

Integrated models of ambulatory care: a scoping literature review to inform Community Health Hub development in the Southern Region

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List of Abbreviations

CCMS	Collaborative Care Management Solution
CHeST	Centre from Health Systems and Technology
DHB	District Health Board
DN	District Nurse
GP	General Practice
GPSI	General Practice with Special Interest
IFHC	Integrated Family Health Centre
IT	Information Technology
IUD	Intra Uterine Device
MeSH	Medical Subject Heading
MHN	Midlands Health Network
MOH	Ministry of Health
NGO	Non-Government Organisation
NHITB	National Health IT Board
NSCPP	National Shared Care Planning Programme
PAC	Patient Access Centre
PCCS	Primary and Community Care Strategy
PHO	Primary Health Organisation
PMS	Patient Management System
RUFUS	Rurally Focused Urban Specialist

Executive summary

Both internationally and in New Zealand, emerging trends across health systems to address health system issues include a fundamental shift of care from hospitals to community-based outpatient settings, and increased integration of services to better link traditional community, primary and secondary/specialist services. In this context, it is important to know how different service providers in community-based outpatient settings work in a coordinated manner to create a strong integrated health care system, ensure the quality of services, improve access and reduce duplication of resources.

Aligned with the New Zealand government's priorities and policies, the Southern Primary and Community Care Strategy (PCCS) focusses on developing and implementing new care models which will strengthen the ability of the Southern Health System to provide a broader scope of services close to home and to integrate care across primary, community and secondary care.

One key PCCS initiative is the Community Health Hub, a care model focusing on co-location and integration of community health services being implemented by Alliance South. Evidence about the experience of other local health systems across New Zealand regarding how Community Health Hub model and other integrated care models at an outpatient setting can be delivered is needed. This can inform the Southern Health System as to how best to develop and implement its proposed Community Health Hub initiative.

Drawing on literature from New Zealand and overseas, this report identifies models of integrated care in ambulatory care settings, the effectiveness of such models, and key implementation issues and lessons learnt.

International evidence

Sixteen review papers (10 journal papers, 3 Cochrane reviews and 3 grey literature) were included to summarise international evidence. The types of reviews included were: meta-analysis, systematic review, scoping review, structured review. Most of the included reviews addressed integrated care across the specialist and primary care interface and identified different models of care to deliver this.

Models of care

- The most common models of integrated care identified were: 1) transfer of services or elements of services from secondary to primary care; 2) relocation: shifting the venue of specialist care from outpatient clinics to primary care without changing the people who deliver the service and 3) liaison/joint working: joint working between specialists and primary care practitioners, or within primary community care practitioners to provide care to individual patients.
- It was found that services often used more than one model and drew on elements of more than one model to provide integrated care.
- Different categories of initiatives were identified which transferred services from secondary to primary care, chiefly: minor surgery, medical care for chronic disease, general practitioner or nurses with special interest, transfer of outpatient discharge, access for general practice for diagnostic tests and services.

- Re-location strategies included shifted outpatient clinic, co-location of the clinic, telemedicine/telehealth, hub and spoke, visiting/periodic services, “fly-in, fly-out”.
- The joint working/liaison model had three components: shared care, consultation-liaison, and care management.
- Different integrated information technology (IT) initiatives were identified as a cross-cutting strategy and enabler for all these three models of care.

Effectiveness of the different models of care

- All three models of care (transfer, relocation and liaison/joint working) increased access to health care and convenience for patients. However, there was limited evidence on better clinical and economic outcomes for any of the three models.
- Very few studies included an assessment of cost-effectiveness. Cost generally increased with the models of integration. Reduction in cost included reduced time and travel cost for patients. Studies raised the question as to whether the extra costs for the health are offset by the benefits of integration.
- Re-location increased equity and cost-effectiveness if located in rural areas. It offered no additional benefit for urban, advantaged populations. Telemedicine may increase equity of access and may be useful for rural and remote areas.
- Co-location provides opportunities for better coordinated and integrated care but doesn't necessarily lead to such improvements in practice.
- Joint working/liaison model of care between primary care and specialist care can be provided in primary care. However, there was insufficient evidence that it improves accessibility and equity.

Key implementation issues

- There are implementation issues to be addressed which are related to financial, organisational, governance, quality, workforce and communication.

New Zealand evidence

This part of the review was informed by the international literature review which provided a framework of models of integrated care. Eighteen examples/cases of integrated care across the primary-secondary care interface in New Zealand were identified. Included examples ranged from formal evaluation of programmes through to very brief descriptions of programmes.

General drivers for pursuing an integrated model of care in New Zealand were:

- in response to national policy directives
- local circumstances related to accessibility and equity
- increasing demand for health services from a growing and ageing population with increasing numbers of chronic conditions (multimorbidity)
- rapid advances in information/communication technologies

The scale and scope of the models also varied widely, and many were in different stages of development. Reviewing these different initiatives, the most common approaches to integrated care between primary and secondary care in New Zealand fall into the following

strategies: the three models of care identified above (transfer, relocation and liaison/joint working), localities model, integrated family health centres and HealthPathways.

Most of the models were found to address the primary and secondary care interface (vertical integration). The review also found a few examples of models of care which were applied in between health and social care space in primary care.

Effectiveness of New Zealand models of care

The literature included a number of studies which reported evaluation of models of care. Key outcomes reported by different studies were improved communication, coordination and sharing of information between primary and specialist care providers, improved equity and accessibility, reduced waiting time reduced hospital presentations and improved skills of the primary care workforce.

New Zealand implementation issues

This review identified the following key barriers to implementation which cut across the different models of care:

- Not having viable and sustainable funding for the planned model of care. There are many hidden costs of running a new model of care. For example, in shared care, the hidden costs in general practices (GPs) included the staff time required for liaison and follow-up and the costs of providing facilities for consultant-liaison services.
- Lack of capacity of the current IT system to support communication.
- Lack of confidence, trust and communication between providers. Poor relationships between professional groups were a major barrier to integrating services at the provider level.
- Increased workload and lack of protected time for staff. For example, one study showed staff not having time for shared care planning.
- Knowledge and skills required to perform new roles/tasks.
- Lack of infrastructure required for running an integrated programme.

Key lessons

The following lessons have been drawn from the implementation of different models of care:

- It needs to be located in a community that uses it. Location is important and ideally on main bus routes. Furthermore, service flexibility and a welcoming atmosphere in a co-located clinic are important.
- Committed leadership is necessary from governance to the individual providers. There is a need for an organisation/programme champion for the successful implementation of the programme.
- Changes at the system level are required to integrate services. An overall change process is necessary for new ways of working.
- Development of governance group that includes representation across different providers groups is necessary.
- Considerable energy is needed for relationship development and communication in the early stages of implementation of models of care. Funding needs to include set-up funding and relationship building.

- The way communication is delivered is key. For example, monthly meetings are key to ensure providers know each other, work together and address problems jointly.
- Effective working relationships between providers is important. The history of the good relationship between the team members is helpful for smooth functioning.
- Administrative and project management support is essential to establish a process and allow providers to focus on their professional roles.
- New workforce skill and roles are required to support integration. There is a need for training for the integrated workforce (scopes of practice, information sharing).
- A good performance measurement system is needed to illustrate as early as possible the impact and credibility of the programme.
- The organised collaborative work between GPs and hospital clinicians leads to improved communication and better working relationships. For example, the Canterbury HealthPathways initiative required organised collaboration between general practitioners and hospital clinicians in writing the pathways. This was a key factor in the programme's success.

Conclusions

Drawing on published and grey literature this report has provided an overview of key components of the integrated care models in ambulatory settings. A broad overview of the international literature on different models of care followed by more specific examples of the New Zealand based literature is presented. As there is significant diversity in models of integrated care in terms of the scale, scope and stages of development of the models, and the local context has a strong bearing on how a specific model is developed, caution should be taken while applying the findings in the local context.

1 Introduction

Both internationally and in New Zealand, health systems are facing mounting pressures that are predicted to intensify in the future.⁽¹⁻³⁾ There are demographic changes with growing, ageing and diversifying population, and changing pattern of disease which increases more demand for services and more complex health needs.^(1, 2) Issues in New Zealand particular include: a growing and ageing population, increasing ethnic diversity, and population redistribution across districts; growth in the incidence and impact of chronic conditions, and consequent greater demand for health services; the persistence of health inequalities; worsening workforce shortages; opportunities and challenges arising from the development of new diagnostic and treatment technologies; increase in health care expenditure.⁽³⁾ These changes necessitate innovative responses in policy and practice with such changes to the health system should be introduced based on enough evidence of effectiveness and efficiency, and carefully adapted and implemented for the local situation.⁽⁴⁾ Hence, there are increasing international trends for the redesign of health service and new models in response to underlying pressures.⁽³⁾

Worldwide, emerging trends across health systems include emphasis on home-based delivery of services as an effective way to address workforce constraints, health inequalities and help address cost pressures; increased integration of services to better link traditional community, primary, secondary and specialist services to improve access to services, make the best use of the available workforce, foster multidisciplinary teamwork, improve access to specialist diagnostic testing, and to deliver some traditionally based secondary services.⁽³⁾ Providing integrated care that crosses the boundaries between primary, community, hospital and social care is a goal of health systems worldwide.⁽⁵⁾

Reducing fragmented health sector silos and achieving more integrated care is a continuous focus and policy goal of subsequent health reforms in New Zealand.^(6, 7) The recent New Zealand Health Strategy also emphasises the need for greater integration providing care closer to home.⁽⁷⁾ The aim of such thematic direction ('closer to home' and 'one team') in the strategy is to improve people's overall wellbeing, get the greatest value from the public funding invested in health services, improve the quality of services, improve timeliness of access and reduce duplication of resources.⁽⁷⁾

Aligned with the government's priorities and policies, the Southern Primary and Community Care Strategy also focuses on developing and implementing new care models which strengthen the ability of the Southern Health System to provide a broader scope of services close to home and integrate care across primary, community, and secondary care.⁽⁸⁾ The strategy is meant to address some unique needs and circumstances of the diverge Southern District which have more than 40% of its population living rurally with persistent inequities of access and outcomes for Māori, rural and remote population.⁽⁸⁾ Furthermore, the Dunedin Hospital rebuild is a major opportunity to reconfigure health services across settings.⁽⁸⁾

One of such initiatives of the strategy is Community Health Hub, a care model focusing on co-location and integration of community health services being implemented by Alliance South.⁽⁸⁾ Evidence about the experience of other local health systems ((District Health Boards (DHB)/Primary Health Organisations (PHOs)/Alliances)) across New Zealand regarding how Community Health Hub model and other integrated care models at outpatient setting can be

delivered is needed. This can inform the Southern Health System as to how best to develop and implement its proposed Community Health Hub initiative. The proposed review was undertaken in response to a request by the Southern DHB, New Zealand to provide knowledge regarding key ingredients of integrated ambulatory care models implemented in New Zealand, including Community Health Hubs and identify best practice and areas of learning which may be important in contributing to the success of a programme. The review also included relevant international experience regarding the evaluation of integrated ambulatory care that can be applied in the New Zealand context.

1.1 Research/Review questions

The study aimed to carry out a structured rapid scoping review of models of integrated ambulatory care to inform Community Health Hub development in the Southern DHB. Refined by using PICOC format⁽⁹⁾ (see Annexe 1), it answered the following review questions:

1. What was the international evidence regarding the effectiveness of models of integrated ambulatory care that can be applied in the New Zealand context?
2. What were the models of integrated ambulatory care currently being implemented in New Zealand?
3. What were the facilitators and barriers of successful implementation of models of integrated ambulatory care in New Zealand?
4. How was equity promoted by models of integrated ambulatory care in New Zealand?

1.2 The research team

The research team included Dr Gagan Gurung, a postdoctoral fellow, Professor Tim Stokes and Professor Robin Gauld, co-directors and theme leaders from the Centre for Health Systems and Technology (CHeST), University of Otago.

1.3 The layout of the report

This report is based on the findings of a literature review and is organised in four sections. The introduction is followed by the methods section. The methods explain the methods of review covering search strategy, inclusion/exclusion criteria, selection of papers and data extraction, and data analysis and synthesis. The next section presents the results of the review. The result section begins with descriptive information of studies, followed by a summary of international evidence and New Zealand based literature. The same section also presents a more detailed description of the New Zealand based individual case studies. With research questions in mind, both international and New Zealand based literature are structured around following areas: description and drivers for change, key features of integrated ambulatory care, the effectiveness of the models of care, implementation issues, including facilitators and barriers and key lessons learnt. The final part of the report includes a conclusion which includes a summary of findings and conclusion. Unless otherwise noted, when we use the term ‘model of care’ it refers to a range of integrated care in between primary community secondary care interface in ambulatory settings.

1.4 What does this report add?

This report is intended to add to the evidence base by providing a higher level overview and framework of integrated care models between secondary, primary and community care interface at ambulatory settings, and effectiveness and implementation issues of such models. Furthermore, drawing on international evidence and framework identified, specific examples of the New Zealand based models of integrated care are discussed.

1.5 Acknowledgements

We would like to thank Southern DHB for funding this work. We are particularly grateful to Lisa Gestro, Executive Director Strategy, Primary & Community, Southern DHB and Dr Carol Atmore, Chairwoman, Alliance South for their advice during the design phase of this study.

2 Research Plan/Methods

The study used a systematic structured rapid review method to identify literature and analyse and synthesise evidence surrounding models of integrated ambulatory care. The study was conducted from January- February 2019 period.

2.1 Search strategy

Due to the nature of the review topic, the search strategy was designed to locate both grey and supplementary published literature, and New Zealand specific and relevant international literature. Different search approaches are needed for grey and academic literature. For the academic literature, standard electronic database search approach was used. Although there is no gold standard for systematic grey literature search, systematic and transparent search approach was applied as suggested by past studies.^(10, 11)

Following web search engines and electronic databases were used to capture literature focused on integrated ambulatory care: Google, hand searches of selected journal publications, publications/databases of key international health policy organisations, MEDLINE, EMBASE, and The Cochrane Library (Cochrane EPOC). The search in electronic databases, international organisations’ databases and hand search of journal publications were focused to identify relevant review articles and related international academic literature to supplement the grey literature search.

Different search strings (keywords or phrases) related to the concepts of 1) integrated care and 2) ambulatory care were developed and used by combining the terms by Boolean Logic to explore related literature. When possible, Medical Subject Headings (MeSH) were used while searching for electronic databases. The search plan was tailored according to the database or search source. An illustrative list of search terms to be used is given in Table 2.1 below. Resources written in the English language and published after the year 2000 till February 2019 were included.

Table 2.1 Search terms

Concepts	Search terms
Integrated care	community health hub OR care pathway* OR integrated care OR integration of care OR integrated service OR model* of integrated care OR clinical integration OR virtual integration OR coordinated care OR care coordination OR collaborative care OR joint working OR linked care OR seamless care OR integrated ambulatory specialist care OR integrated specialist care out of hospital OR Delivery of health care, integrated [MeSH*], Integrated Health Care System (MeSH**) *Medline, **EMBASE
Ambulatory care/setting	Ambulatory care (MeSH), Outpatient care,(MeSH), Urgent care, Outpatient service, Outpatient clinic*, out of hospital

*Search terms were developed based on a quick search of keywords and terms used in electronic databases and past review papers.

The first search strategy involved electronic database search through MEDLINE, EMBASE and Cochrane Database for Systematic Reviews (EPOC reviews). The focus was to identify review papers (narrative, scoping and systematic reviews) which reported evaluations of models of integrated ambulatory care.

Second, the publications of key international health policy organisations (e.g. The UK Health Foundation, Nuffield Trust, King's Fund and the UK Commonwealth Fund) were reviewed. The focus was primarily to identify review papers, but primary resources were also considered if it was relevant to the New Zealand context.

Third, a hand search was also conducted to selected publications in the International Journal of Integrated Care to identify any relevant review papers and primary papers relevant to the New Zealand context.

Fourth, the search strategy involved browsing targeted websites of relevant health organisations of New Zealand to capture literature related to the implementation of integrated ambulatory care in New Zealand. Google search and consultation with content experts on the review project team was used to locate the targeted websites. Regarding Google search, two steps were taken. First, a Google search was conducted to identify the relevant websites publishing documents related to the review questions (see Table 4.1). Second, each of the websites' homepage was hand-searched to locate potentially relevant documents. Different search strategies were developed, combining the identified search terms discussed above and applied to a Google search engine. The first 10 pages of each search hits (representing 100 results) was reviewed for potentially relevant titles. The details of the search results were documented in an Excel spreadsheet. To allow more relevant and targeted search, the Google search engine was refined using different options available in Google (e.g. confined to country New Zealand). To complement Google search, consultations with content experts on the review project team (Tim Stokes and Robin Gauld) was conducted to locate the relevant websites or organisations which published documents surrounding integrated ambulatory care.

Additionally, Google Scholar was searched for relevant articles.

The search process was recorded in detail with lists of search engines, and databases searched, date search run, limits applied, and the number of hits to improve transparency and reproducibility of the review process. The search approach was iterative involving refinement and continuous assessment to bring the most relevant results and make the search process realistic in terms of resources and time frame of the project.

2.2 Inclusion and exclusion criteria

The body of literature regarding integrated care is vast, and the concept as such is not consistently applied or defined.⁽¹²⁾ The following inclusion and exclusion criteria were applied to assess the relevance of the publication identified during the searching process (see Table 2.2). Our definition of integrated ambulatory care was any integrated care strategies which take place between traditional hospital-based care (specialist care) services and primary /community care interface (vertical integration), and within primary and community care (horizontal integration). But both strategies had to be taken place in an outpatient setting. Both physical and virtual (e.g. virtual outreach via telemedicine) integration examples were

included. The main aim of the project was to identify integration strategies which inform the implementation of future community health hub initiative of Alliance South. Hence, the focus of the review was directed to identify strategies/models such as ‘co-location’ of different practices/services, multidisciplinary work, shared care/information, transfer of care, etc. which could be elements of health hub implementation strategies. Essentially, this review was interested in specific strategies which integrate primary, community and secondary services. Models of care which had a broader scope of improving care/practice such as chronic care model and healthcare come/primary care medical home were excluded from the review. Although integrated care was operationally defined, in the most basic sense, any model was considered as integrated care if it facilitated (or the potential to facilitate) joint work, teamwork, and improved coordination and communication between organisation/practices/providers in the primary-secondary interface.

Table 2.2 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Ambulatory care/out of building care. • Primary and community care. • Primary and hospital care (specialist care) interface. • Documents which were substantive and include detailed descriptions of the model of integrated care, outcomes or successes and lessons learned. This may include research study, programme evaluation, technical brief, programme report, policy/strategy. • New Zealand context, with occasional substantive publications covering international context (Canada, Australia and the UK) which could be applicable to the New Zealand context. • Both grey and published literature. • Narrative/scoping/systematic review of the evaluation of integrated ambulatory care models. • Available in English. • Documents published after 2000. 	<ul style="list-style-type: none"> • Hospital and any inpatient care. • Documents which were not substantive and do not include detailed descriptions of the model of integrated care, outcomes or success and lessons learned. • Unavailable in English. • Documents published before 2000. • Disease-specific models.

2.3 Definition of terms

Ambulatory care: For the purpose of this review, ambulatory care was defined as medical care or service delivered in an outpatient setting. More specifically, this referred to any service that was not performed in a hospital or facility that requires admission but included both primary and speciality care.

Model of integrated care: Model of integrated care was defined as health service delivery strategies that facilitated coordination and integration within primary or community care (horizontal integration), between the primary/community and secondary care (vertical

integration), and between health and social services (inter-sectoral integration). Types of integration could be organisational, functional/administrative or clinical.^(13, 14) The focus of the review was on integrated care strategies happening between traditional hospital-based care (specialist care) and primary /community care interface (vertical integration), and within primary and community care and between health and social services (horizontal integration). But both strategies were needed to be taken place in an outpatient setting.

2.4 Selection of papers and data extraction

In the case of literature from an electronic database, title and abstracts were uploaded into Endnote to form a database and duplicates were removed. In terms of literature from Google and websites, titles and source organisations of documents identified from all search techniques were entered into an Excel sheet and duplicates were removed. After reviewing the titles and abstract (if abstracts were unavailable in grey literature, executive summaries or table contents were reviewed) using inclusion/exclusion criteria, full-text versions of all potentially eligible documents were accessed and reviewed by one reviewer (GG). To decide potentially relevant publications/records from websites, the focus was given on those publications which were directly related to integrated ambulatory care and occasional high-level policy/strategy document. When it was unclear whether or not an item met the eligibility criteria during screening, it was resolved through discussion with the second reviewer (TS) during weekly meetings between GG and TS and sometime between GG, TS and RG. A study flow diagram, as recommended by PRISMA⁽¹⁵⁾ was prepared to describe the screening and document selection process (see Figure 3.1).

A standardised data extraction form was used to extract data from the included publications. Extracted information included: source organisation which published, year published, title, type of publication, setting, type of integrated care model, main findings.

2.5 Data analysis and synthesis

A short descriptive summary (numerical summary included) was provided, which included information such as the overall number of publications included, source of the documents, year of publication, type of integrated ambulatory care models, setting, and countries where studies were conducted/published. This was done separately for review papers, and New Zealand based papers.

Guided by research questions, presentation of synthesised findings were structured around models of integrated ambulatory care (description/drivers, key features of models of care, governance/management, funding, etc.) and effectiveness/any outcomes of integrated care strategies, implementation issues and lesson learnt with the implementation of such strategies.

The first analysis of the international evidence was conducted to develop a broad idea of the conceptual framework to categorise models of integrated ambulatory care, which then influenced our thinking to review New Zealand based studies.

3 Results

3.1 Literature search

A total of 3,057 citations were initially obtained. After restricting the search to the availability of an abstract, and English language 2,660 remained. Then 281 studies were removed as duplicates. We further excluded 1,116 primary papers from the electronic databases. After title and abstract review of the remaining 1,263 literature, 198 papers remained. Of these, 30 met the inclusion criteria after full-text reading and data extraction. Further hand searched of cited references were conducted which found six additional papers (four review articles and two New Zealand based primary papers). Hence, the total number of included papers were 36. Figure 3.1 summarises the amended PRISMA study flow diagram.

Of the total 36 included literature, the number of peer-reviewed publications totalled 15 (12 journal articles and 3 Cochrane reviews), and 21 grey literature (7 evaluation documents, report, 5 literature reviews, 5 programme reports, 2 strategy/plan, 1 case study report and 1 website programme description).

This review included 16 review papers (10 journal papers, 3 Cochrane reviews and 3 grey literature) to summarise international evidence. Types of reviews include 1 meta-analysis, 9 systematic reviews, 3 scoping review and 3 other reviews. Seven of the included reviews were specifically focused on chronic disease/long-term conditions or mental health. Two were related to rural and remote health. Summary of included review papers in terms of aims, design, setting, integration models, primary outcomes and main outcomes were showing in table 3.1 (see Table 3.1).

In terms of New Zealand based literature, 18 were grey literature (7 evaluation documents, report, 2 literature reviews, 5 programme reports, 1 case study report, 2 strategy/plan, 1 website programme description) and 2 were journal papers.

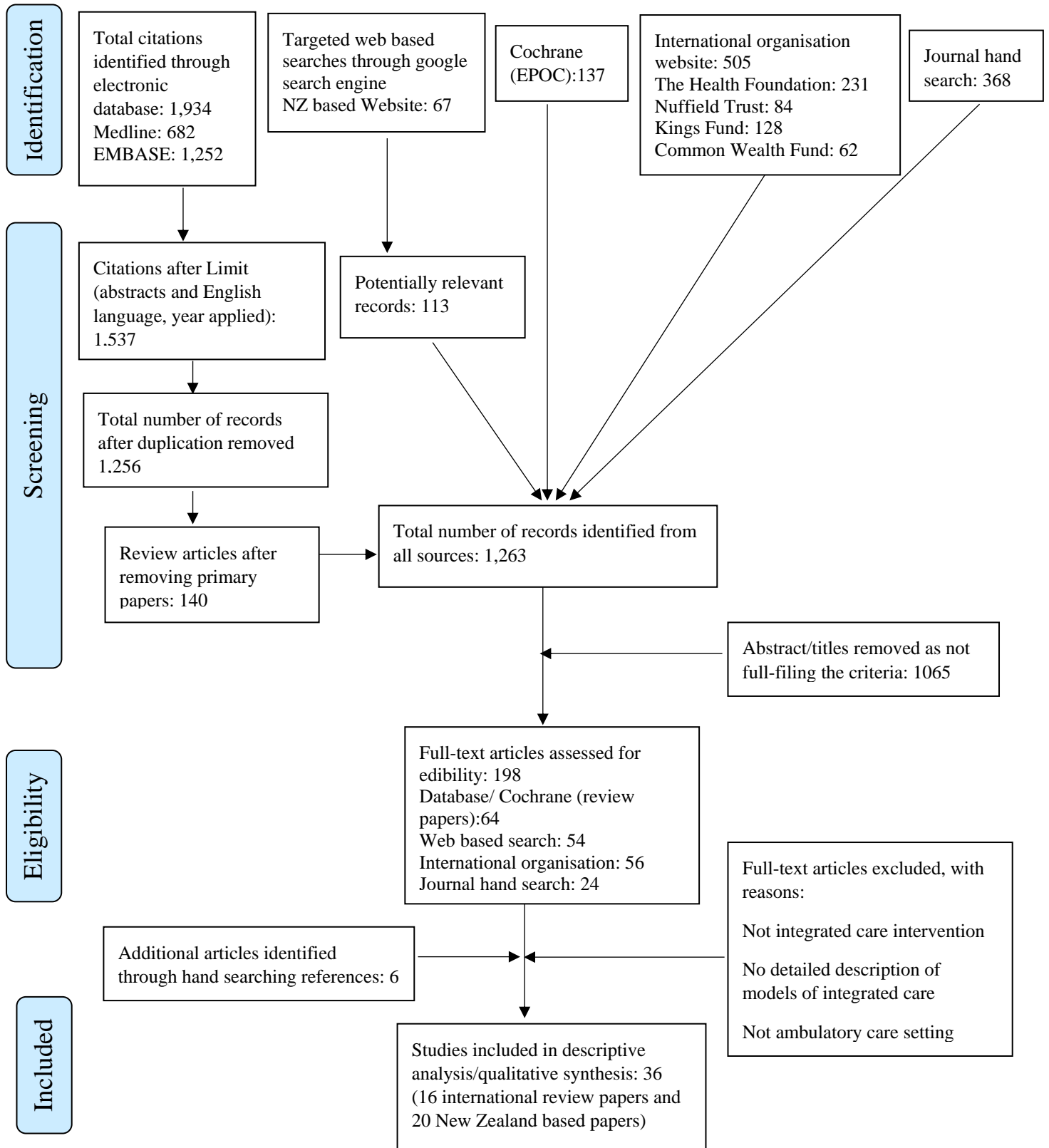


Figure 3.1 PRISMA flow diagram

3.2 International experience

Prior to reporting on the examples of integrated care in the New Zealand context, this section reports on the findings of international literature regarding models of integrated care, factors required for successful implementation, and the key lessons learnt from the overseas example of integrated care. The findings of the international literature inform the literature review of the New Zealand based examples by providing a framework of integrated care internationally used.

This section aims to present international experience on integrated ambulatory care based on selected review studies. Type of reviews included: meta-analysis, systematic review, scoping review, structured review. Most of the included reviews covered integrated care in between specialist and primary care interface. Hence, they were the example of vertical integration. Many of these review studies focused on chronic disease, long-term conditions and mental health. In terms of geographical representation, they were mostly from high-income countries, including the UK, the US, Australia, Canada, Sweden, Netherland, New Zealand. We found multifaceted intervention, and there is a varying definition of integrated models.

3.2.1 Models of integrated care

The models described below are not mutually exclusive. It was found that services used more than one model and drew on elements of more than one model to provide integrated care. This review found the most common models of integrated care between primary and secondary interface at outpatient settings fall into one of the three domains of models of care: transfer, relocation, and liaison/joint working (see Figure 3.2). Integrated information IT initiatives were identified as a cross-cutting strategy and enablers for all these models of care.

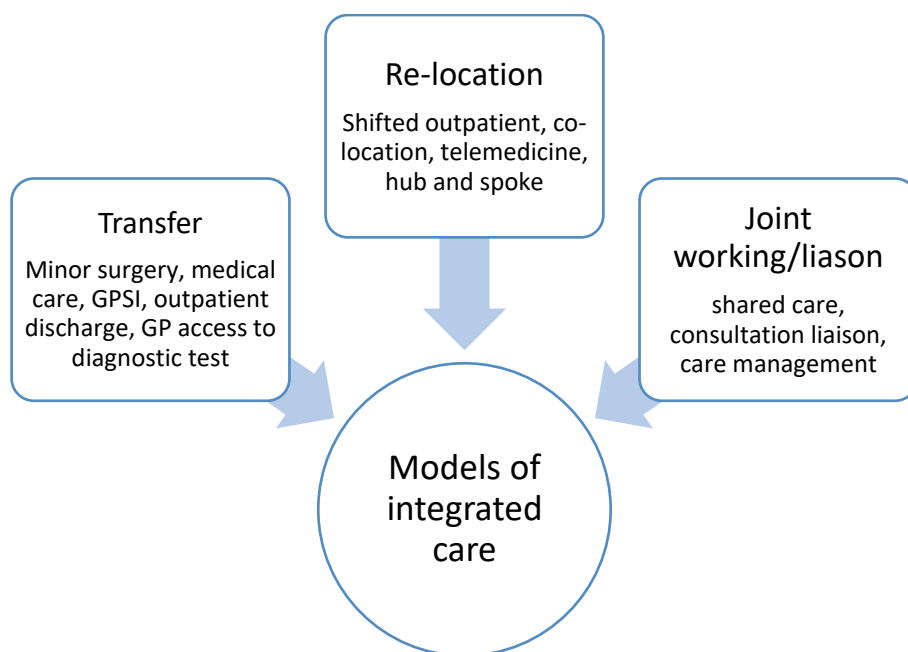


Figure 3.2 Models of integrated care

3.2.1.1 Transfer of services from hospital to primary care

This refers to the transfer of services or elements of services from secondary to primary care. Different categories of initiatives were included under this: minor surgery, medical care for chronic disease, general practitioner or nurses with special interest, transfer of outpatient discharge, access for GP to diagnostic test and services.^(16, 17)

Overall, included review studies highlighted that access to service and convenience for patients were increased, but the quality may be compromised. Quality of care and health outcomes were affected when expectation goes beyond minor surgery, reduction in hospital workload was not always achieved due to an increase in the volume of care. Cost reduction was achieved through reduced salary cost in primary care and reduced time and travel costs for patients. But these were offset by the loss of economies of scale and increases in the volume of care. Hence, there were no substantial economic benefits.⁽¹⁶⁻¹⁸⁾

Reviews showed that minor surgery improved accessibility, but the quality was variable.⁽¹⁸⁾ There was no reduction in hospital workload but an increase in workload in GP. There was an increased cost due to the overall expansion in service volume. It required equipment and training of the primary care workforce.^(16, 17)

Studies demonstrated that medical care for chronic disease and condition such as diabetes, asthma, alcohol dependence) can be safely and effectively delivered in primary care. It improved access and quality was maintained as equivalent to hospital care. However, it increased workload in GP and increased cost due to the loss of economies of scale and increased demand. It required expansion in size and training of primary care workforce.⁽¹⁶⁻¹⁸⁾

Regarding general practice with special interest (GPSI), evidence suggests that it improved access and reduced waiting time with no change in quality.⁽¹⁸⁾ There was a lower salary cost for GPSI but was offset by increased volume and lower productivity of GPSI. It also required training of GP workforce, change in the attitude of specialists who are hostile to change.^(16, 17)

In terms of transfer of outpatient discharge, evidence suggests GPs can follow-up patients across a range of diagnostic groups as an alternative to hospital follow-up. It improved access with no change in quality and outcomes,⁽¹⁸⁾ but there was increased workload in GP. It reduced the overall cost, but there was a higher cost to primary care. There were some implementation issues such as unacceptable to a high proportion of patients and clinicians. Furthermore, it is important that GPs have administrative support and specialist support.^(16, 17)

In the case of direct access to a diagnostic test,⁽¹⁸⁾ it reduced waiting time and outpatient visit. There is not enough evidence about health service cost. Implementation issues included expansion of hospital diagnostic services, and it was suitable only for tests which GP can understand.^(16, 17)

Direct access by GPs to services reduced waiting time, with quality of care and health outcome unchanged. There was not enough evidence of workload in GP, but it reduced outpatient visit in the hospital. Reduced hospital cost was offset by an increase in the volume of care. It required changes in hospital policy; introduction of GP referral guideline, and it was suitable only for such conditions which GP can diagnose.^(16, 17)

3.2.1.2 Re-location

Relocation generally refers to shifting the venue of specialist care from outpatient clinics to primary care without changing the people who deliver the service.⁽¹⁶⁾ The shifted care can have a separate outreach clinic or co-locate with the primary/community care team, and it can be both physical and virtual. Different categories of initiatives fall into relocation: shifted outpatient clinic, co-location of the clinic; telemedicine/telehealth, hub and spoke, visiting/periodic services, “fly-in, fly-out”.⁽¹⁶⁻²³⁾

The shifted outpatient clinic is one of the models of the broader term ‘specialist outreach’ clinics. It is defined as outpatient clinics run by hospital specialists but in a primary care setting⁽²²⁾ where outreach provides similar consultations, investigations and procedures to those provided in hospital clinics.⁽²¹⁾ Overall, evidence suggests it improved access to services and has the potential to improve equity if such clinics are located to populations with poor access to secondary care.^(16, 17, 20, 22) Furthermore, multifaceted outreach clinics were more effective than simple outreach (shifted outpatient clinics).⁽²¹⁾

Scoping studies conducted by Winpenny et al. and Sibbald et al. showed that outpatient clinics improved access to services and had the potential to improve equity if located to populations with poor access to secondary care. There was limited evidence on quality, but theoretically, it remained unchanged. There is no evidence that it helped GP to gain knowledge or skills. In the case of the hospital, there is insufficient evidence on outpatient use. Clinic serving urban advantaged populations were not cost-effective due to the loss of economies of scale. Implementation issues included it required expansion in the specialist workforce.^(16, 17)

A systematic review of outreach clinics in primary care in the UK also showed perceived improved communication between GP and specialist, improved patient experience and access but at a higher cost and with less efficient use of specialists’ time.⁽²²⁾ There were no clear benefits of outreach over hospital-based services in terms of health improvement or health outcomes. If patients currently have good access to hospital outpatient services and there are no issues of poor access, then outreach clinics are not of great benefit. The review suggests that such clinic was relevant for geographic areas or groups with a large number of patient/people who had barriers to access specialist health services.⁽²²⁾

A systematic review conducted by Gruen RL et al. concluded that multifaceted outreach (increased collaboration with primary care practitioners, joint consultations, case-conferences, seminars or other educational sessions, or is part of a broader intervention involving other personnel and services) was associated with improved health outcomes, more efficient and less use of inpatient health services.⁽²¹⁾ Simple outreach (shifted outreach) was associated with improved access, but there was no improved health outcomes.⁽²¹⁾

Another scoping review on models of integrating rehabilitation and primary care reported mobile teams and satellite units as specific approaches to outreach, which often target remote or resource-poor locations. This review supports the above-discussed findings that specialised outreach approaches in collaboration with the primary care team shown improvement in health outcomes, consistent care and decrease in inpatient services.⁽²³⁾

An advantage of the outreach approach was potential skill development opportunity in a primary care setting whereas the disadvantage included the complexity of institutional

arrangements required to costs, availability of specialist, office and meeting space, equipment, transportation and other resources.⁽²³⁾

Other outreach models used in rural and remote areas included hub-and-spoke, visiting/periodic services and fly-in, fly-out. The purpose of such models was to increase access to service for communities which were remotely located.⁽¹⁹⁾

Co-location means having a range of health services in one place that is normally delivered by different agencies in separate locations. Such initiatives are sometimes called “one-stop shops” or polyclinics.⁽¹⁸⁾ These strategies include both attachments of the specialist to primary care team or providers of primary care and/or community care providing services under the same roof.

Overall, co-location presents opportunities but does not in itself lead to better clinical integration or quality of care. International evidence indicates that co-location provided opportunities for better coordinated and integrated care, but it didn’t necessarily lead to such improvements in practice.⁽¹⁸⁾

It has been suggested that the co-location of different professionals could lead to general upskilling via knowledge sharing. Drawing on published literature and original research to the polyclinic model, Imison et al. concluded that co-location was not sufficient to generate joint-working or integration of care. Co-location of multiple services presented opportunities for delivering more integrated care, which was especially beneficial for young people or with the mental health problem. Other benefits included increased quality in terms of infrastructure, organisational capacity and chronic disease management.⁽¹⁸⁾

There was a number of best practices mentioned in the same study. One such example was of co-locating services in the hub-and-spoke model. In this case, co-located clinic acted as a resource centre housing a range of diagnostic, community and specialist services, and GPs remaining in existing premises and directly accessing resources based on such clinics. Video conferencing equipment may be used to support the hub-and-spoke model by allowing GPs to consult co-located clinic based specialists remotely.⁽¹⁸⁾

Significant investment in change management and process redesign to support the integration, focus on those with greatest health care needs, redesigned pathways were other good practice.⁽¹⁸⁾

Similarly, another good practice was the decision to not to invest in new buildings but rather follow technology-based approaches - virtual polyclinics/collocated clinics. In such virtual clinics, there was the development of a system to better sharing of health information, allowing specialist advice and consultation to take place remotely.⁽¹⁸⁾

Finally, the equivalent of the “one stop shop” for urgent care out of hours was developed. Such an arrangement brought together primary and community care out of hours services, including community matrons and social care support with a pharmacy. It prevented a significant number of hospital admissions.⁽¹⁸⁾

Two other scoping reviews concluded that attachment of specialist to primary care team can improve accessibility with no change in quality. The reviews found that there was no change in GP workload and hospital impact was variable. But it reduced outpatient referrals in some specialities. There was no concrete evidence on health service cost but generally, appear

costly. Other benefits included substantial educational/skills transfer opportunities when specialist conducted joint consultations with GPs. It required expansion of the specialist workforce and deployment to primary care teams and depends on the enthusiasm of individual specialists to work.^(16, 17)

Imison et al. in their review identified number of barriers for co-location model which included lack of overall governance structure; unclear lines of accountability; no single leader, lack of professional support, particularly from GP, professional isolation for specialists; and a reduction in primary care accessibility if services with colocation strategies centralised services.⁽¹⁸⁾ There is a number of lessons learnt and recommendation regarding co-location strategies reported by the review.

If co-location strategies pursue a substantial centralisation of primary care into large health centres, there is a possibility of consequent reduction in access to primary care. Hence, there are relatively smaller gains in access to specialist care compared to a reduction in access to primary care as studies suggested that use of primary care is sensitive to distance than the use of an outpatient or acute services.⁽¹⁸⁾ Larger practices may be better at managing chronic diseases and organising care packages, but less good at offering continuity of care and personalised care.⁽¹⁸⁾

The review notes that the choice of location was crucial, and clinics should be developed at natural transport hubs to improve accessibility.⁽¹⁸⁾ And to find a centrally located place would be difficult so the creative approach of using existing sites/facilities would be an option.⁽¹⁸⁾

Services should be aligned to local health needs, recognising the demographic, disease profile of the local population and geography. Flexibility was a key consideration in building design from the start to enable adaptation to changing needs.⁽¹⁸⁾

A considerable investment of time, effort and resources were necessary for planning and development of co-located clinics.⁽¹⁸⁾

Investment in buildings could be an outdated solution to the problem of integration, given the context of the possibilities of new technologies for co-working between professionals by virtual means.⁽¹⁸⁾ Hence, the review recommended that primary focus should be directed towards developing new pathways, technologies and way of working rather than new buildings.

Co-location alone was not sufficient to generate co-working between different teams and professions. Investment in change management and strong clinical and managerial leadership is required.⁽¹⁸⁾

New approaches to assure the quality of out of hospital care and support for professional development is needed. The review also strongly recommended systems of clinical governance be developed and to adjust quality regulation to ensure that all health care meets certain minimum quality standards.⁽¹⁸⁾

There are significant workforce implications that need to be thought through and addressed.⁽¹⁸⁾ Expansion in certain workforce groups and the development of new roles are required.

There is a need for professional engagement to address potential lack of professional support.⁽¹⁸⁾

A major centralisation of primary care is unlikely to be beneficial for the patient, particularly in rural areas. A hub and spoke model where the co-located clinic acts as a central resource base in a coordinated network of practices, is likely to be more appropriate to achieve the desired development of primary care services.⁽¹⁸⁾

A potential risk associated with moving specialist from hospitals to community settings in relocation strategies is the lack of professional development opportunities and motivation for specialists. It has to be dealt with by considering ways of enabling specialists in polyclinics to be involved in education and research.⁽¹⁸⁾

Telemedicine/virtual outreach is virtual rather than physical, relocation of secondary care services to primary care. It has been widely used as a means of overcoming accessibility problem to health care and shortage of health professionals in rural and remote areas.

Overall, evidence suggests that it increased access to a rural and remote area and potential to improve equity if it is located to the population with poor access to specialist care. Winpenny et al. in their review reported that telemedicine ‘store and forward’ services were developed in cardiology, dermatology, ophthalmology and oncology allowing for digital images or other test results be taken locally. And it was sent to a specialist for feedback. This technology allowed specialists to provide service within primary care despite service was not physically relocated. Among them, teledermatology for images of skin conditions gave an accurate diagnosis and showed potential to reduce referrals. It can be cost effective if telemedicine clinics are located in remote areas where patient travel costs to outpatient clinics are high. However, there was insufficient evidence of health outcomes and economic evaluation. Furthermore, telemedicine required substantial investment in equipment and training of clinicians.^(16, 17, 20)

3.2.1.3 Liaison/joint working

This phrase is defined as joint working between specialists and primary care practitioners, or within primary community care practitioners to provide care to individual patients. A number of categories are included in this model: shared care, consultation-liaison, care management and interactive communication.^(16, 17, 24)

Shared care is a personalised approach to care which uses the skills and knowledge of a range of health professionals who share joint responsibility in relation to an individual’s care by making a common care plan and sharing information between them.⁽²⁵⁾ It originated in mental health and has been widely used in chronic diseases and conditions.⁽²³⁾ Shared care typically refers to two providers with the same professional backgrounds, one a specialist and one a generalist. Shared care can also be implementing a shared care approach by the use of technology for teleconferencing virtually.⁽²³⁾ A care plan is defined as a structured, comprehensive plan developed jointly by the patient, carers and health professional(s).⁽²⁵⁾

Scoping reviews conducted by Winpenny et al. and Sibbald et al. on shared care between a general practitioner and a specialist in joint management of a patient chronic diseases suggests that care can be provided in primary care using shared care protocols without loss of quality. There is insufficient evidence on improving accessibly and equity, with no change in

quality or health outcome. Cost savings to patients are related transport cost, but savings to the health services are less clear. Shared care depends on good communication between GP and specialist. ^(16, 17)

Other systemic reviews on the effectiveness of shared care (shared care components: liaison, shared care record card, computer-assisted shared care and electronic mail) across the interface between primary and speciality care in chronic disease management also concurred that no consistent evidence for the effectiveness of shared care for most of the outcomes, including clinical outcomes. Only a few studies did economic analysis. Patient direct costs were lower with shared care than with hospital outpatient care due to reduced travel costs. They found that shared care for depression was cost-effective. ^(26, 27)

Studies highlighted that fundamental aspect of shared care was information sharing, which can be facilitated by IT, but most important is a cultural change compelling health professionals to share patient information in a more timely and efficient way should be given higher priority. ⁽²⁰⁾

Consultation-liaison. In the broadest sense, the consultation-liaison is a model of mental health care in which there is an interface between mental health experts and other health care providers. ⁽²⁸⁾ In the primary care context, it involves a mental health specialist provides consultant and liaison service by working alongside the primary care provider, providing advice to the primary care team on the delivery of mental health care. ^(24, 28) This model is based on a belief that the primary care team, particularly GPs with support and guidance from mental health specialist, obtain additional skills and knowledge to enable them to increase their involvement in mental health care. ⁽²⁴⁾ This model also uses e-health technologies such as video conferencing in areas with limited access to resources such as rural areas. ⁽²⁸⁾

The scoping review conducted by Sibbald et al. found that there was insufficient evidence on the effect of the consultation-liaison on access and equity. They found that quality of care was improved, but there was no change in health outcomes. It is unlikely to be cost-effective because costs are higher with no change in health outcomes. The main implementation issue was it required major revision to working practices of specialist and GP. ⁽¹⁷⁾

Gillies et al. in their systematic review found some evidence of consultation-liaison in primary care for people with mental disorders in improving mental health, satisfaction with care and adherence to treatment. Consultation-liaison also appeared to improve mental health care by primary care providers. The same study also concluded that the model may not be as effective as collaborative care (mental health care coordinated by a primary care case manager). Overall, the quality of the evidence was low. ⁽²⁸⁾

A scoping review on integrating rehabilitation and primary care mentioned about **case management** as a separate model. This model is a component of a more general model of chronic disease management widely known as Wagner's Chronic Care Model. ⁽¹³⁾ According to this model, a case manager, generally a specialised health professional, on the basis of a referral and intake assessment, coordinates and liaises services. It has the advantage of tracking and coordinating multiple service providers and organisations. A disadvantage of the case management arises if various involved professionals do not acknowledge the case management role and do not cooperate. It also needs resources such as IT, office space, meeting space, clerical staff, including others. ^(13, 23)

Interactive communication. Foy et al. conducted a meta-analysis on the effect of interactive communication between collaborating primary care physicians and specialists on outcomes for patients receiving ambulatory care. The interactive communication included: initial joint consultations, regular specialist attendance at primary care team meetings, telepsychiatry with primary care physicians, scheduled telephone discussion and shared electronic progress notes. They found that interactive communication between collaborating primary care physicians and specialists is associated with improved patient outcomes.⁽²⁹⁾

We also identified a review conducted by Mitchell et al. which did not specifically review a specific model but reported finding on the effectiveness of integrated models of care at the interface of primary and secondary care in general. This review found a substantial impact on process outcomes and a modest impact on clinical and economic outcomes. Examples of positive process outcomes were patient attendance rates improved, hospital attendances fell, falls in hospital length of stay and readmission rates, both clinicians and patients reported satisfaction. Interdisciplinary teamwork, communication and information exchange, use of shared care guidelines or pathways, training and education and variable funding model were the elements the review identified to facilitate the integrated models of care.⁽³⁰⁾

3.2.2 Key implementation issues and lesson learnt

3.2.2.1 Financial

Financial barriers are identified as a major impediment to integration because many activities associated with models of integrated care involved cost and resources. Examples include resources for equipment and training, new building and facilities for co-located sites, the additional role such as case manager function, and investment in the community and IT. Furthermore, another issue is the sustainability of funding to keep the programme running after the pilot work has been completed.^(16-18, 30, 31)

3.2.2.2 Organisational

It includes a number of issues related to change process, time, role clarity, professional attitude, the revision to working practices, etc. An effort to integration requires substantial changes in the way different providers are traditionally working and has profound implications for the way in which professionals work. For example, GPs are trained to provide general medical service and may consider mental health service outside their jurisdiction and responsibility. There is also a possibility that health providers do not want to share space under the same roof which might threaten their professional autonomy. Hence there is a need to address the change required in attitude in health professionals, in working practices and cultures. Similarly, it demands additional responsibility for providers which leads to time pressure. There are new staff and roles which need to be balanced.^(18, 31) Hence, a considerable investment of time, effort and resources are necessary for the planning and development of an integrated model. Significant investment in change management is needed to support the integration.⁽¹⁸⁾ Clearly defined roles among team members are essential. Furthermore strong professional engagement, provider training and support is required.^(18, 31)
(23, 30)

3.2.2.3 Governance and management

Related to the above, reviews identified lack of governance structure, unclear lines of accountability and no single leader are important barriers for implementation of new

integrated care models.⁽¹⁸⁾ A well-structured governance representation all stakeholders is necessary. Having strong leadership that is committed to integrated care and champions the programme is also key to success.⁽³¹⁾

3.2.2.4 Workforce

The shift in care from hospital to community and subsequent integrated care requires expansion in certain workforce groups and the development of new roles. Furthermore, the specialist workforce traditionally in a hospital setting may not be enthusiastic to go to community setting due to a potential lack of opportunities for research and continued education. Hence, there is a need for education, research and training opportunities to professionals on their new roles and ways of working collaboratively.^(16-18, 30)

3.2.2.5 Communication

Effective integration requires a willingness to share information and supportive management and administrative staff. A structured communication either through electronic media or regular meetings between the integrated team is a key element. A high level of trust between multi-professional or inter-professional providers is necessary to address their difference in practice styles, cultures, and philosophies. Shared governance for effective communication and collaboration are also seen as important. Studies also showed co-location provides an opportunity for informal communication and the subsequent development of understanding and trust.^(23, 30, 32)

3.2.2.6 Use of shared care guidelines

Locally agreed care guidelines such as shared care planning, patient goal setting and self-management and structured electronic record and recall systems, are a key component of the integrated care models.⁽³⁰⁾

3.2.2.7 Quality of care

Transfer of care from specialist to secondary care may compromise the quality of care. Hence, new approaches to assure the quality out of hospital care and support professional development is needed. Development of systems of clinical governance and to adjust quality regulation to ensure that all health care meets certain minimum quality standards is needed.⁽¹⁸⁾

3.2.2.8 Strong primary healthcare system

Reviews also found that well-functioning primary health care system is important for integrated care between the primary-secondary care interface.^(18, 20)

3.2.3 Section summary

This section has systematically presented findings on international evidence on integrated care at ambulatory settings. The key findings are presented below.

- This review found the most common models of integrated care are: transfer, relocation, and liaison/joint working. However, it was found that services used more than one model and drew on elements of more than one model to provide integrated care.

- Different categories of initiatives fall into the transfer of services from hospital to primary care: minor surgery, medical care for chronic disease, general practitioner or nurses with special interest, transfer of outpatient discharge, access for GP to diagnostic test and services.
- Relocation strategies include shifted outpatient clinic, co-location of the clinic, telemedicine/telehealth, hub and spoke, visiting/periodic services, “fly-in, fly-out”.
- Joint working/liaison model can be split into shared care, consultation-liaison, and care management.
- Integrated IT initiatives were found a cross-cutting strategy and enabler for all these models of care.
- Overall, transferring of care from hospitals to community and other integration models between primary-specialist interface increased access and convenience for patients. However, there was no sufficient evidence of clinical and economic outcomes. Furthermore, there are mixed findings on the quality of care.
- Very few studies included cost-effectiveness. Overall, cost generally increased with the models of integration. Reduction in cost included reduced time and travel cost for patients. However, there is a need to decide whether the extra costs are offset by the benefits of integration.
- Relocation model increased equity and cost-effective if located in rural areas. It was not useful for urban, advantaged populations. Telemedicine may increase equity and useful for rural and remote areas.
- Co-location provides opportunities for better coordinated and integrated care, but it does not automatically lead to such improvements in practice.
- Joint working/liaison model of care between primary care and specialist care can be provided in primary care. However, there is insufficient evidence that it improves accessibly and equity.
- There are implementation issues to be addressed which are related to financial, organisational, communication, and quality of care.

Table 3.1 Summary of review articles

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Sibbald et al. (2007) Shifting care from hospitals to the community: A review of the evidence on quality and efficiency	To review the research into the effectiveness of strategies to shift specialist services from hospitals to the community	Scoping review, Primary care setting	Transfer to primary care (minor surgery, medical care of chronic disease in primary care, GP with a specialist interest, outpatient discharge, direct access for GP to hospital diagnostic test and service). Relocation of hospital services (shifted outpatient clinics, telemedicine, and attachment of specialist to primary care teams). Joint working/liaison (shared care and consultation-liaison psychiatry).	Patient health, patient satisfaction, quality of care, impact on hospital services, impact on primary care services, and costs to service providers and/or patients.	Overall, shifting care from hospitals to community improved patient access to specialist care but risk-reducing quality and increasing the cost. Relocating specialist clinic to remote rural areas may improve equity. The overall health service cost was increased due to an increase in the volume of care, loss of economies of scale, and increase demand. Reduction in cost achieved through reduced salary costs in primary care and reduced time and travel costs for patients. Service located to underserved population and areas tended to be more cost-effective than those located to urban, advantaged populations.	Requires equipment and training of the primary care workforce. Change in attitude of specialists who are hostile to change (GPSI), requires expansion of the specialist workforce (relocation strategies). Successful delivery depended on good communication between primary and secondary care clinicians (shared care). Requires major revision to working practices of specialist and GPs (consultation liaison)

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
<p>Winpenny et al. (2017) Improving the effectiveness and efficiency of outpatient services: a scoping review of interventions at the primary-secondary care interface</p>	<p>To review the literature on strategies involving primary care that are designed to improve the effectiveness and efficiency of outpatient services.</p>	<p>Scoping review, primary care setting</p>	<p>Transfer: minor surgery in primary care, medical care of chronic disease in primary care, intermediate care, outpatient discharge to primary care, direct access by GPS to diagnostic test and investigations, direct access by GPs to specialist services.</p> <p>Relocation of hospital services: shifted outpatient clinics, telemedicine, attachment of specialists to primary care teams, community mental health teams.</p> <p>Joint working/liaison: (shared care and consultation-liaison psychiatry).</p>	<p>Access, including waiting times, referral rates, patient outcomes, service outcomes, physician outcomes and costs.</p>	<p>Shifting care from hospitals to community improved patient access to specialist care but risk-reducing quality and increasing the cost.</p> <p>Relocating specialist clinic to remote rural areas/underserved communities may improve equity.</p> <p>Reductions in cost were achieved through reduced salary cost in primary care and reduced time and travel costs patients. But these were offset by the loss of economies of scale and increases in the volume of care.</p>	<p>Requires equipment and training of the primary care workforce.</p> <p>Change in attitude of specialists who are hostile to change (GPSI), requires expansion of the specialist workforce (relocation strategies).</p> <p>Successful delivery depended on good communication between primary and secondary care clinicians (shared care).</p> <p>Requires major revision to working practices of specialist and GPs (consultation liaison).</p>

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Mitchell et al.(2015) Systematic review of integrated models of health care delivered at the primary-secondary interface: how effective is it and what determines effectiveness?	Examine the operations and effectiveness of integrated models of care at the interface of primary and secondary care.	Systematic review, chronic/complex chronic disease, interface of primary and secondary care.	Not clearly/separately reported.	Clinical, process of care and economic.	Substantial impact on process outcomes and modest impact on clinical and economic outcomes. Example of positive process outcomes: patient attendance rates improved, hospital attendances fell, falls in hospital length of stay and readmission rates, both clinicians and patients reported satisfaction.	Interdisciplinary teamwork, communication and information exchange, use of shared care guidelines or pathways, training and education, variable funding model.
McColl et al. (2009) Models for integrating Rehabilitation and Primary Care: A Scoping Study	To describe the scope and breadth of knowledge available regarding the integration of rehabilitation and primary care services.	Scoping review, chronic conditions/disabilities, primary care and rehabilitation.	Clinic (colocation), outreach, self-management, community-based rehabilitation, case management, shared care.	Reporting on models of care, facilitators and barriers	Clinic (colocation), outreach, self-management, community-based rehabilitation, case management, shared care.	Factors support or hamper to the integration of rehabilitation services into primary care settings: team approach, inter-professional trust, leadership, communication, accountability, referrals and population-based approach.

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Smith et al. (2017) Shared care across the interface between primary and speciality care in the management of long term conditions (review)	To determine the effectiveness of shared care health services interventions to improve the management of chronic disease across the primary/speciality interface.	Systematic review, primary speciality care interface, chronic conditions.	Shared care: liaison, shared care record card, computer-assisted shared care and electronic mail.	clinical, patient-reported outcome measures; hospital admissions; the process of care; participation and default rates; treatment satisfaction; cost outcomes.	Little or no effect on clinical outcomes. Shared care is effective for depression but for other consistence evidence is lacking. Only a few studies did economic analysis. Patient direct costs are lower with shared care than with hospital outpatient care due to deuced travel costs. Shared care for depression is cost effective.	NA
Smith et al. (2007) Effectiveness of shared care across the interface between primary and speciality care in chronic disease management.	To determine the effectiveness of shared-care health service interventions to improve the management of chronic disease across the primary-speciality care interface.	Systematic review, primary speciality care interface, chronic conditions.	Shared care: liaison, shared care record card, computer-assisted shared care and electronic mail.	Patient health outcomes, patient and provider behaviour, efficiency and cost	Non-consistent evidence for the effectiveness of shared care for most of the outcomes. Cost data were limited and difficult to interpret. Patient direct costs are lower compared to hospital outpatient care.	NA

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Foy et al. (2010) Meta-analysis: Effect of interactive communication between collaborating primary care physicians and specialists	To assess the effects of interactive communication between collaborating primary care physicians and key specialist on outcomes for the patient receiving ambulatory care.	Meta-analysis. Studies in outpatient and community primary care. Focused on psychiatry, endocrinology and oncology, high-income countries.	Collaborative care/Interactive communication: initial joint consultations, regular specialist attendance at primary care team meetings, telepsychiatry with primary care physicians, scheduled telephone discussion and shared electronic progress notes.	Any patient, process to care and economic outcomes	Interactive communication between collaborating primary care physicians and specialists is associated with improved patient outcomes.	Importance of human factors in promoting successful collaboration. Relational coordination.

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Butler et al. (2008) Integration of mental health/substance abuse and primary care	To describe models of integrated care used in the US, assess how the integration of mental health services into primary care settings or primary care into speciality outpatient settings impact on patient outcomes.	Systematic review, Outpatient (primary care or speciality mental health care), Mental health/substance abuse.	Provider integration: care manager; consultations on an as needed basis, regular schedule case reviews, and formal protocol for updating primary care providers on patient progress. Co-located services: co-located mental health provider or behavioural health trained care managers in the primary care site. Or used telemedicine technology to rural or small clinic settings. Shared medical record Use of Health Technology	Not mentioned	Most intervention in either setting is effective. For primary care setting: positive results for symptom severity, treatment response and remission when compared to usual care. For speciality care setting: patient outcome improved. Improvement in medical care, quality of care and patient outcome. No sufficient evidence on the effectiveness of the impact of specific types of health IT for improving the integration process of care. Telemedicine improves access to care, especially for patients in rural areas.	Financial barriers: Many activities associated with integrated care such as may care management functions, consultations and other communication activities between providers and telephone consultation with patients. Organisational barriers: resistance to change and process of care, and time pressure. A key leader who promote, support and advocate for the programme and use of care managers to mitigate time pressure on primary care physicians. Provider support and training are needed.
Smolders et al. (2008) Knowledge transfer and improvement of primary and ambulatory care for patients with anxiety	To summarise evidence on the effectiveness of knowledge transfer intervention at the management of anxiety.	Systematic review, Primary and ambulatory care, patient with anxiety.	Collaborative care: involvement of mental health specialists in health care delivery (co-locating in primary care), telephone-based coordination of care.	Recognition, management, and outcome of anxiety, and cost and resource use.	Collaborative care interventions seem to be most effective in improving the quality of care for a patient with anxiety in a primary and ambulatory health care setting.	NA

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Ginsburg et al. (2008) Collocating health services: A way to improve the coordination of children's health care?	To explore what is known about colocation strategies used in paediatric primary care settings	Structured review and interviews with key stakeholders, paediatric primary care settings, Australia, UK and Sweden	Colocation	Approaches of colocation, benefits of colocation, implementation issues and barriers	Some examples of various approaches to achieve colocation objectives: care coordinators, referrals, linkage, follow-ups, shared/link data/patient records, common/shared services. Colocation generally leads to improved access to care and patient satisfaction. Increased provider satisfaction. Contributes to the more appropriate use of health services and improve clinical outcomes.	Organisational consideration, space, staffing, financial issues, coordination/collaboration consideration and sharing data.
Gillies et al. (2015) Consultation-liaison in primary care for people with mental disorders	To identify whether consultation liaison can have beneficial effects for people with a mental disorder by improving the ability of primary care providers to provide mental health care	Systematic review, primary care, mental health.	Consultation-liaison	Different consumer and provider-related outcomes: relapse, satisfaction with treatment, general health status, health care visits, cost of treatment, etc.	Some evidence that consultation-liaison improved mental health, satisfaction with care and adherence to treatment in people with some mental disorders, particularly depression, and improve mental health care by primary care providers. Consultation-liaison may not be as effective as collaborative care (mental health care coordinated by a primary care case manager).	NA

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Gruen RL et al. (2003) Specialist outreach clinics in primary care and rural hospital settings.	To undertake a descriptive overview of studies of specialist outreach clinics and to assess the effectiveness of specialist outreach clinics.	Systematic review, specialist outreach clinic, different speciality and any disease condition. Both high-income and other countries.	Simple outreach: specialist consultation only in primary care/remote hospital setting. Multifaceted outreach: outreach enhanced by increased collaboration with primary care practitioners, joint consultations, case conferences, seminars or other educational sessions.	Access, quality, health outcomes, patient satisfaction, use of health services and costs	'Multifaceted outreach' was associated with improved health outcomes, more efficient and less use of inpatient health services. Simple 'shifted outreach' was associated with improved access but no improved health outcomes.	NA
Powell (2002) Systematic review of outreach clinics in primary care in the UK.	To determine the benefits of holding specialist outreach clinics in primary care settings.	Systematic review, outreach clinics in primary care, UK.	Specialist outreach clinics	Advantages and disadvantages of outreach clinic, health outcomes, patient satisfaction, cost	Perceived advantages: improved GP-specialist communication, improved patient experience and access. Disadvantages: administrative costs, accommodation costs, inefficient use of specialists' time. No consistent difference in health outcomes. Outreach clinics had higher direct costs to the health system than hospital-based clinics.	NA

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Wakerman et al. (2008) Primary health care delivery models in rural and remote Australia – a systematic review	To describe innovative models of comprehensive primary health care in rural and remote Australia to identify what rural and remote primary health care models work well, where and why	Systematic review, rural and remote primary care in Australia.	Different rural primary health care models: discrete services, integrated services (shared care, multipurpose service with colocation and common administration), outreach services (hub and spoke, visiting/periodic services, fly-in, fly-out), virtual outreach services (IT/Telehealth) –virtual amalgamation, virtual clinics (video pharmacy/assessment & monitoring, telehealth/medicine).	Description of different care models.	Different rural primary health care models were identified but the comprehensive evaluation is lacking. An integrated model may be beneficial for rural communities in terms of the sustainability of services. Out-reach services improve access to health services for the widely dispersed and isolated population. Telehealth/medicine is widely used in Australia to overcome access and health worker shortage issue.	NA
Imison et al. (2008) Under one roof: Will polyclinics deliver integrated care?	To identify and explore opportunities and risks presented by the transition to polyclinics model of care	Document review, structured interview and literature review	Polyclinic/co-location	Opportunities and risk factors associated with the implementation of polyclinics	Co-location presents opportunities but does not in itself lead to better clinical integration or quality of care	Lack of overall governance structure; unclear lines of accountability; no single leader, lack of professional support, particularly from GP, professional isolation for specialists; and a reduction in primary care accessibility

Author(s)/title	Aim	Design/ Setting/Sample	Integration models/ Strategies	Primary Outcome(s)	Main Findings	Implementation issues/facilitators and barriers
Rygh et al. (2007) Continuous and integrated health care services in rural areas. A literature study	To explore evidence on how to promote continuity and integration in healthcare services in order to meet the special demands of populations in rural areas	Structured review	Specialist outreach programs shared care and telemedicine	Possible ways to identify integrated care to improve rural health care	Integrated and managed care pathways, outreach programs, shared care and telemedicine were relevant initiatives. Integrated care may improve equity in access to care, but with additional costs.	Well-functioning primary health care systems, the flexibility of roles and responsibilities, delegation of tasks and cultural adjustments needed for integrated care in rural areas.

3.3 New Zealand evidence

3.3.1 Description and key drivers

This part of the review is informed by section four of our international literature review by providing a framework of models of integrated care. This review identified 18 cases of integrated care in the primary-secondary care interface in New Zealand. Included examples ranged from formal evaluation of programmes through to pamphlet descriptions of programmes.

General drivers for pursuing an integrated model of care were:

- in response to national policy directives
- local circumstances related to accessibility and equity
- increasing demand for health services from a growing and ageing population with increasing numbers of chronic conditions (multimorbidity)
- rapid advances in information/communication technologies

3.3.2 Models of care

Just like there is no single accepted definition of integrated care,⁽¹³⁾ there is significant diversity in models of integrated care with a range of titles for similar concepts. Integration can take a variety of forms.⁽³³⁾ The scale and scope of the models also vary widely, and they are in different stages of development. This review tried to fit the New Zealand based models within one of the categories identified by our international review. Looking across these different initiatives, the most common strategies of integrated care between primary and secondary interface fall into one of the following categories: the three models of care identified above (transfer, relocation and liaison/joint working), integrated family health centre (IFHC), HealthPathways, and localities model. A more detailed description of each model of care is discussed in the full case study profile section of this section (see Table 3.2).

Our review found most of the models were found in primary and secondary care interface (vertical integration). We also found a few examples of models of care which were applied in between health and social care in primary care.

Models of care covered ranged of target population and services: youth services, maternal and child health services, chronic and long-term conditions, mental health, rural and hard-to-reach population.

3.3.3 Key outcomes

The literature included a number of studies which reported evaluation of models of care. Key outcomes reported by different studies were improved communication, coordination and sharing of information between primary and specialist care providers, improved equity and accessibility, reduced waiting time reduced hospital presentations and improved skills of the primary care workforce.

An evaluation of the implementation of a co-location strategy reported that the co-location strategies reached vulnerable women and improved outcomes by bringing together health and social services. The study also found improved communication and working relationship as

co-location of providers improved communication between providers and the development of working relationship.⁽³⁴⁾

Another evaluation study of shared care planning (sharing both patient records and planned care activity) illustrated that rich and meaningful communications to coordinate care and strengthened relationships between the primary care and specialist care services.^(25, 35)

An integrated care programme in the Eastern Bay of Plenty, which included intervention such as shared care plan, telehealth monitoring and case manager, demonstrated a reduction on hospital presentations and improved accessibility to patients.⁽³⁶⁾

The Canterbury initiative of the HealthPathway model showed improvement in referral quality, more equitable referral triage, and more transparent management of demand for secondary care.⁽⁵⁾

Evaluation of the Primary Health Care Strategy showed that GP liaison positions and participation in joint committees resulted to better sharing of information; delivery of specialist services in practices; and up-skilling of GPs to undertake some specialist functions.⁽³⁷⁾

Models of care which were related to transfer of care from secondary to primary care showed evidence of reduced waiting time and increased access to services for patients, reduced pressure on hospital services, improved communication and linkages between primary and secondary care, and upskilling of the primary care workforce.⁽³⁸⁾

The Bay of Plenty Telehealth project also demonstrated the successful implementation of the use of video doctors in hard to reach areas and video clinics for long term conditions.⁽³⁹⁾

3.3.4 Key implementation issues

This review identified the following implementation issues which cut across different models of care.

- No viable and sustainable funding for the model of care is one of the important organisational barriers. There are many hidden costs of running a new model of care. For example, in shared care, the hidden costs in GPs included the staff time required for liaison and follow-up and the costs of providing facilities for consultant-liaison services.^(24, 25)
- Lack of IT system to support communication is identified as a systemic barrier.⁽³⁴⁾
- Lack of confidence, trust and communication between providers are found. Poor relationships between professional groups are a substantial barrier to integrating services at the provider level.⁽³⁴⁾
- Issues regarding increased workload and time are another factor. For example, the study showed the challenge of staff having time for shared care planning. Co-designed shared care planning is a time-consuming activity and the current structure of primary care, including the funding model, does not lead itself easily to this process.⁽²⁵⁾
- Another barrier was the knowledge and skills required to perform new roles/tasks.^(25, 34)
- The infrastructure required for running an integrated programme is another issue.⁽²⁴⁾

3.3.5 Key lessons

The following lessons have been drawn from the implementation of different models of care.

- Location and accessibility: It needs to be located in a community that uses it. Location is important and ideally on main bus routes. Furthermore, service flexibility and nice atmosphere in the co-located clinic is important.^(34, 40)
- Committed leadership is necessary from governance to the individual providers. There is a need for an organisation/programme champion for the successful implementation of the programme.^(25, 34, 36)
- Changes at the system level are required to integrate services.^(34, 39)
- Development of governance group that includes representation across different providers groups is necessary.⁽³⁴⁾
- Considerable energy needs to be placed into relationship development and communication in the early stages of implementation of models of care. Funding needs to include set-up funding and adequate to provider's cost, and relationship building.⁽³⁶⁾
- How communication happens is key. Monthly meetings are key to ensure providers know each other, work together and address problem jointly. Effective working relationships between providers is important.⁽³⁴⁾
- Administrative and project management support is essential to establish a process and allow providers to focus on their professional roles.⁽³⁴⁾
- New workforce skill and roles are required to support integration. There is a need for training for the integrated workforce (scopes of practice, information sharing).^(25, 34)
- A good performance measurement system and patient stories in regular newsletters are needed to illustrate as early as possible the impact and credibility of the programme.⁽³⁶⁾
- A shared care platform will take some time to get people to use freely - particularly if they continue to have access to any previous system they use to maintain patient notes.⁽³⁶⁾
- A history of a good relationship between the team members is helpful for smooth functioning.⁽³⁶⁾
- The organised collaborative work between GPs and hospital clinicians leads to improved communication and better working relationships. For example, the Canterbury initiative of HealthPathways involved the organised collaboration between general practitioners and hospital clinicians in writing the pathways which were a key factor of the programme's success.⁽⁵⁾
- Inclusion of information on locally available health resources in the care pathway and information platform improved acceptability and use of such a platform.

3.4 Case study examples

This section provides profiles of case examples of New Zealand based integrated care models. The scale and scope of the models vary widely, and they are in different stages of operational implementation/development. When possible we tried to include the following information in each case example: descriptive information and key drivers, model of care, governance/management, outcome measures, key success factors, implementation issues, and lesson learnt. A summary of the New Zealand based models of care are at the end of this section (see Table 3.2).

3.4.1 Youth One Stop Shops

3.4.1.1 Descriptive information and key drivers

A number of community youth health organisations were established in New Zealand to address the health care needs of the youth in New Zealand. They are collectively called Youth One Stop Shops which provided services to aged 10 and 25 years. These organisations were developed in its own setting but as a group, they were united by a common vision to promote access to health and social services to youth.⁽⁴⁰⁾

3.4.1.2 Model of care

Youth One Stop Shops are integrated community-based health and other services, using holistic ‘wrap around’ model of care. The ideal model is to be responsive to the health and social needs of youth and to integrate primary and secondary care for young people. This can be achieved through the co-location of primary and secondary services. Service delivery team is multidisciplinary. Youth works as a communication bridge between young people and services.

3.4.1.3 Governance/management

These organisations were managed by a community-based organisation (charitable trust and societies) and have a governance board. Board members characteristics: interested in young people, good standing in community, effective skill mix, Maori and youth were also represented.

3.4.1.4 Effectiveness in improving access and health

A mixed-methods evaluation was conducted in 2009 of 12 such Youth One Stop Shops. The evaluation reported different features of service implementation. These organisations provided a range of specialised, integrated health and social care services for the Youth. It offered outreach, mobile and satellite services to increase access for young people. Most Maori service users considered the service to be effective at providing access to health services.

3.4.1.5 Key success factors

- The main reasons young people use the services were they were related to cost (low cost or free), service flexibility, convenient location and perception of non-judgemental.
- Configuration of services: Service facility were located centrally and close to public transport.

- Access was further facilitated through the provision of mobile, outreach and satellite services.
- The relaxed and safe atmosphere in the clinics.

3.4.1.6 Implementation issues

- No viable funding was the barrier.

3.4.2 New integrated services at Lakes DHB

3.4.2.1 Descriptive information and key drivers

Pregnant women, children and their families have contact with a number of different health service providers during the pregnancy and postnatal periods. Lack of coordination between existing services can reduce the efficiency and quality of services. Integration of maternity and child health services is an important goal for Government because it can improve the efficiency and quality of services. The Ministry of Health (MoH) selected 3 DHBs to integrate maternal and child health services. The pilots were conducted from 30 January 2014 to 1 February 2016 and involved the Counties Manukau DHB (Otago communities), Lakes DHB (Rotorua, Turangi and Taupo communities), and the Nelson Marlborough DHB (all communities in the region). In the demonstration pilots, each DHB developed their own approach to integration to meet the needs of their communities. Lakes DHB pilot project aimed to have an integrated and coordinated maternal and child health services that support improved health outcomes and reduced inequities in the target population group. It was implemented into two sites: Awhi House and Kia Puawai.⁽³⁴⁾

3.4.2.2 Model of care

This pilot provided an example of a model of care with co-location strategies. There was the development of three sites where providers co-located to provide maternal and child health services. It included a multidisciplinary team. Multidisciplinary team include midwives, a house host role, clinical coordinator role, social service providers. New workforce roles were identified for integrated services. Communication between providers was organised by setting up a system such as electronic referral forms or shared notes and agreeing scope of practice and what information is to share.

3.4.2.3 Governance/management

A dedicated maternal, children and youth governance group ‘Te Whanake’ was set up with representation from primary, secondary and tertiary providers, and community maternal and child health services. The overall oversight and direction for the integrated pilots were provided by the DHB Portfolio Manager for Women, Child and Youth services while the operational aspect of the project was led by the pilot project employed project manager.

3.4.2.4 Outcome

An evaluation conducted by Malatest International in 2016 found that implementation of the models has reached vulnerable women and improved outcomes by bringing together health and social services. The study also reported improved communication and working relationship as co-location of providers improved communication between providers and co-location at the new integrated services facilitated the development of the working relationship.

3.4.2.5 Barriers

- Systemic barriers: Lack of an IT system to support communication.
- Poor relationships between professional groups are substantial barriers to integrating services at the provider level.
- Lack of confidence, trust and communication between providers were also found.

3.4.2.6 Key lessons

- Need for training for the integrated workforce (scopes of practice, information sharing).
- Committed leadership is necessary from governance to the individual providers.
- Changes at the system level are required to integrate services. Effective board with representation from people who make a decision on behalf of their organisation is important.
- Development of governance group that includes representation across different providers groups is necessary.
- Development of vision, mission statement and strategic plan for a shared understanding of service are necessary.
- Funding must include set-up funding and adequate to provider's cost, and relationship building.
- Monthly meetings have been key to ensure providers know each other, work together and address problem jointly.
- Administrative and project management support is essential to establish a process and allow providers to focus on their professional roles.
- Location and accessibility: Service needs to be located in the community that will use it. Location is important and ideally on main bus routes.
- The homely atmosphere is important. A house host has the main role to play to create such an environment.
- Effective working relationships between providers is important.
- New workforce skill and roles are required to support integration.

3.4.3 Counties Manukau DHB localities model

3.4.3.1 Description and key drivers

Counties Manukau Health has committed to investing in primary and community care to reduce demand across the system and provide a better patient experience. This change is in response to increasing demand for health services from a growing and ageing population. Nearly 60% of acute hospital admissions are for less than 48 hours and some of these could be managed in community settings with rapid response services. Many Counties Manukau Health community services currently operate in isolation of one another, and this can create a lack of equity of access to services.

Community Integration (previously known as Community Health Services Integration or CHSI) is the Counties Manukau DHB model to integrated primary and community care at a local level. It aims to deliver services to patients closer to home and work by placing more services in the community and developing locality based multidisciplinary community teams.

These teams are skilled in delivering a range of functions and work closely with the primary care team.⁽⁴¹⁾

3.4.3.2 Key features of the model

This model includes the development of locality-based multidisciplinary community teams who are skilled in delivering a range of functions and work closely with the primary care team. The Teams is mobile, multi-skilled, and equipped to work together to enable the first best response for our patients.

Community Health Teams integrate with primary care/GP clusters within localities, taking an interdisciplinary approach.

It includes an extension of the capacity and scope of Counties Manukau Health community teams to ensure a timely response to patient need including a proactive approach and a rapid response for urgent need.

Community staff are enabled to work more efficiently through the use of technology. Community Health teams are enabled by Community Central which provides centralised intake and triage for community teams, supporting this through improved scheduling and rostering. It provides community teams with mobile technology to support their work and facilitate the sharing of information.

By working in clusters, strong working relationships between providers are formed at a local level. This means each cluster has named community clinicians supporting their enrolled population and named secondary care clinicians who provide specialist input.

Services provide general access to the community, specialist nursing and allied health services, integrate with contracted home & community support services and include the following functions: re-ablement, rapid response, supported discharge, rehabilitation.

Non-complex wound care is provided by GP. Rapid response and supported discharge services are operational in all localities.

3.4.3.3 Governance/management

Locality leadership groups and community and clinical networks have been established to provide engagement and governance over the development and implementation of new models of care.

3.4.3.4 Outcomes

It is expected that services will be more integrated, effective and patient centred. Patients and whanau will be supported by a team who work together to best support them to achieve their goals. GPs will be supported by an enhanced GP team including community teams. Community health staff will work in a more efficient and effective way – utilising technology to support their work. There will be a central point of access (contact and referral) to community services that supports a best first response for services, triaging, allocating resources and capacity planning capability.

3.4.4 Shared care planning

3.4.4.1 Description and key drivers

The National Health IT Board (NHITB) and the three metro Auckland DHBs jointly funded National Shared Care Planning Programme (NSCPP), the pilot project which was implemented in phases in eight GPs, five DHB services (ADHB Heart Failure Service, Counties Manukau DHB Rheumatology Service, Waitemata DHB Acute Intervention Respiratory Service, Counties Manukau DHB Whitiara Diabetes Service and Auckland DHB Diabetes Service) and four community pharmacies. healthAlliance was contracted by the NHITB to manage the implementation of NSCPP.^(25, 35)

NSCPP was to support the Government's strategy for using technology as an enabler to deliver health outcomes. NSCPP is aimed at supporting the management of people with long term conditions through the development of a shared care record, available to relevant carers and patients, and the development of a care plan.

The shared care planning model is based on the philosophy that shared information and shared care planning helps all stakeholders involved in patient care to have access to more timely and relevant supporting information for decision making.⁽²⁵⁾

3.4.4.2 Key features of the model

- It is implemented in primary and secondary services.
- The technology solution of NSCPP is Collaborative Care Management Solution (CCMS), which is a web-based clinical case management care planning solution. It is designed to assist shared care planning by sharing both patient records (e.g. diagnoses, measurement results, medications, notes and record summary) and planned care activity (care plans and related care activity) among multiple care team members.
- This care team may include members from different organisations who are active in the patient's health care (e.g. specialists, GP, pharmacist, community nurse). CCMS also provides communication support through features regarding notes and tasks.
- CCMS has achieved a degree of interoperability with the GP practice management system (PMS) software and also MedTech32 and with secondary clinical information systems (Orion Concerto).
- Training for using CCMS was delivered to participating providers by either the technology vendor (HSAGlobal) or the healthAlliance support team.

3.4.4.3 Outcomes

- Providers were able to use CCMS to undertake care planning and have substantive electronically mediated communications about the management of patients' conditions.
- There is improved patient motivation and overall health service experience through goal setting and shared information.
- Primary and secondary team members are able to use CCMS to set tasks for one another and communicate about patient status and management plans.
- The data illustrate rich and meaningful communications across the primary-secondary boundary to coordinate care. All major roles communicate with each other.

- The relationships between the participating primary care and specialist care services have strengthened.

3.4.4.4 Key lessons

- The majority of CCMS use is by a nurse and this likely to be the continuing trend. While physician engagement is essential, nurse activity is central to care plan formulation and overall shared care execution.
- Go for best value patient cohorts while we wait for a more definite business model.
- An early introduction to the notion of multidisciplinary, team management skills are some starting strategies that are needed to understand and optimize teamwork.
- Need more change management support overall.
- The identification and appointment of a Care Coordinator are seen as essential. When a specific person was responsible for the coordination of care, the overall utilisation of shared care planning was better, than when shared care was managed by individuals independently within their organisation.
- Where there is a commitment from the whole of practice and where training and support are consistent and readily available, it is more likely to prove sustainable.
- The identification of a practice champion who is actively engaged is an important step in the engagement of others.

3.4.4.5 Implementation issues

- One of the challenges is the lack of time for staff to shared care planning. Co-designed care planning was difficult. Co-designed shared care planning is a time-consuming activity and the current structure of primary care, including the funding model, does not lead itself easily to this process.
- Another barrier is skills related to care planning. Effective co-care planning requires skills and support.

3.4.5 Healthcare Hawke's Bay DHB pilot

3.4.5.1 Description

This is a pilot programme involving DHB District Nurses (DNs), Health Hawke's Bay (PHO) and three GPs to integrate district nursing and primary care practices. The pilot was running for 15 months and the service model was expected to be finalised by April 2015. Previously GPs and DNs worked in isolation, and there were difficulties in communicating patient information even though both may have been involved in providing care for the same patient. The desired outcome was to improve the patient experience by bringing key stakeholder services closer together, eliminating duplication and waste, and ensuring patients have direct access to services closer to their home. It was rolled out at Hastings Health Centre, Totara Health and Te Mata Peak Practice.⁽⁴²⁾

3.4.5.2 Key features of the model

- DN's are employed and resourced by Hawke's Bay DHB, structured within the Oral, Rural and Community Service.
- DN's are aligned to the GPs, at times physically basing themselves there when not visiting patients in their home.

- DN skills are being used by GP - wound assessment, advice, management of wounds failing to progress or developing complications, catheter and bowel management, administration of prescribed medications and support with the management of other health issues.
- DNs are given remote access to GPs' clinical records. DNs had access to the GPs MedTech 32 PMS, saw their patient's history online from anywhere and contribute to shared patient records through their clinical notes. They can also schedule doctor's appointments.
- DNs are one of the team, to be referred to, and to pass on information to the appropriate practice when a patient is referred to them directly from hospital services.

3.4.5.3 Outcomes

- The resounding message from all stakeholders is that the partnership is one of the most significant moves so far towards integrating services and putting the patient at the centre of care.

3.4.5.4 Facilitators and barriers

- Initial teething problems included poor knowledge of roles, incompatibility with each other's methodology and way of practising.

3.4.6 Te Whiringa Ora: an integrated care in the Eastern Bay of Plenty

3.4.6.1 Description

Te Whiringa Ora was established in 2011 as a response to a call from the New Zealand government for the integrated primary care programme that delivered 'Better, Sooner, and More Convenient' services. It was funded by the Easter Bay Primary Health Alliance. It was designed and implemented by Healthcare of New Zealand – the largest provider of community-based health and disability support in New Zealand.⁽³⁶⁾

Te Whiringa Ora service is an integrated care community-based service that facilitates interdisciplinary care to provide care around patients having a chronic disease with the intention to improve their self-management.

It is based in a rural part of New Zealand that has a large indigenous population, and a relatively high level of social deprivation.

The programme makes use of culturally appropriate care coordinators and uses telephone support and telemonitoring to aid self-management. The overall purpose is to provide a responsive, coordinated and seamless delivery of services.

3.4.6.2 Key features of the model

- It works across GPs, hospital, community service providers and iwi providers.
- The programme incorporates the principles of Whanau Ora meaning that the individual and their family are involved as partners in care.
- Core components of the service include:
 - An assessment of the need
 - A series of home visits
 - Telephone monitoring where deemed necessary

- Self-management support
- Referrals to other social, community and health services
- A shared care plan
- Patients who meet the entry criteria are identified by GPs, hospital staff, Whānau Ora providers, allied health staff and district nurses.
- It has care coordination at the patient level. Once the patient is referred, a case manager and the kaitautoko visit the patient and their whānau. The case managers are registered nurses, while the kaitautoko are those in the community, with experience in community health or mental health.
- The role of the case manager is to bring clinical skills, while the kaitautoko provides cultural support and lifestyle coaching to assist the patient and their whānau to achieve their goals. The case manager and kaitautoko work as a team, with the average patient load of 60 patients per team.
- The case manager and kaitautoko do home visits to complete the shared care plan. Once completed, the GP is notified of the care plan and there is often phone or face to face discussion. The case manager and kaitautoko then work with the patient and their family/whānau, the GP team and other service providers to help meet the targets identified in the shared care plan.
- After pre-screening patients have the possibility to have a telehealth monitoring unit in their home. The measurements include heart rate, blood pressure (BP), spirometry, pulse oximetry, body temperature, body weight and blood glucose levels. However, the system data are accessible by clinical staff so they can pick up early signs of an exacerbation. The system also encourages self-management through learning to monitor their symptoms and better manage their condition and seek help at the appropriate times.
- A shared care platform was developed to support cross-professional interaction.
- The telehealth monitoring unit allows the case manager (and the patient) to identify when clinical markers start to show signs of an eminent acute episode and intervene early. It means that the case manager can communicate with the patients GP and relevant secondary care professionals to liaise around the patients care.
- Multiple organisations are involved in the planning and delivery of Te Whiringa Ora. Hence, the range of care practices from Eastern Bay Primary Health Alliance provides referrals, ongoing clinical links and are key in the discharge process.

3.4.6.3 Governance

- The programme is owned, delivered and administered by Healthcare of New Zealand. They are a private company and New Zealand's largest provider of community-based health and disability support. However, the programme is delivered under contract through the Eastern Bay Primary Health Alliance.
- The Te Whiringa Ora service alliance leadership team was established to govern the implementation of that initiative, and assist and provide guidance to ensure success. The team was made up of five individuals with a clinical and/or management background from across the three agencies -Eastern Bay Primary Health Alliance, two providers (including Healthcare of New Zealand) and the local DHB.

- This group met via teleconference every two weeks for the first six months. Their function was to supervise the execution of the project deliverables to ensure targets are met.
- Many of the more management focused tasks were handled by the Healthcare of New Zealand Te Whiringa Ora project board, which comprised of Healthcare of New Zealand staff seconded to design and oversee the implementation of the project.
- Organising and funding
- The Te Whiringa Ora service is owned by Healthcare of New Zealand Limited and was funded by the Eastern Bay Primary Health Alliance.

3.4.6.4 Outcomes

- The programme has been running for three years and has reported a reduction on hospital presentations, as compared to an equivalent population (not enrolled in the programme). GPs found the programme supportive as it improved accessibility to patients.

3.4.6.5 Success factors

- The development of the kaitautoko role is a unique feature of the programme which is central in the programmes ability to engage patients and the family/whānau and good cultural support. This feature is absent in many other integrated programmes nationally and internationally.
- The history of the good relationship between the alliance partners, especially between the three primary health care organisations prior to aligning meant the decision-making processes about Te Whiringa Ora have been smooth.
- Multidisciplinary decision-making within the patients' home helped to address multiple issues of the patients' chronic illnesses collectively and the patients don't have to repeat their story multiple times with each provider.
- One of the strong organisational factors of the programme is the well-developed performance measurement system. It helped case managers and kaitautoko to track the programme and facilitates GP and hospital staff engagement as the system provides evidence about the impact of the programme at a patient level and a system level.

3.4.6.6 Implementation issues

- There was still considerable energy needed for relationship development and communication in the early stages of implementation, which was unanticipated and not adequately resourced.

3.4.6.7 Key lessons

- Planners should take note that considerable time and energy is needed for relationship development and community in the early stage of implementation and this important activity is to be resourced adequately.
- The pooling of several funding streams to allow some new models to be lead to some concern amongst the GPs as they thought they were losing revenue or previously funded services. The challenge for the Te Whiringa Ora team was to illustrate as early as possible the impact the programme was having on patient outcomes. This was done

through a good performance measurement system and patient stories in regular newsletters. The lesson here is that when funding is moved from one existing area to another it is important that attention is given to measuring the impact of the new programme on things that matter to those that may have 'lost' the funding.

- The lesson from the Te Whiringa Ora service is that a shared care platform will take some time to get people to use freely - particularly if they continue to have access to any previous system they use to maintain patient notes.
- To expand this approach to other parts of the country, first, there is the need for a champion in the place the programme to be transferred to, and the other is a recognised need for the programme.
- One important lesson is the time is needed to build relationship development and engagement with GP staff. They need to trust the service is providing something that is valuable to the patient and that there are effective outcomes.
- Another important thing is the importance of investing in staff who have strong cultural competences and partnering them with those who have clinical credibility.

3.4.7 Midlands Health Network

3.4.7.1 Description and key drivers

The Midlands Health Network (MHN) is a relatively large network of primary care organisations in the central North Island regions of the East Coast, Coromandel, Waikato, Taupo, King Country and Taranaki, covering nearly 500,000 people.

MHN considers that a new model of care was necessary as the current model of GP due to increasing population, especially the ageing population, rising number of chronic conditions, rapid advancement in technologies, including others.

The old model of care was more contact with health sector are acute and unplanned, point of contact does not usually include any form of triage or proactive management, major forms of contact with primary health care through face to face contact with GPs or nurse.

MHN trailed a new model of care, the IFHC, at three Hamilton-based practices – NorthCare - in response to the Ministry of Health's 2009 'Better, Sooner, More, Convenient' initiative. The model seeks to more efficiently and effectively utilise primary healthcare resources by changing the way patients and clinicians interact and to thereby contribute to the sustainability of the overall healthcare system. IFHC is a new way of working to create a new patient centred model of care and facilities to address the above problem.

The model is based on the work of Group Health, a Seattle based health care network, refined for the New Zealand environment. The new model was adopted in April 2011 and had been undergoing progressive refinement since then.^(1, 4, 33)

3.4.7.2 Key features of the model

- MHN's solution is to design a new model of care based on the IFHC concept.
- Key components of the IFHC model of care cover the full range of healthcare: creation of a telephone patient access centre (PAC); patient access to personal health information online; development of care plans; formalised practice-initiated patient

contacts; visit pre-work; reorganisation of practice premises; and employment of a clinical pharmacist and medical centre assistants.

- Expand the current GP team
 - These include patient access centre, community workers, Maori and Pacific health providers, mental health providers, including others.
 - They are either co-located at IFHC or linked virtually such as centre's patient management system, share patient care plans, online patient portal.
 - Clinical pharmacist and medical centre assistant roles are added to the core GP team.
 - District nurse working closing with GP teams to provide mobile nursing services for a patient with long-term and chronic conditions in the community.
- Provide a single point of access for patients contacting their GP team.
- Developing system initiated contact to people health care
- Increase number and nature of virtual consultations
 - Virtual medicine involves replacing some face to face GP visits with virtual ones (phone or email) based on patient need and preference. When patient contact their IFHC (through PAC). The online patient portal back up virtual medicine by giving patient 24-hour online access to their health information and care plans through a secure log on. The online patient portal gives patient direct involvement in their care.
- It is focussing on wider integration with locality planning, including co-location of DHB community nursing services (district nurses) as part of locality planning.

3.4.7.3 Key outcomes

A pilot evaluation showed more constructive use of consultations and increasing uptake of virtual (phone and email) consultations. The Clinical Pharmacist – continued to deliver appreciated assistance to clinicians and patients across the three practice sites. Use of secondary services has been held constant or reduced. There was reported greater role clarity

3.4.7.4 Lessons

- Practice Staff might benefit from clearer orientation, mentoring and in-service education.
- Small practices find it harder to reap the full benefits of the new model.

3.4.8 Tararua Health Group Limited

3.4.8.1 Description

Tararua Health Group was established in 2009. It is a network of 3 GP practices (two in Dannevirke and one in Pahiatua) and a community hospital. It operates a hub and spoke arrangement across a wide geography. The hospital provides 8 GP beds (care for by those GPs on a roster system), is a maternity facility (3 beds), has an x-ray service and provides ultrasound service 2 days per week. An after-hours telephone triage system is provided by the hospital.

It has a single patient management system linked by 90 km of fibre optic cable. The software is a Medtech supported framework and patient records from all four sites are integrated to

allow sharing of information between the practices, linkages to a radiology service and MidCentral health enables participation from specialists.⁽³³⁾

3.4.8.2 Key features of the model

The key features of the Tararua Health Group aged care model is a GP-based model with multi-disciplinary case management. In addition to the input of the Central PHO clinical pharmacist, the Health of Older People service agreement enabled the following team positions: GP with Special Interest, Clinical Nurse Specialist, RN with Special Interest, Allied Health. The adoption of a stratified approach – aimed at high needs/high risk. It is a consistently applied approach across GP practices with a solid base infrastructure (IT and buildings) in the hub and spoke arrangement. It has a high potential for prevention of ED and inpatient, ARC and long term HBS but evidence only anecdotal at the moment;

3.4.9 HealthPathways

3.4.9.1 Description

It is one of Canterbury's most innovative and most effective changes. It grew out of the Health Ministry's drive in 2006 to cut waiting times to six months.

It is basically a website that provides easy-to-follow localised best practice guidance for GP teams developed in the Canterbury region of New Zealand from 2008. It is now used routinely by the majority of general practitioners in the area. The website evolved in 2008 as part of changes towards an integrated healthcare system in the Canterbury region of New Zealand.

The interface between GPs and hospital services was recognised as a major area requiring redesign and key to the development of an integrated health system. This led to local general practitioners and hospital clinicians to discuss possible improvements. With the assistance of senior health system managers, funders, and a facilitator, a plan was prepared that proposed changes in pre-referral and post-referral patient management. Following acceptance and implementation of the plan, this project became known as the Canterbury Initiative.

A clinical pathway for the management of chronic obstructive pulmonary disease was drafted using a Canterbury DHB Innovation Grant. A website containing the clinical pathway was constructed by a local technical writing company, Streamliners Ltd to disseminate the information. The e-web content was structured so that information would be easy to access during a patient consultation. Ten other clinical pathways were developed following the development, using a standardised format, and the website went live in October 2008 under the name, HealthPathways.^(5, 43)

3.4.9.2 Key features of the model

- HealthPathways is a website that provides GP teams with guidance on clinical assessment and management of medical conditions, relevant to local services and resources.
- The website differs from other clinical guidance websites as the clinical pathways are formulated by local bringing together hospital doctors and GPs to address what the patient pathway for a particular condition should be.

- Each pathway is an agreement between primary and specialist services on how patients with particular conditions will be managed in the local context.
- The target audience for HealthPathways is the primary care clinicians responsible for managing patients in the community, and for initiating requests for specialist assistance.
- It is different from other online clinical guidance systems because the clinical pathways on HealthPathways provided locally relevant information and were established by a collaborative process between healthcare professionals, management, funders, clinical editors, and technical writers.
- The primary objective of HealthPathways is to provide concise information required for patient consultation and to overcome the difficulty GPs may experience when organising multiple sources of information.
- The website provides information on investigations, differential diagnosis, acute and conservative management, and patient education.
- The majority of pathways include a link to HealthInfo, a website that provides health information for patients, consistent with that described in the clinical pathways.

3.4.9.3 Outcomes

- Introduction of the website has been associated with an improvement in referral quality, more equitable referral triage, and more transparent management of demand for secondary care.

3.4.9.4 Success factors

- One reason for HealthPathways becoming the preferred information source for GP teams is that it contains information on locally available health resources.
- Another important factor in the acceptance of the website by GP teams is that it assists in the care of patients with the poorest health status by providing clear access guidelines based on the need, cost and availability of these services.
- The provision of local information for patients on HealthInfo that is consistent with the guidance on HealthPathways is also considered to have been a helpful initiative.
- The organised collaboration between general practitioners and hospital clinicians in writing the pathways has been a key component in the development of HealthPathways. Local Clinicians, practice nurses and allied health professionals, and hospital managers have been involved in the development of the website. The organised collaborative work between GPs and hospital clinicians has led to improved communication and better working relationships.

3.4.10 Primary/Secondary Care Liaison

Evaluation of the Primary Health Care Strategy (for the period 2003-2010) was conducted in 2013. The Evaluation was designed to examine the implementation and impact of the primary health care strategy. As part of the key findings, this report reported about primary/secondary liaison.⁽³⁷⁾

3.4.10.1 Description

The study reported that coordination is desirable between primary and secondary health care services, which were a well-developed function within most districts. Two forms of coordination between primary and secondary care were reported: GP liaison positions and participation in joint committees.

DHBs, and in some cases PHOs, employed GPs to improve function between primary and secondary care. The focus was on clinical issues, particularly elective surgery and discharge planning, but also management processes related to specific conditions. Study participants felt that GP liaison people should widen their sphere of concern towards more general population health issues. Others felt that GP liaison people had focused too strongly on the needs of secondary care and of the hospital.

With regard to joint committees, the following variations were found: PHO CEOs sitting on the DHB senior management team; joint senior medical officer/GP and joint senior medical officer/GP/manager forums; primary care reference groups; and PHO representatives on steering groups, working parties and DHB executive committees.

3.4.10.2 Outcomes

- A number of successes in the management of patients across the primary-secondary interface had been achieved. These included: better sharing of information; delivery of specialist services in practices; up-skilling of GPs to undertake some specialist functions (including minor surgery and thrombolysis); and access for GPs to hospital investigations, development of a combined primary-secondary after-hour service plans.
- Improved sharing of information, including the provision of test results online, electronic discharge summaries and shared patient-held records (for diabetics).

3.4.10.3 Barriers

- The focus of GP liaison was on clinical issues, particularly elective surgery and discharge planning, but managers felt that attention should be widened to consider more general issues.
- It was noted that there were difficulties communicating with GPs because of the separation between practices.
- Diagnostic tests may be repeated at the hospital even though they have been done (sometimes by the same laboratory) immediately before referral.

3.4.11 Mental health/primary care shared care

3.4.11.1 Description

This report presents the findings of an evaluation of New Zealand mental/primary health shared care programmes as of March 2003.⁽²⁴⁾

3.4.11.2 Key features of the model

- There was a wide range of models of shared care in operation, many of which were variations of the consultant-liaison, shared care, and shifted outpatients models described in the literature.

- Of the 21 DHBs in New Zealand, 11 had programmes (one had two programmes) that were in operation at the time of this research. There was substantial variation in the organisation, funding, operations and services provided by the programmes.
- No one model dominated service arrangements within New Zealand, and no programmes were found that did not involve GP.

3.4.11.3 Outcomes

Evaluations reported that in spite of obstacles encountered during the establishment and operation of the programmes that shared care was a good idea and efforts should be made to ensure future developments. There was limited reporting of the impact of shared care programmes on health status and health service utilisation. Most programmes reported that consumers found shared care to be an acceptable arrangement that they wished to continue with.

3.4.11.4 Governance of shared care

Levels of management and governance varied greatly between programmes, as did the input of consumers and Māori. The governance of the programmes vary. Some programmes involved a large governance group that included consumer representatives, mental health and GP management and practitioners, and programme staff, while other programmes had no formal governance structures, rather the programmes were managed by the mental health services. The majority of programmes had a specific governance group responsible for overseeing the development of the programme. Primary and mental health service personnel were well represented in these groups. However, the level of Māori and consumer representation was variable.

3.4.11.5 Funding for shared care programmes

There was no one way that the programmes were funded. Funding differed in terms of the source, the amount, its availability over time, and the components of service being purchased.

3.4.11.6 Implementation issues

- Two recurring organisational and management issues were sustainable funding and the infrastructure support required in establishing programmes. There were many hidden costs of running shared care programmes that both general practice and mental health. For GP, the hidden costs included the staff time required for liaison and follow-up and the costs of providing facilities for consultant-liaison services. The mental health services often had to carry the cost of salaries of mental health workers involved in the programmes and staff time spent in identifying and preparing people for entry into shared care.
- A further concern was about the infrastructure required for running shared care programmes. This infrastructure included the need for project management and coordination that was often not specifically funded.
- Issues regarding increased workload was another factor. There was wide support for the need for training as at times there was not a good understanding between the mental health and primary care sector about the work each other did, and the skills each group already had.

3.4.12 Enhanced out-of-hours GP

3.4.12.1 Description

The 24-hour GP surgery is Canterbury's innovative initiative to strengthen the existing primary care system, but it has been further strengthened during the transformation programme. It has observation beds and access to diagnostic tests such as blood tests and x-rays. Patients have access to GPs, who otherwise would need to be rushed to the emergency department.⁽⁵⁾

3.4.12.2 Model of care

- The 24-hour GP surgery is a type of strategy to transfer secondary service to the primary care setting by strengthening existing primary care system.
- The introduction of an electronic shared care record view was central to the success of out-of-hours GP. GPs who see patients out of hours can have access to their full medical history. Other health professionals can see the results and notes of out-of-hours investigations when the patient is followed up.

3.4.13 Canterbury IT initiative

3.4.13.1 Description

Improving and developing new IT systems was a key component of Canterbury's success of integrated care. A number of initiatives were taken by the health system collaborating with the local IT industry.⁽⁵⁾

3.4.13.2 Electronic shared care record view

- The electronic shared care record view was developed by Canterbury DHB, Pegasus Health, the Canterbury Community Pharmacy Group, Nurse Maude and Orion Health (a health care software development company).
- It is an online summary care record, combining an individual's GP records, hospital records, community pharmacy records, and laboratory and imaging results. It is a central portal that brings together information from different e-health systems.
- It drew on existing systems rather than replacing them. Hence, it was possible to implement the record without affecting the central IT system of organisation.
- Clinicians across the hospital, community and primary care services can view the record, which facilitated information exchange between different parts of the system.

3.4.13.3 Electronic request management system

- It is an electronic referral system between GP and other parts of the system, replacing fax and letter referrals.
- It covered both health board services as well as private referrals across the system.
- Referrals go to a central repository and can be rerouted if appropriate.
- GPs to use the system to request diagnostic tests, specialist assessments, outpatient appointments or specialist advice.
- GPs and hospital doctors were closely involved in designing the system, and so it is well-suited to users' needs.

3.4.14 Health Hub

3.4.14.1 Description

Health hubs have been established across New Zealand with varying functions and roles.

The health hubs provide an opportunity for better integration between primary and secondary care through shared physical space, collaboration for continuing care and teaching.⁽⁴⁴⁾

There is no clear definition for a health hub and therefore the concept of a health hub is therefore flexible and can be further developed based on a clearly defined purpose, outcomes, guiding principles and performance measures. The configuration of services can be customised to address the greatest need and based on the evidence to support health services being accessed and delivered in a more effective and cost-efficient way for both the provider and the consumer. Health hub experience in New Zealand has been largely driven by PHOs.⁽⁴⁴⁾

A model of care for the proposed health hub by Dunedin Hospital redevelopment is as below.

3.4.14.2 Model of care

- Multidisciplinary teams
- New workforce models increasing the scope for nurse practitioner roles and allied health led clinics
- Greater collaboration with primary care
- Enhancing the model of care for the community pharmacy
- Live, audio and or video interactive links for clinical consultations and educational purposes
- Store and forward telehealth – this model can involve digital images, video, audio and clinical data being captured and stored on the client computer, then at a convenient time transmitted securely to a clinic at another location to be studied by relevant specialists
- Telehealth services and equipment to monitor people’s health in their own home
- A range of services is proposed by the hub. There were various drivers for health hubs. One of them is to support rural resident to access secondary health services. The second reason is to facilitate primary and secondary care providers to work more collaboratively. Another reason is to provide services closer to home.

A number of facility requirement has been highlighted. They are below:

- Easy access to car parking and public transport
- Youth services would require easy access by students and school-aged children, so proximity to schools and education facilities is important
- Lower scale facility blending with the urban landscape
- Flexible spaces to support care coordination and potentially high numbers of staff
- Access to garaging requirements to suit a highly mobile workforce
- Reliable high performing ICT infrastructure to ensure effective transmission, storage and exchange of patient information throughout the patient journey
- Access to fit for purpose space which enables telehealth and case conferencing to occur

- Area to allow for inter-professional learning and development needs.

A concept brief of health hub project for Palmerston North, the Manawatu and Horowhenua also explained about the proposed model of care in this area. Changing population composition with an increasing share of elderly people, an ever increasing number of people with chronic conditions, unsustainable funding, persistent inequalities in health status, health workforce shortage are the general trends of the present health care system. The health hub project in Palmerston North, New Zealand is in response to the above trends, the Government's Better Sooner More Convenient Primary Care policy (2008) and the New Zealand Primary Health Care Strategy (2011) to implement holistic population health approach to primary care delivery. Existing local circumstances related to inaccessibility of primary care also led to the establishment of the hub. It is a population health care and health education grassroots initiative for Palmerston North which operates as a not-for-profit charitable trust.⁽⁴⁵⁾

3.4.14.3 Model of care

- The design draws on many features of the IFHC concept.
- Doctors, nurse and other health professionals work in a multidisciplinary clinical and care team delivering personalised population health care.
- Team approach engaging the full range of medical and nursing expertise available for population health care and replacing the present GP model of practice in the long run.
- Primary and secondary care merge to form a unitary and holistic population health care delivery system.
- The population health centre comprises of an urgent care clinic, specialised general clinical and care practice teams, and all networked on-site and externally, with a pharmacy, psychologists, social workers and all work together as health hub project care team members.
- The health centre will deliver care and support to patients across a wide range of health conditions, onsite and in the community.
- Patient population segmentation to enable targeted delivery of care.
- An integrated and multidisciplinary leadership team, representative of the wide range of personnel is proposed to administer and coordinate the hub's day-to-day activities and development.

The Southern Primary and Community Care Action Plan have also considered a community health hub as model care to achieve its objectives. The action plan envisioned Community Health Hub as a facility which co-locates relevant DHB and NGO community services and provides for a level of ambulatory specialist care. Primary and community care will be integrated as part of a Community Health Hub, and will be delivering an HCH model of care. It can be developed through either existing infrastructure or new sites. In rural areas, rural hospitals may act as a hub but with the explicit expectation that this includes primary care delivering the HCH model of care. In Dunedin and Invercargill, purpose-built facilities may be developed, which may include delivery of some specialist outpatient services, possibly in collaboration with the University of Otago.^(8, 46) The proposed services to be delivered from Community Health Hubs include:

- GP using a Health Care Home model of care

- Onsite community and clinical pharmacy services
- Community diagnostics (e.g. radiology; laboratory specimen collection)
- Space for visiting specialist clinics and minor procedures
- Provide space for ‘housing’ DHB and NGO community health services (e.g. district nursing; physiotherapy) including staff, vehicles and supplies
- Urgent care
- Observation beds

3.4.15 The telehealth demonstration project

3.4.15.1 Description and key drivers

The Project was conducted jointly by the Ministry of Business, Innovation and Employment, National Health IT Board and the Bay of Plenty DHB in 2012. The Project was designed to test the practical application of telehealth in the New Zealand setting. The Bay of Plenty was chosen for the project as it built on its pre-existing investment in telehealth. Furthermore, the demographics were ideal for the project, with an ageing population, hard-to-reach areas, deprivation, and a high population of Maori.

Priority areas for the project identified by the Governance Group were as aged care, mental health services, palliative care, isolated communities, and remote monitoring in the community of patients with long term conditions.⁽³⁹⁾

3.4.15.2 Model of care

The project was designed to be clinician-led and IT-supported.

The following types of telehealth were used within the project.

- **Video Doctor Service:** A patient can consult a clinician across a video link from the patient's home, or from a health facility where no doctor is available at the time, or where a patient can sit alongside a GP while they jointly consult with a specialist by video link.
- **Video Outreach Clinic:** A hospital-based service such as renal, diabetic or mental health operates clinics for clusters of patients, with the clinicians and the patients connected by video between different towns.
- **Video Clinical Education:** Clinicians, often in hard-to-reach localities participate over video in professional development opportunities which without the video would have been difficult or impossible to reach.
- **Video Health Administration:** People working in health use video as a cheap and convenient way to attend a meeting or hold a discussion that otherwise would have required travel or would have been held over the less effective means of a telephone call.
- **Video Multi-Disciplinary Meetings:** Clinicians in different locations communicate by video to discuss and prioritise cases, often sharing complex pathology and radiography data over video as well as seeing each other, and patient records, on screen.
- **Video Emergency Support:** A health professional faced with an emergency situation and who has video capability at hand can consult with an emergency doctor or other health professionals to decide a course of action.

3.4.15.3 Governance and management

It was governed by a team of senior officials from the Ministry of Business, Innovation and Employment, National Health IT Board, Bay of Plenty DHB and Project Facilitator.

3.4.15.4 Outcomes

The use of video doctors in isolated locations as a means to get better, more cost-effective and more timely health services to patients in isolated areas is among the most successful application of the project. Other successful strategies were video clinics for long term conditions and the use of video for mental health services. The less successful application reported were video communications between Aged Residential Care facilities and their health providers and for travelling health professionals in the community.

One of the biggest success of the project is it successfully implemented primary care support services by video in several isolated localities (distance, no car/public transport who live close to a large town, lack of confidence to deal with the process of visiting doctor.

With the incidence of long term conditions increasing dramatically in line with the ageing population, the Project was focused especially on ways to use video to improve health outcomes for the patients with long term conditions and increase the efficiency of service delivery. The project was successful in establishing "Video Outreach Clinics" for this purpose, based in Tauranga and Gisborne hospitals and provided virtual clinics to Whakatane, Opotiki, and all around East Cape.

Use of video by district nurses working in the community was not quite successful. Laptops and cameras were supplied and configured so that district nurse could take a laptop on their daily rounds and use it when appropriate to connect back to the community nursing base. But a number of teething problems arise. First, the bandwidth was insufficient to support this application. Second, the project encountered some pushback from the district nurses who were reluctant to add a laptop and camera to their already held load of equipment. Finally, the participants were unconvinced that the number of situations in which video would add value.

3.4.15.5 Practical implementation issues

- One practical issue to be dealt with is a mechanism for co-payment fee from the patient if that is applicable. It was debatable whether such fees should be more or less than for a physical consultation.
- Application in the palliative care was not successful due to issues related with lack of high-speed broadband connection in hospice or inpatient home which hampered the connection of patient for support to the hospice base, palliative care specialist, or the patient's GP or clinical communication between providers.

3.4.15.6 Lessons

- Introducing video as a consultation tool in isolated sites requires getting many different groups in alignment. It is important to get buy-in from all as the absence of any one group can threaten the process. Groups involved can include clinicians (nurses as well as doctors) both in the remote site and the one that will support it, the PHO management and IT team, DHB management, administration and reception staff, and any external specialists or allied health services.

- Good video consultation is dependent on the availability of good quality PCs or laptops at both ends of the connection. Choice of an appropriate room with enough space for patients, health providers to sit comfortably and to set up the video which can be moved around the room are important.
- The purpose of the video is to create a sense of being in the same room as the other party. For this, the camera and monitor should be as close as possible to eye level at each end. Lighting is crucial so that body language and facial expressions are captured, so cameras and monitors need to be placed accordingly.
- Telehealth can become a major part of the solution to address present health systems challenges. However, it is necessary for fundamental changes to the health service delivery system, which include devolution of tasks down the clinical chain, new forms of primary-secondary interface, primary-based community nurses, etc.
- On several occasions in the life of the Project issues emerged that required solution above the level of the DHB – either at the regional or national level. There needs to be a top-level strategic plan above the level of the DHB – either at the regional or national level, setting out the role of telehealth across the whole New Zealand health system, using the experiences of the Project and other successful implementations to inform the policies.
- It is important to consider the role of clinicians and planning and funding leaders into the DHB system beside traditional IT to take a leadership role in telehealth.

3.4.16 Rurally Focused Urban Specialist

Rural Focused Urban Specialist (RUFUS) model of telehealth was pioneered in Canterbury, which is specialist support for the rural health practitioner. General practitioners in remote parts of Westland have established contacts with specialists in Christchurch with whom they can periodically communicate by a video about specific patients. The urban specialist occasionally visits Westland, spends time with the GP and possibly meets some of the patients, and generally offers collegial support.⁽³⁹⁾

The concept is seen as having considerable potential. The difficulty is in implementation. Clearly, it is easier to implement with specialists who are salaried employees of the DHB rather than in private practice.

This initiative was also implemented by the Bay of Plenty. General practitioners at Opotiki expressed interest in using video by creating a formal association between a rural GP and a handful of key urban specialists. However, efforts by the Project to establish this in Opotiki did not succeed. As with some other initiatives we tried, the complex nature of the health sector, the funding models, and the number of "gatekeepers" to get past simply made this overwhelming.

To reach this potential requires a much broader shift in thinking that can be driven through telehealth. It needs all influential leaders in the sector to converge on the view that telehealth provides a once-in-a-generation opportunity to re-design the way the sector offers services around the available technology. Currently, there is no evidence of such a conversation taking place, nor of the existence of an institution or forum with.

3.4.17 Intersectoral initiatives for improving the health of local communities

This is an example of integrating health and social care in the primary care setting. Four Intersectoral Action for Health projects -Porirua, Kapiti, Counties Manukau & Northland - were evaluated from 2001-2004. As per needs in local contexts, all these projects had different aims. For example, they included elements such as community support workers to improve access to and coordination of health and social services (Kapiti); a health and education partnership to improve health and welfare outcomes for teenage parents (Counties Manukau); Healthy Housing pilot jointly delivered by housing and health sectors (Counties Manukau); and a whānau-based gardening and nutrition project (Northland).

Outcomes included improved access to primary care for Māori, Pacific and low-income people; measurably improved health outcomes for teenage parents in Counties Manukau; significantly reduced hospital admissions for intervention households in the Healthy Housing pilot; impacts on the social and economic determinants of health (e.g. access to income); improved health behaviour such as increased physical activity, better nutrition and decreased smoking rates; contribution to the reduction of health inequalities; community skill development and transfer of traditional knowledge in Māori communities in Northland; and enhanced community capacity to find solutions to problems of local concern.

The evaluation highlighted the importance of drawing on community wisdom in the needs analysis process, and throughout project implementation.⁽³⁸⁾

3.4.18 Transfer of service

This model includes examples of the delivery of secondary service by the primary care team in a primary care setting. DHBs New Zealand conducted a survey of DBHs regarding their experience of transferring service at community settings. The most commonly transferred services were minor surgery in primary care (primarily skin lesions), services for diabetics, insertion of Mirena, contraceptives IUD, sleep apnoea assessments and radiology.

Most of the initiatives reported benefits from the transfer. Reported benefits were reduced waiting time and increased access to services for patients, reduced pressure on hospital services, improved communication and linkages between primary and secondary care, and upskilling of the primary care workforce. Some DHBs reported improved performance targets. The findings showed lower costs per unit, which were offset by higher volumes as a result of increased access and demand for services.⁽³⁸⁾

3.4.18.1 Success factors

Critical success factors reported were good engagement with secondary services, strong governance with the representation of primary, secondary and management, clinical governance and oversight, the good existing relationship between primary and secondary professionals, an ongoing forum to solve system issues and identify opportunities for improvement and good community.

3.4.18.2 Barriers

Barriers included lack of acceptance of changes from secondary services, administrative complexity, higher cost, development of protocols which all agreed, data and recording

issues, inter-district flow, workforce capacity, time and resources needed for training, the requirement of appropriate space in the primary care setting to deliver the transferred services.

3.4.18.3 Key lessons

Key lessons learned include the following:

- The importance of early engagement and consultation with secondary services to get enough support from the secondary care sector.
- A clear communication mechanism is necessary.
- Transfer of service from secondary to primary care takes time as service development and consultation is time-consuming.
- Adequate resource is needed to be allocated in training and education.
- There is the importance of a joint primary/secondary clinic oversight group.

Table 3.2: Summary of the New Zealand based models of care

Name of the project	Type of document	Region	Models of care	Key features of the model	Integration interface	Target population/service
Youth One Stop Shops	An evaluation report	12 such Youth One Stop Shops	One shop /Colocation	Colocation, multidisciplinary team	Primary and secondary care, health and social services	Youth, health and social services
New integrated services at Lakes DHB	An outcome evaluation report	Lakes DHB	Colocation	Colocation, multidisciplinary team	Maternal and child health providers across different levels of care; health and social services	Maternal and child health services at the community level
Health Hub	A project concept brief, a model of care summaries, a strategy document, a strategic action plan document	SDHB and Palmerston North, the Manawatu and Horowhenua	Health hub/ IFHC	Multidisciplinary care, Store and forward telehealth, Patient population segmentation, IFHC concept	Primary and secondary care	Not specific

Name of the project	Type of document	Region	Models of care	Key features of the model	Integration interface	Target population/service
Midlands Health Network	A pilot evaluation report, two other reports	Central North Island regions of the East Coast, Coromandel, Waikato, Taupo, King Country and Taranaki	IFHC	Patient access centre, care plan, medical care assistants, engagement of clinical pharmacist, expanded GP team either co-located or connected virtually, single point access, virtual consultation by GP by phone or emails, online patient portal	Primary and community care	Expanded primary care
Shared care planning	An evaluation report	Three metro Auckland DHBs	Shared care planning	Shared electronic record, care plan, care team which have members from the different team (e.g. specialists, GP, pharmacist, community nurse)	GP, DHB services and community pharmacies	Long term conditions
Mental health/primary care shared service	An evaluation report	All over New Zealand	Consultant-liaison, shared care, and shifted outpatients	Consultant-liaison, shared care, and shifted outpatients	Primary care and secondary care	Mental health
Te Whiringa Ora: an and integrated care in the Eastern Bay of Plenty	An original article in the journal	Eastern Bay of Plenty	Whanau Ora which include shared care plan, telehealth monitoring, case manager and kaitautoko	Interdisciplinary care, telemonitoring, shared care plan, case manager and kaitautoko	GPs, hospital, community service	Chronic disease/community-based programme

Name of the project	Type of document	Region	Models of care	Key features of the model	Integration interface	Target population/service
Healthcare Hawke's Bay DHB pilot	A literature review	Hawke's Bay	Integration between district nursing and primary care practices by shared care records, co-locating district nurse in a GP practice and joint working	Shared patient records between GP and district nurse and the nurse can contribute by clinical notes	Primary care and community care	Community-based services
Primary/secondary liaison	An evaluation report	All over New Zealand	GP liaison positions and participation in joint committees	GP liaison positions and participation in joint committees	Primary care and secondary care	Not specific
Transfer of service from the hospital to the community setting	A literature review	All over New Zealand	Transfer of care from secondary to primary care: minor surgery, medical care and radiology	Minor surgery, medical care and radiology	Primary and secondary care	No specific
Enhanced out-of-hours GP	A case study report	Canterbury	Transfer of secondary care to primary care	GP surgery, electronic shared care record	Primary and secondary care	Not specific
The telehealth demonstration project	A report	Bay of Plenty	Different video communication strategies	Different video communication strategies: video doctor, video outreach clinic	Primary and secondary care	Isolated population, long term conditions, aged care

Name of the project	Type of document	Region	Models of care	Key features of the model	Integration interface	Target population/service
RUFUS	A report	Canterbury, West Coast and Bay of Plenty	Video Clinical Education - Rurally Focused Urban Specialist	Video Clinical Education -Rurally Focused Urban Specialist	Primary and secondary care	Rural population
Canterbury IT initiative	A case study report	Canterbury	Electronic shared care record view, Electronic request management system	Electronic shared care record view, Electronic request management system	Primary and secondary care	Not specific
HealthPathways	A case study report A journal article	Canterbury	Care pathways	Website, a link to HealthInfo	Primary and secondary care	Chronic and long term conditions
Tararua Health Group Limited	A report	Dannevirke and Pahiatua	GP -based model with multi-disciplinary case management, hub and spoke arrangement	Network of GP practices and hospital, multidisciplinary case management, shared patient record, stratified approach, hub and spoke arrangement	Primary care and secondary care	Aged care
Counties Manukau DHB localities model	Webpage material	Counties Manukau	Localities Model	Multidisciplinary/interdisciplinary Teams, clusters/localities approach, use of technology for centralised intake and triage	Community and primary care	Re-ablement, rapid response, supported discharge, rehabilitation

Name of the project	Type of document	Region	Models of care	Key features of the model	Integration interface	Target population/service
Intersectoral Initiatives for improving the health of local communities	A literature review	Porirua, Kapiti, Counties Manukau & Northland	Different intersectoral initiatives	Different intersectoral initiatives	Health and social care in the primary care setting	No specific

3.5 Section summary of the New Zealand based evidence

This part of the review was informed by an international literature review which provided a framework of models of integrated care. We identified 18 examples/cases of integrated care in the primary-secondary care interface in New Zealand. Included examples ranged from formal evaluation of programmes through to pamphlet descriptions of programmes.

The scale and scope of the models also vary widely, and they are in different stages of development. Looking across these different initiatives, the most common models of integrated care between primary and secondary interface fall into one of the following strategies: co-location, shared care, IFHC, health pathways, telehealth, transfer of care, shifted outreach, consultation-liaison, localities model.

Our review found most of the models were found across the primary and secondary care interface (vertical integration).

Key outcomes reported by different studies were improved communication, coordination and sharing of information between primary and specialist care providers, improved equity and accessibility, reduced waiting time reduced hospital presentations and improved skills of the primary care workforce.

This review identified a number of implementation issues which cut across different models of care: no viable and sustainable funding for the model of care, lack of IT system to support communication is identified as a systemic barriers, lack of confidence, trust and communication between providers, issues regarding increased workload and time are another factor and lack of knowledge and skills required to perform new roles/tasks.

Different lessons are drawn from included documents. Studies highlighted the need of an appropriate location for services, committed leadership, development of governance group that includes representation across different providers groups, strong communication mechanism, new workforce skills and overall change management to facilitate a new way of working.

Integrated care models discussed above appear in different forms, but accepting this variability, the review identified some common elements across the models of care (e.g. co-location, interdisciplinary/multidisciplinary teamwork, development of care pathways, and shift in care from specialist to community setting) which could be useful to operationalise the Community Health Hub at the local context.

4 Conclusion

This report has drawn together evidence from a wide range of international and national sources to identify and discuss key components of integrated care models in ambulatory settings. A broad overview of international literature on different models of care followed by more specific examples of the New Zealand based literature is presented. As there is significant diversity in models of integrated care in terms of the scale, scope and stages of development of the models; and the local context has a strong bearing on how a specific model is developed, caution should be taken while applying the findings.

Internationally, the most common models of integrated care found were: transfer, relocation, and liaison/joint working. However, it was found that services used more than one model and drew on elements of more than one model to provide integrated care. In the case of New Zealand, the most common models of integrated care between primary and secondary interface fall into one of the following strategies: co-location, shared care, IFHC, health pathways, telehealth, transfer of care, shifted outreach, consultation-liaison, localities model.

Overall, the international literature showed that transferring of care from hospitals to community and other integrated models of care between primary-specialist interface increased access and convenience for patients. However, there was no sufficient evidence of clinical and economic outcomes. Cost generally increased with the models of integration, and there was a concern with quality while transferring service from specialist to community setting. Relocation model increased equity and cost-effective if located in rural areas. It was not useful for urban, advantaged populations. Telemedicine may increase equity and useful for rural and remote areas. Co-location provides opportunities for better coordinated and integrated care, but it does not automatically lead to such improvements in practice. There are implementation issues to be addressed which are related to financial, organisational, communication, and quality of care.

Regarding New Zealand based literature, key outcomes reported by different studies were improved communication, coordination and sharing of information between primary and specialist care providers, improved equity and accessibility, reduced waiting time reduced hospital presentations and improved skills of the primary care workforce. Implementation issues which cut across different models of care were no viable and sustainable funding for the model of care, lack of IT system to support communication is identified as a systemic barriers, lack of confidence, trust and communication between providers, issues regarding increased workload and time are another factor and lack of knowledge and skills required to perform new roles/tasks.

Different lessons were drawn from the New Zealand based documents. Studies highlighted the need of an appropriate location for services, committed leadership, development of governance group that includes representation across different providers groups, strong communication mechanism, new workforce skills and overall change management to facilitate a new way of working.

In conclusion, although there are reasons to be cautious about drawing conclusions from this included literature (different goals of the studies, features and development of the

programme, outcome measures, quality of included literature), it is expected that conclusions drawn from the available evidence will be informative to design and implement an integrated care model such as Community Health Hub in the local health system.

Annexe 1

PICOC

Population: Patients receiving a healthcare service and health workers delivering services in primary and community care or in the transition of care from hospital to primary/community care.

Intervention (Phenomenon of interest): Models of integrated ambulatory care.

Comparison/Control: Existing models of care delivery (“usual care”)

Outcome: Types of models used, facilitators and barriers, impact on health outcomes, impact on equity.

Context: Ambulatory/out of building settings, interface between hospital-primary/community care.

Annexe 2

Table 4.1. List of websites

No	Website name/organisation	Link
1	Ministry of Health	http://www.moh.govt.nz/
2	Health Quality and Safety Commission	https://www.hqsc.govt.nz/
3	New Zealand Productivity Commission	https://www.productivity.govt.nz/
4	Nationwide Service Framework Library	https://nsfl.health.govt.nz
5	Southern District Health Board	https://www.southerndhb.govt.nz/
6	Lakes District Health Board	http://www.lakesdhb.govt.nz/
7	Waitemata District Health Board	https://www.waitematadhb.govt.nz/
8	Bay of Plenty District Health Board	https://www.bopdhb.govt.nz/
9	Nelson Marlborough Health	https://www.nmdhb.govt.nz/
10	Mid Central District Health Board	www.midcentraldhb.govt.nz/
11	Auckland District Health Board	http://www.adhb.health.nz/
12	Canterbury DHB	http://edu.cdhb.health.nz/
13	Counties Manukau Health DHB	https://countiesmanukau.health.nz/
14	OURHELATH Hawke's Bay DHB	www.ourhealthhb.nz/
15	Wairarapa DHB	http://www.wairarapa.dhb.org.nz/
16	Hutt Valley DHB	http://www.huttvalleydhb.org.nz/
17	Canterbury DHB Palliative Care Service	http://cdhb.palliativecare.org.nz/
18	Hauraki PHO	https://www.haurakipho.org.nz/
19	ChristchurchPHO	http://www.chchpho.org.nz/
20	Marlborough Primary Health	https://www.marlboroughpho.org.nz/
21	NZ College of Mental Health Nurses	https://www.nzcmhn.org.nz/
22	Health Improvement and Innovation Resource Centre	https://www.hiirc.org.nz/
23	Platform Trust	https://www.platform.org.nz/
24	General Practice New Zealand	https://gpnz.org.nz/
25	New Zealand Institute of Rural health	http://www.nzirh.org.nz/
26	Pharmaceutical Society of New Zealand	https://www.psnz.org.nz/
27	Health Navigator, New Zealand	https://www.healthnavigator.org.nz/clinicians/i/integrated-care/
28	Nurse Maude	https://www.nursemaude.org.nz/
29	New Zealand Medical Journal	https://www.nzma.org.nz/

No	Website name/organisation	Link
30	Compass Health	http://www.compasshealth.org.nz/
31	College of Nurses, New Zealand	www.nurse.org.nz/
32	Healthy Christchurch	healthychristchurch.org.nz/
33	Primary Mental Health	www.primarymentalhealth.org.nz/
34	Central Cancer Network	https://www.centralcancernetwork.org.nz/
35	Starship	https://www.starship.org.nz/
36	Central PHO	https://www.centralpho.org.nz/
37	Auckland Regional Health Pathways	https://aucklandregion.healthpathways.org.nz/
38	General Practice NZ	https://gpnz.org.nz/
39	New Zealand Nurses Organisation	https://www.nzno.org.nz/
40	New Zealand Nurses Organisation	https://www.nzno.org.nz/
41	Mental Health Foundation	https://www.mentalhealth.org.nz/
42	Manaia Health PHO	https://www.manaiapho.co.nz/
43	Pinnacle Midlands Health Network	http://www.healthcarehome.co.nz/
44	Kiwi Business Heroes Waikato	http://kbhwaikato.co.nz/
45	Counties Medical Integrated Health Centre	http://www.countiesmedical.co.nz/
46	Ko Awatea	http://koawatea.co.nz/
47	Oamaru Hospital	https://www.oamaruhospital.co.nz/
48	Care Connect	http://www.careconnect.co.nz/
49	ProCARE	http://www.procare.co.nz/
50	Health point	https://www.healthpoint.co.nz/
51	Homecare Medical	https://www.homecaremedical.co.nz/
52	SCOTT Construction Marlborough	https://www.scottconstructionmarlborough.co.nz/
53	Redbox architects	https://www.redboxarchitects.co.nz/
54	Health Hub Project	http://www.hhpnz.nz/
55	Te Awamutu Online	https://www.teawamutu.nz/
56	Midlands Health Network Corporate	https://www.midlandshn.health.nz/
57	South Island Alliance	https://www.sialliance.health.nz/
58	Health Innovation Hub	http://innovation.health.nz/
59	TAS	https://tas.health.nz/
60	Health Central	http://healthcentral.nz/
61	Aotearoa New Zealand Social Work	https://anzswjournal.nz/
62	Canterbury Clinical Network	http://ccn.health.nz/
63	Health Services Assessment Collaboration	http://www.healthsac.net/
64	HealthPathways Community	https://www.healthpathwayscommunity.org/
65	Northern Health Region	http://www.northernhealthregion.ca/
66	ORION Health	https://orionhealth.com/
67	NZ Telehealth forum and research centre	ttps://www.telehealth.org.nz

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