.

4. Decrease the health inequalities experienced by our most vulnerable populations.
5. Increase the number of people making healthy lifestyle choices.

AUCKLAND REGION INFORMATION SYSTEMS STRATEGIC PLAN 2004

The previous information plan guiding regional activities was the Auckland Region Information Services Strategic Plan (RISSP), published in 2004, which covered the three metro Auckland region DHBs.

To support ongoing collaboration, the metro Auckland region agreed on a set of principles, including that each DHB must first look at the system(s) used by the other DHBs before making major IT investments. This has led to greater sharing of systems by the DHBs and a number of specific regional achievements including providing access to clinical information, such as discharge summaries, implementation of the TestSafe clinical data repository, and development of a single mental health care system for the region.

One of the key challenges is that current solutions are based around 'best of breed' departmental systems with significant messaging and interfacing requirements. With a shift of focus to person centred health models, this approach is becoming unsustainable. Linking provider based systems to enable a person centred health information system makes integration exponentially more difficult due to the increasing number and complexity of the necessary interfaces. Making relatively small changes in this environment is prohibitively expensive.



Health professionals across the different institutional settings would find it much easier to provide seamless care if they shared easy access to a common patient record. (Meeting the Challenge: Ministerial Review Group, 31 July 2009, p17)

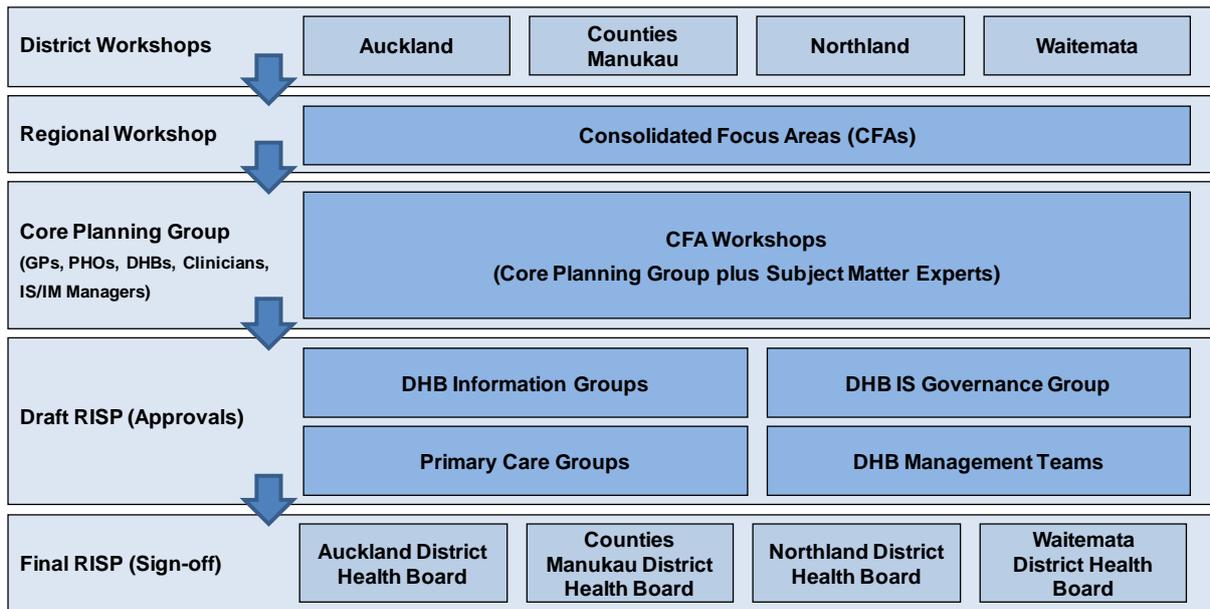
REGIONAL INFORMATION STRATEGY 2010 TO 2020

The northern region DHB Chief Information Officers (CIOs) facilitated a number of workshops during 2008 to guide the development of an updated Regional Information Strategy (RIS10-20). Following a prioritisation workshop with Chief Executive Officers and management teams, the high level approach and priorities were agreed and consolidated into six focus areas; Person Centred Health Information, Population Health Information, Knowledge Management, Workforce Information, Business Information, and IT Infrastructure & Services.

A core planning group was formed and a further series of workshops were held through 2009 to develop the content for each focus area. The planning group was made up of a number of subject matter experts from the sector representing the interests of secondary clinicians, GPs, PHOs, Public Health and DHB information management and technology teams. Additional subject matter experts were invited to specific workshops as required.

RIS10-20 sets a long term direction for each of the focus areas. High level roadmaps are included to show the transition from the current Regional Information Systems Strategic Plan (RISSP04), and to illustrate what significant projects and assets are intended to be delivered under RIS10-20.

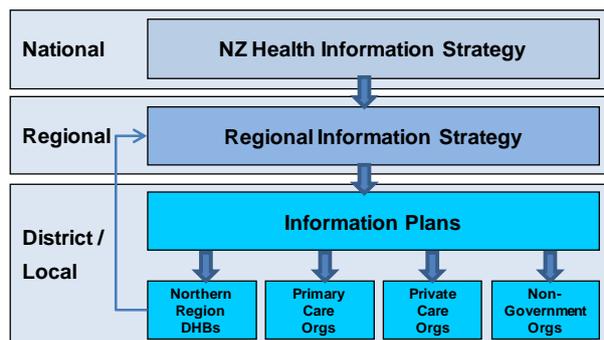
The following diagram illustrates the process undertaken in developing RIS10-20.



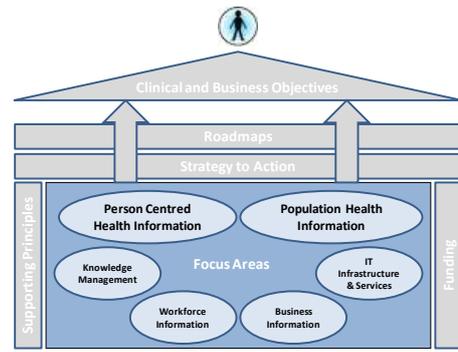
ALIGNMENT OF INFORMATION PLANS

Successful implementation of regional strategies requires alignment of purpose and approach across national, regional and district healthcare delivery processes. The regional strategy needs a national information strategy to deliver effective national enablers for identity such as National Health Index (NHI) and Health Practitioner Index (HPI); efficient access to national information stores such as the Medical Warning System (MWS); broad reach to providers via a fast and affordable health network; and national population health support such as screening programs.

Individual organisations need to identify their local needs in District Information Plans (DIP), while ensuring that these plans are aligned to and not duplicating the regional strategy.



3. FOCUS AREAS



3.1 PERSON CENTRED HEALTH INFORMATION

VISION

HEALTH INFORMATION THAT WORKS FOR ME WHEREVER I AM

Our vision is improved health outcomes through empowering people, general practice teams and the wider clinical team to effectively manage care through appropriate access to and use of shared and trusted electronic health records and care plans.

DRIVERS FOR CHANGE

- The current model of care is episodic and based on a patient’s illness while the future model of care is characterised by a person’s participation and self care, as illustrated by the table below.

Current State Model	Chronic Disease Management Model	Future Person Centred Model
Focus on illness and cure	Focus on priority diseases	Focus on health needs
Relationship limited to moment of care	Relationship limited to programme implementation	Enduring personal relationship
Episodic curative care	Programme defined disease control interventions	Comprehensive, continuous and person centred care
Responsibility limited to effective and safe advice to the patient at the moment of consultation	Responsibilities for disease control targets among the target population	Responsibility for the health of all in the community along the life cycle; responsibility for tackling determinants of ill health
Users are consumers of the care they purchase	Population groups are targets of disease control interventions	People are partners in managing their own health and that of their community

Source: Adapted from World Health Organisation table on “aspects of care that distinguish conventional health care from people-centred primary care”.

- New and emerging health care models are focused on person-centric care, including the expert patient and managed self care, and enhanced continuity of care including shared care plans.
- Partnerships to deliver shared care including the multi disciplinary and cross provider team based approach to management of long term conditions.

- Integrated Family Health Centres and the transfer of services from secondary to primary and community care providers.
- Health care service innovations need to be implemented effectively and quickly across the health sector.
- Rapidly growing emphasis on quality improvement through the use of evidence-based decision support and streamlining clinical work flow processes around the person.
- More efficient and collaborative clinical processes are required to support improvements in clinical safety.
- The current system architecture requires a new approach to: enable new models of care to develop from information exchange to information sharing; reduce complexity, cost and fragmentation; improve performance and reliability; increase speed of implementation; and allow clinical leaders to focus on the clinical process.
- The current health system is tied together through *correspondence* and needs to change to one that is based on effective *conversations* enabled by a shared health record involving patients and clinical teams.

DHBs should also be required to agree protocols and establish arrangements amongst community, primary, and secondary providers to facilitate the collective development of new models of care. This will require a clinically led process and needs to include strengthening the contractual and financial incentives on secondary, primary, and community providers to develop cost-effective substitutes for secondary care and to work together to develop new models of care that are patient-centric, less fractured, and more cost-effective.
(Meeting the Challenge: Ministerial Review Group, 31 July 2009, p16)

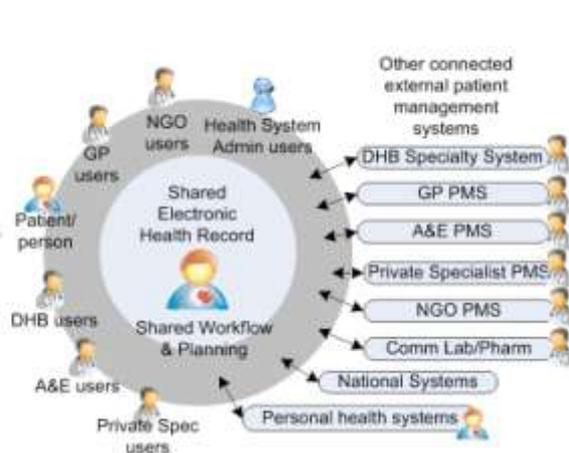
STRATEGY

- Implement a single, regional Health Management Information System (HMIS) that provides a:
 - Shared and trusted electronic health record (EHR) for use by people, general practice teams and the wider clinical team involved in a person's care, and
 - Shared person management and clinical workflow system that tightly integrates with EHR and covers all aspects of the clinical care planning and management processes that are common between health providers.
- Provide support for single instance regional specialty systems related to clinical functions that are not covered by the shared environment. (i.e. functions that are not common).
- Enable effective exchange of information between the shared HMIS and:
 - Regional specialty systems;
 - National identity systems, national collections, health summary and workflow systems;
 - Community, NGO and other provider systems;
 - Commercially available systems supporting the personal health record, where practical.

CURRENT EXCHANGE SYSTEM



FUTURE SHARED SYSTEM



ROADMAP

1. Define the core components of the regional Health Management Information System (HMIS), including EHR, shared person management and clinical workflow, to be shared between the person and primary, community and secondary care organisations.
2. Select strategic partner(s) who will work with us to enable the vision.
3. Implement a component of the core HMIS through a specific regional 'cornerstone' project with a small number of primary, community and secondary care organisations.
4. Rollout the core HMIS for that specific regional cornerstone project to all primary, community and secondary care organisations.
5. Extend the core HMIS to other regional clinical services cornerstone projects (i.e. repeat steps 3 and 4.)

There will not be a Health Management Information System project per se. Instead we will enable various clinical cornerstone projects, for example the first Integrated Family Health Centre, with core components that will incrementally build up the new shared HMIS.

CRITICAL SUCCESS FACTORS

- Change process is led by clinical leaders in partnership with service staff, support services and IT service providers.
- Serious commitment and follow through by stakeholders to the vision and strategy including health system transformation.
- Focus by stakeholders on new health models and associated clinical processes to be supported by the information technology change.
- Implementation of the future state regional HMIS takes priority over local provider (DHB/PHO/GP) projects and resources (people and funds) are made available accordingly.
- Stakeholder commitment to align all other relevant service improvement activities with this strategic objective and to accept that some of these other initiatives may be delayed as a result.
- Benefits are clearly articulated to all participants in the change process and incentives are aligned with the required level of stakeholder involvement.

- Innovation efforts will be targeted and evidence based and a particular innovation is not successful until it is rolled out to all relevant parts of the health system.
- Demonstrable improvements in population health outcomes are evident from implementing the regional HMIS.
- The new regional HMIS will be fast, intuitive, robust, stable and trustworthy.

SCOPE

- People of the northern region, general practice teams and the wider clinical team involved in a person's care, will be encouraged to participate in the shared system.
- Mainstream flows of people in the northern region; where appropriate, workflows will be linked into national clinical workflows and programmes.
- Publically funded health services. Providers of privately funded services will be encouraged to participate, acknowledging that often providers will operate across both the private and public sector.
- Capability is established to support regional and national Population Health Strategy.

MEASURES OF SUCCESS

- People acknowledge they experience the regional HMIS as person centred; they are well informed about options and benefit from continuity of care across providers.
- Clinicians feel they are able to make well informed and safe decisions related to a person's care plan and trust the integrity of the shared electronic health record.
- People and clinicians enjoy the benefits of improved effectiveness and efficiencies of workflow processes resulting in better, sooner, more convenient quality of care.
- Stakeholders and in particular clinicians, publicly acknowledge that the new regional HMIS has made a considerable contribution to the achievement of northern region population health improvement targets.
- Users have confidence in the security of their health information and that this is not compromised due to the wider access.
- Statistics collected demonstrate that the number of clinical incidents or medical errors across care settings is reducing over time.
- Total cost of ownership of the new regional HMIS indicates improvement or a reduced rate of cost increase compared to the current state.
- Primary and community care confirms through survey delivery of innovation, improvements in workflow and clinical processes, and ease of use of the regional HMIS.
- All users confirm through survey their overall satisfaction with the regional HMIS.

The next challenge is for information collected by providers to be shared, communicated and made more easily accessible to other providers and patients. However, the sector is currently inundated with too much information and too many IT projects. Literally each national health programme results in another 'national collection or database'. These current national collection and provider systems are not easily linked up to provide a 'patient or person-centred' view. This ignores the fact that for most people they will have more than one health issue that needs treatment and/or management. (Meeting the Challenge: Ministerial Review Group, 31 July 2009, Annex 3 p12)

3.2 POPULATION HEALTH INFORMATION

VISION

SHARED POPULATION HEALTH INFORMATION THAT INFORMS HEALTH PLANNING AT ALL LEVELS AND EVIDENCE-BASED ACTIONS AT POINT OF CARE

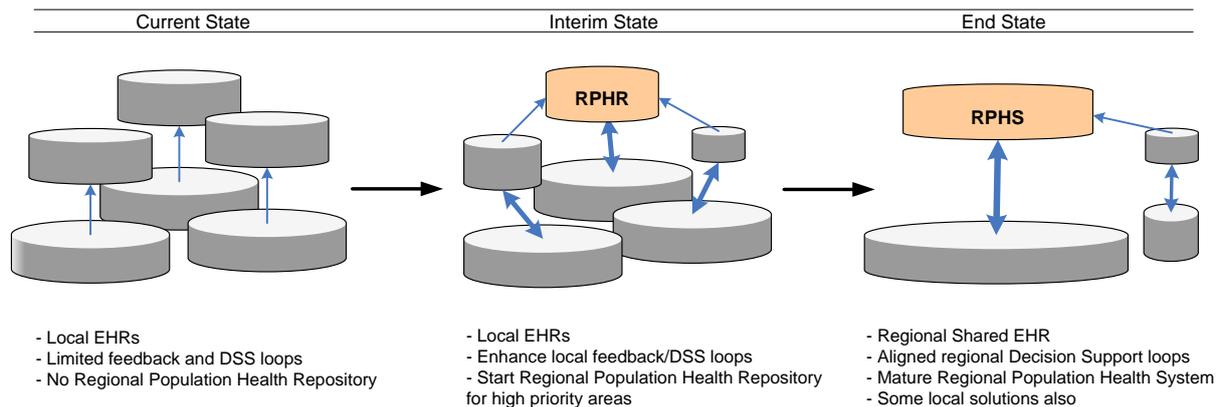
Our vision is improved health outcomes through using agreed principles of data collection, sharing and linking (with other agencies) to enable effective clinical decision making and to support planning and funding decisions that can be translated into action and reviewed for effectiveness.

DRIVERS FOR CHANGE

- It is difficult to measure progress towards improved population health status comprehensively and consistently. The determination of the effectiveness of population health programs such as stop smoking, exercise and better nutrition is hindered by poor data quality, access, and standards.
- Improvements are required in the collection, collation, analysis and communication of population health information to help planners and providers address the widening gap between actual and target health outcomes and health inequalities.
- The demand for improved population health information will grow significantly in order to address the challenges of an ageing and growing population, and increasing risk factors and chronic disease.
- The public health 'system' is not sufficiently 'situational aware' and is lacking in resilience to effectively respond to significant events.
- Population health status improvements are critically important in an increasingly complex health environment where health resources are limited and potentially declining.
- A barrier to quality population health information is that population health information is of limited value to health care providers involved in its capture.

STRATEGY

- Collaborate across primary, community and secondary care sectors, Ministry of Health and the health IT industry to establish clear standards, principles and processes relating to the collection and sharing of population health information.
- Build a regional Population Health System (PHS) collecting information primarily from regional Electronic Health Records that:
 - Delivers actionable health data to health care providers;
 - Enables health information to be linked at an individual and group level;
 - Is comprehensive about the northern region population and at a level of granularity to answer future health questions;
 - Allows progress against national, regional and local health targets to be measured when those targets are defined and supported by standards for collection, viewing and reporting;
 - Supports the grouping of information according to specific criteria including disease state, geo-code, and ethnicity.
- Implement approaches to enable primary, community and secondary care to easily and systematically collect accurate population health data, and receive timely feedback to drive evidence based clinical action.
- Develop guidelines that clearly describe data governance and privacy, and the different levels of access, aggregation, and reporting of population health information.



ROADMAP

1. Educate and build trust with clinicians and the public during implementation on system access rules and data usage.
2. Agree regional population health priorities to inform the priority of what data to collect.
3. Confirm the datasets that are required and the relevant standards for those datasets.
4. Leverage existing systems to collect agreed priority datasets in areas where this adds direct value back to clinician and patients (i.e. a short feedback loop) and link to what is relevant to the clinician and patient (i.e. local or regional initiatives).
5. Collect, align and group data collected locally in a regional Population Health Repository to inform regional planning activity.
6. Agree long term requirements for the regional PHS; data collection, analysis and decision support.
7. In parallel, confirm what the current databases are, what tools are available and can be used or enhanced to deliver to the short term requirements of population health.
8. Depending on the outcome of step 2, create appropriate links with the Person Centred Health Information strategy and develop the regional PHS storing anonymised integrated person data.
9. Complete data collections and processes (flows), including clinical feedback loops and decision support, for quality and completeness.

CRITICAL SUCCESS FACTORS

- Stakeholders support population health, are educated on key aspects and are committed to deliver the required resources and funding.
- Individuals collecting population health information understand the purposes for collection and the importance and relevance of doing so.
- Collection of population health data is easy and adds value to the clinical encounter.
- Legislation is complied with and regional guidelines are developed that provide a workable 'privacy' and 'access' framework for population health and which support 'doing the right thing'.
- Population health data is collected in compliance with agreed data standards.
- Data in the regional PHS is modeled to protect a patient's privacy and support clinicians at the 'point of care'.
- Feedback of data to individual clinicians is supported with options for action.
- Information in the regional PHS is not just about management of long term conditions, but also about health promotion.
- Appropriate incentives, financial and non-financial, are in place to ensure the regional PHS is populated, utilised and successful.
- Organisations and individuals trust, value and use the regional PHS.

SCOPE

- Population health information covering the northern region population and sourced from health clinical encounters within primary, community and secondary care settings.
- Population health information is 'anything to do with groups of patients rather than individual patients' and includes:
 - Finding individuals from registers to provide them care
 - Selecting groups of patients for care
 - Quality and audit
 - Monitoring programmes
 - Evaluation
 - Planning services
- Includes the exchange of aggregated information with private health and other agencies, for example, Local Government, Work and Income, Education, ACC, OHS, Food Safety, Justice, and Statistics New Zealand; but excludes the matching or sharing of individual level information.
- The main scope is publically funded health services, however, providers of privately funded services will be encouraged to participate, acknowledging that often providers will operate across both the private and public sector.
- The regional PHS will integrate information at the detail level and aggregate up dependent on purpose and access rules.

MEASURES OF SUCCESS

- Demonstrate a return on investment.
- Information from the regional Population Health System informs different behaviour and actions.
- People acknowledge that the regional Population Health System is person centred, maintains their privacy, and they are well informed about its purpose and use.
- The region can measure progress being made towards achieving health targets.
- Data in the regional PHS is:
 - Collected as a 'byproduct' of normal clinical practice in a uniform and consistent manner.
 - Relevant, timely, complete and being used at the 'point of care' by the clinician to make better decisions for the patient.
 - Comparable against international benchmarks.
 - Provides a quick insight into the health status of a particular group of the population that is relevant to the party asking the question.
 - Available to not only answer questions but also prompts clinicians to ask better questions.

CASE STUDY - POPULATION HEALTH INFORMATION IN NORTHLAND

Few organisations have found it easy to produce quality population health information - there have been many barriers to success. These barriers include a lack of understanding of how population health information translates into clinical practice, lack of standards, and difficulty in collecting and reporting on population health data. Northland's PHOs have taken a structured approach to resolving these issues. The PHOs have:

1. **Agreed on the priority population health goals including how primary care contributes to achieving each goal.** The population health goals of the Primary Health Care strategy were adopted, although this identified gaps where primary care did not currently have a systematic response. For example, primary care in Northland does not currently have a systematic response to improving oral health or for increasing physical activity.
2. **Agreed on how to measure progress in achieving each goal.** For each goal we defined measures on:
 - Whether we know who needs the intervention (e.g. have we recorded smoking status?)
 - Whether the intervention has been provided (e.g. have we offered cessation support?)
 - If the desired outcome is being achieved (e.g. have people managed to stop smoking?)
 - How big is the problem (e.g. how many people smoke?);
 - And answer these across multiple dimensions including ethnicity, PHO, GP etc.
3. **Agreed on the core population health data to be consistently recorded within primary care, how it should be recorded, and why it should be recorded.** For example, we agreed to record the number of cigarettes smoked per day and how long the patient has been smoking (pack years). We developed electronic forms to systematically and consistently record this information.
4. **Implemented tools within each GP's practice management system that uses population health data to provide significant clinical value to the patient, GP and nurse.** We implemented a patient dashboard to provide GPs and nurses with an overview of all essential clinical information known about the patient (and highlighting missing or out of date information). The patient dashboard allows GPs and nurses to easily answer the questions "what do I need to know about this patient", "what else should I be doing for this patient" and "what information is missing or out of date for this patient". We implemented a system to allow GPs and nurses to identify patients who are "falling through the cracks". For example, patients who have diabetes, a high LDL, but are not on lipid-lowering medication. This system also improves the efficiency of the administrative processes associated with contacting patients to address these issues.
5. **Implemented tools that collect population health data from each practice and report to each GP on the progress they are making on achieving the agreed population health goals.** The system collects population health information from each practice every month and presents an aggregated view to each PHO and the DHB answering the four questions shown above for each population health goal. Reports are produced by ethnicity to help address inequalities, by GP for peer review and support, and across time to see whether progress is being made.

The critical success factor for the PHOs has been to focus on ways to ensure that primary care clinicians value population health data so they are motivated to consistently and systematically record population health data. For the first time, Northland's PHOs are able to know whether they are contributing to achieving goals for smoking risk, nutrition, physical activity, alcohol risk, breast and cervical cancer, oral health, diabetes risk and management, CVD risk and management, and child health.

Provided by Ken Leech, Chair, Northland PHO Information Governance Group, October 2009

3.3 KNOWLEDGE MANAGEMENT

VISION

KNOWLEDGE 'AT OUR FINGERTIPS' ENABLING PEOPLE TO WORK TOGETHER

The “knowledge” of an organisation refers to the collective know-how contained in its people, processes, policies and information resources (e.g. information systems, databases, libraries, files). Knowledge management is about providing the capabilities (including tools, processes, ways of working etc.) to ensure all people in an organisation have easy access to relevant information and expertise to support their work; and the continual growth and development of the organisation’s knowledge is captured.

Our vision for Knowledge Management is improved health outcomes through:

- a. Building capacity and motivation to act in the best interests of people and our communities;
- b. Making the right thing the easy thing to do; and by
- c. Providing awareness of and easy access to general information, skills and experience.

KM is concerned with how an organisation can best nurture, leverage and motivate people to improve and share their capacity to act. (Sveiby Nov 2001)

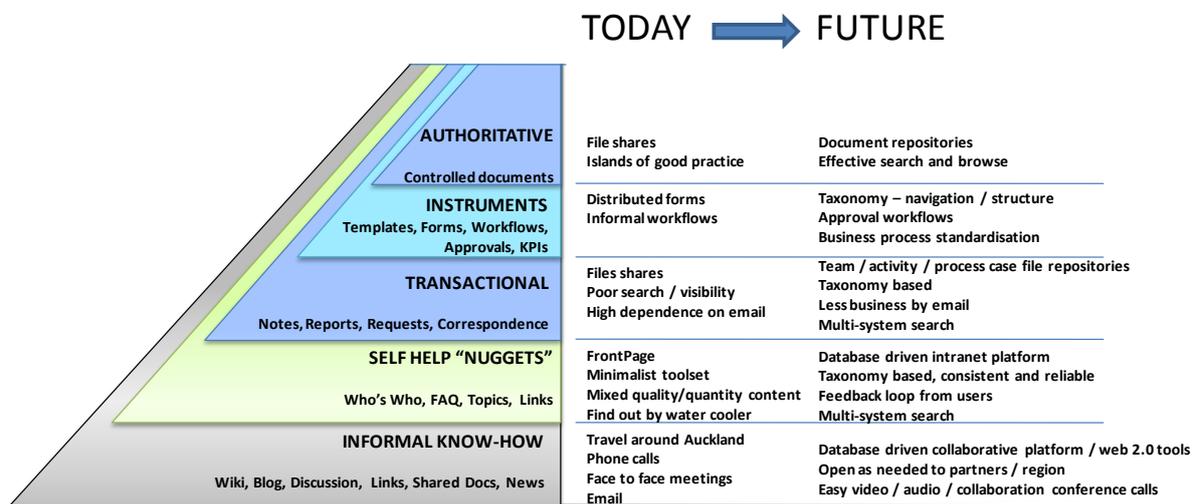
DRIVERS FOR CHANGE

- Ongoing risks of information accidents from reliance on information that is inaccurate, incomplete, outdated or not authoritative.
- Inefficiencies in the system due to the inability to quickly (or at all) find what or who is needed to make the best decisions, redirect resources and take action.
- Duplication of technology investment (time and dollars) with multiple tools in place doing the same things.
- Time is wasted by new staff members searching for information to enable them to understand and find their role in a complex organisation and keep oriented to changes.
- Risk of non compliance with the requirements of the Public Records Act; for example, risk of commitments made or received by email not being recorded in permanent ways.
- Lack of appropriate systems (infrastructure) resulting in email becoming the default document management system and causing people to rely on point to point communication which creates further risk, frustration, and duplication.
- Unwillingness to work together regionally in spite of talk to the contrary. For most, the perceived barriers, hassle and extra effort of regional collaboration outweigh the benefits of working together.
- Lack of clarity over ownership (copyright) and responsibility for maintenance of knowledge.
- Inconsistency of action due to inconsistency of information presentation, for example, in respect of ‘travel advice’, general practitioners have different views due to variations in information sources and experience.
- Unavailability of information relevant to the clinical consult and needed for decision making at the ‘front line’ (i.e. general practice). This should be available regardless of where it exists ‘in the world’.
- Lack of knowledge management in general practice, for example, difficulty in accessing information such as referral and prescribing guidelines, contact people (within hospitals), subject experts, service directories, financial guidelines, accreditation advice, and claims submission.

- Lack of a single source of truth and a directory of trusted information (i.e. controlled documents) which identifies approval level and location.
- Experience (personal wisdom) and institutional knowledge cannot be substituted and therefore it should be made easier to share and access this information to support ongoing learning.
- Lack of a knowledge management culture that promotes sharing, learning and collaboration.
- Knowledge management will become increasingly important as managed self care develops in terms of providing the appropriate clinical information and self help that people require.

STRATEGY

- Identify and confirm the information in the five knowledge domains identified in the Information and Knowledge Framework, namely ‘Authoritative’; ‘Instruments’; ‘Transactional’; ‘Self Help Nuggets’; and ‘Informal Know-How’. These domains are illustrated in the pyramid diagram below.
- Prioritise actions in line with the regionally identified needs and appetite for change.
- Provide resources directly to support the higher tiers of the content pyramid and use more public resources for the lower levels.
- Develop regional standards for consistency of knowledge use, generation and maintenance.
- Define a governance framework and strategy for creating controlled and governance documents including a set of high level principles that are generic and resolve the key issues of trust, access and collection.
- Ensure capability is in place to comply with Public Records Act requirements.
- Provide regional enterprise content and document management systems and other core infrastructure to help correct the knowledge management deficiencies, particularly, in primary, community and secondary care.



(Adapted from ‘Information and Knowledge Framework, Metro Auckland District Health Boards’ – Information Leadership Limited, 2008)

ROADMAP

1. Establish a Governance Group and framework for regional knowledge sharing with responsibility for keeping initiatives well resourced, aligned and achieving the desired outcomes.
2. Agree standard information formats and classifications (taxonomies) to improve knowledge sharing.
3. Implement processes for managing content that require 'authoritative' approval to infer level of trust and endorsement.
4. Develop and/or better utilise existing tools for searching and finding content, including strategies to ensure compliance into the future.
5. Ensure search engines are configured to present content based on the 'level of authority' or 'trustworthiness'.
6. Develop the region's key recordkeeping staff's capability and collaboration capacity to enhance their understanding of compliance, and foster joint or common approaches across the region.
7. Provide a simple-to-use and update contact and location information directory, for all staff in the region (Know-Who).
8. Provide individual or group-driven collaboration tools (including collaboration workspaces) for working together within each organisation and across the region.
9. Develop a Referrals knowledge base or a wiki version which is collectively editable and generated.
10. Implement enterprise content, collaboration and document management systems and other core infrastructure for wider organisational needs but in particular primary, community and secondary care. The system should be simple to use and update, has built-in approval processes and good find-ability for differing roles and information needs (Know-How).
11. Promote knowledge sharing and facilitate development of communities of practice.
12. Embed knowledge management processes into business processes and projects.
13. Implement proactive (push) type decision support systems and integrate with clinical systems based on the degree of importance of the information being delivered.

CRITICAL SUCCESS FACTORS

- All parties sharing information or explicit knowledge are using common information classifications.
- All parties are signed up to an agreed common taxonomy without changes being implemented in file structures.
- Knowledge management tools are available, easy to use and embedded in normal workflow.
- Staff, in particular front line clinical users, trust and use the knowledge.
- Peer-to-peer contact is sufficient to support knowledge transfer.
- Communities of practice develop as a combination of personal relationships, contact and information exchange.
- Sharing of knowledge across communities of practice is increased, barriers are removed and people and organisations are less isolated.
- Presented information is accurate and relevant to the individual's local situation and context.
- There is a willingness to work together regionally with greater transparency and availability of information allowing those predisposed to searching and connecting with others, to do so.
- Regional working becomes much easier as people can participate without time-wasting meetings and travel, and email overload.
- A culture of sharing, learning and collaboration is in place.
- Expertise and learnings from other failures and successes within knowledge management implementations are used effectively.
- Regional information systems are integrated enough to allow access, sharing or information and collaboration.

SCOPE

- Knowledge management covers content held or related to an organisations intranet and internet content, document and email management, know-how and contact information, records, scanning, images, collaboration tools and processes, management information and external providers. It also includes implicit knowledge held in the minds of staff.
- Knowledge management includes knowledge for organisations and staff, in particular clinicians; information for patients on services in the region, and public health information. It excludes the electronic health record covered in the 'Person Centred Health Information' strategy.

MEASURES OF SUCCESS

- People like to use the knowledge management systems, including clinical users, and these systems influence what actions they take.
- Results of organisation audits on information creation, maintenance and disposal, as required under the Public Records Act, are reasonable and improving.
- Staff surveys on information management and environment show improvement across the range of domains from 'Authoritative' to 'Informal Know-How'.
- Information and therefore knowledge is self maintaining.
- Self sustaining communities of practice are established, use and value the environment; and there is an increase in general social networking across the sector.
- Individuals have access to knowledge using it to improve self management resulting in reduced demand for chronic care services.
- Information accidents are reduced as people have quick search and browse access to reliable information, know-how and experts, and are relying less on email.
- There are minimal or no issues in accreditation reviews.
- Staff turnover reduces as new and existing staff quickly and reliably access what they need to know and contribute to its update.
- Email reduces and reliance on it as a local store of trusted content becomes less pronounced as the new ways of working are quicker and more reliable.
- Efficiencies increase due to people finding information, know-how and others quickly and correctly the first time. Lessons learnt or innovation made in one area become available and known through search tools to avoid reinventing the wheel.
- Current regional practices are replaced by quick means of having dialogue at a distance and sharing content in workspaces.

3.4 WORKFORCE INFORMATION

VISION

INFORMATION THAT ANSWERS THE KEY WORKFORCE QUESTIONS

Our vision is improved health outcomes through:

- a. Enabling the appropriate planning, recruitment and education of the northern region healthcare workforce through the sharing of regionally consistent, up to date capacity, capability, utilisation and forecasting information across primary, community and secondary care; and by
- b. Providing managers and staff with the ability to interact online to support recruitment, employment, development, pay and transfer processes with minimum waste and duplication.

DRIVERS FOR CHANGE

- New models of care, in particular those involving devolution of services from secondary to primary and community care, are emerging to meet changing health needs. To ensure optimal use of current and new clinical resources; a 'whole of health' workforce view is required to understand current workforce limitations and opportunities.
- Current workforce information is not consistent, not of sufficient quality and does not adequately cover primary, community and secondary care providers. It cannot, therefore, reliably inform local, regional and national decisions on how to develop and manage our health workforce to support these new models of care.
- The current workforce configuration and roles are too inflexible and will not meet future demand.
- A review by the northern region DHBs identified that the most significant workforce process and information issue for the region is workforce planning.
- Human Resources (HR) processes in the DHBs, are inefficient due to significant gaps in information systems functionality to support critical processes such as:
 - Organisational Structure management (staffing numbers, staff allocation);
 - Staff planning, profiling and succession planning;
 - Staff utilisation, rostering and capacity planning;
 - Staff attendance and leave management;
 - Staff education and qualification;
 - Staff records management.
- Current regional and national workforce data collections are perceived as costly or onerous and do not meet requirements, undermining commitment to these collections.
- Workforce information is fragmented and under-utilised, residing in various health provider systems, professional bodies or colleges and regional workforce databases.
- Data standards required to develop a consistent and consolidated picture of the workforce are not universally applied.
- The increased focus and reliance on primary care requires promotion of the professions in primary care and a positive image to attract people into this growth area.
- Better utilisation of the available workforce could be achieved by making it easier for staff, especially clinicians, to work in multiple roles, in multi disciplinary teams, and in multiple facilities and organisations, by sharing relevant employee information between providers.
- Life style choices and personal preferences characterised by casualisation, mobility, multiple areas of interest and work-life balance are changing the way people choose to work. We need a better

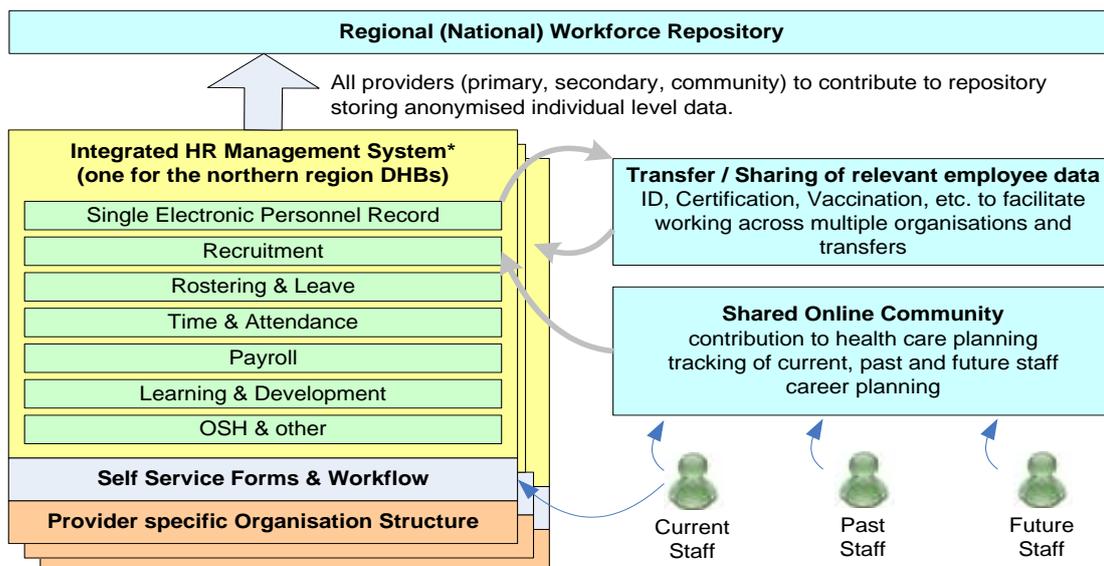
understanding of the barriers for the current workforce and how staff might be enabled to achieve their work and life preferences.

- Internationalisation of the workforce requires efficient mechanisms to communicate with prospective staff in different geographies and time zones.

STRATEGY

- Assist organisations to achieve their workforce requirements by providing a repository of standard, comprehensive, complete and quality workforce planning information for the region.
- Assist providers to understand and support the purpose of workforce planning data collection and support them to comply with data collection.
- Assist DHBs to process HR functions efficiently by providing a single, regional integrated and comprehensive Human Resources Management System (HRMS) that has a common staff identifier, standard integrated staff record, and on-line forms and workflow. This would enable the transfer and sharing of staff information between organisations, and include payroll, time & attendance, rostering, learning and development, recruitment, attendance and leave management, workforce planning, Occupational Health and Safety incident reporting, and management reporting. This HRMS is to be made available to primary and community care organisations who wish to use it.
- Extend the HRMS with functionality to collect, store and evaluate qualitative data to ensure staff personal preferences are considered as part of decision making processes.
- Enable DHBs to efficiently manage hierarchy, staff costs and allocations with the ability to capture and process a single organisation structure that covers all staff regardless of the way they are employed or paid.
- Provide an online community of interest that allows past, current and future staff to share their work, career and personal interests, enables them to seek opportunities, and to register their plans and goals. This shared online community would link to the regional recruitment website, and enable voluntary tracking of past and prospective employees as well as career planning and career pathways on how a person can migrate from one career to another.

FUTURE STATE: REGIONAL HR ARCHITECTURE



* Some providers may share a hosted solution with a logical split between organisations.

ROADMAP

1. Develop a single identifier for health care staff to prevent duplication of workforce planning information at a regional and national level and to enable transfer of data between providers.
2. Agree or improve a standard for a workforce planning minimum dataset, and support healthcare providers to implement the standard and contribute the data reliably to a central national or regional repository; ensure the dataset is pragmatic, easy to collect and focused on agreed priority issues for providers.
3. Either build upon the national Health Workforce Information Programme (HWIP) national repository, or implement a regional repository, which provides regional workforce planning and forecasting of skills and capacity for service delivery, in which information will be at the individual level but anonymous.
4. Agree and implement a standard staff record minimum dataset including identification, education, certification, and vaccination. This can be transferred or shared between organisations with the consent of the employee, so that an individual can be effectively managed across multiple organisations without duplication.
5. Implement a single, regional integrated and comprehensive HRMS that supports a single, regional DHB HR and payroll process for the four DHBs, and available to primary and community care organisations.
6. Implement organisational structure management functionality for the four DHBs.
7. Implement a Shared Online Community to build closer relationships with past, existing and future staff.

SCOPE

- Workforce information covering the workforce across primary, community, and secondary care providers in the northern region regardless of how the individual is engaged (i.e. employment contract, independent contractor agreement, self employed, volunteer, students, trainees, etc).
- Participation by the private sector in the regional/national workforce repository is considered important and will be encouraged, subject to future discussions with private health care providers on the value of that involvement.

CRITICAL SUCCESS FACTORS

- Ensure link with an appropriate governance structure to enable setup and ongoing management of shared information sets and the regional/national repository.
- Workforce information, both quantitative and qualitative, is available to the region across primary, community and secondary care.
- Collaboration in this area is designed to minimise competition for staff and recruitment.
- There is acceptance by the individual of the value of collecting personal qualitative data and trust in its use.
- Information reporting through regional and national (HWIP) systems is timely and of a high quality in regard to specific HR questions.
- Links are in place with tertiary training organisations, including processes to inform courses and training being offered.
- Tools to support regional workforce planning and forecasting are established and operational.

MEASURES OF SUCCESS

- Workforce information used by decision makers on labour market supply and demand is Fast, Reliable, Intuitive, Stable and Trustworthy.
- Education investment decisions are well informed and aligned to the northern region's demand for new graduates and ongoing training.
- Employees in the northern region indicate through Workforce Surveys a high satisfaction with their employment and career pathways.
- Workforce planners acknowledge that the regional and national HR management systems are assisting:
 - The minimisation of critical shortages in key occupational groups within the northern region;
 - The development of new roles and scopes of practice necessary to implement new models of health care.

3.5 BUSINESS INFORMATION

VISION

INFORMATION MANAGEMENT TO DRIVE PERFORMANCE IMPROVEMENT AND SUPPORT COST-EFFECTIVE CLINICAL DECISION MAKING

Our vision is improved health outcomes through:

- a. Enabling improved performance across primary, community and secondary care through enhanced capabilities to cost, analyse and report on clinical, financial and volume data; and by
- b. Providing clinicians with relevant and useful financial and management information, at the point of care, to inform clinical decision making and to drive the best use of resources.

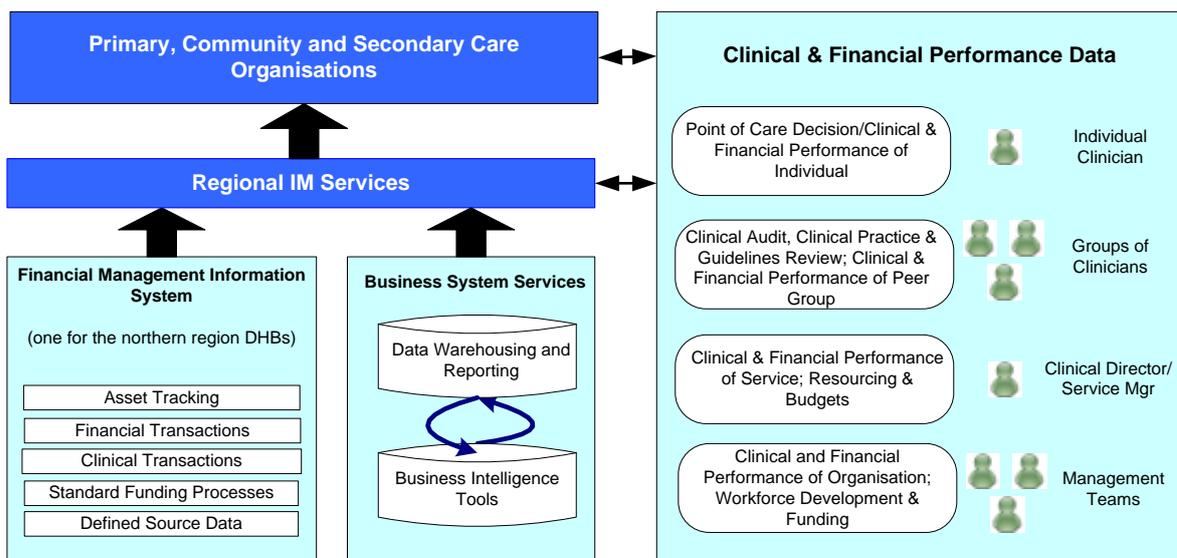
DRIVERS FOR CHANGE

- Operating and supporting multiple financial, procurement and other support systems is costly and inefficient. The complexity and relatively low level of smart integration of these systems is a barrier to the introduction of more efficient and sustainable administration processes.
- There is an increasing focus on performance management and in particular, clinical performance and outcomes measurement. Benchmarking, comparing or combining cost information is difficult to achieve in the present model because of the fragmentation of transaction level health data and the lack of standard identification preventing effective end to end system analysis.
- Clinicians have no access to the cost implications of a clinical decision at the time of making that decision. Likewise there is no capability to identify across different system the costs and benefits related to certain patient pathways.
- There is insufficient data to understand the economics of new products and procurement initiatives.
- Business systems for primary and community care are often not affordable or feasible given the number of individual general practitioners and practices and do not adequately recognise the significant differences between primary, community and secondary care.
- The various funders of health care have different payment and claims processes creating overhead and complexity for GP practices and other community providers needing to interact with those processes.
- Information management processes need to be aligned and systems and coding standardised to improve on data warehousing, consistency of analysis, and the quality of reports.
- The analysis and understanding of utilisation and rationing of business capacity is highly complex and better tools and higher quality information is required to determine the long-term effects of decisions.
- Business intelligence is required to support pricing as well as costing. New funding models are required to be based on pricing of outcomes, including models that price risk.
- Staff access and utilisation of business systems should be simplified using common processes and portals that direct the user, are intuitive and require minimal training.
- The strategic development of new clinical services facilities is currently hampered by the lack of integrated systems for asset tracking and space management.

STRATEGY

- Enable more efficient DHB financial and procurement processes by providing a single, regional Financial Management Information System (FMIS) for the four DHBs which would be available to primary and community care organisations who wish to use it.
- Improve information management by defining the source data required for clinical performance and outcomes measurement, standardising clinical and financial transaction data, simplifying the data capture to organisation data warehouses, and providing utilisation and comparison reporting that supports effective clinical and financial decisions.
- Provide improved support for primary and community care with standardised funding processes and offer business system services.
- Improve the quality of decision making by providing business intelligence tools.
- Deliver information to clinicians in a clinical context and in such a way that an individual clinician can make an informed decision to affect a change. Ensure the system is enabled to maximise resource utilisation by making available information about the actual cost of particular tests and treatment approaches.
- Optimise new clinical services facilities development processes with asset tracking and space management systems.

FUTURE STATE: REGIONAL BUSINESS SYSTEMS ARCHITECTURE



ROADMAP

1. Align DHB financial and procurement processes including a single chart of accounts, single product catalogue, end of month cut-off dates, and invoice approvals.
2. Implement one instance of FMIS to support common financial and procurement processes for the northern region DHBs and offer appropriate services for primary and community care from this platform.
3. Standardise data warehousing and information management processes including reporting outputs, terminology, data definitions, clinical coding and costing models, and align the source transaction systems.

4. Enhance data warehousing and information management by working with clinicians to define information required for quality clinical decision making, measuring improved quality performance and presenting clinical utilisation and costing information at the point of care.
5. Analyse the feasibility of standardising funding processes and developing information management services including decision support and KPI reporting for primary, community and secondary care providers.
6. Implement business intelligence processes and tools.
7. Implement facilities asset tracking and space management systems.

SCOPE

- Business support functions that refer to the operational activities of governance, management and administration.
- Business intelligence and support systems covering primary, community and secondary care providers in the northern region, as defined by the following key functional areas:
 - Financials including FMIS and asset management.
 - Procurement including supply chain management.
 - Reporting including clinical costing, decisions support, KPI reporting, data warehousing.
 - Facilities management including in-building systems.

CRITICAL SUCCESS FACTORS

- A clear and aligned vision for business intelligence and support systems
- A clear directive from sector leadership on the overall aims and objectives.
- Perceived equity by stakeholders in terms of 'pain' and 'gain' being aligned across the region.
- An incremental approach to implementation is followed as opposed to a single large scale and complex change, by starting with a significant system or 'foundation stone', e.g. finance, (online) identity management, patients, staff.
- Reasonable and realistic timelines and goals are established, agreed to and followed.
- Appropriate funding is available to support strategy and alignment of systems.

MEASURES OF SUCCESS

- Clinicians consider they are optimally informed to make the best clinical decisions possible given the resources available.
- Highest cost patients can be identified and treatment pathways agreed to support their efficient and effective management.
- Productivity gains are evident i.e. more is being done for less.
- Regional and national reporting requirements are easily and efficiently achieved.
- Consistent business intelligence and support processes are established and operating.

3.6 IT INFRASTRUCTURE & SERVICES

VISION

ACCESS TO SHARED INFORMATION SYSTEMS WHERE AND WHEN I NEED THEM

Our vision is improved health outcomes through providing people with appropriate access to fast, intuitive, robust, stable and trustworthy information systems and services to ensure they can be an effective participant in the health system, regardless of what they do, where they are and when they require access to these systems.

DRIVERS FOR CHANGE

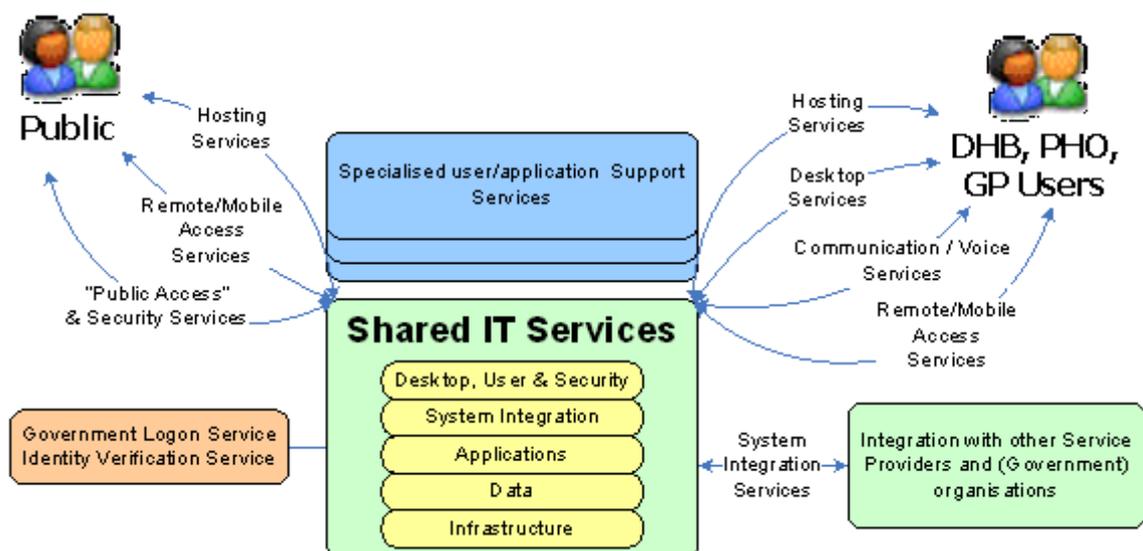
- The vision for a person centred integrated electronic health record (EHR) and access to shared population health information demands consistent access to highly resilient and reliable regional and national IT services and systems.
- Current infrastructure services are fragmented, leading to significant inefficiencies across the health system for both IT service providers and IT service users; including but not limited to:
 - Duplicate systems between health care providers;
 - Unnecessary barriers between provider centric networks;
 - Multiple logins and passwords for IT users.
- Security solutions, including building security systems, are fragmented, inconsistent and vary based on the experience and capability of individual health care and IT service providers. This results in a health system IT security model that is only as strong as its weakest link.
- The level of investment in information technology is inconsistent across health care providers and relatively low in primary and community care providers compared to secondary and tertiary care providers.
- Funding and resources are insufficient to meet the demands of clinicians and other users for high performance systems with high resilience and availability. Compared to international benchmarks, investment in secondary care IT in the region as a percentage of revenue is less than half the international average of 4.4%.
- Current models of IT service delivery and IT capital investment favour ongoing capital investment in secondary care IT solutions because of the level of depreciation based on historic investments. Primary and community care IT investments are fragmented and often hidden in low level operational expenditure making it difficult to create a more balanced IT investment portfolio across the health system as a whole.
- Resources in primary care IT are limited with minimal vendor collaboration, few standards, legacy software, inconsistent IT investment, and highly variable infrastructure for connectivity, security, data backup, and networks.
- Funding constraints are increasing the need to justify increases in IT expenditure, account for uses of funding, demonstrate returns on investment, and to prioritise the increasing demand for infrastructure services.
- The health IT system landscape is becoming increasingly complex and as a result is becoming more difficult for health provider organisations to meet IT resilience and integration requirements.
- Due to fragmentation of the current IT infrastructure, systems and resources across the health system, IT system users are finding it more difficult to receive end-to-end service delivery guarantees and assistance.
- The high cost to a GP to implement the Health Network secure connectivity or to comply with minimum standards is a significant barrier to patient information sharing.

- Growth in demand is nearing a tipping point in IT infrastructure capacity such that a step increase in investment is required in primary, community and secondary care for major items such as data storage and data centres.
- Traditional software licensing models such as Microsoft are unsustainable as volume growth pushes license cost increases well beyond affordability.
- DHBs work to annual IT funding processes which are wholly inadequate for long term infrastructure investments.
- Technical discontinuities and disruptive technologies such as virtualisation, mobile devices, web technologies, and cloud computing place even greater pressure on infrastructure investment, resources, and services.
- Health care provider IT managers require timely and accurate information about the overall performance of their IT infrastructure including where there are risks to performance and availability. An unstable IT environment can impact in a number of ways such as adversely affecting patient care, compromising patient safety, affecting clinician productivity and morale, and undermining enterprise confidence.
- The complexity of the IT infrastructure has continued to increase every year, including new, more complex applications, demand for point of care technology and system integration, exponential data growth and the need for 24/7 availability.
- Organisations do not appreciate the value of IT as they focus on the performance of infrastructure components rather than how those components collectively contribute to the delivery of specific, mission-critical clinical and business services to end users.
- FTE constraints hamper opportunities to better utilise the IT workforce to leverage efficiencies.

STRATEGY

- Establish a single, northern region IT service organisation to support a regional EHR, regional population health, HR and business information systems, and offer services to primary and community care. This organisation to be charged with:
 - Matching service delivery with service need;
 - Minimising cost through convergence, collaboration, standardisation, rationalisation and component reduction;
 - Developing precise, targeted intelligence that enables it to respond in a timely manner to agreed business needs;
 - Defining, measuring and improving performance to deliver continuous quality improvement;
 - Establishing Service Level Agreements that clearly define the services to be delivered and associated performance expectations;
 - Building end to end system monitoring tools that relate infrastructure components to business processes.
- Develop IT infrastructure capacity planning and capability covering primary, community and secondary care, to anticipate and accommodate growth, new facilities and new projects.
- Employ best-practice frameworks, such as ITIL, to improve infrastructure and operations maturity levels.
- Develop and deliver a set of shared, integrated and consistent IT services including information system, infrastructure and communication services that are accessible to all health workers and support the key strategies outlined in RIS10-20.
- Consolidate duplicate information systems and services, and provide common software solutions as a service to health care providers and the population.

- Develop a limited set of data centre facilities in the region to support regionally shared systems and protect these core information assets with strong security measures while the entire network and all connected workstations are treated “public”.
- Align regional IT network(s) with the NZ Connected Health standards to ensure consistent service levels and interconnectivity.
- Provide regional information systems users with a single logon that provides access to all health information systems and information they are authorised to access, linked to a national identifier (and/or the HPI; and leverage the Government Logon Service and Government Identification Service, where appropriate).
- Develop an integrated IT Service Management model to provide users with a single point of contact across IT service providers, including integrated service call tracking across IT supplier service desks.
- Improve infrastructure business cases to provide a more compelling case for increased infrastructure investment.
- Evaluate Open Source solutions before selecting proprietary solutions and move towards Open Source where it makes sense, in order to provide required IT services within the constrained funding environment and to lower the total cost of ownership.
- Establish guidelines to assist health care providers acquire technology aligned with the regional vision and strategy for IT infrastructure and service management.



ROADMAP

1. Confirm requirements of primary, community and secondary care organisations; design and establish northern region IT shared services.
2. Confirm requirements, design and implement the high level regional IT infrastructure and network to support single, regional systems for HMIS, population health repository, enterprise knowledge management, workforce planning repository, HRMS, FMIS including primary and community care users.
3. Establish key performance indicators and service level agreements to provide end users with clear service expectations and measures of performance.
4. Provide an integrated service desk for primary, community and secondary care to enable single point of contact for users.

5. Tender DHB regional telecommunications and data services procurement.
6. Implement new regional data storage infrastructure.
7. Implement new regional data centre strategy.
8. Implement the HPI within a cornerstone clinical/business project and pilot the Government Logon Service and Identity Verification Service.
9. Implement a single integrated logon for primary, community and secondary care users.
10. Deliver a primary and community care IT service package to provide end user focused support including desktop, voice, data and hosted applications.

CRITICAL SUCCESS FACTORS

- Agree and implement a governance structure so users and stakeholders can trust that a shared service will serve their best interests in the context of the health system as whole.
- GPs and independent healthcare providers are encouraged to use common infrastructure services and realise specific benefits from doing so.
- Leadership (both business and clinical) commitment to the importance of a reliable and resilient IT infrastructure and service for the success of the patient centred health record and associated integrated care clinical process.
- Effective partnerships to ensure that the shared service makes optimal use of both internal DHB/PHO capabilities and IT service providers.
- Devolve funding to a single IT service organisation.
- Infrastructure planning and design to accommodate technical disruptive change and discontinuities.
- Adequate support for the workflow and information needs of GPs, clinicians, and the wider clinical team involved in a person's care.

SCOPE

- IT services including information architecture, server, network, data storage, desktop, database administration, integration technologies, security, application, video, voice, and mobile services for DHB staff, PHOs and GPs in the northern region.
- Focus is on delivery of the core EHR, Population Health and Business information systems with other support services as optional.
- Connectivity and access for the public as well as community and private healthcare providers.
- Individual organisations (DHBs/PHOs/GPs) may retain some level of local IT capabilities to support local specialised services if they wish to do so.
- Methodologies, policies, best practices and software systems used to assist the IT service organisation in meeting its service-level commitments covering operations management, application and system management, security management, network management, change management, and problem management.

MEASURES OF SUCCESS

- Clinicians can move easily between healthcare providers without the need for separate logons or re-training.
- Clinicians across the health system can easily access all relevant patient and health information systems where and when this is needed for the most effective and efficient delivery of care.
- Customer/user satisfaction survey shows shared services do meet general user expectations.
- Shared service consistently achieves agreed service levels.

- Shared service organisation can demonstrate an above average performance against international total cost of ownership benchmarks for integrated health systems.
- Improving position on the Gartner Infrastructure and Operations Maturity Levels.
- Regional infrastructure is flexible enough to allow for potential technical developments in the future.

PART TWO - IMPLEMENTING THE STRATEGY

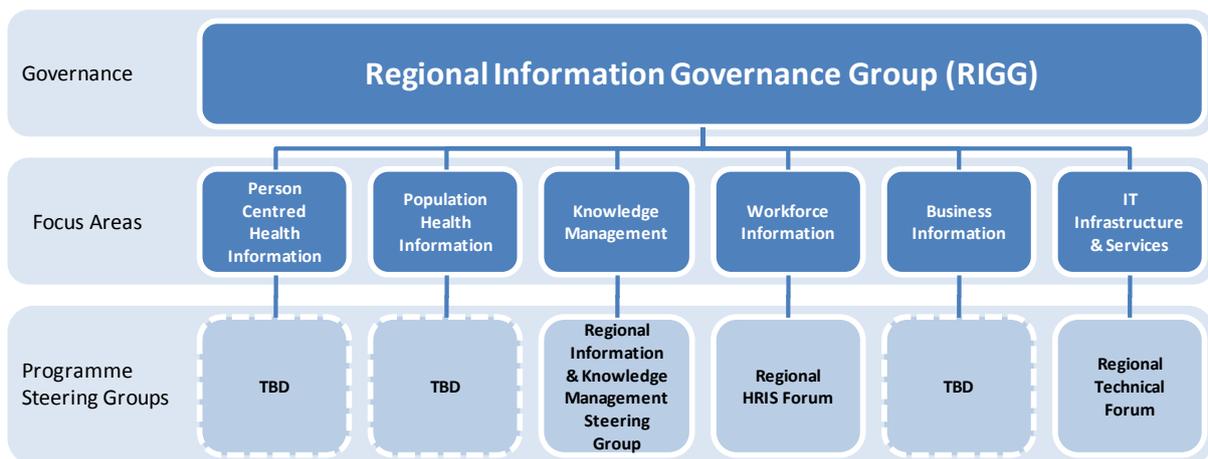
4. STRATEGY TO ACTION



4.1 IMPLEMENTATION APPROACH

Implementation of the future state will require the coordination of a range of complex actions and tasks across the northern region’s primary, community and secondary organisations. To achieve the objectives of RIS10-20 and support the transformation to new models of care, there will be a process for clinicians, administrators, managers and other stakeholders to develop specific implementation plans, regional and local, to deliver the strategy.

An implementation plan will be developed for each programme of work established by RIS10-20. Programme steering groups will lead this work under the direction of the Regional Information Governance Group (RIGG). Existing structures and forums will be reviewed and evolved to perform the steering function. Implementation plans will detail the priority, dependencies and timing of the various projects noted within the individual roadmaps of the focus areas.



District and local plans will reference the programme implementation plans when making local decisions and commitments to information projects. Local plans such as DHB District Information Plans (DIPs) will need to be specific to the organisation and not duplicate or compete with RIS10-20. Some local information decisions will be interim steps to meet specific needs, but still on the path to implementing the regional information strategy.

RIS10-20 and the implementation plans that follow will be shared nationally to inform planning for cornerstone infrastructure projects and development of national systems. This coordinated regional approach to implementing RIS10-20 is intended to provide more effective governance over the region's IT activities and greater accountability for realising benefits.

BARRIERS TO SUCCESS

Implementation of RIS10-20 will be a challenging undertaking. Many of the projects are deemed to be sizable and would be expected to involve substantial change processes, and be staged over a number of years. The risks of failure or non-delivery of large and complex projects are high and will require mitigation strategies developed through the regional governance frameworks, and delivered through regional and local management processes.

For RIS10-20 to be successful, the northern region will need to behave in a significantly more unified and cohesive manner. Governance mechanisms will need to enable swift and final decisions. Passive resistance and relitigation must be replaced by clear communications, common understanding and binding commitments. Approval and procurement processes must be streamlined to facilitate and not hinder the plan delivery. Regional collaboration must be prioritised over parochial self interest. Regional agencies must be trusted and empowered to deliver efficient services.

RIS10-20 will rely on high performing and accessible national systems to support regional achievement of objectives. Progress will be hampered until long awaited enhancements are delivered to the NHI, HPI, and Health Network. Unfortunately there has been a continuously poor record of implementation of much needed improvements to these systems. For example, the Horn Report comments on the National Systems Development Program (NSDP) and states that "there is little benefit to show for the \$27.9 million invested to date". (Meeting the Challenge: Ministerial Review Group, Annex 3, page 13). The northern region CIOs will work closely with the new National IT Board to press for a significant and rapid improvement in the delivery and operation of these critical national systems, and for speedier and more comprehensive development and publication of national information standards.

Implementation of RIS10-20 will require a longer term regional and national investment strategy to ensure more certainty for planners and implementers, encourage greater collaboration and to mitigate the issues that arise from annual capital planning processes and Ministry of Health monitoring cycles.

It may also be appropriate to support performance gains and achievement of the wider objectives of RIS10-20 by embedding principles noted within 'Supporting Principles' within Key Performance Indicators for key individuals, managers and clinicians with direct accountabilities for delivering cornerstone projects.

4.2 PRIORITY NEXT STEPS

Steps to ensure RIS10-20 moves from strategy to action, are:

1. Governance – reconstitute RIGG and establish the framework for managing, integrating and delivering RIS10-20.
2. Structures and Resources – review and change, if required, the existing programme steering groups, create the three new steering groups, and establish processes and mechanisms to operationalise RIS10-20.

3. Implementation Plans – each programme steering group to develop implementation plans that detail processes, priorities and partners for actioning RIS10-20, including an ongoing process to refresh and publish changes.
4. Focus Area Projects – establish wider engagement and endorsement of approach, clinical and business priorities and agree specific regional projects and timeframes, including recognition of interim steps being developed under local plans.

ALIGNMENT TO NATIONAL AND REGIONAL PRIORITIES

Implementation plans and projects will align to national and regional clinical and service priorities. These priorities will inform the implementation planning work and drive the IT projects to be delivered.

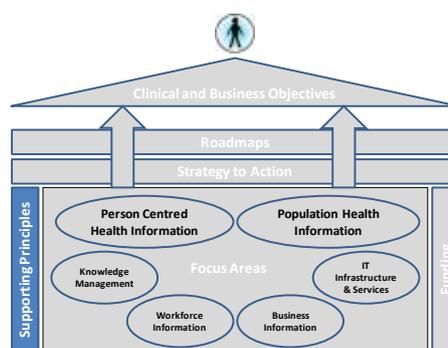
In the initial stages, specific regional cornerstone projects will be identified, for example, a DHB and PHO may agree to establish the first Integrated Family Healthcare Centre. This will be step three on the Person Centred Health Information roadmap and a cornerstone project for the first implementation of the core components of a shared care electronic health record system. Cornerstone projects are characterised by strong clinical leadership, defined clinical services need, and identified quality and efficiency benefits.

The approach of selecting specific cornerstone projects will be applied across all strategy focus areas. Implementation planning and project selection for all developments will be guided by the principle of ‘building simple common systems first which will work for most services’.

The process of selecting specific cornerstone projects will be informed by:

1. Regional clinical and service priorities, including:
 - Clinical Networks and Regional Services.
 - Urgent and Immediate Care.
 - Planned and Elective Care.
 - Radiology Services.
 - Health Services for Older People.
2. National health targets aimed to focus on achieving ‘better, sooner, more convenient’ services, including:
 - Implement new models of care in primary care, including the establishment of multiple Integrated Family Health Centres.
 - Devolution of secondary care services to primary care.
3. Quality improvement and national quality priorities as identified by the National Quality Improvement Committee and associated groups (e.g. Safer Medicines Group), including:
 - Electronic Medicines Reconciliation.
 - e-prescribing.

5. SUPPORTING PRINCIPLES



These principles guide the implementation of RIS10-20. They will apply to all IS/IM activities including programmes of work, individual projects and the operations of information services in the northern region.

5.1 SAFE SHARING OF INFORMATION

Privacy and the concepts of data management are integral to the collection of and access to health information. The following principles guide the collector (or user) of information on obligations when data is changed, when interests in information may be wider than just the individual and on how sharing of information should be managed.

DATA MANAGEMENT

- All collection, storage and use of information will comply with statutory and regulatory obligations, Government and DHB policies including the Health Information Privacy Code (HIPC).
- The purpose and use of information collections will be clearly identified and published, and patients will be informed of this and made aware of the circumstances in which access to information is provided, noting the legitimate reasons for access.
- Key messages to information collectors and the public will be consistent and based on definitions, terms and key phrases that are used regionally.
- Every shared system will establish 'who' is 'holding' the information and on behalf of who, noting that 'holding' is separate from technical hosting.
- Decisions on access to shared information will be based on discussion and review by an authorised group of individuals based on an agreed set of principles.
- Procedures and related principles of data governance and data sharing in relation to data will be published in the 'Regional Information Sharing Guideline'. This Guideline will be formally reviewed and republished every two years.
- Security capabilities of systems will be carefully considered when establishing rules and restrictions.
- All users of regional systems will be provided with their own logons and role based security models established to enable access and provide better protection for data.
- All Information system users will take responsibility and accountability for data quality and integrity.

REGIONAL PRIVACY MANAGEMENT

- Existing advisory structures, including the Regional Privacy Advisory Group ('RPAG'), will be regularly reviewed and strengthened, in line with these 'Supporting Principles'.
- Membership of RPAG will be extended to reflect the increased scope of RIS10-20 and its Terms of Reference will be adjusted accordingly.
- RPAG will define the "Regional Information Sharing Guideline" and advise the following groups on its appropriate application and use:

- Regional governance group responsible for governing the shared regional information systems across primary, community and secondary care settings.
- Multiple stakeholders including DHBs and PHOs, following agreed principles, on the safe sharing of information.
- Membership of the advisory group may vary from time to time and will be appropriate for the scope of the discussion or subject matter.
- Patient and general public input will be via DHB consumer advisory panels or equivalent.
- An effective mechanism for stakeholder consultation will be established.

5.2 EFFECTIVE USE OF IT RESOURCES

Notwithstanding the specific information management and technology strategies that have been outlined in RIS10-20, any future investment in information systems will adhere to the following principles:

- All IT/IM activities will be aligned to clear clinical or management drivers and benefits and take into account patient expectations of how their health information will be managed.
- Information systems will contribute to the development of new processes for improved clinical effectiveness and efficiency.
- Information systems will support the priority development of primary and community care with an emphasis on supporting new models of healthcare in preference to automating current processes.
- There will be a single information services direction for the region. This means reducing the number and variety of information systems used, and balancing commercial risk by having relationships with a limited number of strategic vendors.
- Implementation planning and IT project selection will follow the premise of 'building simple common systems first which will work for most services' before catering for highly specialised requirements.
- Autonomy is constrained once the commitment is made to a regional programme; if any DHB contemplates digression from such a programme then that decision will be made regionally. Flexibility in implementation is allowed through individual DHB action plans and by recognising different starting points.
- DHBs will seek to maximise IT effectiveness within available resource by seeking out alternative sources of funding, reconfiguring existing costs and redirecting resources.
- Wherever possible the significant historical investment in secondary care IT will be leveraged to deliver benefits to patients across the sector, including primary, community and NGO providers, without prejudicing primary health care independence. Information systems will be implemented in partnership with primary, community and NGO sectors, with consideration of providers' skills, capacity and existing IT infrastructure and resources.
- The utilisation of national foundation infrastructure (e.g. the HPI) will be proactively incorporated into regional cornerstone projects to ensure the national projects become a reality.

5.3 GOOD GOVERNANCE

Effective structures and processes for executing RIS10-20 are essential to its success. Governance of shared systems includes the key aspects of prioritisation, project steering for system implementation, ongoing support of shared systems, and monitoring of progress and performance. The following principles will guide the governance of RIS10-20:

SHARED REGIONAL DIRECTION

- Business, clinical and IS strategies will be regionally aligned, including budget setting and decision making.
- Regional investments will be aligned to solutions that can be afforded, are justified and are in demand.
- Regional collaboration rather than regional consensus will be adopted as the preferred model of working together. Successful collaboration will require us to:
 - Have common business goals and processes;
 - Use standard processes to underpin trust;
 - Get smarter with communication;
 - Divide the work up based on strengths; and
 - Remove the 'not invented here' barrier.

REGIONAL PRIORITISATION FRAMEWORK

- Prioritisation will be performed at strategic (direction), tactical (projects/capital) and operational (resources) levels.
- Prioritisation processes will be lead by business and clinical personnel, against shared business directions and priorities.
- Priorities will be set on the basis of known benefits (outcomes) and costs taking into account value for money and return on investment.
- Local prioritisation processes will be guided by, and will not undermine regional priorities.

WELL INFORMED DECISIONS

- All stakeholders, including primary, community and secondary care organisations, will be appropriately engaged in decision making.
- Engagement and contributions to end products will be based on specific skill sets and expertise
- The regional (shared) IS team will integrate with clinical services to prevent any separation of aims and approach.
- Users will be represented to ensure that the solution delivery is about making users' life easier.
- The 'right' questions will be asked before proposals and/or recommendations are presented to final decision makers.

EXECUTIVE LEADERSHIP

- Executives will consistently engage with and communicate joint decisions to their own and other individual primary, community and secondary care organisations, to ensure regional concordance with those decisions.

CLINICAL LEADERSHIP

- Leadership to inform and implement the 'right' decision is essential, with clinicians and managers to have shared responsibility and accountability for improving system performance.
- Clinical leaders will advocate for the required changes by demonstrating adoption of the changes and challenging the environment needing the change.

- Ideas will be collated according to organisation, specialty or other mechanism(s).

TRUST DECISIONS

- Through strong engagement and leadership, stakeholders will be able to trust that decision makers are well informed and will do the 'right thing for the right reasons at the right time'.
- Benefits will be balanced across the sector and engender a sense of perceived equity.
- The needs of primary and community care will be specifically considered in relation to resources, decisions and benefits.

CLEAR ACCOUNTABILITIES

- Accountabilities will be clearly defined, with advisors and decision makers identified and confirmed.
- Individual accountabilities versus shared (and/or delegated) responsibilities will be understood.

SUPPORT INNOVATION

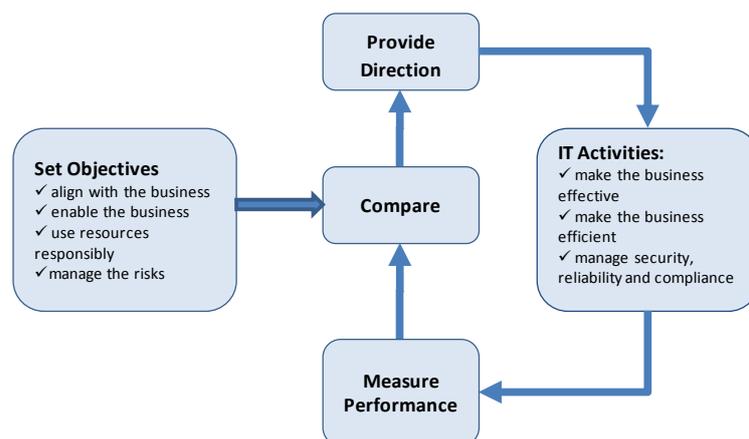
- Whether one or multiple solutions will be supported for a similar requirement will be determined following an assessment of the need to maintain business processes, the level of innovation and organisational risk.
- Innovation will be supported where appropriate, taking into account the requirement to maintain high performing operating environments and production systems.

IS GOVERNANCE:

The current level of strategic leadership and governance of the information and technology agenda is inadequate and unlikely to significantly realise the potential of this enabler for the health sector. In most health organisations this important responsibility is left to their Chief Information Officer and a few enthusiastic clinicians and managers. There is a tendency to 'oversimplify' and look for IT solutions without getting the fundamentals right, like looking at standardising clinical process and assessing the readiness for changes in behaviour necessary to make new systems work effectively. (Meeting the Challenge: Ministerial Review Group, 31 July 2009, Annex 3 p12)

- The Regional Information Governance Group ('RIGG') will be reconstituted to ensure quality regional governance and strong clinical input is maintained for strategic, tactical and operational IS management. Key features of this re-established group will be primary and community care participation, programme steering groups for each RIS10-20 focus area, and accountability for delivery of outcomes.
- Other existing governance structures, including the Regional Information Services Group (RISG) and the Regional Privacy Advisory Group (RPAG) will be reviewed and strengthened to support RIGG.
 - RPAG will continue to advise RIGG on privacy and security matters.

- RISG will continue to advise regional CIOs on alignment of regional systems and governance of regional repositories.
- Clinical and business initiatives enabled by IT will be managed at all levels as a shared responsibility between IS and the business.
- Structures, processes and guidelines will be established to support a strong partnership between IS and clinicians and business.
- Strategic leadership and governance of the information technology agenda will ensure potential benefits of IS as an enabler for the health sector are realised.
- The RIGG will:
 - Be chaired by one DHB CEO on behalf of other DHB CEOs and the wider primary, community care sector;
 - Be an advisory body to the DHB CEOs (and executives of primary and community care organisations);
 - Focus on strategic thinking and clarify IS direction;
 - Agree and develop a prioritisation framework to be applied to regional IT investment decisions;
 - Determine the regional strategic priorities and identify duplication of IS function across primary, community and secondary care;
 - Provide strategic advice and design for the region;
 - Establish and oversee programme steering groups;
 - Oversee the direction and delivery of implementation plans to support district strategic and annual plans;
 - Prioritise and manage adhoc / in-year initiatives;
 - Oversee the alignment of the regional information strategy with local and national plans;
 - Network with local (or organisational) governance groups (which would continue to exist);
 - Adopt the principles, guidelines and processes as described by the 'IT Governance Institute'.



5.4 PRACTICAL CHANGE MANAGEMENT

Change management in business is about helping people achieve the benefits of new technology, systems or structures. New Information systems and tools are enablers; however, an enabler as an output does not directly result in a benefit, but provides a mechanism through which benefits can be achieved. The following

principles will guide the management of business process and systems change required to implement RIS10-20:

BUSINESS LEAD

- Business change, characterised by new ways of working, must occur before the benefits of any change can be realised.
- Business change must be managed through and beyond the delivery of new information systems and tools.
- Executive and clinical leadership is important and required throughout the change period, to demonstrate commitment by promoting and supporting the changes introduced by a project and championing the implementation of new capabilities.

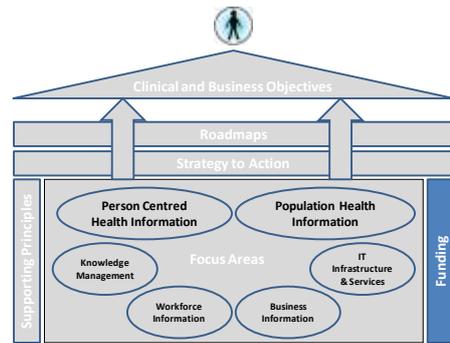
COMMUNICATE THE CHANGE

- All people affected by the change will be communicated with early in the process to ensure they understand the nature and purpose of the change.
- Opportunities offered by the change will be investigated, described and articulated to affected parties.

MANAGE AND MEASURE

- Major change projects will be clearly mapped with objectives, tasks and deliverables.
- Impacts of the change on processes, people and systems will be identified and planned for.
- Benefits will be tangible, obtainable (realistic) and measureable.
- Training of users will receive appropriate investment and emphasis to ensure maximum benefits are derived.

6. FUNDING



6.1 STATUS QUO

The clinical systems strategy of the last ten years has been to exchange information between separate silos of primary, community and secondary care. This approach segmented clinical functionality into areas such as chronic care, child health, mental health, community and disability, referrals, discharges, clinical documents, orders, prescribing, care plans. Each of these areas is then delivered by a major project with separate business case and funding, and often selects different applications from different vendors.

Experience has shown that many of these projects require millions of dollars, years of effort, a new regional engagement, a new business case, and a new procurement. This variety of systems then has to be integrated together, with ever increasing complexity of technology and support cost overhead. While this strategy has made some gains, it has proven to be complex, costly and time consuming. The 'best of breed' strategy followed under RISSP04 is therefore not sustainable and will not support implementation of advanced clinical features such as shared care planning, decision support, electronic orders, and e-prescribing.

CURRENT LEVEL OF IT INVESTMENT AND SERVICES EXPENDITURE

Current levels of IT investment and services expenditure across the northern region DHBs (excluding primary, community and NGO sectors) amounts to approximately \$60M per annum, covering capex and opex, for clinical and patient administration systems (PAS), business systems, infrastructure and general operations. Over a five year period this is a total spend of approximately \$300M with the clinical and PAS portfolio making up \$50M.

Estimated levels of investment in IT in the primary and community sectors in the northern region range from \$12M to \$18M per annum, calculated from an average annual IT spend of between \$10K and \$15K per full-time equivalent GP.

6.2 NEW MODELS OF CARE

INVESTMENT REQUIRED TO IMPLEMENT 'PERSON CENTRED HEALTH INFORMATION'

The regional Person Centred Health Information strategy (covering Clinical and PAS) outlined in RIS10-20 is estimated to require an investment of between \$75M and \$150M over five years, which amounts to a projected increase of approximately \$25M to \$100M over a five year period or 8% to 32% of total current IT expenditure for the northern region.

It is assumed that progress in the other five strategic focus areas will be funded out of efficiency gains.

The above projected investment is based on the traditional model that includes the upfront purchase of a user license and the ongoing payment of maintenance fees associated with that license. It does not consider other investment scenarios, for example:

- No upfront license purchase but payment of annual license subscription only.
- Annual subscription based on size of population rather than the number of users.
- Incremental subscription based license that increases gradually as the usage of models increases

These alternate investment options may address short term capital expenditure issues, however, are likely to increase long term operational costs.

COMPARATIVE HOSPITAL IT SPEND

Annual hospital IT expenditure for the four northern region DHBs is 2.7 percent of total provider revenue of approximately \$2.2B. International benchmarking indicates that average annual hospital IT expenditure as a percentage of revenue is 4.4 percent (Info-Tech Research Group, Health Care: 2007-2008 IT Budget & Staffing Report, p. 14).

As noted, implementation of RIS10-20 will require an increase in current levels of IT expenditure of \$20M per annum, which will bring it to 3.6% of total provider revenue (which is closer to, but still below international benchmarks).

6.3 QUALITY AND EFFICIENCY GAINS

Severe financial constraints are anticipated over the next five years which will impact the region's ability to fund major transformational change. Any increase in investment to achieve RIS10-20 will need to be justified by significant and measurable improvements in performance of the health system as a whole, both in terms of quality and efficiency. Planning for new investment will examine how the current expenditure can be reconfigured and redistributed so that existing funding streams can be redirected into transformational systems to enable the future changes.

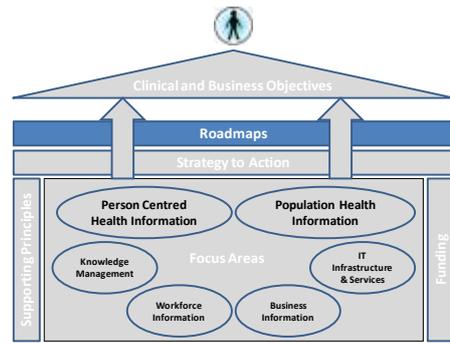
To achieve improvement changes, investment will be clinically led, and will support a deliberate move towards new agreed ways of working and models of care. Direct links will be established between the levels of investment and business process and clinical KPI improvements being sought.

The move to new person centred health (IT) systems will be accompanied by a move to appropriate levels of shared services and regional/national IT infrastructures. New IT service models will assist to keep the total cost of operation of the system at an acceptable level.

DHB procurement approaches requiring extensive business cases, formal tender and multi-party sign off processes may also inflate project costs when compared with smaller scale projects being undertaken in primary and community care environments. This presents an opportunity to be further considered when establishing implementation plans for RIS10-20.

More detailed analysis of costs and clinical and financial benefits will be required to determine the long term affordability and justification of the new models of care and associated IT requirements. Any evaluation of the 'new ways of working' and future IT systems will include clinician, health economist and business perspectives from primary, community and secondary care settings.

7. ROADMAPS



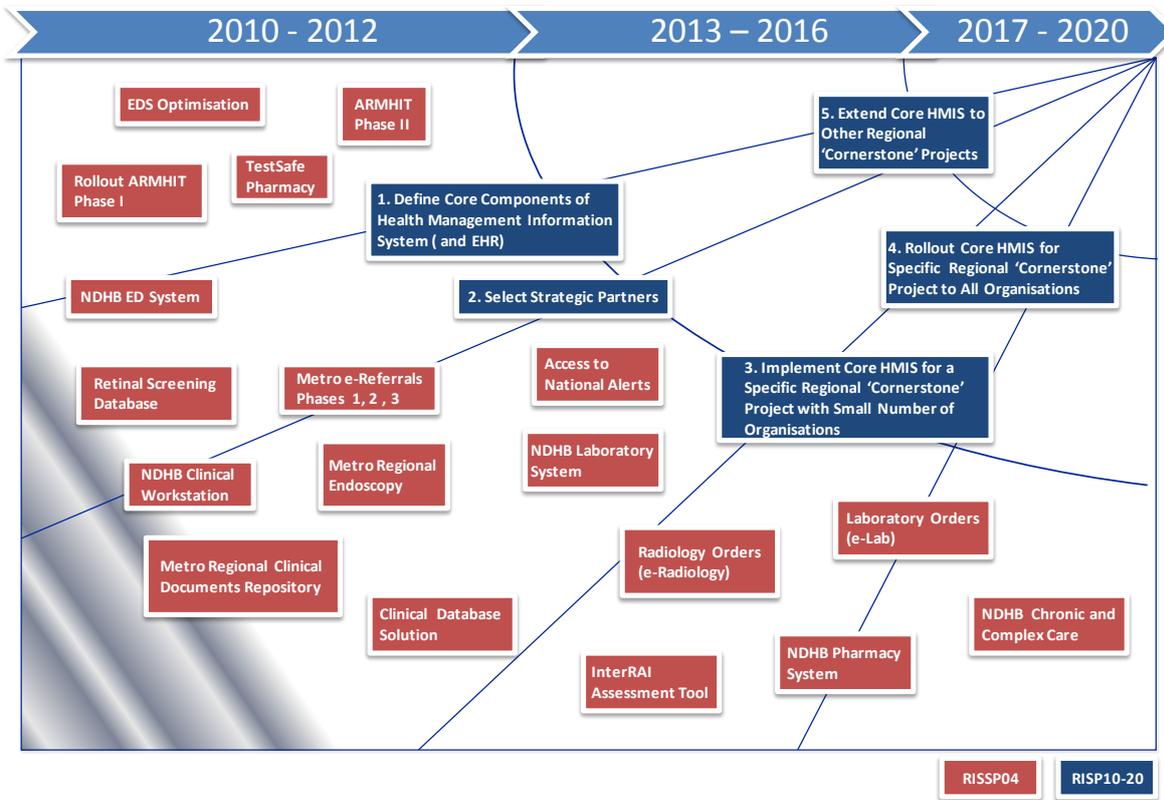
Roadmaps are presented for each of the focus areas and are indicative of the projects and timeframes for their implementation from 2010 through to 2020. These are high level start points for each focus area programme of work and will be refined as detailed implementation plans are developed. Primary, community and secondary care organisations’ local information plans are expected to include roadmaps that show these regional projects in combination with local projects.

The roadmaps use a colour coded legend:

- Red boxes denoting current projects continuing under RISSP04 and Northland DHB projects of regional significance.
- Blue boxes denoting the range of projects and actions arising out of RIS10-20.

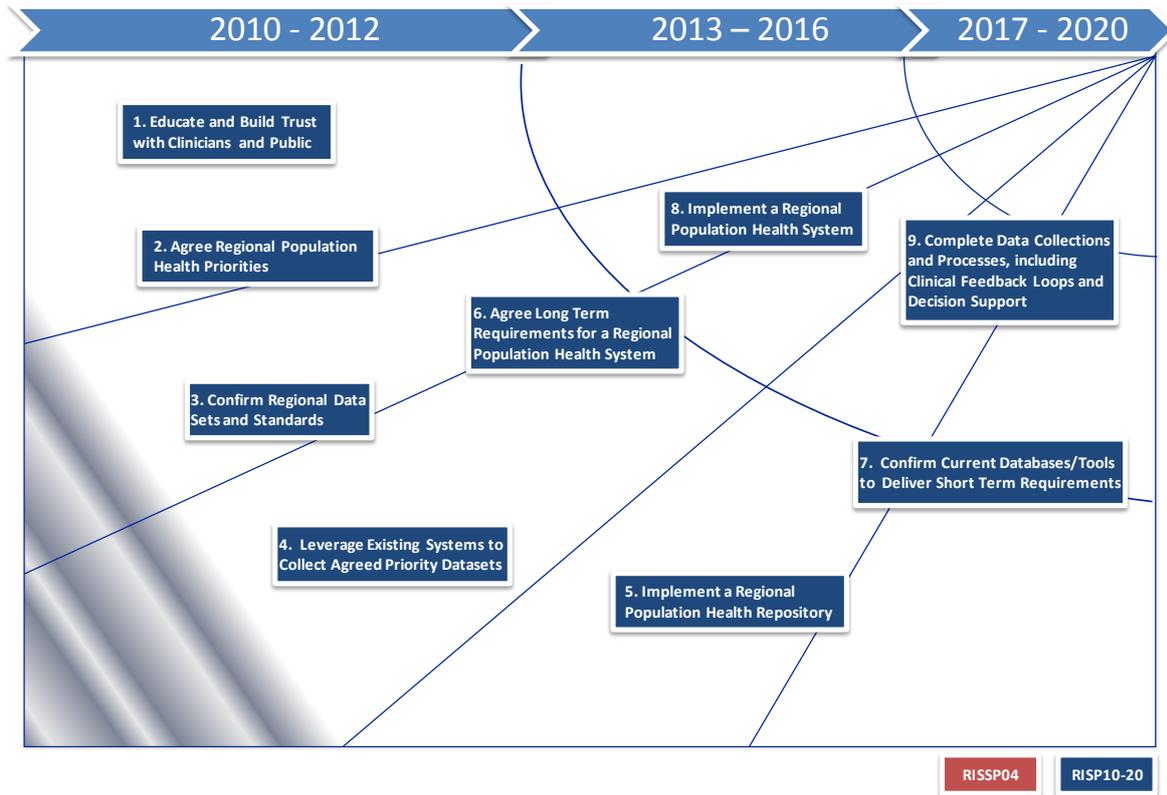
PERSON CENTRED HEALTH INFORMATION

ROADMAP



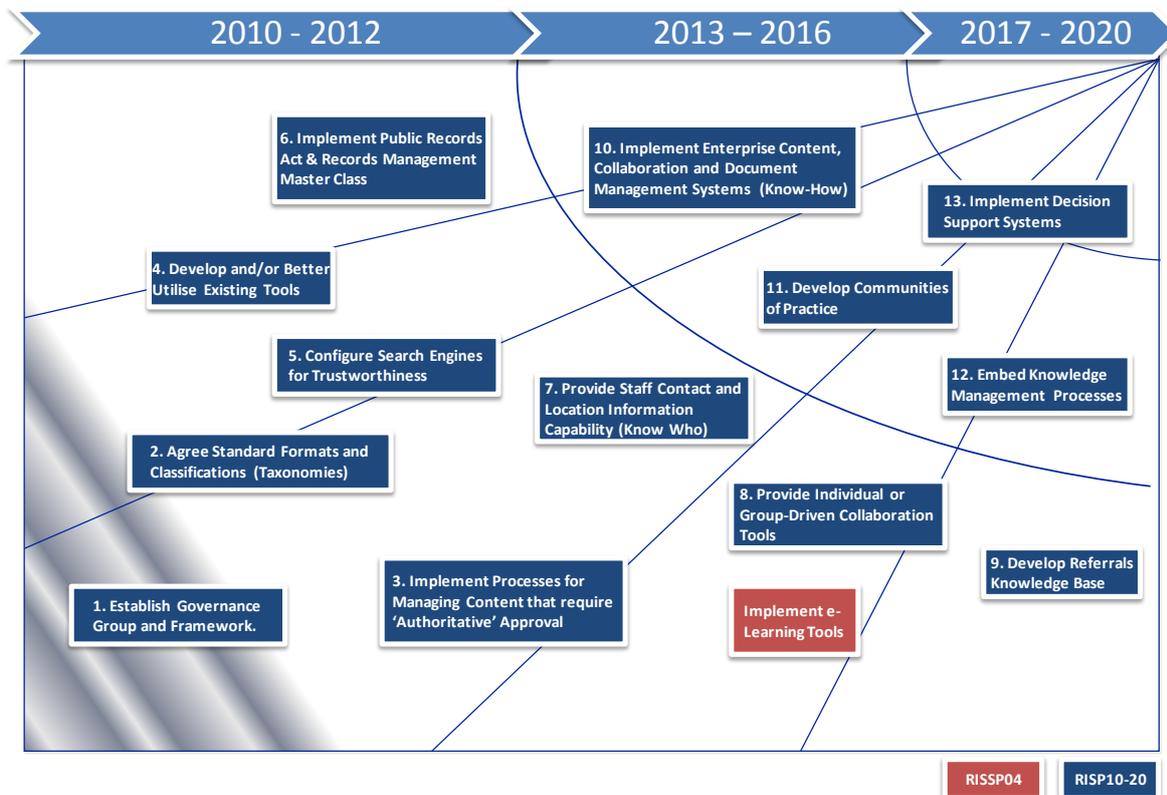
POPULATION HEALTH INFORMATION

ROADMAP



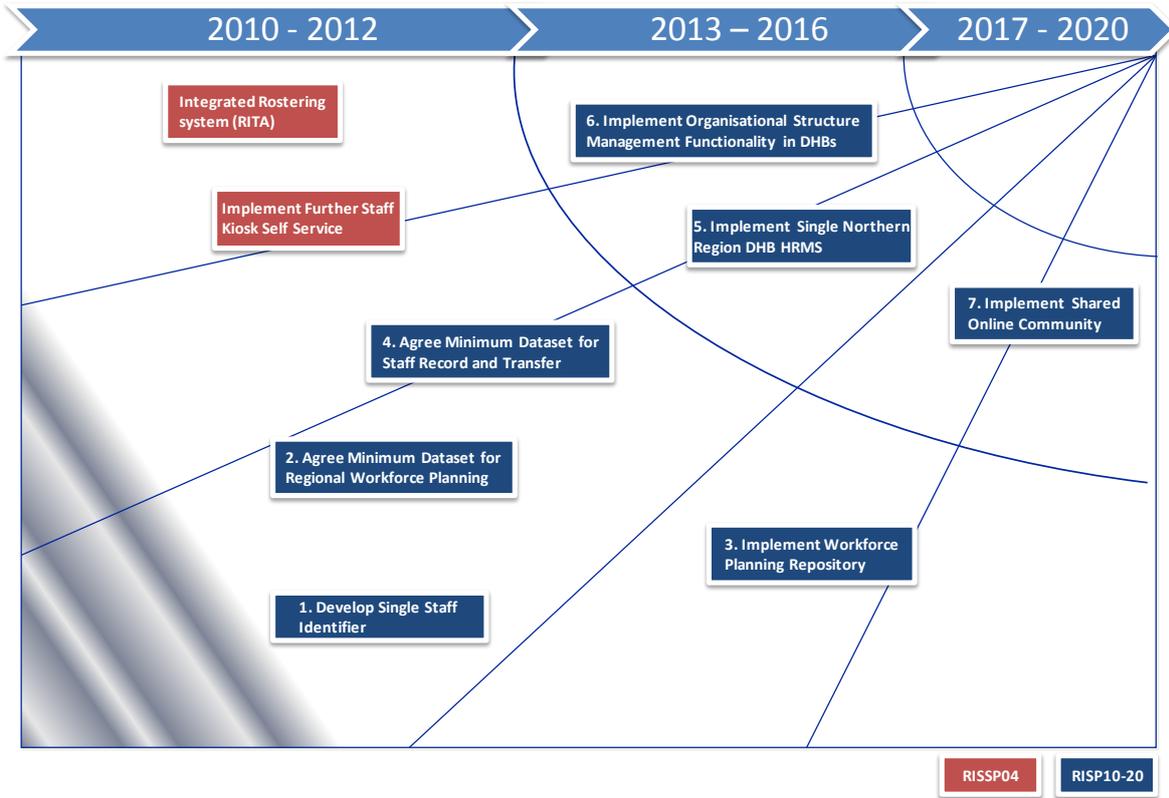
KNOWLEDGE MANAGEMENT

ROADMAP



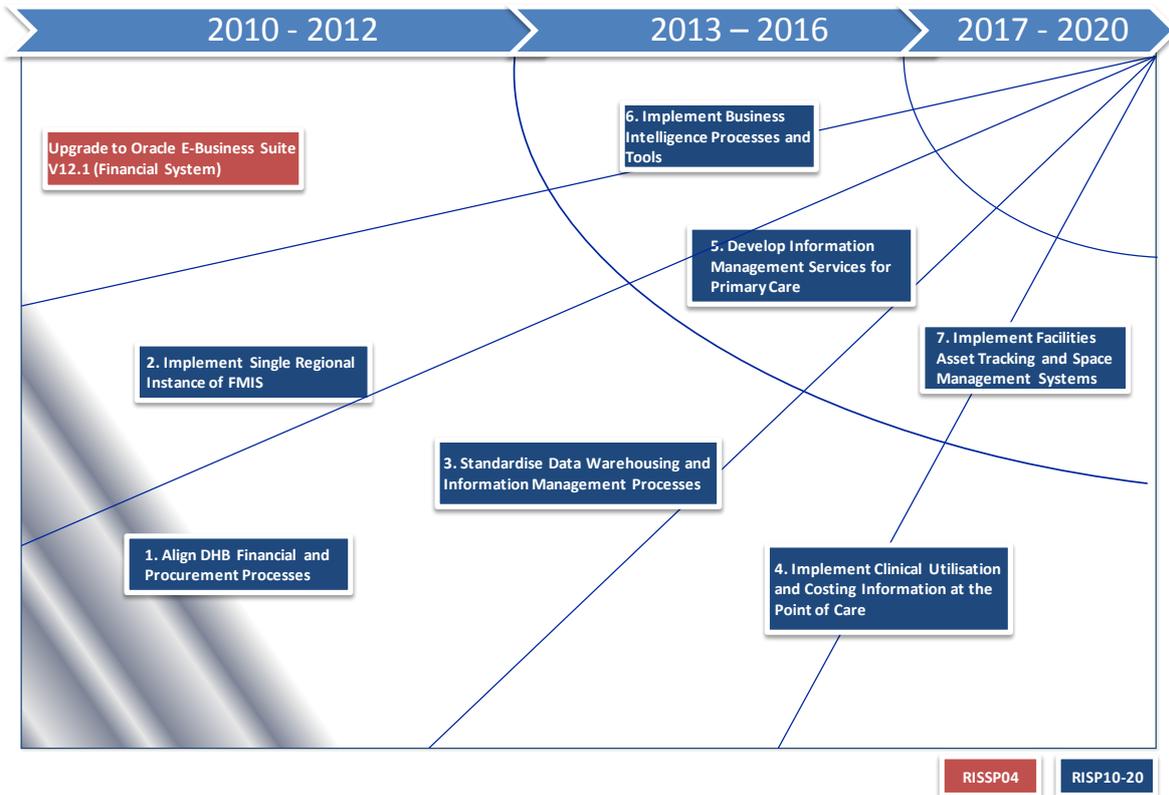
WORKFORCE INFORMATION

ROADMAP



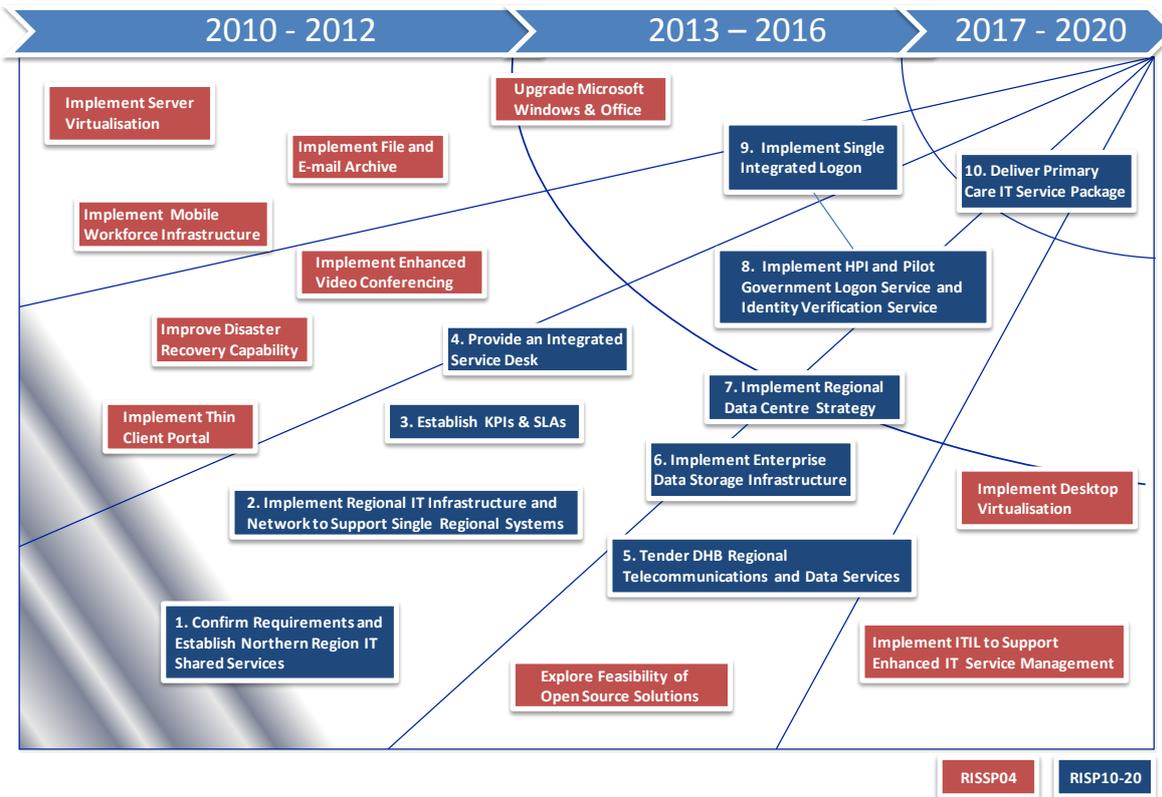
BUSINESS INFORMATION

ROADMAP



IT INFRASTRUCTURE & SERVICES

ROADMAP



GLOSSARY OF TERMS

The following table provides definitions on terms used in this document:-

Term	Definition
Business Information	The information that is gathered, manipulated, stored, distributed and accessed for the funding and management of (health) services.
Client centred	Client-centred care is an approach to service “which embraces a philosophy of respect for and a partnership with people receiving services” (Law, Baptiste and Mills, 1995).
Clinical Information	The information that is gathered, manipulated, stored, distributed and accessed for the assessment and treatment of patients, including information that is used for the evaluation of outcomes of health services provided to people.
Clinician(s)	Used in the widest possible sense of “a caregiver” – doctor, nurse, physiotherapist, psychologist, midwife, etc.
Cornerstone projects	Cornerstone projects are projects that implement new ways of working enabled by a shared information system. These projects are characterised by strong clinical leadership, defined clinical services need, and identified quality and efficiency benefits.
Collaborative repository (information systems)	A database where multiple organisations hold separate information. The information can be found in one place but is still identified with and under the control of each individual organisation. (Source: Regional Health Information Sharing Guideline, Privacy and Security, September 2007)
Data ownership	“Records can be owned but information cannot be. Agencies have obligations (purpose and openness). Individuals have rights (access and correction). Also, privacy law focuses on awareness rather than consent. No-one actually “owns” health information but the HIPC gives patients the right of access (including correction of) health information general practice holds about them. This includes information about what general practice has done with their health information, for example transfer to third party and how health information will be used. “ (Source: IPAC Health Privacy Policy, April 2009)
Data management	Management of information in terms of its security, integrity and availability.
Data sharing	“General Practices should have agreements with any third party (e.g. PHO, IPA, MSO, payment agent) with which they share health information. The agreement should outline the purpose for sharing, who will have access to the information, how the information will be used, stored, retained and disposal arrangements (if applicable). Third parties are not normally permitted to use health information for any other purpose than that for which the information was obtained. Third parties should only combine datasets of identified health information where doing so is one of purposes for which the information was obtained. The National Health Index (NHI) number is only usable as a unique identifier within the health sector.” (Source: IPAC Health Privacy Policy, April 2009)
DHBs	District Health Boards
EHR	Electronic health record is the shared clinical data repository and a core component of the HMIS.
FMIS	Financial Management Information System
Funder	The funder arm of a DHB, responsible for health service commissioning.
Governance	Frameworks and principles of guardianship and awareness applied to the health information.
GP	General Practitioner
Healthcare Provider	Any health and disability organisation providing health care in the northern region. This includes agencies such as a DHB, GP practice, private hospital or independent specialist, but does not include individual employees of an agency.
Health information	Any identifiable information about an individual patient’s health or about health services provided to an individual patient irrespective of how that information is stored.
HMIS	Health Management Information System which includes the shared data repository (EHR) and shared clinical business rules / workflow.
Hosting	Provision of information technology and management services to third parties. Note that the hosting provider may be different from the ‘holder’ of the information.

Term	Definition
HRMS	Human Resources Management System
Information Management (IM)	The process of structuring and analysing data to extract value from it.
Information Service ('IS')	The hardware, software, processes, and people that manage (electronic) data and information. Also used to describe "the organisation that provides information services".
Information System	A computer application that supports a business function.
Information Technology ('IT')	The hardware, networks, operating systems, and databases that enable Information Systems.
Joint repository (information systems)	A database established, controlled and governed jointly by multiple organisations. Each DHB holds and has control over all the information contained in it. (Source: Regional Health Information Sharing Guideline, Privacy and Security, September 2007)
NGO	Non Government Organisation - any organisation involved in health care that is not responsible to the Minister of Health, e.g. community, local body, iwi, charitable trust.
Northern region	The area and population covered by the Auckland, Counties Manukau, Northland, and Waitemata District Health Boards.
Person Centred	"A collaborative effort consisting of patients, patients' families, friends, the doctors and other health professionals ..." (Lutz and Bowers, 2000). "Treatment and care provided by health services [that] places the person at the centre of their own care and considers the needs of the older person's carers" (DHS, 2003).
PHOs	Primary Health Organisations
PHS	Population Health System
Point of care	The time and place of any interaction between a patient and a clinician.
Primary Care Team	The team of community based clinicians supporting a person's care. Primary health care providers include, but are not limited to, primary health organisations (PHOs), general practitioners, primary health care nurses (including mental health nurses), midwives, counsellors, social workers, non-government organisations (NGOs), community pharmacists, community laboratories, dental and oral health services, allied health services, community workers, carer support workers and health care assistants. (CMDHB Primary Health Care Plan 2007-2010, Appendix 2)
Public Health Services	"Public health services means goods, services, and facilities provided for the purpose of improving, promoting, or protecting public health or preventing population-wide disease, disability, or injury; and includes – (a) regulatory functions relating to health or disability matters; and (b) health protection and health promotion services; and (c) goods, services, and facilities provided for related or incidental functions or purposes." (Source: Health Information Privacy Code 1994-2008 Revised Edition)
RIGG	Regional Information Governance Group
RISG	Regional Information Services Group
RPAG	Regional Privacy Advisory Group

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Joe Crowley	Business Analyst, Payroll Services	Northland DHB
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Dave Davies	Chief Executive Officer	Waitemata DHB
David Dodds	IS Manager	Waitemata DHB
Ron Dunham	Chief Operating Officer	Counties Manukau DHB
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Julie Harris	Manager, Decision Support	Auckland DHB
Linda Harun	General Manager, Child Woman and Family Services	Waitemata DHB
Peter Hogg	Head of Finance	healthAlliance
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Dr Gary Jackson	Public Health Physician	Counties Manukau DHB
Jonathan Jourdain	Portfolio Manager for System Enablers	Ministry of Health
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Abinesh Krishan	Senior Manager Technology Services	healthAlliance
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Peter Le Cren	Legal Counsel (Medico-legal)	Auckland DHB
Dr Donald Mackie	Chief Medical Officer	Counties Manukau DHB
Geraint Martin	Chief Executive Officer	Counties Manukau DHB
Jane McKenzie	Programme Manager, Information Services	Northland DHB
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Ron Pearson	Finance Director	Counties Manukau DHB
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Stephen Powell	Business Manager	Waitemata DHB
Sarah Prentice	General Manager	Northern DHB Support Agency
Karen Roach	Chief Executive Officer	Northland DHB
Tanekaha Rosieur	Manager, Pou Whakahaere	Waitemata DHB
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Dr David Sage	Chief Medical Officer	Auckland DHB
Garry Smith	Chief Executive Officer	Auckland DHB
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