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Promoting Clinical Engagement and Cross-sector Collaboration Through Changes in Workforce, Use of Technology, and Improved Business Systems

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Australian Medicare Local Alliance

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AML Alliance is an advocate for Australia's primary health care policy setting and system. It works with a variety of stakeholders including general practice, health, aged and social care proponents to promote continuous improvement and excellence in the Medicare Local sector through evidence-based and innovative quality practice.

Led by a skills-based board, the AML Alliance works with Medicare Locals to:

- deliver better health services with general practice at its core;
- ensure service innovations are well promoted and advocated;
- provide the national connections to improve links between service delivery across the nation and Government policy;
- encompass the broader health sectors, including the social care and aged care sectors, to ensure gaps in services are filled and services are functional locally;
- provide accountability in the primary health care system; and
- support strategic partnerships with Local Hospital Networks (LHNs), general practitioners (GPs), allied health professionals, nurses, other health professionals and local government to improve their region's health system.

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Executive summary

Background: Cross-sectoral collaboration across health care settings has the potential to deliver efficiencies as well as improve health care outcomes. There is a need for better understanding and awareness of models, mechanisms and strategies that enhance cross-sectoral collaboration in Australia. Improved cross-sectoral collaboration is supported by a number of changes in workforce, use of technology and improved business systems. This review seeks to summarise these programs for those who may be seeking to engage in this area as a means of determining the range of options and possible proven benefits.

Methodology: This study employs a mixed methods approach. A pragmatic literature review was undertaken to determine the relevant collaborative care models and review current programs Australia-wide that implement these models. Programs were selected from searching the grey and indexed medical literature as well as suggestions obtained from relevant stakeholders. Criteria for inclusion included having description in the peer reviewed and grey literature, ability to represent a unique model, extent of current use and description of outcomes of the intervention. Additional qualitative semi-structured interviews were conducted to elucidate more detailed information about technology, workforce and business systems. This information is summarised in the report and details about the individual programs are included as an appendix to this report.

Results: Fifteen models were reviewed for this report. Qualitative semi-structured interview data were employed to supplement findings from the literature review. Key mechanisms of these models are described specifically focusing on the use of technology, workforce and business systems. Facilitators and barriers were identified and explored.

Key findings:

- 1) These models present promising opportunities for promotion of cross-sector collaboration; particularly those that have the ability to be adapted to a range of settings and are scalable.
- 2) Most involve substantial changes to workforce roles and most make use of conventional technologies such as standard communications or commercial available medical software
- 3) A few of the programs have made more extensive use of technology such as telehealth while others have developed extensive business systems to support their work.
- 4) There are currently limited peer-reviewed data on Australian initiatives across health sectors to enhance collaboration and assessment of outcomes is sparse.

Recommendations:

Several recommendations are made based on the study of these models and include:

- 1) Design of cross-sectoral programs requires clearly defining what improvements are being sought.
- 2) Design of cross-sectoral programs can benefit greatly from the experience of others who have developed similar programs.
- 3) Design of cross-sectoral programs should be informed by reviewing models developed in contexts similar to the area or clinical group where the intended program is to be developed.
- 4) When new roles for health care professionals are required, encouraging enhancement of skills of existing personnel appears to be an effective strategy.
- 5) Implementation of innovative technologies requires sufficient technical support and training.
- 6) Business systems need to be developed simultaneously with other efforts to improve cross-sectoral collaboration.
- 7) Programs that integrate or build upon existing clinical systems are more likely to be accepted.
- 8) Engagement of clinicians at each stage of the development process and have an ongoing role for clinical governance is important for successful implementation of cross-sectoral initiatives.

1 Introduction

The aim of this report is to review innovative models of health care provision that promote cross-sectoral collaboration within Australia. This review seeks to describe models of care that facilitate communication and integration between the hospital, primary care and aged care sectors. The specific emphasis of this review is to describe changes in workforce, technology and business systems that underpin these innovative models of care and facilitate the integration of services.

One characteristic of the Australian health care system is that it has a diversity of funding sources including national, state and private funding. This funding is used to provide health services to people with health care needs. These services are optimised to make best use of these resources for the direct purpose of the funding. Unfortunately there is little incentive to use that funding to effectively integrate the services provided with other sectors of the health care system particularly if they are funded by other means. Each sector of the health care system has different funding with the majority of national funding going to private specialists, general practitioners, pharmacy and aged care, while state funding is predominantly used for the public hospital system. Private funding is generally applied to private hospitals and to fund private specialty services. An unfortunate result of the multiple funding sources is that integration between sectors is often limited, resulting in inefficiencies and at times poor health care outcomes and there are few incentives to promote collaboration across these sectors.

With rising numbers of older people in the population and resulting increased demand for services, there is increasing interest in promoting integration through collaboration across the sectors of the health system as a means of controlling costs and improving outcomes. The federal government has initiated a range of organisations to promote this integration including local hospital networks (LHNs), Medicare Locals (MLs) and Lead Clinician Groups (LCGs) at both the state and national level to facilitate this activity.

The purpose of this review is to look at models of care that promote collaboration across-sectors with a primary emphasis on general practitioners and the primary health care sector. This project seeks to determine models that have evaluation data of their effectiveness and could potentially be spread through a range of communities and contexts. Most of these models involve new roles for health care workers and a redesign of the work that is currently being done to more effectively communicate and integrate these services across-sectors. As technology is a key driver of change in many industries including health care, many models incorporate new use of technology. Technologies that promote cross-sectoral collaboration primarily involve those that promote improved communication and sharing of health

information but can also involve innovations in health informatics such as extracting key information from health records and displaying this to decision makers. These innovations may use conventional technology, which have been present for many years such as facsimile machines (Fax) or even the mail system but are increasingly using a range of newer technologies such as shared health records, secure messaging, and a range of telemedicine options.

The use of health information technology is regarded as an integral component of collaborative care (Rao, Brammer et al. 2012). Whilst Denmark, Sweden and New Zealand are world leaders, an international study conducted by Accenture Connected Health Services in 2011 found that most of the eight countries in that study (Australia, Canada, England, France, Germany, Singapore, Spain, US) had embarked on programs to optimise health care Information Technology (IT), health information exchange, and use of advanced analysis of data to better inform clinical decision-making (Ratcliff 2012). Not all countries were equally advanced, however, and in Australia it was reported that whilst secondary/specialist care lagged well behind primary health care (PHC) in terms of health care IT adoption, the two sectors were both at very early stages of development with respect to health information exchange. In the Ratcliff study, interviews with 160 health system leaders identified four categories of challenges hindering progress: systems and policies – including fragmented delivery and lack of financial incentives; organisation and management – including poor collaboration between organisations and technical limitations; clinicians and end users – including general practitioner (GP) resistance to technology and practices that slow productivity; patients and the public – including concerns over privacy/ data security and the need to encourage self-management of health.

As secure and stable funding of these innovations is essential for their long-term sustainability; development of business systems is essential to determine the use of the services, to ensure that appropriate use of financial resources occurs and optimally to include some indication of the effectiveness of these services.

This review of models will highlight the use of new roles for health care workers (workforce redesign); the role of technology and development of business systems. The individual models are described in Appendix 1. The goal of this review is to provide busy health care planners and clinicians an opportunity to find models that are being applied in Australia to cross-sector collaboration as a means to inform additional work in this area.

2 Background

In a study commissioned by the World Health Organization (WHO), collaborative practice in health care was defined as the result of multiple health workers working together with patients, their families, carers and communities to deliver the highest quality of care across settings (Mickan, Hoffman et al. 2010). Although the WHO study was limited to ten case studies in ten different countries, it illustrates the global interest in improving cross-sectoral collaboration; and the common barriers to achieving this include a lack of structured information systems and processes. In this report, communication across-sectors of health care was reported to be sub-optimal in many cases despite having been identified as an essential component of collaborative care (Mickan, Hoffman et al. 2010). Conversely, governance procedures and processes that contributed positively to collaboration included supportive health legislation, consistent payment schemes for all health workers, structured protocols, and commitment from high-level policy makers. Likely facilitators of collaborative practice identified in the WHO study included common patient protocols (care plans or pathways), regular meetings between teams, and a shared electronic record, although none of the practices surveyed reported having an integrated electronic health record. Similarly, a meta-analysis based on 23 studies, including 11 randomised trials, found that interactive communication between GPs and specialists was associated with improved patient outcomes (Foy, 2010). Further to this, a recent review of international and Australian literature on patient safety during transitions of care between acute and PHC highlighted the importance of strategies to improve communication between providers and/or health services involved in patient care (Russell, Doggett et al. 2013).

A detailed review of electronic health (ehealth) record in Denmark, New Zealand and Sweden, found that despite high levels of meaningful use (defined according to 15 types and functions of ehealth record capacities being fulfilled) none had reached 100 per cent in all categories (Gray, Bowden et al. 2011). Facilitators of meaningful use in those countries included use of unique patient identifiers for cross-organisational sharing of information, legal protection policy for the privacy of medical records, and financial incentives from government for uptake. However, meaningful use was limited by differences in payment systems between hospitals and doctors, coding of patient information at time of entry, and poor interoperability between organisation systems. Whilst information sharing with other organisations or health authorities also rated highly, for GPs and hospitals the least-developed type of meaningful use was for sharing of information with patients. In New Zealand, patients have access to limited subsets of their records, whilst in Denmark and Sweden there is a trend towards facilitating this access. The Australian government has recently invested in a national Personally Controlled

Electronic Health Record (PCEHR) and has defined a unique patient identifier, and there is increasing interest in, and use of other technology-based practices such as telehealth (real-time communication via telephone or videoconference), 'store-and-forward' applications (capture of clinical patient data and transmission to specialists for interpretation and assessment at a later time), and remote monitoring of patients using specialised devices connected to computer modems (Bywood, Raven et al. 2013). As Australian health care embraces the uptake of technology, there is a need to consider how this can be optimally incorporated into collaborative models of care, and how information exchange and health professional development can be facilitated to support this implementation process.

The Australian Primary Health Care Research Institute (APHCRI) prepared a recent review of patient safety issues during handover of care between primary and acute care for the National Lead Clinicians Group (NLCG). A number of models of care were identified and used to highlight structural, system, process and communication strategies relevant to improvement in this area (Russell, Doggett et al. 2013). The APHCRI review also identified 'gaps in the research' including the need for information relating to care aspects involving interaction between specialists and GPs, and the emerging roles of health coaches or advocates. In brief, findings from the APHCRI review that are relevant to the current investigation of collaborative care include:

- Clinical issues at the acute/PHC interface include increased mortality, morbidity and adverse events, as well as delays to appropriate treatment and avoidable emergency department (ED) visits and hospital admissions.
- Non-clinical issues can also have a major influence on outcomes following discharge (e.g availability of support, living circumstances, access to medications, transport and other health and social services).
- Strategies employed in national and international programs aimed at improving acute/primary health care handover varied between studies and no one strategy addressed all of the needs that prompted implementation of the program.
- Identified strategies fell into seven major categories:
 - Structural (co-location of health services, payment mechanisms)
 - Systems (patient registers, shared records, care plans and decision support systems)
 - Process (development and implementation of discharge protocols, care coordinators, development of clinical pathways for specific conditions)
 - Communication (meetings between providers/consumers/families/carers, GP direct line to EDs, electronic health records and/or referral systems)

- Relationships (Memoranda of Understanding between health services, PHC representation on acute care committees, dedicated positions for 'liaison officers' to facilitate interaction with other health care sectors)
- Clinician support and education (professional development focussed on integrated care at post- and under-graduate levels)
- Patient/carer/family support and education (development of educational resources, telephone communication post discharge, tailored instructions on discharge).
- eHealth relying on shared communication and data collection can support communication and integration interface
- Case workers play an important role but they can be costly, and it is important that consumers see them as a part of the health care system.

The APHCRI report concluded with a number of recommendations including the need to establish a single location for the sharing of information; tools and resources relevant to transitional care; the need to conduct economic analyses and new research to establish the role of carers and investigate resource and cultural issues that are barriers to transitional care. Gaps in the research were identified as information relating to the role of carers and families, the needs of people with disabilities including socioeconomic factors, the interface between GPs and specialists, and the emerging role of health coaches or advocates who support patients through the process, including acting upon the care plan. However, the study authors suggest it is likely that due to time constraints not all of the programs of collaborative care implemented in the Australian setting have been widely published if at all, hence the need for a central site for knowledge sharing (Russell, Doggett et al. 2013).

Although a number of collaborative care models are known to have been implemented in the Australian setting, published accounts of the models in publicly accessible literature are limited. The current report is not an exhaustive review of all models implemented in Australia. Models not reporting outcomes were generally omitted since, in the absence of reported outcome measures, it is not possible to assess the program effectiveness. For this reason, preference has been given to those models reporting qualitative and/or quantitative outcomes. Many of these models have been developed to address the increasing burden of chronic diseases, and since aged and elderly persons are commonly the recipient of such models of care, we have also included a limited number of models focused on the transition from residential aged care facilities (RACFs) to and from acute care hospital.

An earlier version of this report limited to a literature review of a selection of the models described has been published previously by the Australian Medicare Local Alliance (Erny-Albrect, et al. 2013).

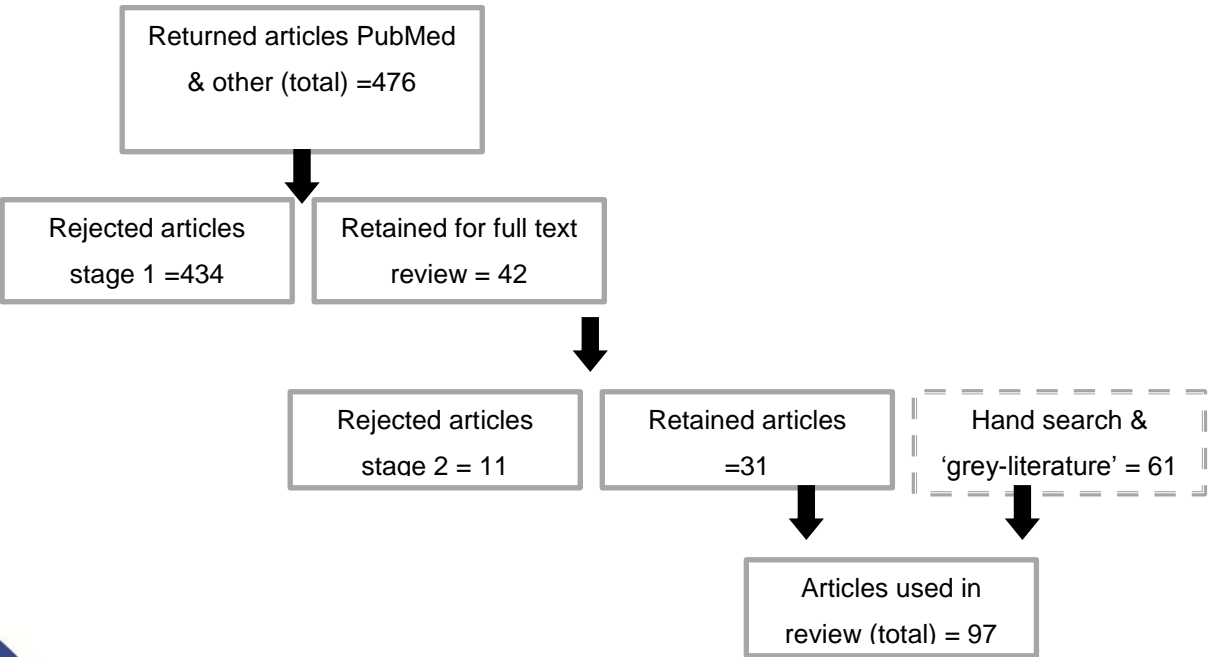
3 Methods

Literature search

A thorough but not exhaustive review of Australian and international literature was undertaken to search academic and grey literature sources including but not restricted to: PubMed; TROVE; Cochrane Collection; Open Grey; Google Scholar; and publicly accessible websites of relevant study groups such as the New South Wales Chronic Care Collaboration group and the Hospital Admission Reduction Program (HARP).

Keyword terms applied in the searches were as follows: ‘Models of Collaborative’ care AND ‘Multidisciplinary team’ OR ‘Interdisciplinary team’ OR ‘Clinical engagement’ OR ‘Clinical handover’ OR ‘Clinical transition’, and ‘Health care transitional models’. Searches were restricted to English language, publication period 2003-2013, conducted within the Australian health care setting. In addition to the above filters, articles were reviewed for relevance to the following topics, with an emphasis on cross -sector collaboration between acute care and primary health care settings: Acute care, Primary health care, Allied health, Specialist care, Aged care, Workforce, Technology, Business systems, Implementation, Outcomes reporting.

Figure 1. Literature Search Strategy



In addition to the published literature captured in this way, numerous web based publications and data presentations were consulted to gain an overview of individual model structures.

Semi-structured Interviews

In many cases, peer reviewed publication of collaborative care models did not contain the level of detail required for the current study. Therefore, program coordinators responsible for the models of interest were approached to participate in an interview designed to explore the role of technology, governance and workforce development in improving patient transition between acute and general practice/aged care sectors. In twelve of the fifteen programs a coordinator could be located. All twelve of these program coordinators agreed to be interviewed.

Participants were forwarded a series of questions regarding their program and subsequently engaged in an online telephone interview. Questions focused on three major areas: technology, business practices, and governance/workforce issues. Reasonable efforts were made to contact individuals involved in each program, including multiple telephone messages and emails. The semi-structured interview schema is described in Appendix 2.

Ethics approval (Application 531.13) was granted by the Southern Adelaide Clinical Human Research Ethics Committee.

4 Results

Based on the search strategy outlined in the literature search, fifteen collaborative care models implemented in Australian settings, involving collaboration across care settings (acute, primary, aged care), were identified as relevant (Appendix 1). The main body of this report focuses on exploring approaches to workforce redeployment, the role of technology in improving the transition between acute and primary health care sectors, and business practices. The models chosen frequently sought to implement improvements in more than one of these areas.

In the table below, the primary target clinical group are listed by model. The majority of the models identified focussed on older adults. Eight of the fifteen models chosen include ambulatory elderly as the major focus with three additional programs focussing on residents of residential aged care facilities. Within these models older people with complex and chronic disease were the primary emphasis. Eight of the fifteen models seek to improve the critical transition period to and from the hospital. Only two of the models are developed for a broad range of patient conditions (Uni-clinic and *HealthPathways*).

	Older Ambulatory	RACF	Disease Specific	Hospital Transition	Broad range of conditions
Primary Care Amplification			✓		
Uni-Clinic					✓
<i>HealthPathways</i>	✓	✓	✓	✓	✓
CanNET			✓		
Hospital Admission Risk Program (HARP)	✓			✓	
Health Independence Program (HIP)	✓			✓	
Chronic Care Collaborative (CCC)	✓		✓		
Geriatric Rapid Acute Care Evaluation (GRACE)	✓			✓	
Cancer Nurse Coordination Service			✓		
REACH Aged Care in the South Program		✓			
Transitional Care Program	✓			✓	
Yellow Envelope		✓		✓	
Silverchain of WA	✓			✓	
Telegeriatrics (Queensland)	✓	✓			

Table 1. Target Clinical Group for Each Model of Care

Workforce

All of the collaborative care models identified were based on improving team-based care with the exception of the tactical eHealth referral and the Yellow Envelope models which solely focussed on information transfer. In some cases collaborative care models involved a limited workforce, whilst others engaged multidisciplinary teams (MDTs) with a wide skill mix that facilitated flexible response to the needs of individual patients.

The models identified often emphasised the role of General Practice services in relation to connecting patients with acute care facilities. Integration of enhanced General Practice facilities (either through identification of GPs with special interests (GPwSIs) or nurses with special skills) within the hospital structure to coordinate patient transition into or out of acute care was also reported.

Examples of this approach include:

- Referral to an Intermediate level of care between hospitals and GP (PCAM; HARP)
- GP based care with delegation of duties to multidisciplinary care group (Uni-Clinic)
- GP within multidisciplinary care group including specialists (CanNET)
- Hospital or GP based care but with a dedicated coordinator or liaison (GRACE, CNC Service)
- Hospital-based care with a pre-admission GP evaluation (DMACS)

Semi-structured interviews with program managers found a clear trend of primary-tertiary collaboration, with GPs, acute care and nurses taking leading roles in the majority of models. Interviews revealed a diversity of health care professionals engaging with programs in both formal and informal capacities, with specialist and allied health staff often contributing to process development. Hospital administrators and practice managers were also reported to perform information transfer activities in Tactical eReferral and HARP.

The table below indicates the various modifications in team member roles in the programs described.

	GP with Special Interest	Nurse with special skills	Medical specialist	Usual GP	Dedicated liaison officer	Allied Health
Primary Care Amplification Model (PCA)	✓		✓	✓		
Uni-Clinic		✓		✓		✓
<i>HealthPathways</i>	✓	✓	✓	✓	✓	✓
CanNET ¹	✓	✓	✓	✓	✓	✓
Hospital Admission Risk Program (HARP)	✓	✓	✓	✓	✓	✓
Health Independence Program (HIP)			✓	✓		✓
Chronic Care Collaborative (CCC)		✓	✓			
Geriatric Rapid Acute Care Evaluation (GRACE)		✓	✓	✓	✓	
Cancer Nurse Coordination Service		✓	✓	✓	✓	✓
REACH Aged Care in the South Program	✓	✓				
Transitional Care Program		✓	✓		✓	✓
Yellow Envelope	✓	✓			✓	
Silverchain of WA	✓	✓	✓	✓	✓	✓
Telegeriatrics (Queensland)			✓	✓		

Table 2. Change in workforce role in the models of care selected for this review.

¹ CanNET is a diverse collection of programs tailored to individual regions and the data listed here relate to one WA CanNET project only.

With the exception of the Tactical eReferral and Yellow Envelope initiatives, all programs reported positive influences on multidisciplinary relationships. Personal willingness to engage with other sectors was key to successful implementation. A track record of successes providing evidence of benefit enabled acceptance and uptake of many programs.

Adequate funding was essential to facilitating adequate workforce and resources; conversely, poor or ceased funding was reported as a barrier that limited workforce and resources.

Technology and Business Systems

The written literature provided limited detail about specific technologies. This section draws on information gathered in the semi-structured interviews of program managers/administrators, including the use of eHealth records, telehealth and electronic referral approaches. As technology was also a major factor in the development of business systems, these two aspects are discussed together.

Technologies used

The diversity of technologies employed reflects the diversity of systems and purposes of the models reported. The Yellow Envelope Project and the Chronic Care Collaborative required minimal technology for implementation, for example, and the GRACE program relies only on telephone and email for communication between sectors.

	Conventional (Fax, email, telephone, mail)	Electronic Medical Records	eReferral Records	Video- conferencing	Telehealth	Web Portal
Primary Care Amplification	✓	✓				
Uni-Clinic	✓	✓				
HealthPathways	✓					✓
CanNET	✓			✓		
Hospital Admission Risk Program (HARP)	✓					
Health Independence Program (HIP)	✓			✓		
Chronic Care Collaborative (CCC)	✓					
Geriatric Rapid Acute Care Evaluation (GRACE)	✓					
Cancer Nurse Coordination Service	✓			✓		
REACH Aged Care in the South Program	✓	✓				
Transitional Care Program	✓	✓		✓	✓	
Yellow Envelope	✓					
Silverchain of WA	✓				✓	✓
Telegeriatrics (Queensland)	✓	✓			✓	

Table 3. Use of technology and business systems in the selected models of care

Telephone and email continue to be widely used across all programs. Programs with a focus on coordination such as CanNET, Cancer Nurse Coordination Service, HIP and Transitional Care reported using videoconferencing. Several programs, such as REACH, do not currently use videoconferencing equipment and software, but plan to integrate videoconferencing into the program in the future; broadband infrastructure limitations were reported as barriers to effective use of these systems. As a 'virtual practice', REACH also utilises laptops, virtual

private networks and wireless broadband to facilitate remote access to electronic medical records (Best Practice) and patient records. Remote monitoring technology is rarely used.

eScheduling technology is often chosen at the discretion of clinicians, and is not uniform for many coordination-focused initiatives. As a virtual general practice, REACH is an exception to this, and uses Best Practice. Many of the commonly used clinical data management systems, such as Best Practice, feature integrated computer-assisted decision support.

A number of programs were exploring integration with the PCEHR such as HealthPathways and HIP but none were using electronic medical records to share clinical data at the time of interviews. Several program managers stated that the use of PCEHR was not widespread in their region, but that they intended to use PCEHR but faced logistical challenges. For example, the aged care program REACH, stated that the reduced capacity of residential care facility residents to sign up and populate the records was a significant barrier.

All initiatives report use commercially-available software and videoconferencing hardware, with technical support available through the commercial suppliers. Initiatives within government organisations often reported the availability of technical support from within the government infrastructure.

The use of eReferral, ePrescription, patient billing, patient booking, patient file linkage to primary care, and patient record linkage to acute care were explored during telephone interviews. With the exception of the Tactical eReferral Program, REACH and HARP, the majority of programs do not include systems of eReferral. eReferral is currently in use with the Tactical eReferral Program through installation of a referral template into clinical databases, and encrypted messaging software. Although some programs, such as HealthPathways and Tactical eReferral, have the capacity to incorporate eReferral processes, the diversity of clinical software in use presents logistical challenges. HARP uses email and digital referral forms from the Service Coordination Tool Templates to perform an eReferral function.

ePrescription is not in widespread use across programs, although several program managers stated that clinical software has the capacity to manage ePrescription. It should be noted that ePrescribing is often done in regions with support for the roll-out by the state health department or Medicare Local as significant effort is required to equip health care providers and pharmacists with appropriate software and a critical mass of users is required to make this system effective. HIP uses CERNER, a commercial vendor of medical software which predominantly caters to the diverse needs of hospitals to facilitate ePrescription, with a recent transition to digital drug charts demonstrating substantial reduction in medication errors over a twelve month period. Clinical software is also used to manage patient scheduling and billing,

but as clinic administration fell outside of the scope of many programs, few program managers reported using it in the implementation of the collaboration program itself.

Encrypted secure messaging software is used for the Tactical eReferral Project to transmit referral-related patient information between primary and acute care, and for community services in HIP, but of the few programs that reported cross-sector data linkage, the majority reported fax, email and telephone as the communication modes used. Several programs, such as HealthPathways, plan to investigate the feasibility of interfacing program systems with the PCEHR.

Table 4 provides a brief overview of available performance outcomes for the models selected for this review. Outcomes generally focused on improved transition between care sectors with optimal information exchange, reduction in hospital re-admission or ED presentation, or improved satisfaction with the treatment process. It is important to note that models are often targeted at different patient groups; therefore, the approaches taken varied according to needs, and outcomes varied according to condition and circumstances.

<p>Primary Care Amplification Model (PCAM)</p>	<ul style="list-style-type: none"> • Approx. 50% reduction in the waiting list of newly referred diabetes patients to the in-hospital specialist clinic • Chronic disease patient visit to the ICDMS cost \$150 compared to a cost of \$750 for an in-hospital specialist clinic visit • In the Brisbane South Complex Diabetes Service, participants reported ease of access, a high degree of satisfaction with the service
<p>Uni-Clinic</p>	<ul style="list-style-type: none"> • Increases in the range of specialised PHC services offered at the clinic, as well as greater collaboration with other PHC services in the community
<p>HealthPathways NSW</p>	<ul style="list-style-type: none"> • NSW Hunter & New England <i>Healthpathways</i> 2012 targets for patient care were either met or exceeded, including reduction of unplanned readmissions within 28 days of separation down to 6.1% for all, although mental health (15.1%) fell short of the target of 13%. GP advisory committee average satisfaction score was 110 versus a target of 92, and 85% of network/stream members felt that the network had promoted collaboration amongst clinicians.
<p>CanNET</p>	<ul style="list-style-type: none"> • CanNET pilot project focused on developing a multidisciplinary team at Albany Hospital, WA, including fortnightly visits or videoconferencing with, specialists from Perth tertiary centres. In the first year, a 36% increase in demand for service was reported from the Albany Hospital (rural centre) and in some tertiary metropolitan centres up to a 30% increase in referrals for radiotherapy (McConigley, Platt et al. 2011). This indicated that more patients were receiving treatment.
<p>Hospital Admission Risk Program (HARP)</p>	<ul style="list-style-type: none"> • The first phase of HARP (2002-2005) yielded a 35% reduction in ED presentations, 52% reduction in admissions, and 41% fewer days spent in hospital per annum • HARP Better Care of Older People, (BCOP), initial outcomes

	<p>included 64% reduction in hospital separations post intervention, 55% reduction in ED presentations, and 39% reduction in number of clients presenting to the ED post discharge</p> <ul style="list-style-type: none"> • HARP Western Consortium program focused on elderly people with multimorbidity and complex care needs, and demonstrated a 20.8% reduction in ED presentations, 27.9% reduction in admissions, a 19.2% reduction in inpatient bed-days, and an increase of 13.4% for diabetes complication screening. Model was associated with an annual saving of approximately two million dollars (~\$2M), twice the annual cost of the HARP program • WestBay Alliance/ HARP Western consortium's program for diabetes patients at high risk of hospital presentation included use of a clinical risk map to identify and prioritise access for people with type 2 diabetes, and resulted in 80% of high risk patients being seen within 7 days, and a 91% increase in referrals to GP, specialist, podiatrist, dietician, ophthalmologist or optometrist • St Vincent's Hospital Melbourne HARP program known as the 'Restoring Health Program' (RHP) included significant reductions in length of stay, ED presentations, and hospital admissions within 6 months for all disease groups
Health Independence Program (HIP)	<ul style="list-style-type: none"> • Alignment of programs under one directorate; improved management structure • Common goals and person-centred design from end-to-end Administration support factored into re-design process
NSW Chronic Care Collaborative (CCC)	<ul style="list-style-type: none"> • While only modest improvement in clinical outcomes was reported, staff and patient awareness improved as did the ability of staff to implement appropriate care • A single site evaluation found significant improvements in medication use, but highlighted lower levels of improvement in areas requiring cross-sector negotiation
Geriatric Rapid Acute Care Evaluation (GRACE)	<ul style="list-style-type: none"> • Number of hospital admissions avoided increased from two patients per month in the first month of operation to ten patients per month after one year • The Aged Care Emergency Model of care (based on the GRACE and the Aged Care Triage models) pilot study reported a 35% reduction in hospital length of stay, 16% reduction in ED presentations from RACF, and improved relationships between staff located at both facilities
Cancer Nurse Coordination	<ul style="list-style-type: none"> • Surveys of patients found that aspects most valued were provision of information, emotional and practical support
REACH Aged care in the South	<ul style="list-style-type: none"> • REACH was initiated to address GP inability to visit RACF residents. After 3 months of operation, REACH doctors had admitted and were responsible for ongoing medical management for 108 RACF residents who could not find a GP and 419 consultations were conducted
Transitional Care Program (TC)	<ul style="list-style-type: none"> • Compared to patients discharged normally, those discharged to TC were less likely to be re-admitted in the first six months. Elderly people receiving TC in a residential setting had a seven-fold greater risk of admission to an aged care facility than those receiving TC in a community setting. • Median length of stay was shorter for recipients of TC in residential settings (38 days) compared with TC in community setting (58 days) • Cost of TC over a six month period was \$344 for each day that a

	recipient survives without institutional care (without hospital or residential aged care).
Yellow Envelope	<ul style="list-style-type: none"> • The need to seek additional clinical information by acute sector carers was reduced by approximately 50% when the Yellow Envelope was used • Use of the Envelope was associated with improvement in sending of discharge information at time of discharge (92% versus 68% in 2009 and 2006 respectively), availability of medication lists (72% versus 32%), and provision of recommendations for GPs (97% versus 72%).
Tactical e-Referral	<ul style="list-style-type: none"> • Increased GP satisfaction, decreased time taken creating a referral due to auto-population of forms, increased security
Silverchain of WA	<ul style="list-style-type: none"> • Hospital in the Home associated reduction of 29% in avoidable ED presentations, decreased length of stay, and 11% fewer GP referral letters for avoidable conditions. • Health system costs savings found due to avoiding high cost hospitalisations, reduced use of ambulance and ED facilities and reduction of lost working days for carers. • A telehealth trial for COPD related ED presentations, hospitalisation and length of stay reduced by half in the group receiving telehealth services.
Telegeriatrics (Queensland)	<ul style="list-style-type: none"> • Good stakeholder acceptance facilitated by the management of complex cases • A cost-minimisation analysis found that providing a similar telepaediatric service to two hospitals over five years reduced costs to Queensland Health by 37% • Telehealth videoconferencing equipment increased the volume of geriatric assessment and increased geriatrician input to multidisciplinary meetings

Table 4. Overview of performance outcomes for selected cross sector collaboration models

5 Discussion

The aim of this report is to review innovative approaches to health care that promote cross-sectoral collaboration within Australia that involve innovative use of workforce, technology and business systems. A substantial number of innovations were found but the models reviewed were limited to fifteen that had the best information on outcomes and/or demonstrated unique approaches.

This review can be used as a reference tool for those working in primary, acute and aged care settings. Only two of the models identified (HARP and the CNC) for this report, were reviewed in the recent report by the Australian Primary Health Care Research Institute (APHCRI) on the evidence and policy around patients' transition between the primary and acute sectors. However the focus of this investigation was not only on cross-sector collaboration and handover between acute hospital care specialists and general practice but also aged care/allied health/nursing/social services/rehabilitation/mental health and was aimed at identifying strategies to promote collaboration. For example, this review has also included three models focused on the transition from residential aged care facilities (RACFs) to and from acute care hospital (GRACE, REACH, Yellow Envelope).

Published accounts of collaborative care models in publicly accessible literature are limited; consequently, the current report is not an exhaustive review of all models implemented in Australia. The additional information retrieved through telephone interviews did, however, provide a broader understanding of the workforce and technologies that facilitate implementation. Most of the models have evolved to support those with highest needs or complexity. This makes good sense as these are the patients that are more likely to need assistance from more than one sector of the health care system as those with simple or stable needs are generally able to receive all of the necessary services within one sector (e.g. general practice).

Changes in Workforce

Findings indicated that workforce structures relied on up-skilling existing staff, creating specialised roles, or a combination of both approaches. In addition to changes in the roles of individuals, the development of multidisciplinary teams was also reported. These occurred virtually via videoconference (such as in CanNET) or within a common setting such as the Primary Care Amplification model which co-locates GPs with a special interest in Diabetes, diabetes educators and endocrinologists to enable multidisciplinary team collaboration.

As with many innovations in primary care, expanded roles for nurses to include care coordination and case management of services in the majority of the models and represent the most consistent change to the health care team. Several programs also used multi-disciplinary teams, which included allied health.

This project did not discover any models that specifically involved the patient-centred medical home (PCMH), which has been an innovation of great interest in the primary care community. This approach seeks to locate a comprehensive set of services in a single “home” for patients and is consistent with the type of care that most general practitioners aspire to provide.

Although the PCMH predominantly focuses on improved care within the home, there is an increased emphasis on care management particularly the use of practice nurses to manage care transitions particularly across the hospital sector. However, we were unable to identify any evaluations of this model in Australia, although a number of studies have been undertaken in the USA and UK. The closest model to the PCMH in the models selected for this review is UniCare which has provided some limited data on its outcomes but not on the effectiveness of cross-sectoral collaboration.

Technology and Business Systems

Key technologies used to facilitate cross-sector collaboration continue to include use of conventional technologies including telephone, fax machines, email, mail and courier services, with some current and planned uptake of videoconferencing technologies. These conventional technologies continue to be the mainstay of clinical activity even in these innovative models. One model presented, the Yellow Envelope model demonstrates an innovation in health informatics which seeks to optimize the acquisition, retrieval and use of health information during transitions from residential aged care facilities to the hospital and back which demonstrates significant improvements in health outcomes while relying solely on conventional technology. This demonstrates how a change in a clinical process to ensure all relevant clinical data are available at the time of transition can make a positive difference without the addition of sophisticated technology.

Exchange of clinical information is a critical element to support cross-sector collaboration with the optimal solution being a shared medical record. Unfortunately, this has only slowly developed in Australia although the recent development of a universal patient identification number is an essential first step. We were unable to identify any specific models of care that had a shared electronic health record across-sectors as part of the review. The personally controlled eHealth record (PCEHR) has been a relatively new innovation and our review did not include any evaluations of this. We were able to identify two additional uses of shared

health records. These were *My eHealth record* based in the Northern Territory which has targeted rural and remote communities and urban indigenous communities. Unfortunately very limited written information on the outcomes of this program was able to be located (Northern Territory Government, 2013) and therefore was not included in the review. In the Chronic Care Collaboratives, the patient used a personally controlled hand-held record but there was not a detailed discussion about its use. Exchange of information such as hospital discharge summaries via conventional methods such as fax still remains the norm.

Although Tactical eReferral reported the use of secure messaging systems to transmit referral and discharge information between primary and acute care, the depth of information shared is clinician-dependent, and formatting problems present challenges to effective information sharing. No model reported technology that facilitated a seamless interchange of patient data between sectors, although manual sharing of patient information is common.

Telehealth is also increasingly being used as a means to support patients in the community and three of the models identified had a telehealth component, two of which emphasized remote monitoring while the third used videoconferencing facilities to perform clinical examinations by geriatricians. All of the telehealth interventions had positive outcomes and this represents an opportunity to better serve patients.

The *HealthPathways* program used a web portal as a means to support the work with teams of GPs and Specialists regarding development of clinical pathways for care using small multidisciplinary teams. The web portal serves as a repository of critical information, which is password-protected. This model has been adopted by a number of communities as a means of working effectively together.

Clinical Engagement and Governance

One of the cross-cutting themes from looking at all the models of care is the need for clinical engagement and governance. For the models of care in this review, the engagement of GPs was especially important. A range of methods were developed to engage clinicians but generally this required suitable reference groups both for input regarding the design and implementation of the program as well as endorsement of the program. Another key factor is identifying what benefit the programs have for clinicians both in terms of improved access to services and support and lessening of burden of providing care for people with high needs and complexity. Those programs which directly contracted with GPs either as GPwSPs in public hospital facilities or as an integral part of the care model (SilverChain, REACH) had the highest level of engagement.

Scalability

The ability of these models to grow rapidly and be used in a variety of settings is quite variable. For example, the *HealthPathways* program which has a common methodology but can be easily adapted to each community has been accepted and supported by multiple Medicare Locals in a number of regions while other programs such as the Uni-clinic are placed in a specific setting and would not be easy to replicate widely although it shares some characteristics of the GP Superclinics which have been developed across the nation. The transitional care program is another example of a program, which has been rolled out across the country, which is highly scalable, yet requires each site to adapt to the local context. Another example of a scalable program is Telehealth (Queensland), which uses multiple remote consultation sites, which has been greatly facilitated by the use of an MBS item number for use by medical specialists as well as development of videoconferencing facilities supported by the state government. Many of the models presented are scalable but this is dependent on funding.

Sustainability

Sustainability of these models of care also requires both on-going support from the funders of the programs as well as support from the community of clinicians that the services provide add value and do not duplicate other services already provided. Some models are developed to fill a specific service gap (e.g. REACH for medical services in RACFs) while others are developed to facilitate specific clinical processes such as referral (e.g. Tactical eReferral) or more broadly information to promote integration (e.g. *HealthPathways*). These gaps in service or technology based solutions for transfer of information may ultimately be filled by other means and hence their on-going need may decline with time.

All of the programs appear to require ongoing funding from either the Federal Government or state government. Some programs were specifically funded under dedicated federal funding such as the Transitional Care Program. However other programs such as the Primary Care Amplification Program and REACH aged care in the South have required funding from state governments. Other programs such as *HealthPathways* have both state and federal government funding (federal funding is through Medicare Locals). All of these programs need to demonstrate ongoing improvements in outcomes and that these improvements represent value for the funding provided. Programs that conduct either their own evaluation or are evaluated nationally and demonstrate the anticipated improvements appear to be in a better

position for ongoing funding. They require both initial funding for set-up such as purchasing technology or training and then a suitable business model which supports ongoing funding.

A number of programs have been predominantly developed to improve quality of care or communication but have justified their ongoing funding from avoidance of hospitalisations in the public sector. However, they are vulnerable to changes in the focus of the hospital sector (e.g. activity based funding), which may decrease the ability of the state funded health system to provide ongoing funding.

6 Recommendations

A number of opportunities and barriers to initiatives in cross-sectoral collaboration were identified in the course of this review. Based on this information, as well as a broad review of the literature conducted as part of this report and the authors' experience in this area, several recommendations can be made regarding the development of programs to promote cross-sector collaboration.

Recommendation 1. Design of cross-sectoral programs requires clearly defining what improvements are being sought.

The program logic, which seeks to determine how the changes planned will result in improvements, needs to be explicitly stated. All of the workforce changes, use of technology and development of business systems need to support, reinforce and sustain that change.

Recommendation 2. Design of cross-sectoral programs can benefit greatly from the experience of others who have developed similar programs.

In addition to reviewing reports such as this, speaking directly with program developers or visiting programs that are currently in operation often provide valuable information regarding key details that can impact implementation of the program. When these individuals can be located they are often very willing to share their experience in detail.

Recommendation 3. Design of cross-sectoral program should be informed by reviewing models developed in contexts similar to the area or clinical group where the intended program is to be developed.

Differences in context can have a dramatic impact on the outcome of a wide range of health care programs. Special effort should be made to identify successful models developed in similar contexts to the area of work to inform program design.

Recommendation 4. When new roles for health care professionals are required, encouraging enhancement of skills of existing personnel appears to be an effective strategy.

Encouraging existing practitioners to expand their skills can be a good strategy to develop new roles for the workforce and may result in cost savings. Examples include GPs with a special interest in a clinical area who might enhance or replace some of the work done by medical specialists or nurses performing case management and coordination which might otherwise be done by doctors.

Recommendation 5. Implementation of innovative technologies requires sufficient technical support and training.

The implementation of new technologies often requires a number of changes to current clinical systems and there are often unintended consequences. Provision of sufficient technical support and training are critical for success.

Recommendation 6. Business systems need to be developed simultaneously with other efforts to improve cross-sectoral collaboration.

As efficiency is a critical factor for sustainability, development of business systems to track outcomes and guide financial decision making needs to be integrated into cross-sectoral initiatives and integrated with the development of other aspects of the program.

Recommendation 7. Programs that integrate or build upon existing clinical systems are more likely to be accepted.

Initiatives in cross-sectoral collaboration need to be seen as providing value for clinicians to support their implementation. Ideally they will both improve quality of care and not require significant increases in work or learning new systems. Building on current systems (e.g. medical software) rather than building new separate systems is more likely to promote acceptance.

Recommendation 8. Engagement of clinicians at each stage of the development process and having an ongoing role for clinical governance is important for successful implementation of cross-sectoral initiatives.

Ensuring mechanisms for input by those affected by the proposed changes especially for clinicians in leadership roles or are who are opinion leaders is another critical factor for success.

References

- Askew, D. A., C. L. Jackson, R. S. Ware and A. Russell (2010). "Protocol and baseline data from the Inala Chronic Disease Management Service evaluation study: A health services intervention study for diabetes care." BMC Health Serv Res **10**: 134.
- Belfrage, M. and D. Cooper (2008). Pushing the envelope - clinical handover between aged care homes and hospitals. Australian Commission on Safety & Quality in Health Care Clinical Handover Workshop. Adelaide, North East Valley Division of General Practice.
- Bird, S., M. Noronha and H. Sinnott (2010). "An integrated care facilitation model improves quality of life and reduces use of hospital resources by patients with chronic obstructive pulmonary disease and chronic heart failure." Aust J Prim Health **16**(4): 326-333.
- Bird, S. R., W. Kurowski, G. K. Dickman and I. Kronborg (2007). "Integrated care facilitation for older patients with complex health care needs reduces hospital demand." Aust Health Rev **31**(3): 451-461; discussion 449-450.
- Bywood, P., M. Raven and C. Butler (2013). Telehealth in primary health care settings within Australia and internationally. Policy Issue Review, Primary Health Care Research and Information Service, Department of Human Services HARP chronic disease management guidelines, Metropolitan Health and Aged Care Services Division, Department of Human Services.
- Department of Human Services (2008). Health independence programs guidelines. Melbourne, Victorian Government.
- Erny-Albrecht, K, Oliver-Baxter J, Bywood P, Reed RL. 2013. Clinical Engagement and cross-sector collaboration. Report to the Australian Medicare Local Alliance. Australian Medicare Local Alliance, 1-54.
- Goode, S., J. Dunbabin and P. Magin (2007). Patient satisfaction with a multidisciplinary primary care team approach. 2007 GP and PHC Research Conference. Sydney Convention & Exhibition Centre, Darling Harbour, Sydney, PHC RIS.
- Gray, B. H., T. Bowden, I. Johansen and S. Koch (2011). "Electronic health records: an international perspective on "meaningful use"." Issue Brief (Commonw Fund) **28**: 1-18.
- Gu, Y., J. Warren, K. Day, M. Pollock and S. White (2012). Achieving Acceptable Structured eReferral Forms. Health Informatics and Knowledge Management 2012.
- Hepworth, J. and J. E. Marley (2010). "Health care teams - a practical framework for integration." Australian Family Physician **39**(12): 969-971.
- Hoare, H. (2009). What's missing? Linking patient information to patient care - public report on pilot study. Brisbane, GPpartners Ltd.
- Howard, R., R. Sanders and S. M. Lydall-Smith (2008). "The implementation of Restoring Health - a chronic disease model of care to decrease acute health care utilization." Chron Respir Dis **5**(3): 133-141.
- Jackson, C., J. Tsai, C. Brown, D. Askew and A. Russell (2010). "GPs with special interests - impacting on complex diabetes care." Aust Fam Physician **39**(12): 972-974.
- Jackson, C. L., D. A. Askew, C. Nicholson and P. M. Brooks (2008). "The primary care amplification model: Taking the best of primary care forward." BMC Health Serv Res **8**: 268.
- Jackson, C. L. and J. E. Marley (2007). "A tale of two cities: Academic service, research, teaching and community practice partnerships delivering for disadvantaged Australian communities." Medical Journal of Australia **187**(2): 84-87.
- Jackson, C. L., C. Nicholson, M. Tweeddale, C. Kardash, P. Matthews and J. O. D. J (2007). "Creating an integrated vision by collocating health organisations: Herding cats or a meeting of minds?" Australian Health Review **31**(2): 256-266.
- Martin-Khan, M. and P. Varghese (2007). "A telegeriatic memory disorder we service for remote patients using and video-consultation." Australian and New Zealand Journal of Psychiatry **41**: A56-A56.

- Martin-Khan, M., P. Varghese, R. Wootton and L. Gray (2007). "Successes and failures in assessing cognitive function in older adults using video consultation." Journal of Telemedicine and Telecare **13**: 60-62.
- McConigley, R., V. Platt, K. Holloway and J. Smith (2011). "Developing a sustainable model of rural cancer care: the Western Australian Cancer Network project." Aust J Rural Health **19**(6): 324-328.
- Metro North Brisbane Medicare Local (2012). 2011-2012 A year in review. Brisbane, Metro North Brisbane Medicare Local.
- Mickan, S., S. J. Hoffman, L. Nasmith and World Health Organizations Study Group on Interprofessional Education & Collaborative Practice (2010). "Collaborative practice in a global health context: Common themes from developed and developing countries." J Interprof Care **24**(5): 492-502.
- Monterosso, L., V. Platt, M. Krishnasamy and P. Yates (2011). Evaluation of the Western Australian cancer nurse coordinator role. Final report. Western Australia, Department of Health.
- NEVDGP and ACSQHC (2009). Procedure for use of aged care home Transfer-to-Hospital Envelope. North East Valley Division of General Practice & Australian Commission on Safety and Quality in Health Care.
- NEVDGP and ACSQHC (2009). Transfer-to-hospital envelope with template. North East Valley Division of General Practice & Australian Commission on Safety and Quality in Health Care.
- Newton, P. J., E. J. Halcomb, P. M. Davidson and A. R. Denniss (2007). "Barriers and facilitators to the implementation of the collaborative method: Reflections from a single site." Qual Saf Health Care **16**(6): 409-414.
- Northern Territory Government. *My ehealth Record*. Darwin, Department of Health 2013.
- NSW Health (2004). Strengthening capacity for chronic care in the NSW health system. Report on phase one. Sydney, NSW Department of Health.
- NSW Health (2005). NSW chronic care program. Strengthening general practitioner involvement in chronic care. Review and recommendations. Sydney, NSW Department of Health.
- NSW Health (2006). GRACE (Geriatric Rapid Acute Care Evaluation). Clinical Services Redesign Program. Sydney, NSW Department of Health.
- NSW Health (2012). Aged Care Emergency model of care. Sydney, Emergency Care Institute and NSW Department of Health.
- Phillips, J. L., J. Ramadge, R. Evans and D. C. Currow (2009). CanNET - a new service model linking regional and metropolitan cancer services into single networks. 10th National Rural Health conference. Cairns.
- Platt, V., M. Plaster, R. Jenkin, J. Sykes, K. Young, K. Jackson, C. Broderick, A. Cooper and L. Monterosso (2008). "Development of the Western Australia Cancer Nurse Coordination Service." The Australian Journal of Cancer Nursing **9**(1): 17-21.
- Pond, C., G. Heading and J. S. Williams. (2005). "Measuring the impact of the Cessnock Uni-Clinic." from <http://www.phcris.org.au/roar/projects/1883> Uni-Clinic.
- Powell Davies, G., J. McDonald, G. Russell and M. Harris (2011). An outcomes framework for comprehensive primary health care services and organisations. 2011 PHC Research Conference. Brisbane Convention and Exhibition Centre, Brisbane, PHC RIS.
- Rao, S., C. Brammer, A. McKethan and M. B. Buntin (2012). "Health information technology: transforming chronic disease management and care transitions." Prim Care **39**(2): 327-344.
- Ratliff, R. (2012) "Making the case for connected health." Hospital and Health care Management.
- Raven, M. and P. Bywood (2013). Allied health video consultation services. PHCRIS Policy Issue Review. P. H. C. R. I. Service. Adelaide.
- Regen, E., G. Martin, J. Glasby, G. Hewitt, S. Nancarrow and H. Parker (2008). "Challenges, benefits and weaknesses of intermediate care: Results from five UK case study sites." Health Soc Care Community **16**(6): 629-637.

- Russell, A. W., K. A. Baxter, D. A. Askew, J. Tsai, R. S. Ware and C. L. Jackson (2013). "Model of care for the management of complex Type 2 diabetes managed in the community by primary care physicians with specialist support: an open controlled trial." Diabet Med **30**(9): 1112-1121.
- Russell, L., J. Doggett, P. Dawda and R. Wells (2013). Patient Safety - handover of care between primary and acute care. Policy review and analysis. Australia, Australian Primary Health Care Research Institute: 59.
- Schofield WN, S. D., Lai YY, Guo Y, Campbell D and Rubin GE (2005). Evaluation: NSW Chronic Care Collaborative, February – November 2004. , Centre for Health Services Research at Westmead, Sydney West Area Health Service and University of Sydney School of Public Health, Sydney, Australia.
- Siggins Miller (2009). CanNET national support and evaluation service. Final national evaluation report, Australian Government Cancer Australia.
- Smith, A. C. and L. C. Gray (2009). "Telemedicine across the ages." Med J Aust **190**(1): 15-19.
- Smith, A. C., P. Scuffham and R. Wootton (2007). "The costs and potential savings of a novel telepaediatric service in Queensland." BMC Health Serv Res **7**: 35.
- Wade, V. (2013). How to Make Telehealth Work: Defining telehealth processes & procedures. Adelaide, Unicare e-health,.
- Wagner, E. H. (1998). "Chronic disease management: What will it take to improve care for chronic illness?" Eff Clin Pract **1**(1): 2-4.
- Warren, J., Y. Gu, K. Day, M. Pollock and S. White "Approach to Health Innovation Projects: Learnings from eReferrals."
- Warren, J., M. Pollock, S. White, K. Day and Y. Gu (2011). A Framework for Health IT Evaluation. Health Informatics New Zealand 10th Annual Conference and Exhibition.
- Williams, H. and E. Reddin (2011). REACH Aged Care in the South, General Practice Network South.
- Williams, H. and E. Reddin (2012). REACH Aged Care in the south report. Adelaide, Southern Adelaide-Fleurieu-Kangaroo Island Medicare Local.

Appendices

Appendix 1

Listed below are the collaborative care models discussed in this report. For each model, there is an overview and brief description of the governance and workforce, patient transition and technology, business practices, and outcomes, enablers and barriers. Diagrammatic representations of models are provided where possible. However, these are based on a synthesis of available information and should only be regarded as indicative of the likely model structure and processes.

1. Primary Care Amplification Model

Overview: The Primary Care Amplification Model (PCAM) is based on uniting local general practices around a ‘beacon’ practice that acts to extend the capacity of local practices in terms of meeting clinical needs, health care staff education, and integration with local secondary, tertiary and other state-funded health care (Jackson, Askew et al. 2008). The model involves a network of PHC services with links to outreach specialist services (physical and virtual) in areas of nursing, allied health, pharmacy, radiology and hospital-in-the-home (Jackson and Marley 2007). The “3Cs” model of integration used in this approach stand for communication and access, cultural change and teamwork, and commitment and incentives to integrate (Jackson, Nicholson et al. 2007).

Governance and Workforce: The beacon practice is not a general practice clinic per se. It operates one day per week out of a general practice clinic and consists of GPs with Special Interest (GPwSIs) and medical specialists with a focus on specific conditions or patient cohorts (e.g. Brisbane South Complex Diabetes service). Patients attend based on referral by their usual GP (Figure 1). The clinic consists of GPwSI in diabetes care, an endocrinologist, a diabetes educator and a podiatrist where patients are at high risk. The clinic is not designed for ongoing care provision, but provides a service that helps patients reach treatment goals in partnership with the usual GP and the patient.

Patient transition and technology: With respect to patient transition between the beacon practice and hospital care, the Centre for Research Excellence in improving quality and safety at the interface between primary and secondary level care was established in 2010²

² <http://www.uq.edu.au/primarysecondarycare/>

with the specific task of investigating the interaction between hospital outpatient clinics and the beacon practice model. Essentially the beacon practice is an arm of hospital care located within the community. Communication between the usual GPs and the beacon practice is a high priority, and the usual GP receives a summary of the assessment and management plan within a week of patient attendance at the clinic. The summary includes any recommendations, patient status, contact numbers etc. as outlined for the Inala Chronic Disease Management Service (ICDMS) (Askew, Jackson et al. 2010).

Telephone interview identified that summaries are prepared in Microsoft Word and sent to the usual GP and the hospital via a secure messaging program. Once patients have achieved treatment goals they are discharged back to their referring GP. Video conferencing is not currently in use, but plans are being made for the endocrinologist to consult via video-conference in the future. The diabetes educator contacts the patient by telephone on a regular basis to monitor and regulate insulin levels. As patients have a home glucometer, remote monitoring via telehealth systems is not considered necessary. Best Practice is the commercially licensed clinical software used by beacon practices for eScheduling activities and patient data management, and whilst referrals are currently received by fax. Best Practice has the capacity to support eReferral. Clinicians are also able to log on to the hospital patient database, the commercially licensed system Practix. Personally controlled electronic health records are not in use, but during telephone interview the current information transfer process was described as 'seamless'. IT systems are managed by the practice that hosts the beacon clinic.

Business Practices: Telephone interview identified that Best Practice supports eReferral, ePrescribing, patient billing and patient booking. No system-based data linkage between primary and acute care is available; clinicians log into each system separately.

Outcomes, Enablers, and Barriers: The Inala Primary care program implementation of the primary care amplification model has been well documented (Jackson and Marley 2007, Jackson, Askew et al. 2008). Application of the model for diabetes has demonstrated a 50 per cent reduction in the waiting list of newly referred patients to the in-hospital specialist clinic (Jackson, Askew et al. 2008). Patients treated in line with the ICDMS program recorded significant improvements in glycaemic control, cholesterol levels, and weight loss after just one year in an open controlled trial among patients who had been referred to the specialist diabetes outpatient clinic at the local hospital (Askew, Jackson et al. 2010, Russell, Baxter et al. 2013). In the ICDMS co-consultation between the up-skilled GPs, endocrinologist and patient ensured that the patient received specialist care as required whilst remaining at the centre of any management decisions. A recent cost analysis found that each patient visit to

the ICDMS cost \$150 compared to a cost of \$750 for an in-hospital specialist clinic visit ([Whispah](#), News from the Princess Alexandra Hospital, March-April 2013). An important aspect and enabler of the 'beacon' practice is the conductance of an evidence based practice journal club for local GPs, students, registrars, allied health and practice nurses (Jackson, Askew et al. 2008).

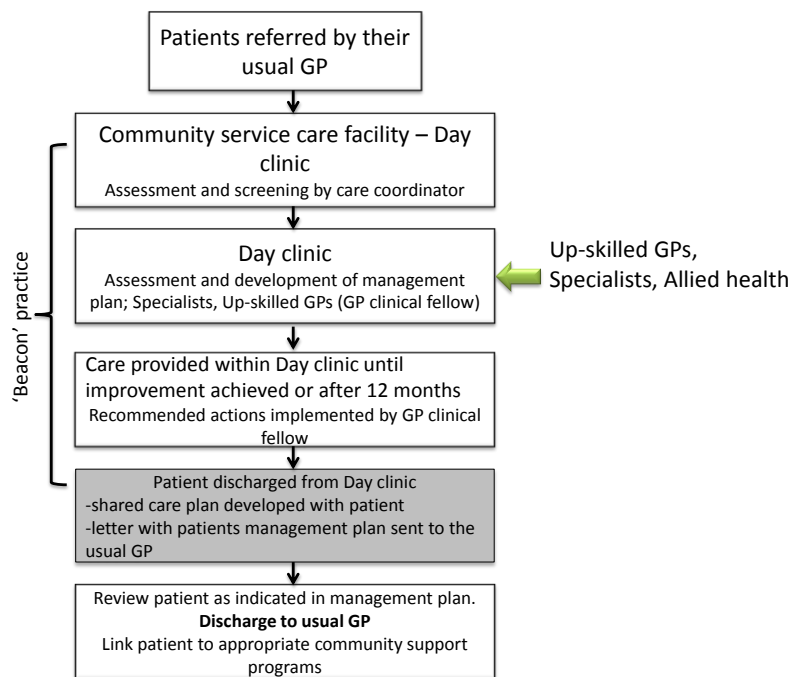


Figure 1. Primary Care Amplification Model

A second application of the PCAM was the Brisbane South Complex Diabetes Service (BSCDS) delivered from within a large general practice in Queensland (Inala Primary Care) for patients with complex diabetes choosing care via the BSCDS rather than the Princess Alexandra Hospital outpatient department. The BSCDS developed from an earlier model of diabetes care and is fully described in Jackson et al. (2010). A multi-professional team comprising an endocrinologist, advanced-skilled GPs known as 'Clinical Fellows', a credentialed diabetes educator and a podiatrist provide this care. A recent qualitative study (Hepworth and Marley 2010) identified patient-centred care was clearly evident in the BSCDS through the ways in which participants reported ease of access, and a high degree of satisfaction with the service. Effective multi-professional teamwork was evidenced through the provision of several health care medical specialists, nursing and allied health professions, immediate referrals among the team, and effective communication links between the service and participants' regular GPs. Finally, the service was identified as empowering for patients, in that participants had a clear sense of their role in improving diabetes management, that

the team was a motivating factor for them to do well, and they felt engaged with both their own health and the health care team.

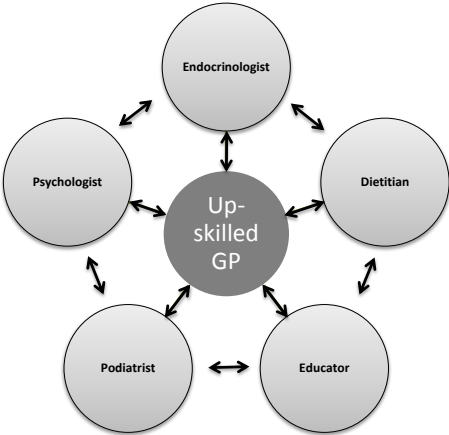


Figure 2. Beacon Practice Multidisciplinary Team

Telephone interview identified that enablers of the program include high levels of respect and personal motivation within the multidisciplinary team, and good clinical leadership. Funding changes within the new integrated health care model have created barriers. Improvements to the model would include looking at new pharmacological approaches, new funding models, and providing specialist diabetes training for the Royal Australian College of Physicians in addition to the Royal Australian College of General Practitioners.

2. Uni-Clinic Model

Overview: The Cessnock Uni-Clinic, also known as 'The Clinic', was established in September 2004 to address the shortages in PHC services in regional NSW, the Cessnock and Kurri Kurri Local Government Areas. This model of integration was formerly introduced by Jackson and Marley (2007) and the NSW Uni-Clinic model was designed to link research and clinical education. Cessnock Uni-Clinic provides the clinical environment to develop extended roles for women's health nurses, practice/triage nurses, dieticians, mental health and drug and alcohol nurses, and other non-medical primary health care providers. The model is based on the premise of a not-for-profit trust which specifies that any income generated must be used towards health promotion activities including both research and teaching.

Attempts to interview a representative of the Uni-Clinic model were unsuccessful; consequently no additional information regarding technology, business practices and workforce could be obtained.

Governance and Workforce: The Uni-Clinic model takes a "one clinic, one team" approach to PHC. Led by GPs, services are delivered by a MDT of health care professionals, including specialist nurses, and the practice is located adjacent to the Cessnock Hospital ED. The clinic is also active in the training of GP registrars and medical, nursing and allied health students.

Patient transition and technology: Detailed information about technology used could not be obtained.

Business Practices: Detailed information about business practices could not be obtained.

Outcomes, Enablers, and Barriers: Evaluation of this pilot program focused on whether the Clinic had an impact on health service usage (i.e. increased screening rates) and patient satisfaction with receiving care from a MDT approach (Goode, Dunbabin et al. 2007). At the meso level, this evaluation aimed to see if there was any improvement (increase) in the PHC workforce and the economic costs/savings associated with the model of care. Findings suggested there was no change in the GP population ratio, but the Clinic had added variety to the general practice workforce in the Cessnock area. Extensions to the Clinic have seen increases in the range of specialised PHC services offered at the clinic, as well as greater collaboration with other PHC services in the community (Pond, Heading et al. 2005). In summary, evaluations that have been undertaken typically focused on specific components of comprehensive PHC or individual programs and projects rather than services or systems.

More recently, a framework for assessing the performance of comprehensive PHC services and organisations has been proposed to assist in research and evaluation (Powell Davies, McDonald et al. 2011). An evaluation based on this framework is yet to be published.

3. HealthPathways

Overview: The *HealthPathways* initiative was implemented in response to a 2011 survey of GPs in Newcastle and Lake Macquarie, in which GPs identified rapid access to information about specialist services as a key tool to help them care more effectively for patients.

HealthPathways is a web-based information portal with a primary focus on general practice. The site and its contents are designed for use by GPs and PHC providers during a patient consultation. *HealthPathways* are restricted to health professionals. In Australia, the Hunter Medicare Local³ was the first to develop *HealthPathways*. Since then other MLs have also begun to implement the initiative (i.e. Western Sydney and Barwon).

This collaborative model is based on a model of working together that was pioneered in Christchurch, New Zealand. The information on *HealthPathways* is jointly developed by small groups of hospital, community and general practice clinicians called 'Pathway Development Teams'. Teams develop the content jointly between GPs, hospital specialists and community health providers using processes developed and agreed by Hunter New England Health and GP Access. This process involves all clinicians in its development, including medical, nursing, allied health and health scientists. It provides local information about local services. Information is based on, and referenced to, best-practice Australian guidelines if available, or international guidelines. Content covers information on assessment, management, hospital departments, and referral; as well as patient information, reference material and educational resources. Pathways cover the most frequent reasons for referral to hospital outpatient services and community services, acute and non-acute. *HealthPathways* are designed to be complementary to the planned electronic referral (eReferral) management system. The information keeps clinicians up-to-date with which services are available, which are funded, and how to access them. As of August 2013, there were over 135 localised pathways in the Hunter New England area and more will be developed over time as Pathway Development Teams work on additional individual pathways.

Governance and Workforce: Currently there is no published evaluation of the Australian application of *Healthpathways*. However this approach was adopted from The Canterbury Initiative (CI) in NZ, which is described as a health care transformation program. It is identified as a referral management innovation for Canterbury District Health Board and is notable for its 300 *HealthPathways* (as of May 2011) (Gu, Warren et al. 2012). At the initial work-stream meetings, GPs identified **access to information** as the key tool to enable them to care for their patients more effectively. The CI approached a company already publishing clinical information for the Canterbury District Health Board and discussed the challenges of

³ http://www.hnehealth.nsw.gov.au/innovation_support/programs_for_20102011/health_pathways

informing general practice with minimal barriers to access. In order to create local, context-dependent pathways, the CI established a structured *HealthPathway* definition process that consists of a maximum of five 90-minute evening meetings, where GPs and specialists have robust discussion regarding the issues, requirements and workflows relevant to the management, assessment, and referral for a condition. These discussions are both informative and conclusive for iterative drafting of the pathways until agreement is reached. The process takes from six to 12 months and a CI facilitator role is central to this process.

The process has been described by a CI facilitator in NZ as follows (Gu, Warren et al. 2012):

- At the initial meeting issues and opportunities are identified (blank white board session).
- The actions required to address the issues are agreed and assigned.
- The second meeting occurs after actions have been progressed. This provides confidence to group members that they are investing their time in activity that actually delivers change. The same applies to subsequent meetings.
- There are a maximum of five meetings, which are all in the evenings. All clinicians are paid to attend these hour and a half long meetings and clinicians receive points towards Continuing Medical Education (CME)

This series of meetings, at its core, is a platform to enable negotiation between GPs and specialists regarding the local way of working with the resources that are available.

Patient Transition & Technology: *HealthPathways* focuses on improving referral pathways and management of conditions by improving transitions between primary, community and acute settings. The 'pathways' are local agreements between GPs and specialists on the criteria, procedures and fax-able templates for appropriate referrals to public secondary services, which are located on the commercially-licensed *HealthPathways* internet platform. Extended from paper-based referral templates, CIs eReferral solution became operational in July 2010. This provided GPs with standardised online referral forms with data pre-populated from their desktop Practice Management System (PMS: Medtech32). The use of eReferrals offer the opportunity for data to be automatically supplied from the PMS database into the referral form (auto-population) but only if there is a high-level of sophistication in PMS usage in its general practice sector (Schoen et al., 2009). Consequently, referrals offer the potential for a degree of transformation in health delivery towards a more coherent interface between referring and referred to services, i.e., across the GP-specialist and community-hospital boundaries. Moreover, eReferrals can provide a hook for electronic decision support and,

potentially, for an IT-mediated social network among the stakeholders in the health of the referred patient.

Telephone interview identified that Hunter Medicare Local currently use telephone-conferencing and email, but will use the commercial video-conferencing software program Microsoft Link to facilitate software-based video conferencing as *HealthPathways* is rolled out across new regions.

Business Practices: Telephone interview identified that for Hunter Medicare Local, the communication and information management technologies currently are unable to support the use of eReferrals within *HealthPathways* due to the diversity of clinical management programs used by general practice clinics in the region, but that the *HealthPathways* web platform has the capacity to support integrated eReferral in the future. ePrescription, patient billing and patient booking fall outside of the scope of the *HealthPathways* project; consequently the technology has no capacity to support these activities. Whilst linkage of patient records to primary and acute care is currently unavailable, Hunter Medicare local are currently looking into the feasibility of interfacing personally controlled electronic health records with the *HealthPathways* website to facilitate electronic patient record linkage.

Outcomes, Enablers & Barriers: There is some evidence of uptake of this tool. In NZ case studies of Canterbury focused on 'colorectal symptom pathway' evidenced steady and sustained uptake of the eReferral form by GPs. Sustained access to the colorectal symptom pathway pages during a 12-month period from 1 August 2010 to 31 July 2011. These pages were viewed a total of 2,351 times with clear pattern of use during working days (i.e. on a case-by-case basis when doctors are seeing patients)

Evaluations of four implementations of eReferral initiatives identified an enabling effect of information technology the New Zealand health sector. Qualitative & quantitative evaluation data of the Hutt Valley, Northland and Canterbury solutions was gathered from September 2010 to May 2011 through collection of project documentation, visits to key sites, analysis of electronic transactional records and stakeholder interviews (Warren, Gu et al. , Warren, Pollock et al. 2011). The following quote summarises their findings:

CI has encouraged GPs and practice nurses to take on additional roles in pathways, for instance by training of GPs to expand skin lesion excision services (and take referrals from other GPs for this). This has significantly reduced waiting lists in many cases, for example dermatology. Canterbury has demonstrated the power to transform health delivery by having the right team of dedicated champions, and putting aside conventional boundaries of

primary and secondary services (including routing of funding to general practice where it takes up work previously done elsewhere). The positive results suggest that this philosophy and structure is worthy of emulation.

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Telephone interview identified that implementation of *HealthPathways* to new regions is not incentivised by Hunter Medicare Local, but is offered where the project team perceives potential benefit. Engagement in the development of pathways is an enabling feature of the initiative. Success lies in the negotiation processes undertaken that have been prolific in presenting, integrating and transferring the specialised and locally contextualised knowledge. The result encodes the negotiation, and incorporates both GP and specialist knowledge. By engaging primary, community and secondary clinicians, the *HealthPathway* authoring process, not just the direct product itself, is viewed as part of the reason for CIs success, particularly because of the trust and relationships it builds. Relationships provide the vehicle to progress and through education and communication create an environment that enables change and builds trust and confidence. Successful outcomes demonstrate that *HealthPathways* is an effective mechanism for engaging multiple sectors in a clinically meaningful and beneficial way, enabling implementation and supporting uptake of the program.

Once the decision to implement *HealthPathways* has been made, CME points are awarded for clinicians involved in the implementation. Regular meetings are held to introduce pathway innovations through face-to-face communication with GPs and get community feedback for further improvement (Gu, Warren et al. 2012). Through engaging both specialists and GPs face to face, effective presentation and transfer of specialised and contextualised knowledge can take place, as well as enhancing relationships between care providers.

Lack of willingness of key stakeholders to engage was reported as a substantial barrier, and depends upon the personalities of key players. Time has been reported as a barrier, as the process of developing and refining agreed-upon referral pathways takes from 6 to 12 months.

HealthPathways is not decision support software (no patient information is entered) and is not designed for patients. However one key criticism is the lack of consumer engagement in the process or consumer advocacy input.

4. Australian Cancer Network

Overview: The Australian Cancer Network ([CanNET](#))⁴ is was a national program first launched in 2007 in the Northern Territory to better serve isolated cancer patients requiring treatment by improving collaboration and communication between and across services. The aim was to support investigation of symptoms, early diagnosis, and timely referral to a multidisciplinary team. In each of the states of Australia, similar networks were established based on the CanNET model, which aimed to link groups of health professionals and organisations (in particular general practice teams and cancer services) to improve the treatment and long-term management and health related education of patients with cancer and residing in rural areas. The model was based on Managed Clinical Networks implemented by the National Health Service in Scotland and England. Implementation of this program ceased in February 2012.

Governance and Workforce: National level governance was by Cancer Australia and the CanNET National Steering Committee, with a CanNET Program Manager appointed to work with the network teams. At the state and territory level the CanNET networks included a lead agency and network team. The lead agencies were as follows: New South Wales, Cancer Institute NSW; Northern Territory, Department of Health and Families; Queensland, Queensland Cancer Control and Analysis Team, Queensland Health; South Australia, Department of Health; Tasmania, Department of Health and Human Services; Victoria, Department of Human Services; Western Australia, Department of Health, WA Cancer and Palliative Care Network. A governing body with a strong consumer viewpoint was appointed in each jurisdiction, and they worked closely with project managers and teams. The most effective project managers (frequently nurses) were those with a wide range of skill sets and strengths with respect to clinical and cultural aspects. The teams included up-skilled local care providers, such as GPs and nurses, acute care, management and administration staff, allied health care, aged care workers, specialists, and where relevant Aboriginal health workers. CanNET had a profound effect on multidisciplinary team care, and facilitated improved communication and collaboration as well as improved patient outcomes. Staff development and further education was ongoing and was also supported through online learning opportunities and forums, as well as the Cancer Australia-funded Cancer Learning web based information hub.

⁴ <http://canceraustralia.gov.au/clinical-best-practice/service-delivery/cannet>

Patient transition and technology: An important aspect of the model was the agreement of referral pathways within each network. Interaction between primary and secondary care was facilitated in a number of ways depending on region; for example South Australia used video teleconferencing to link specialists with patients and their usual practitioner. Similarly, in Western Australia web-based video conferencing was used to link specialists in Perth with a general multidisciplinary team in Albany on a fortnightly basis (Phillips, Ramadge et al. 2009). In addition, a web-based software program [MMEx](#) was trialled to provide secure pathways for exchange of patient information. MMEx can interoperate with the Australian Federal Government's Personally Controlled Electronic Health Record (PCEHR).

Telephone interview identified that in the NT both hardware (through the Department of Health's commercial provider PolyCom) and software-based video conferencing (such as commercially-licensed programs Skype and WebEx) were used, in addition to telephone consultations, telephone conferences and emails. In addition to working to facilitate cross-sector collaboration, CanNET actively promoted internet websites such as EverQ, Cancer Learning and EdCan. Commercial programs were supported by the respective providers, and government initiatives were supported by government IT infrastructure.

Business Practices: Telephone interview clarified that whilst CanNET planned referral pathways, promoted resources and facilitated cross-sector communication, CanNET was not involved in developing or integrating technologies to support eReferrals, ePrescription, billing and scheduling, or patient record linkage activities.

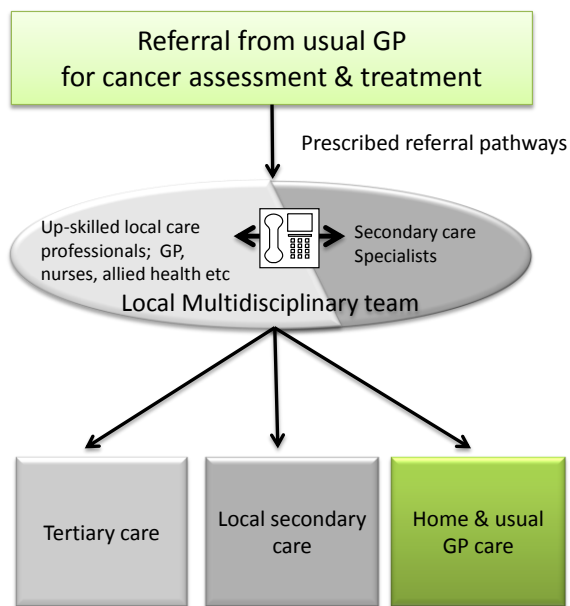


Figure 3. Australian Cancer Network

Outcomes, Enablers, and Barriers: Outcomes have been reported based on an evaluation of the period 2007-2009, and a Phase 2 evaluation for 2009-2012 is underway. In brief, the first phase of CanNET reported substantial progress in the establishment of multidisciplinary teams and professional development of staff (more than 1,196 health care providers). Although there was variability across the networks this helped to identify those factors that enable progress. These included: a comprehensive management strategy with a top-down bottom-up approach; financial and practical investment from Cancer Australia; supplying local clinicians with local data in a timely manner; realistic and achievable project plans presenting clear goals, the staff and budget to travel to health hubs in remote locations, and publicising outcomes to offer stakeholders proof the model represents an improvement over usual care.

Furthermore, telephone interview identified that technology presented a barrier when it did not meet the needs of care providers. Often systems were not compatible with one another, or a lack of infrastructure prevented use of technologies such as telehealth carts. Additionally, in the NT some Commonwealth strategies implemented within CanNET featured a disconnect between the local need and the resources developed. Increased use of technology with regards to educational resources, such as developing DVDs, talking books, ipad apps, and using SMS reminders and social media platforms such as Telstra Whisper, may have improved the program.

While clinical outcomes are not available from across the network as a whole, results from individual implementation sites provide insight into expected outcomes. The Western Australian CanNET pilot project focused on developing a multidisciplinary team at Albany Hospital, including fortnightly visits by or videoconferencing with specialists from Perth tertiary centres. In the first year a 36% increase in demand for service was reported from the Albany Hospital (rural centre) and in some tertiary metropolitan centres up to a 30% increase in referrals for radiotherapy (McConigley, Platt et al. 2011). This indicated that more patients were receiving treatment but also highlighted the increased demand on services that must be met in the long term. Identified challenges to implementation included the time required to recruit visiting medical specialists and to integrate supportive technology into the local system. Full evaluation of the program was impeded by GP reluctance to take part, with some citing 'research fatigue' and time constraints as the reason for this.

A key component of the CanNET program in all states has been the emphasis on establishing MDTs. The achievements in terms of new or enhanced MDTs are summarised in Table 1 (Siggins Miller 2009).

Table 1: Summary of CanNET outcomes across jurisdictions

Service	Outcomes
CanNET NT	Established a general MDT in Alice Springs, with links to Royal Adelaide Hospital for radiology and pathology input, and the Department of Medicine at the Alice Springs Hospital for administrative support. Also, enhanced two existing MDTs (head and neck cancer and surgery/oncology) in Darwin to improve their quality through audit and review processes, and developed a range of supporting guidelines, protocols and templates.
CanNET NSW	Established nine new MDTs (including general and tumour specific) emerged across the three AHS's that comprised CanNET NSW
CanNET QLD	Linked breast cancer services at Bundaberg with the breast cancer MDT at the Royal Brisbane and Women's Hospital, and breast cancer services at Gympie Hospital to the Nambour Hospital breast MDT via weekly videoconferences. Also supported a number of existing MDTs to improve their quality through audit and review processes.
CanNET SA	Established a general MDT in Mt Gambier with links to specialists in Adelaide, as well as two Statewide MDTs, one focusing on upper GI cancer; and the other on adolescents and young adults (AYA) with cancer. All three MDTs had both public and private involvement.
CanNET TAS	Established three new MDTs, one focusing on lung cancer in the north of the state, and two GI MDTs (one in the north and one in the south). Also developed links between Tasmania and the Peter MacCallum Cancer Centre in Victoria for rare cancers.
CanNET VIC	Linked regional and rural clinicians into metropolitan lung cancer MDTs in Melbourne through a new online meeting technology (Cisco WebEx).
CanNET WA	Established a general MDT at Albany Regional

5. Hospital Admission Risk Program (HARP)

Overview: The Hospital Admission Risk Program (HARP) service delivery project was first implemented in Victoria in 2001 to address the increasing demand being placed upon hospital services with the aim of reducing hospital admissions and demand upon hospital emergency services (Bird, Noronha et al. 2010). The HARP model structure⁵ was based on the Kaiser Permanente Chronic Care framework and Wagner Chronic Care Model (Wagner 1998). An integral part of HARP is the identification of those clients currently experiencing, or at risk of, frequent ED presentations or hospital admissions. Typically, this included patients with chronic heart disease, chronic respiratory disease, chronic disease multimorbidity, or diabetes; and the elderly with complex needs or persons with complex psychosocial needs. Individual HARP project consortia vary according to implementation and processes. However, the overall program design includes transition from usual GP to HARP gateway clinics where risk screening is performed to determine how quickly a person should be seen. This is followed by fast-tracking of high risk patients for treatment, assessment and referral to specialists; then ongoing management and review to provide self-management education and support, inpatient care and care coordination until the patient can be referred back to their usual care GP. In the following published accounts of HARP implementation, projects are summarised to illustrate program outcomes. However, for a full listing of implemented HARP services in Victoria, the reader is directed to the website of the [Department of Health, Victoria, Australia](#). A complete set of [HARP chronic disease management \(HARP CDM\) guidelines](#) has been published (Department of Human Services). These are not prescriptive so as to reflect and allow for variation in patient and local needs. Development of HARP is ongoing and in some settings includes integration under the Health Independence Program (HIP) 'umbrella', a move aimed at avoiding confusion arising from the current existence of multiple entry points into HARP. See the HIP overview for more detail.

Governance and Workforce: The HARP gateway clinic represents an outpatient clinic for specialist and GPs with special interest to provide a discrete set of services, but it is not a general practice clinic. Governance is by the Health Service (consisting of at least one representative of primary care partnership, Division of General Practice (in the model as described), Community Health Service, Local Government, consumer and carer representation) in partnership with community-based service providers. Depending on local needs and patient needs staff involved in patient care is likely to vary but include some or all of GPs with special interests, disease specific specialists, nurses, practice managers and aged care workers. Paramedics are not formally engaged in the HARP program, but if they

⁵ <http://www.health.vic.gov.au/harp/about.htm#modelofcare>

recognise a call-out as a HARP client may telephone HARP to problem-solve at home and avoid hospital admission. Inclusion of a further development program for staff is a minimum requirement of HARP CDM, and includes workshops accessed through [Carers Victoria](#).

Patient transition and technology: Communication and patient transition between services is the responsibility of designated multi-skilled care facilitators within the HARP gateway clinics (Bird, Kurowski et al. 2007) According to the HARP CDM guidelines, cross-sector collaboration is supported by the use of the interRAI tool⁶ assessment tool, which collects a consistent set of data that can be used by all providers across settings. There is also a minimum requirement for exchange of information (including enrolment, relevant results of investigations, discharge care plan and notification) between HARP CDM and the client's usual GP via electronic transfer, fax or mail.

Telephone interview identified that collaboration is also supported by the use of an established referral process/documentation defined by the state-wide Service Coordination Tool Templates ([SCTT](#))⁷, to facilitate sharing of information between primary, acute and community services. SCTT forms are available in Microsoft Word or Adobe PDF format, and improve collaboration through access to shared care plans and consistency of information across organisations. Whilst Microsoft Word and Adobe are commercially licensed products, SCTT forms are not. Personally controlled electronic health records (PCEHR) may be in use, but although some clinic software may integrate or interface with the PCEHR no formal integration is in place. Access to external services including but not limited to after hours and outreach services was catered for by ensuring each local alliance had access to brokerage funds. Use of hardware or software-based video conferencing varies by site; a budget for videoconferencing equipment has been lodged but no purchasing decisions have been made. HARP sites continue to use telephone consultations and telephone conferences.

⁶ <http://www.interrai-au.org/>

⁷ <http://www.health.vic.gov.au/pcps/sctt.htm>

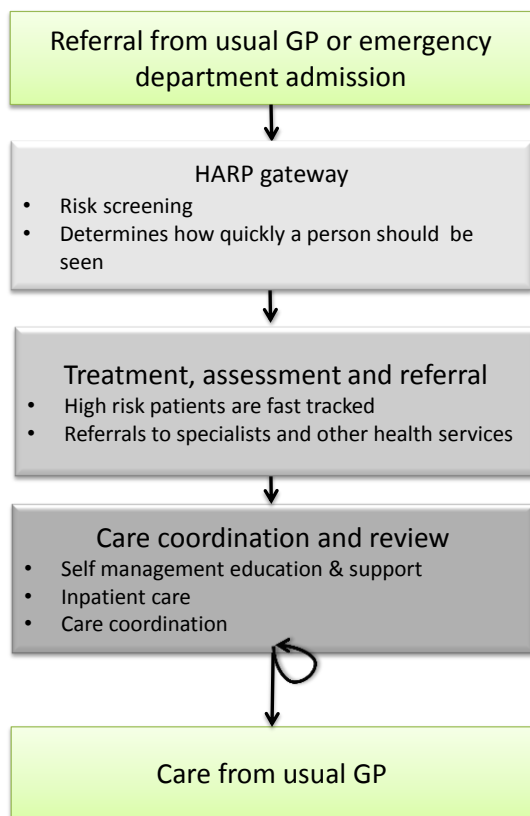


Figure 4. Hospital Admission Risk Program

Business Practices: Telephone interview identified that the practice of emailing SCTT forms provides a limited form of eReferral capability. HARP does not address ePrescribing, patient billing or booking, although clinical software used within clinics may support these activities. Records may be shared on a case by case basis, but HARP does not use technology to facilitate formal cross-sectoral linkage of patient records.

Outcomes, Enablers, and Barriers: From the first phase of HARP (2002-2005), approximately 87 projects were funded with the following overall outcomes: 35 per cent reduction in ED presentations, 52 per cent reduction in admissions, 41 per cent fewer days spent in hospital per annum.⁸ At an individual level, this was equivalent to reductions by one ED attendance, two emergency admissions, and six days in hospital per patient. Projects initiated between 2007 and 2010 focused on the provision of care to older people (HARP Better Care of Older People, HARP BCOP). Initial outcomes for HARP BCOP include a 64 per cent reduction in hospital separations post intervention, 55 per cent reduction in ED presentations, and 39 per cent reduction in number of clients presenting to the ED post discharge.

⁸ <http://www.health.vic.gov.au/harp/about.htm#modelofcare>

The HARP Western Consortium program (“Patients First” model) focused on elderly people with multimorbidity and complex care needs, and demonstrated a 20.8% reduction in ED presentations, 27.9% reduction in admissions, a 19.2% reduction in inpatient bed-days, and an increase of 13.4% for diabetes complication screening (Bird, Kurowski et al. 2007). An essential component of this model and its success was the appointment of care facilitators who were involved in patient assessment and provision of advice and education for patient self-management, as well as coordinating patient access to health services as required. Communication between care providers was via the care facilitator. From an economic perspective, it was estimated in this case that the model was associated with an annual saving of approximately two million dollars (~\$2M), twice the annual cost of the HARP program at that site. According to the study report uptake and support for the program was very strong and took place without disruption or challenging professional boundaries, facilitation of this being attributed to the engagement of all stakeholders in the early development and implementation stages.

The program was applied to develop a [model of diabetes management](#) by the WestBay Alliance/ HARP Western consortium. Adoption of the program for diabetes patients at high risk of hospital presentation included use of a clinical risk map (CRM) to identify and prioritise access for people with type 2 diabetes, and resulted in 80% of high risk patients being seen within 7 days, and a 91% increase in referrals to GP, Specialist, Podiatrist, Dietician, Ophthalmologist or Optometrist. In contrast to the HARP Western Consortium application of the model for the elderly, due to the large number of patients, WestBay Alliance implemented team as opposed to individual care coordinators assigned to patients in this model for diabetes. It was estimated that based only on patients risk screened as ‘urgent’ the annual savings would be almost one million dollars (~\$1M). Use of the CRM by intake staff and clinical staff across the program was identified as important for providing a common language of risk for referrals between agencies.

In the St Vincent’s Hospital Melbourne HARP program, known as the ‘Restoring Health Program’ (RHP), hospital-based nurses and physiotherapists with disease-specific expertise acted as the key contact liaisons responsible for assessment of new referrals, patient recruitment, discharge planning, and forwarding of care plan and liaison with the usual GP (Howard, Sanders et al. 2008). The pilot program focused on patients admitted to St Vincent’s Hospital with one or more of chronic lung disease, chronic heart failure, unstable or poorly controlled diabetes. Key contact liaison staff also served to liaise between outpatient medical specialists and patients, and the RHP also operates a rapid access clinic for RHP patients in need of urgent medical review, and patients were provided with self-management

education. In RHP, a second key contact liaison is appointed to coordinate community-based access to local allied health services after discharge. Based on 350 patients, the outcomes of RHP included significant reductions in length of stay, ED presentations, and hospital admissions within 6 months for all disease groups.

Whilst the program is continuing, a number of key program enablers have already been identified: weekly face-to-face meetings between acute sector key contact liaisons and community based workers; clear referral criteria and pathways; strong use of information technology for data management, monitoring and communication; up-skilled staff and continued education access; colocation of RHP staff; and structured governance system. Barriers include engagement of and communication with GPs (currently involves GP Liaison Unit), the financial demands of providing interpreters and translating evidence-based education materials for patients, and enabling staff to attend seminars to enhance cultural awareness.

Difficulties with engaging various groups were also reported during telephone interview. Better integration of care, switching from a single disease focus to a multimorbidity focus, and an easier referral process may be of benefit to the program.

6. Health Independence Programs

Overview This collaborative model was initiated in order to align services including HARP, Post-Acute Care (PAC) and Sub-Acute Care (SAC) at Austin Health in Victoria in 2008. Collaboration and coordination across the care continuum are considered key success factors for providing the best experience for clients enrolled in health independence programs (HIP) (Department of Human Services 2008) (Figure 5). The target group is patients who are PAC/SAC and transitioning from hospital to home. HIP programs provide tailored packages to people who have short-term needs that require community-based supports (e.g. personal care, home care) or community nursing (e.g. wound dressing) or caring responsibilities which they may be unable to fully or partially meet in the short-term. Initially this approach established a minimum set of guidelines implemented across programs.

The processes include:

- A defined point of access to link a client into the range of services that a client needs
- Common assessment practices and protocols, including sharing assessment and care planning information across different programs
- Common referral practices and protocols to facilitate transition between programs
- Coordination of services between programs
- Guidelines for programs that are complementary and consistent processes that support continuity of care (Department of Human Services 2008).

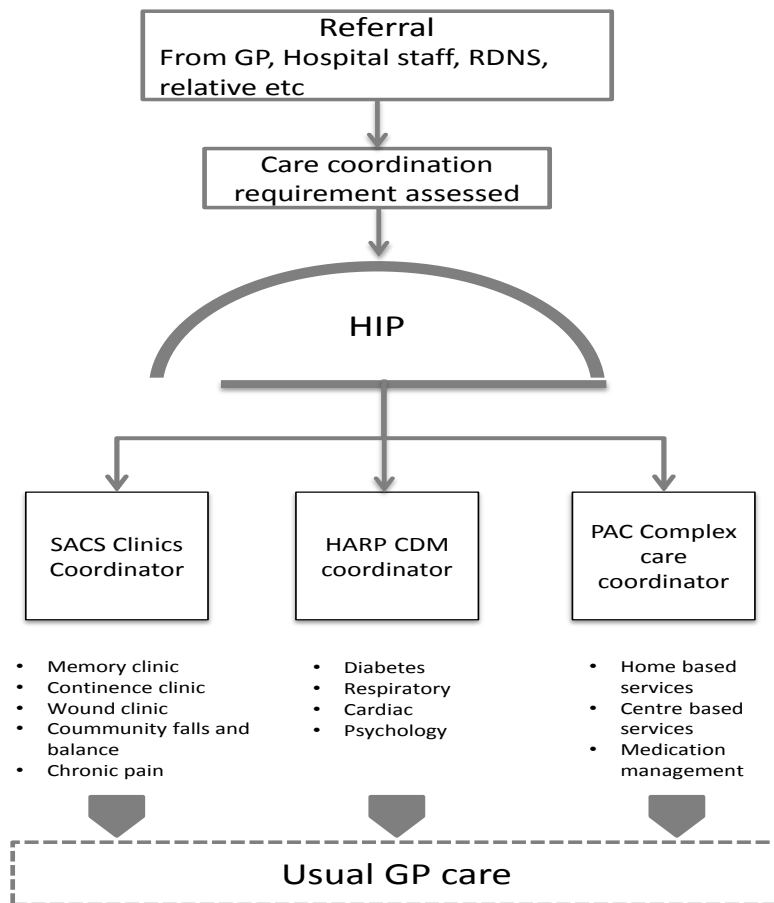


Figure 5. Health Independence Program

Governance and Workforce: With regard to service redesign Austin Health chose to co-locate relevant services at Austin Health including all care coordination services, rehabilitation services, home and community care services and SAC specialist clinics and services. Elements of program delivery are detailed with minimum requirements outlined for each core component. Core components include interdisciplinary care, care coordinator appropriate setting, evidence-based practice, health promotion, consumer involvement, self-management, client and staff safety and engagement with GPs.

Telephone interview identified that a broad range of hospital, general practice and community health care providers are involved in HIP. Clinicians, specialists, administrators, nurses, GPs and allied health form the core workforce. Whilst not specific to HIP, as part of service integration paramedics are involved with the ‘Residential In-Reach’ program, where paramedics may triage a residential aged care facility (RACF) resident to receive care within the RACF instead of transferring them to hospital. Aged care workers are likewise involved in this program.

Strained relationships between the hospital and community services were reported, due to the disruption to personal efficiency produced by system changes designed to improve overall efficiency, but clinical relationships have been positively influenced by HIP.

Patient transition and technology: A central call centre has been established, where a care coordinator puts patient-specific supports in place prior to discharge of patient.

Telephone interview identified that HIP does not use videoconferencing technology, as co-location of services limits the necessity for such technology. Communication across-sectors occurs primarily face to face or through telephone consultations, telephone conference and email. Remote monitoring for chronic obstructive pulmonary disease was trialled in 2009 but not continued. eScheduling technology, booking and reminders occur through the following commercially licensed systems in place at Austin Health: TrakCare for outpatient billing and booking; The Care Manager program for managing services within the hospital; and CERNER for managing inpatient records. Whilst CERNER produces discharge summaries to transmit to GPs, no specific technology is used for electronic referral, with hard copies still posted to the GP from Austin Health. IT support is provided by the Austin Health IT department, and CERNER support is provided by the in-house CERNER project team.

Business Practices: Telephone interview identified that CERNER facilitates referrals within the hospital. eReferrals between community services are transmitted through a secure messaging agent. CERNER supports digital drug charts and ePrescription, a 12 month trial of which has demonstrated a substantial reduction in medication errors. Patient billing and booking in outpatient clinics is managed using TrakCare. No patient file linkage occurs from acute to primary care.

Outcomes, Enablers, and Barriers: No outcomes have been published from the HIP initiative, although initiatives within this framework have published evidence of positive outcomes (i.e., HARP).

Barriers reported in the literature include workforce-specific challenges around new roles, new structures, building new partnerships whilst maintaining existing ones both within Austin Health and externally, and the need for workplace culture to shift from an individual program focus to an integrated service focus.

Telephone interview expanded on these barriers, with specific barriers reported in relation to organisational change and the loss of personal efficiency for the sake of promoting overall efficiency. Barriers to creating a flexible, needs-based service approach also exist, as whilst HIP has been given an overall target, the Department of Health has retained individual service targets, inhibiting capacity to create genuine system change by enforcing the old model within the new one. Patient record linkage within the hospital is obstructed by technological limitations, as when new episodes of care are created in CERNER for billing purposes (such as when a patient is transferred from inpatient to rehabilitation services) it cannot 'roll over' the patient's records or file or drug chart from the old encounter to the new.

Successful HIP integration has been facilitated by unified management structures, agreed-upon shared goals, designing the model of care from end-to end, and including administration support in the re-design process.

Telephone interview identified that the alignment of programs under one directorate, and specifically the appointment of a HIP Manager, have enabled service integration.

7. Chronic Care Collaborative

Overview: The NSW chronic disease management program was first launched in 2000 as the NSW Chronic Care and complex care Program.⁹

Within this program, the NSW Chronic Care Collaborative (CCC) was initiated to address the needs of individuals with cardiovascular disease, respiratory disease and cancer. The model was based on the Boston Institute for Health care Improvement's (IHI, Boston, USA) 'Breakthrough' model. The IHI model focuses on bringing together a large number of teams from hospitals or clinics over a 6-15 month period to seek improvement in a focused topic area (Regen, Martin et al. 2008). The patient entry point into the model of care depends on the complexity of individual management. In the first three years of operation, the state-wide program reported 42 000 patients enrolled, reductions in length of stay, ED presentations, and a steady decline in unplanned admissions for heart failure (NSW Health 2004).

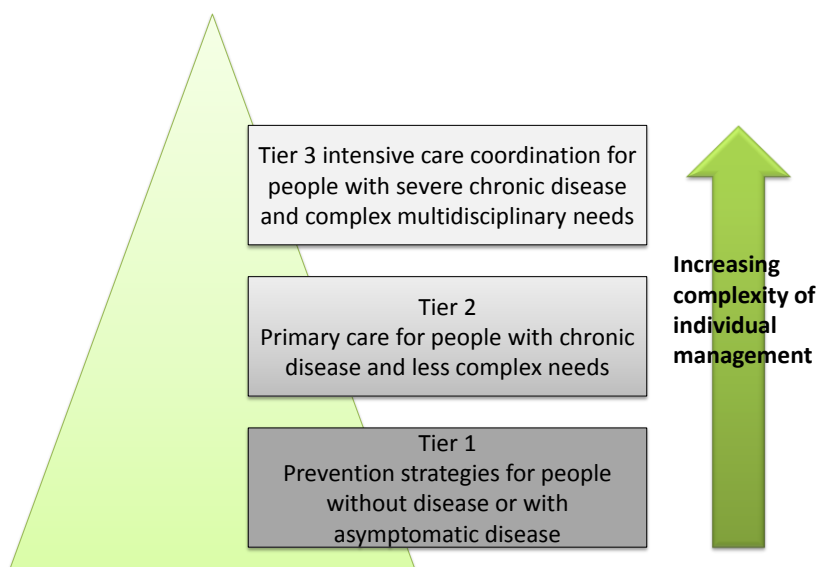


Figure 6. Chronic Care Collaborative

Governance and Workforce: In the NSW CCC model the governance structure centred on representation from a range of health disciplines, including clinical experts for the priority conditions targeted, as well as GPs, consumers, managers and external agencies. The [care team](#) included staff from acute hospital and community-based health services, general practitioners, allied health, and consumer and carer representatives. A key component for success was the role of care coordinators who worked to bridge the gap between patients and service providers. Some [applications](#) of the NSW CCC model involved community-based

⁹ http://www0.health.nsw.gov.au/pubs/2006/chroniccare_3.html

coordinators (range of generalist skills), others hospital-based (substantial level of specialised disease knowledge) with an out-reach component.

Patient transition and technology: In phase two, a need to improve discharge planning and GP involvement was recognised with implementation of the Effective Discharge Planning Framework and a task force was established to investigate barriers and challenges to GP involvement in chronic care (NSW Health 2005). Based on this, liaison officers with GP nursing or allied health backgrounds were introduced to improve communication and transfer of information between GPs and hospitals, and to provide advice with respect to the perspective and priorities of GPs. No electronic health records were available during the implementation period of the NSW CCC, however, patients were provided with a patient-held record ([My Health Record](#)). Telephone and email were used to organise workshops.

Business Practices: NSW CCC used no technology to support the use of eReferrals, ePrescription, patient billing or booking, or patient record linkage to primary or acute sectors.

Outcomes, Enablers, and Barriers: The final evaluation of the CCC program found some components associated with improvement, with conflicting results obtained for analyses of hospital admissions and re-admissions, and length of stay (Schofield WN 2005). The evaluation also identified areas for improvement e.g. collaborative team referral programs and advanced care directives discussions. Overall, whilst only modest improvement in clinical outcomes was reported, staff and patient awareness improved as did the ability of staff to implement appropriate care. Further, a single site evaluation found significant improvements in medication use, but highlighted lower levels of improvement in areas requiring cross-sector negotiation (Newton, Halcomb et al. 2007). This may be due to the fact that CCC workshops focused on MDT collaboration within a single clinical setting, and promoting cross-sector collaboration was not its intended purpose. In particular, it was noted that attempts to introduce medication titration charts for cardiology patients to serve as a guide to their GP during patient transition from acute to PHC were hampered by the slow mechanisms of bureaucracy within the acute hospital setting. Newton et al. (2007) reported that teams attended 'learning sessions' and were then asked to implement components of diagnostic and management 'bundles', the contents of which included items such as focused clinical examination, echocardiography, or ACE inhibitor use, smoking cessation, immunisation etc.

A number of NSW chronic care models have been devised and implemented for care of patients with COPD, coronary artery disease, diabetes, hypertension, and congestive heart

failure; and more recently for those with chronic pain and for Aboriginal and Torres Strait Islander Peoples.

8. Geriatric Rapid Acute Care Evaluation

Overview: The Geriatric Rapid Acute Care Evaluation (GRACE) is a model of care developed by the NSW Hornsby Ku-ring-gai Health Service for RACF residents aimed at improving patient transition and reducing hospital admissions and length of stay (NSW Health 2006).

Although not primarily based on an acute hospital environment, this model has been included because there is a comprehensive focus on effective collaboration and communication between GPs and hospital specialists when managing acute and sub-acute-illness, and the optimisation of this to reduce new admissions.

The GRACE model of care centres on the use of defined response pathways and triage checklists to guide patient care and transition in the event of an acute or sub-acute event (Figure 7). Prior to hospital presentation the RACF makes contact with a GRACE clinical nurse consultant (GRACE CNC) to determine the need for care based on three options: need for presentation to ED within 4 hours; presentation to ED sometime after 4 hours; and acute surgical admission. In each case, the patient is discharged with a care plan developed by the GRACE CNC after consultation with ED staff or nursing home staff. In the case of ED staff involvement, the plan is discussed by the ED or Emergency medical Unit Medical officer with the GP prior to discharge.

Governance and Workforce: A GRACE Steering Committee plans, executes and systematises the GRACE model of care, overseeing evaluation and implementation of changes required to retain focus and provide a structured process for the involvement of all stakeholders. The GRACE model hinges on access for RACFs and their GPs to a hospital-based GRACE CNC responsible for managing a single entry, seven days per week, telephone triage service. The GRACE CNC is based either in, or near to, the ED. For establishment of GRACE within a metropolitan general hospital, it is suggested that the required staff are as follows: 1.0 FTE GRACE CNC; 0.5 FTE Geriatric Registrar; 0.5 FTE Project Officer or CNC; an Aged care Services in Emergency Team (ASET); and a staffing profile in the Emergency Medical Unit for additional nursing care for elderly patients as required.¹⁰ Post discharge, there is also likely to be a need for community nursing service and community acute/post care team input for patients with complex needs beyond the acute event.

¹⁰ <http://www.archi.net.au/resources/moc/older-moc/grace>

Patient transition and technology: The GRACE CNC operates in consultation with other hospital staff and specialists to ensure timely access to required treatment and specialist care during and post event, as well as the development of a care plan.

Telephone interview identified that the care plan and other patient information is communicated via telephone, mobile phone or email. Technology is viewed as a facilitator for cross-sector relationships and communication, which are supported but not driven by technology. Plans to use video conferencing are limited by lack of broadband in many RACFs. The GRACE program utilises the Emergency Department database FirstNet, a commercial program linked to the commercially developed database CERNER used throughout the hospital, with some data stored in Excel. CERNER has the capacity to integrate with Personally Controlled Electronic Health Records in the future.

Business Practices: Telephone interview identified that eReferral, ePrescription, patient billing and patient booking fall outside of the scope of the GRACE program. GRACE does not link patient records to primary care, but does involve communication and collaboration with GPs. GRACE CNCs share patient records with acute care via telephone or email.

Outcomes, Enablers, and Barriers: In one facility, the number of hospital admissions avoided increased from two patients per month in the first month of operation to ten patients per month after one year¹¹ presented at the NSW Health innovation symposium 2012.¹²

The Aged Care Emergency Model of care ([ACE](#)) (NSW Health 2012), based on the GRACE and the Aged Care Triage models, recently reported on a pilot study conducted at the John Hunter Hospital ED and listed a number of benefits of that model including a 35 per cent reduction in hospital length of stay, a 16 per cent reduction in ED presentations from RACFs, and improved relationships between staff located at both facilities.

¹¹ <http://www.health.nsw.gov.au/innovation/Pages/session4.aspx>

¹² <http://www.health.nsw.gov.au/innovation/Pages/symposium.aspx>

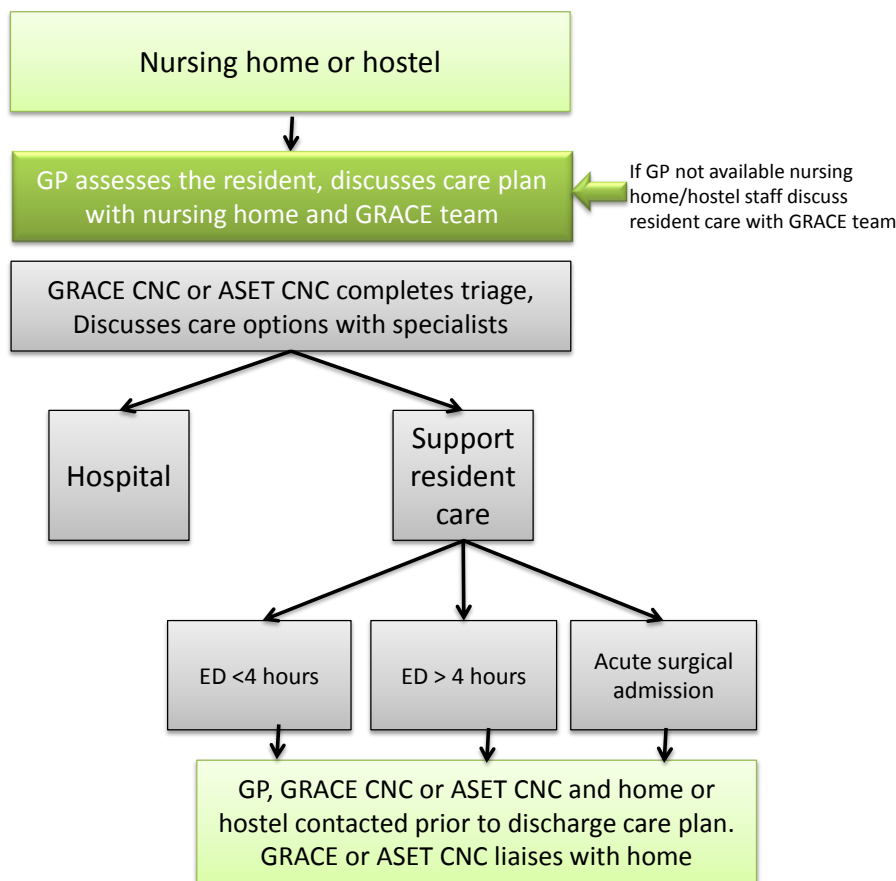


Figure 7. Geriatric Rapid Acute Care Evaluation

Telephone interview identified that enablers of the GRACE program include funding from NSW Health, good pre-existing relationships between sectors that were strengthened by the preparatory planning meetings, communication and collaboration between sectors, and experienced, enthusiastic staff. Additionally, the program's emphasis on collaboration facilitates open communication, and person-to-person communication enables the sharing of information that is useful but could not be recorded, such as family dynamics. Include involving and engaging with GPs from the beginning laid a strong foundation for ongoing collaboration, and the accessibility of GRACE staff to GPs also enables successful implementation, with GPs able to contact GRACE at any time. Other enablers include the up-skilling of RACF staff about basic wound dressing and catheter change practices for intravenous drips. GRACE provides these consumables, and up-skilling staff reduces the need for routine admissions.

Telephone interview also identified that implementation is obstructed when sick staff are not replaced or replacements are unaware of GRACE, resulting in unnecessary or unwanted hospitalisation. Failure of administrative staff to recognise the benefits of GRACE have presented barriers, but dissemination of the 90% reduction of hospitalisations has proven to

be an effective method of overcoming these barriers. When registrars are used they are frequently diverted to other hospital activities and are no longer available for GRACE RACF patients. Suggestions about moving GRACE from RACFs to the emergency department threaten the future implementation of GRACE, as the success of GRACE relies on the sense of ownership felt by RACF staff and the availability of staff for GRACE patients. GRACE facilitates a simple and cheap method of reducing admissions and providing quality care; by retaining the focus in the RACFs, funding is only required for staff salaries. Uptake could benefit from broader dissemination of the admission reduction rate, and infrastructural support of video conferencing.

9. Cancer Nurse Coordination Service

Overview: Since 2005 a state-wide Cancer Nurse Coordinator (CNC) service has been in operation in the state of Western Australia (WA), prompted by release of the Optimising Cancer Care in Australia report of 2002, and in recognition of the needs of the 38% (n=800,000) of the population resident in remote and rural areas. The CNC provides education, referrals, physical and psychosocial assessment, family support and information, and coordination of care in collaboration with other health care professionals (multidisciplinary team). They are patient advocates, providing specialist cancer nurse services as well as emotional and practical support for cancer patients. Whilst there are cancer coordination services throughout Australia (see CanNET), the WA service is unique because it is centred in nursing.

Governance and Workforce: The CNC service is an integral component of the WA Cancer and Palliative Care Network overseen by the department of the Minister for Health. At the clinical engagement interface key players are the tumour collaboratives comprising a lead medical clinician with expertise in a specific tumour group, the relevant tumour-specific CNC, a tumour collaborative officer for administration and organisation, and representatives from specialist and allied health disciplines (including social work, palliative care and pharmacy) crossing both sector and area health services (Platt, Plaster et al. 2008). There are 15 collaboratives involving 18 CNCs, with 10 of the 11 CNCs situated in the metropolitan area being specialists for specific tumours and one caring for paediatric and adolescent patients. CNCs responsible for rural areas (seven in total) have generic cancer nursing roles, and in two of the regions (Kimberley and Pilbara) they are the only regional health professionals within the discipline of cancer (Platt, Plaster et al. 2008). From a governance point of view, it was decided that metropolitan CNCs should be managed by the Network Director of Nursing, and rural CNCs by their local regional Director of Nursing with support from the Network Director of Nursing. Patient contact with the services provided by the collaborative is via the CNC, but importantly the role of CNC was developed to complement existing services.

Patient transition and technology: The cancer nurse coordinator coordinates, summarises and develops care management plans for patients, consulting with specialists and communicating with social workers, palliative care services and pharmacists to ensure this is followed and patient needs are met as outlined in the final cancer nurse coordinator evaluation report (Monterosso, Platt et al. 2011). The CNC acts as an advocate (coordinating appointments, streamlining investigations, referring acute illness enquiries from patients and families, educating patients about the health care professionals to contact and procedures to be performed, and communicating with GPs and other doctors). Patient assessments are

completed in person, by phone, via video conference or email depending on patient circumstances.

Telephone interview identified that no specialist software or data tracking systems are used to transition patient information between health care facilities; a shared nursing database is maintained in Excel, however, and is used to transfer information between health care facilities. No technology used in the CNC service has the capacity to integrate or interface with the personally controlled electronic health record (PCEHR). The CNC service uses Scopia's standalone videoconferencing units and PC software for video conferencing, but telephone interview identified dissatisfaction with the standalone units. A dedicated telehealth staff member provides support for the use of Scopia products. In addition to using Scopia units for videoconferences and multidisciplinary team meetings, they are also used for delivering training and education, and 'virtual visiting' to enable patients to talk with loved ones when receiving care. Communication also occurs via telephone, email and fax, with telephone consultations an area of potential growth. All Scopia products and Microsoft Office products (Excel) are commercially produced and licensed.

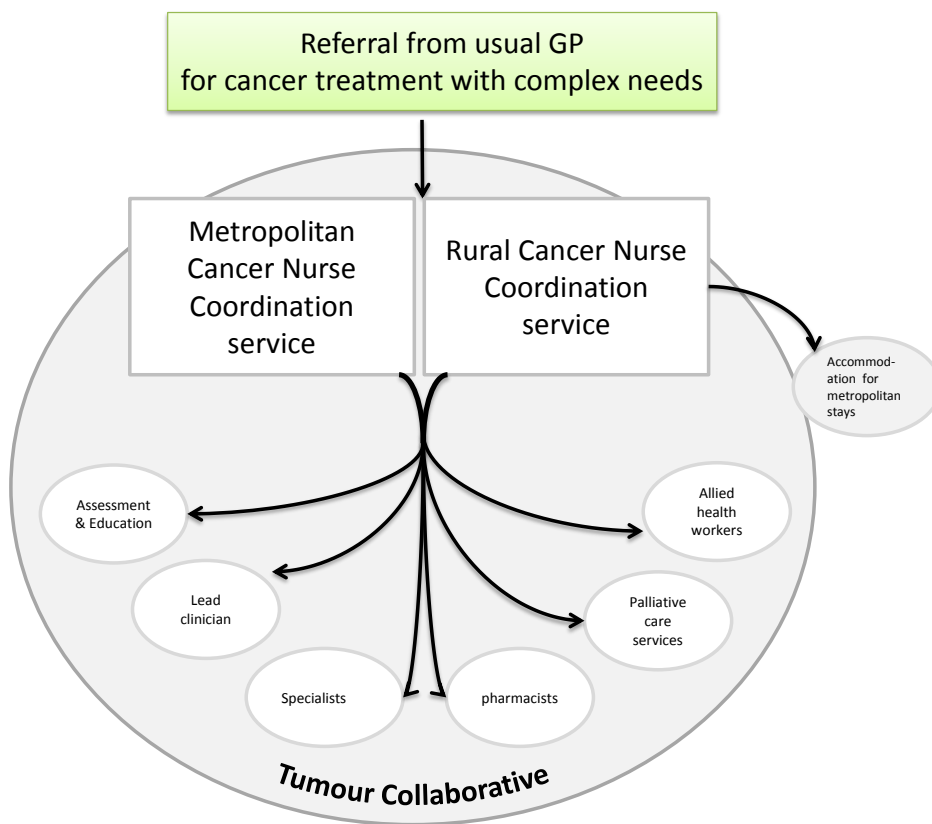


Figure 8. Cancer Nurse Coordination Service

Business Practices: Telephone interview identified that the CNC Service does not perform eReferral, ePrescription, patient billing or patient booking activities. The nursing database serves to link patient records to primary and acute care.

Outcomes, Enablers, and Barriers: Outcomes are difficult to measure, as they relate to patient perception of quality and access to care. Patient surveys found that the aspects most valued were provision of information, emotional and practical support. Members of the multidisciplinary team rated the following as key functions of the CNC: coordinating all aspects of patient care, providing patient education and information, and accountability. Both CNCs and multidisciplinary team (MDT) members identified a need to fund more CNCs. With the clinical load encroaching on time required for strategic tasks. CNCs identified a number of organisational elements that are barriers to more efficient implementation, including the need for standardisation of documentation, and a dedicated database with patient record system to reduce the time involved in data collection and to reduce duplication of patient data. Organisational barriers identified by the MDT included case load, funding and resources. Interestingly, patients recommended more face-to-face contact and increased availability of CNCs. An effective response to case overload was the introduction of the cancer nurse role, particularly in the tumour collaboratives for head and neck, urology, skin, upper gastrointestinal and colorectal cancer.

Telephone interviews identified the statewide approach as an enabler, facilitating central management and uniform implementation. Additional barriers identified through interview include lack of uniformity and compatibility within and between software systems, poor communication from hospitals, travel required for remote sites, and initial resistance encountered due to lack of understanding of the services provided by the CNC which required a change in culture to overcome.

10. REACH Aged Care in the South

Overview: REACH Aged Care in the South (REACH) is an initiative by the Southern Adelaide-Fleurieu-Kangaroo Island Medicare Local (SAFKIML). REACH provides clinical services delivered by GPs and nurse practitioners to residents of participating RACFs or ongoing PHC for residents who are unable to find a GP; and acutely for selected residents when the patients' usual GP is unavailable during regular hours. The aim of the program is to reduce unnecessary reliance on hospital EDs, acute care services and GP deputising services as the first point of care for residents, particularly in acute situations. This initiative was developed due to two key drivers of unmet need. First, there was an increase in the number of residential care beds, particularly in outer Southern Adelaide, which provided care to increasingly complex, aged residents. Second, there was a reduction in the number of GPs in the area, reduction in working hours, and increased sessional rather than full-time GPs. This resulted in reduced availability and interest in providing care in RACFs. In some cases, contractual arrangements were regarded as prohibitive in terms of GPs ability to visit RACFs (Williams and Reddin 2011).

Governance and Workforce: The REACH initiative was developed in consultation across a range of sectors in the local area including consumers, general practice, RACFs, South Australian Ambulance Service including Extended Care Paramedics, the Southern Health Service, Southern Adelaide Health Service, Mental Health Services for Older people, Drug and Therapeutics Information Service, and Southern Adelaide Palliative Services (Williams and Reddin 2011, Williams and Reddin 2012). However each RACF has a slightly different model of working with its existing GPs.

Currently six facilities, encompassing 750 residents and 111 GPs, are involved in this initiative, which has three service models pertinent to governance and workforce arrangements (Williams and Reddin 2011). Service Model 1 involves strategies to provide support to GPs that provide services in RACFs through annual leave coverage, access to program services and resources (shared tools), and provision of education, training and participation in Medical Advisory Committee. Service Model 2 provides a range of responses on behalf of the usual GP specific to patient need. Service Model 3, the 'case-load' component, promotes financial sustainability by taking on new or existing residents where GPs servicing the facility decline, providing a range of responses to ongoing patient care needs, as well as medical care to Transitional Care and Respite patients if no other GPs are able to take on the care of these patients (Williams and Reddin 2011, pp11).

Patient transition and technology: Patient participation in the program is currently dependent on the RACF facility being enrolled in this initiative. However annual reports refer to several recommendations relevant to technologies and transitions across-sectors and sites. These include reform at the operational level to develop clear referral pathways, improve clinical care pathways, cross over links with geriatric specialists, palliative care services and e-health improvements (Williams and Reddin 2011, p 10). The most recent annual report highlights the need to continue to improve the information technology systems to enable better handover of clinical records.

Telephone interview identified that as a paperless clinic, the REACH program is heavily reliant on technology. Videoconferencing is not currently used in REACH, but plans have been made for incorporating telehealth capacity into the REACH program with support from the Medicare Local eHealth team in SAFKIML. Implementation has been delayed by changes to the program as of January 2014, and no revised timeframe was available at the time of interview. In its current form, REACH relies on telephones for consultation and communication, but not email. The commercially developed clinical software Best Practice used by the REACH program has the capacity to integrate with personally controlled electronic health records (PCEHR), but PCEHRs are not currently in use in the RACFs. All GPs carry a laptop and a wireless modem, however, which enables electronic access to patient files through a virtual private network (VPN). This allows access to update patient lists and files in Best Practice whilst onsite at RACFs. Use of the computer-assisted decision support features in Best Practice has not been measured, but all GP laptops include therapeutic guidelines, the Australian Medicines Handbook and MIMS. Best Practice incorporates many useful functions in one system, can be accessed remotely, and is one of the more user friendly packages to use and train others to use.

Business Practices: Telephone interview identified that wireless VPN access to Best Practice supports eReferrals, ePrescription, patient billing and patient booking. Pathology results are currently received electronically using Health Notes. Whilst Best Practice facilitates access to patient records for GPs, no patient record linkage to acute care is available.

Outcomes, Enablers, and Barriers: Evaluation of the program reviewed the first three months of service operation of the 111 GPs as nominated practitioner for 750 patients within the 6 pilot RACFs using both quantitative and qualitative methodologies. The key performance indicator (KPI) for this project was reduction of unnecessary emergency department transfers within the first 12-months. However the economic evaluation conducted was inconclusive.

Focus groups with staff, GPs and residents identified a number of key themes, including lack of awareness of the REACH programs across staff and residents (Williams and Reddin 2011). Nursing staff and GPs had a limited working knowledge of the REACH service and none of the residents interviewed for this evaluation had any knowledge of the services REACH provided. Respondents reported decreasing GP ability to visit residents. After three months of operation, “REACH doctors had admitted, and were now responsible for, ongoing medical management for 108 RACF residents who could not find a GP, and had conducted 419 consultations” (Williams and Reddin 2011, p 13). When residents move to a RACF, it is often impractical to expect continued care from their ‘usual’ GP practice that is some distance away. In some cases the facility refused to admit residents “without a dedicated GP”. Prior to the REACH program, respondents reported that they commonly had to ‘beg’ local GPs to attend RACF residents. Respondents reported a perceived improvement in continuity of care. REACH doctors that attended RACF on a weekly basis were accessible for family/relatives in addition to case conferences to ameliorate any situations regarding medical management. These situations included certifying death – to enable timely removal of deceased. The program was seen as a way to reduce the reliance on locum services, reduce avoidable hospital transfer and improve education of RACF staff. For example, the Drug and Alcohol Treatment Information System provided over 600 educational visits to provide support and advice to RACF staff.

Telephone interview identified support from the SAFKI Medical Local as an important enabler for successful implementation of REACH, as well as communication with RACFs and the use of shared policies, procedures and pathways with RACFs. The major limitation of the REACH service has been the recruitment of suitable practitioners, as aged care is often seen as too challenging and not ‘fashionable’ for GPs (Williams and Reddin 2011, pp27). The initiative does not fit well within the existing Medicare funding models and support services. For example the REACH service is not funded to provide after-hours care so RACFs still require locum call outs plus hospital admissions after hours, which could be reduced with REACH services (Williams and Reddin 2011). Effective ways to overcome this workforce challenge include recent consideration given to developing the workforce by implementing an aged care rotation for GP trainees, pharmacy students and student nurses (Williams and Reddin 2012). The program was initiated with funding from SA Health but this funding has been withdrawn due to changed priorities. Exploration of alternative funding models and the incorporation of additional nurse practitioners to the service may enable REACH to provide more comprehensive level of care in the southern region. Telephone interview identified

additional technological challenges such as GP reliance on the availability of wireless signal to access Best Practice, and the inability to use PCEHR as RACF residents are not able to sign up and enter data.

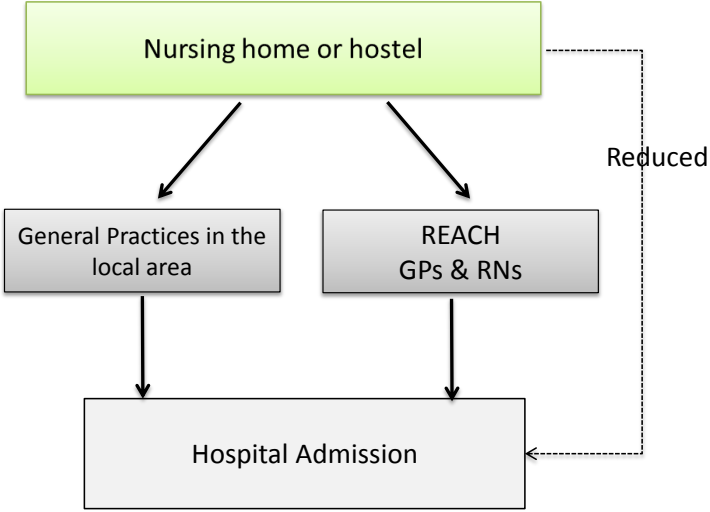


Figure 9. REACH aged care in the South

11. The Transitional Care Program

Overview: The Transitional Care (TC) program is a form of flexible care for aged persons who prefer to transition from an in-patient hospital episode to home although that person would be eligible for entry to a community-based RACF. The TC program is offered either within a home (community), or on the basis of a short-term stay in a residential home-like setting, which can be within a RACF or hospital (resident based). Under the program, recipients are discharged from emergency or acute care with a care plan and a package of services that includes low intensity therapy such as physiotherapy, occupational therapy and social work, and either nursing support and/or personal care. A total of 2 000 flexible aged care places were provided for transitional care across Australia, with each state receiving allocated places based on the proportion of people aged 70 years and over in that state.¹³

Governance and Workforce: The cross-jurisdictional Transition Care Working Group chaired by the Department of Health oversees The TC Program. The working group co-opts two clinicians to provide expert advice as required, and reports to the Australian Health Ministers' Advisory Council (AHMAC) Health Policy Priorities Principal Committee (HPCC). In each jurisdiction (six states and two territories of Australia) the implementation of TC varies according to need and available resources, but can include the involvement of GPs, specialists, nurses, and allied health workers with skills in physiotherapy, psychology, speech therapy etc. The program is delivered either at home or within the hospital rehabilitation service or a TC service provider facility. After referral, the Aged Care Assessment Team (ACAT) is responsible for assessing the medical, physical, cultural, psychological and social care needs of a frail elderly person and to assist them gain access to the most appropriate aged care services.

Patient transition and technology: Referral to the TC program is via the hospital providing acute and/or subacute care, although an older person in hospital may self-refer for assessment. ACAT assesses the needs of a frail elderly person and assists them to gain access to the most appropriate aged care services. Where needed this is done in consultation with members of the hospital multidisciplinary team and/or geriatric rehabilitation service. The TC service provider drives development of a care plan that incorporates the therapeutic care plan stemming from hospital discharge planning, ACAT assessment, and consultation with the recipient and as appropriate the recipient's family. The average duration of Transition Care is seven weeks, but can be for as long as 12 weeks, with a further six week extension possible in special circumstances.

¹³ <http://www.health.gov.au/internet/main/publishing.nsf/Content/ageing-policy-transition.htm>

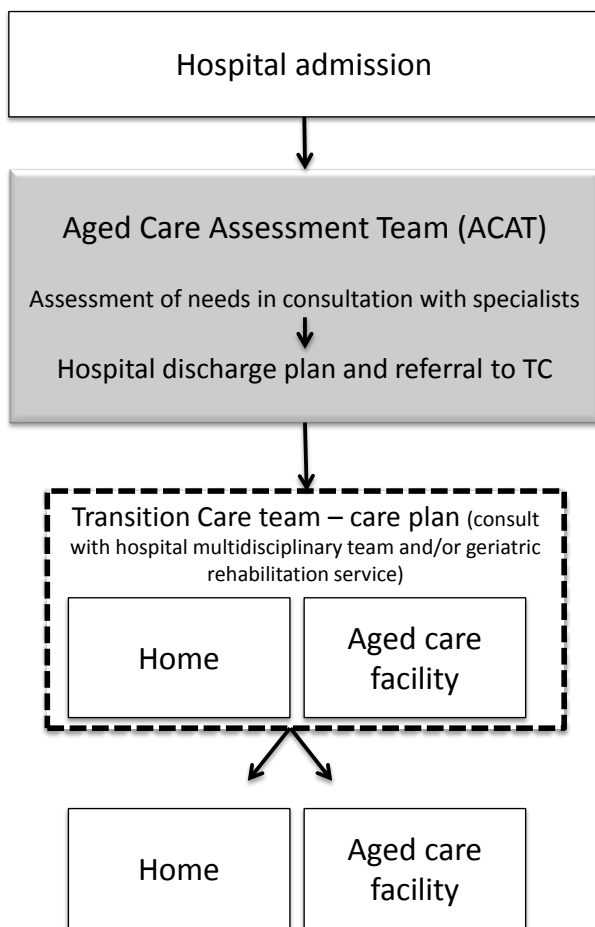


Figure 10. Transition Care Program

To obtain further information about technology used in the TC program, a survey was emailed to a TC representative in SA. The return email indicated that TC uses videoconferencing, telephone consultations, telephone communication, email, remote monitoring, eScheduling technology and personally controlled electronic health records (PCEHR). Whilst telephones, email and videoconferencing were reported as daily telecommunication devices in widespread use, the integration of PCEHRs across the interface of health care remains in progress but used where available. Technological support for the TC program is provided within the SA Health infrastructure. eScheduling technology varies across hospitals and clinics.

Business Practices: Survey responses indicated that the technology used by services within the TC program supports the use of eReferrals, ePrescription, billing, booking, and linkage of patient records to acute and primary care, but these features vary in availability according to the data management systems chosen by each respective service.

Consequently, no information was available regarding the extent to which these activities

were undertaken. Details about systems used for administration and patient record linkage were not provided.

Outcomes, Enablers, and Barriers: A [comparison of outcomes](#) between TC patients and patients discharged normally from hospital found that 37% of TC patients were re-admitted after 3 months, and 47% after six months. For control groups the risk of readmission in the first six months post-discharge was greater, but a hazard ratio was not provided in the evaluation report. At three and six months respectively approximately 22% and 30% moved to permanent residential aged care. Elderly people receiving TC in a residential setting had a seven-fold greater risk of admission to an aged care facility than those receiving TC in a community setting. However, it should be noted that those receiving TC in residential care had a lower average Modified Barthel Index Efficiency¹⁴ than those receiving TC in the community (62.3 and 86.0 units respectively). Whilst implementation of the Transition Care Program resulted in functional improvements, over a six month period it cost \$344 per day that a recipient survives without institutional care (without hospital or residential aged care).

The evaluation report noted that there was less evidence for the involvement of GP, medical and pharmacy staff, and very few services systematically involved a medical specialist in elderly care. Engaging General Practice in care planning and review was found to be challenging, and care staff need for training in a restorative/rehabilitative model identified as a target for program improvement.

No barriers, enablers or outcomes were reported via the survey.

¹⁴ Modified Barthel Index is a measure of function where higher scores reflect higher levels of function.

12. The Transfer to Hospital “Yellow Envelope” system

Overview: From 2007-2008 the Australian Commission on Safety Quality in Health Care (the Commission) conducted a pilot evaluation of the Envelope system in several organisations, to explore the use of the Envelope system to improve 'clinical handover' communication when transitioning a patient from RACFs to hospital and back (Belfrage and Cooper 2008).

The North East Valley Division of General Practice of Melbourne pilot study was performed in response to observed deficiencies in handover from aged care facilities to hospitals. The Yellow Envelope is a tick box checklist for Aged Care Home (ACH) staff use when transferring elderly patients to hospital ED. Information required relates to current presentation, as well as any known prior conditions such as cognitive, speech or mobility difficulties, and current medications. The checklist appears on the back of the envelope, and together with information about usual GP, levels of care within ACH etc. at the front of the envelope it facilitates patient transfer by ensuring timely delivery of relevant information.

An Envelope system was piloted in Brisbane in 2006, and the Envelope system is still in use within the Brisbane Medicare Local structure. Today the Envelope system is still in use within the Brisbane Medicare Local structure, where it reportedly “continues to be widely used by facilities and hospital *“in lieu of a viable electronic solution”* (Metro North Brisbane Medicare Local 2012, p 24). Currently there is one envelope that accompanies the patient to hospital, and a second envelope for discharge. The C4 size of the envelope acts as a prompt for staff and remains with the patient chart during their stay. Templates are available from the Australian Commission on Quality and Safety.¹⁵ Alternatively, prepared Envelopes can be bought from commercial suppliers.

Although this is a ‘low-tech’ system aimed at improving patient transition and information exchange between hospital and non-hospital care sectors, it is in active use and has been taken up in New Zealand.¹⁶ An advantage of this system is that additional information and diagnostic results can be placed inside the envelope for viewing by other health care providers upon transfer.

¹⁵ <http://www.safetyandquality.gov.au/implementation-toolkit-resource-portal/interface/additional-clinical-handover-resources/national-clinical-handover-initiative-pilot-program/north-east-valley-division-of-general-practice.html>.

¹⁶ http://www.firstdonoharm.org.nz/index.php?option=com_content&view=article&id=116

Governance and Workforce: The envelope is completed by the aged care home staff, ambulance and hospital staff as needed (**Error! Reference source not found.**). It can be sealed and its contents accessed by all health care providers. Use of a standard checklist facilitates uptake by different levels of health care professionals and also serves to reduce time needed to collate relevant information.

Patient transition and technology: Transfer-to-hospital Envelope tools include the [Envelope](#) (NEVDGP and ACSQHC 2009) and a detailed [Procedure for Use](#) (NEVDGP and ACSQHC 2009) providing instruction relevant to the aged care staff, ambulance drivers, and hospital coordinators. Although this is a 'handwritten' process, it could be adapted to an electronic format. Telephone interview identified that in light of the Commonwealth and State/Territory endorsement of the PCEHR it is unlikely to be adapted in the near future.

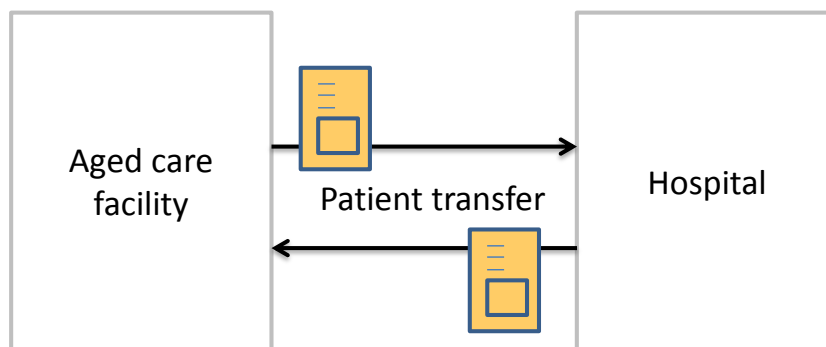


Figure 11. Transfer-to-Hospital Envelope

Outcomes, Enablers, and Barriers: A pilot study in 2008 demonstrated that 98 per cent of staff (163/165) found it to be useful and 89 per cent found it to be easy to use (Hoare 2009). In addition, all aged care home staff and ambulance officers agreed that using the Envelope improves clinical handover to ED, and that they would recommend its use.

A 2009 audit of 91 records for the Brisbane-based implementation found some information gaps when transfer-to-hospital envelopes were used for patients transferring from a RACF to hospital: the Yellow Envelope was only used in 23 per cent of admissions, core details were missing in 1-3 per cent of residents, in 35-60 per cent of cases patient current status with respect to mobility, nutrition, communication needs, behaviours and continence was not indicated, next of kin details were provided in only 25 per cent of cases (Hoare 2009). However, in this situation and in comparison to the 2006 audit, use of the Envelope was associated with a 45 per cent decrease in information received as loose paperwork, a 12 per cent increase in letters from the GP and a 10 per cent decrease in hospital readmission

within six weeks. The need to seek additional clinical information by acute sector carers was reduced by approximately 50 per cent when the Envelope was used, although GP input was limited. With respect to discharges from hospital to a RACF, use of the Envelope was associated with improvement in sending of discharge information at time of discharge (92% versus 68% in 2009 and 2006 respectively), availability of medication lists (72% versus 32%), and provision of recommendations for GPs (97% versus 72%). Allied health discharge summaries were not frequently received. The conclusion of the 2009 audit of Brisbane was that the Yellow Envelope was a worthwhile process when using a paper-based system, and that the audit outcomes could be used for staff education particularly for those involved in transfer of patients from RACFs to hospital. The Metro North Brisbane Medicare Local, 2011-2012 report noted that it was still in place and being used in 2011 (Metro North Brisbane Medicare Local 2012).

The telephone interview identified the potential for the envelope to get lost as the only barrier to implementation of the program, with the high level of acceptance of both ED and RACF a key enabler for success. The employment of specially allocated staff to expedite the patient review process, and education for paramedic and ED staff about what to look for with the Yellow Envelope, further enabled implementation. Envelopes are inexpensive and are provided for RACFs by Queensland Health, facilitating reduced printing costs and uniform formatting and marketing. Having a champion who disseminated the statistics regarding reduced waiting times was also reported as an enabler for implementation.

13. The Tactical eReferral Project

Overview: The Tactical eReferrals Project is one component of a broader eHealth Support Officer Program which was implemented by CheckUP Australia in 2010.¹⁷ This initiative aims to address the need for enhancement and implementation of a tactical electronic referral capability in order to enable the creation and transmission of referrals electronically from GPs to Queensland Health outpatient departments. This project is a stepping stone to a strategic eReferral solution and has been designed to meet the immediate eReferral requirements of GPs and Queensland Health facilities. As a starting point, this initiative provides a website and resources to guide the use of eReferral templates, supported software and tutorials for GPs, specialists and allied health professionals.¹⁸

Telephone interview identified that although the project facilitates improved transmission of information, collaboration has not improved as the acute and primary care sectors remain siloed. GPs populate and send eReferrals, hospitals action referrals and send back discharge summaries, but no collaboration results from the project.

Governance and Workforce: Previously known as General Practice Queensland, CheckUP is a not-for-profit company limited by guarantee and governed by a Board of Directors. Their mission is to:

*meet the challenges of a changing health care landscape by building and fostering collaborative partnerships, networks and expertise to deliver practical solutions focused on best practice outcomes for a better primary health care sector, and better health for all.*¹⁹

Telephone interview identified that in addition to clinical staff, nurses, practice managers, and hospital administrators are involved in transmission and receipt of referrals. Specialists in outpatient departments are also involved in the eReferral pathway.

Patient transition and technology: Telephone interview identified that GPs are provided with an electronic standardised referral template that can be installed directly into their clinical software. GPs use encrypted messaging agent software such as Medical Objects to securely transmit the completed referral to Queensland Health Specialist Outpatient Departments. Queensland Health Specialist Outpatient Departments have the capability to receive, decrypt and view the referral message, as well as send back discharge summaries

¹⁷ <http://www.checkup.org.au/page/Initiatives/eReferrals/>

¹⁸ <http://www.gpqld.com.au/page/Programs/eHealth/>

¹⁹ http://www.checkup.org.au/page/About_Us/Board_of_Directors_2/

via a secure messaging agent. Capacity for integrating with the personally controlled electronic health record is dependent on the clinical software used by each clinic. Whilst the clinical and messaging software is commercially available, the eReferral template is government-supported and not commercially licensed.

Business Practices: Telephone interview identified that whilst Tactical eReferral templates facilitate eReferrals, ePrescription, patient billing and patient booking are managed by individual clinics. Linkage of patient records between primary and acute care is adequate but dependent on GPs populating and maintaining the clinic database.

Outcomes, Enablers, and Barriers: An evaluation of the program is yet to be published.

Telephone interview identified increased GP satisfaction, reduced GP administration time creating a referral due to auto-population, increased knowledge, increased choice of private and public options and increased security and privacy as outcomes. An enabler of this initiative is that all Queensland Health Specialist Outpatient Departments with a secure messaging agent can receive the referral electronically, enabling cross-sector engagement and communication. The requirement to utilise specific clinical software was reported as a barrier to uptake and implementation, however, as GPs need to use Medical Director, Best Practice, Practix or Genie to be able to implement the Tactical eReferrals template, and individual practices are required to install updates to the template manually.

The telephone interview also identified the encryption process as a barrier, as it strips the formatting applied within clinic software and provides hospitals with a poorly formatted referral form. Lack of funding for dedicated staff to go out and install the template presented a barrier, resulting in poor uptake of the template in unsupported regions. Funding for dedicated staff to install, support and update templates could increase uptake, as well as the development of a streamlined and continuous template update method. Better collaboration and communication between GPs and hospitals may improve implementation of the Tactical eReferral project.

14. Silver Chain WA Home based care Model

Overview: The Silver Chain group is a not-for-profit provider of a range of health care services primarily aimed at assisting people in need of care to remain in their own homes and out of hospital. The core services of the Silver Chain Hospital in the Home (HITH) service are; Hospital At The Home (HATH), Post Acute Care (PAC), Priority Response Assessment (PRA) and Community Nursing (CN). HATH is a true hospital substitution, PRA is a hospital avoidance program, PAC is a post-discharge care in the home, and CN is also a hospitalisation alternative for sub-acute interventions. Although Silver Chain groups are now located in NSW, Queensland, South Australia and Western Australia (WA), the WA and SA groups have a longer history of operation and/or currently are more active, e.g. Silver Chain recently integrated with the Royal District Nursing Service (RDNS) of SA to provide coordinated home based care to people living in SA. Of particular relevance to the current study is the ComCare technology used by Silver Chain. ComCare is a client management application developed by the EOS technology group originally established by Silver Chain. It is based on use of a computer or smartphone to capture all referral, assessment and relevant patient information, as well as provide staff with a screening tool for primary assessment to identify client eligibility. To understand how ComCare has influenced the delivery of care it is important to understand the Silver Chain model of care, and the following outline of the Silver Chain model is based on a synthesis of information from a proposal for non-hospital based health services in South Australia as reported by Silver Chain group in 2013²⁰ and an evaluation of Silver Chain HITH published in 2011²¹.

Governance and Workforce: The Silver Chain HITH model is based on better use of general practitioners and ambulatory nurses with support from care workers. It should be noted that eligibility is in part dependent on age (older than 16 years), being not more than 22 weeks pregnant (where applicable), that the care required is appropriate for home based service delivery, and that the patient is able to communicate effectively (directly or interpreter), is medically and mentally stable, and Medicare eligible. Referred patients are initially screened by an Ambulatory Liaison Nurse ALN(ALN) for eligibility, the ALN is located in the Silver Chain Customer Centre and utilises screening guidelines and support from on call medical officers to assess patient needs. Patients not requiring referral to ED, are then streamed by the ALN to a Silver Chain (or other) service as appropriate. Clinical governance and workforce requirements depend on the arm of Silver Chain HITH as follows:

²⁰ <http://www.silverchain.org.au/assets/GROUP/publications/Non-hospital-based-health-services-in-SA.pdf>

²¹ <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

PRA – Provides non-emergency advanced clinical assessments potentially leading to short term acute care intervention with or without admission to other services. Referral of non-emergency patients for assessment by a Silver Chain Ambulatory Liaison Nurse (ALN) to assess eligibility for PRA can occur via one of several sources; Paramedic, Residential Aged Care Facility, Registered Nurses (RN), Enrolled Nurses (EN), Residential Care Line, Complex Needs Coordination Teams (CoNeCT), Allied Health, HealthDirect, GP (at risk patients with pre-approved referral plan), Hospital Doctor/RN/NP²². However, the majority come from community nursing/health service and GPs²³. Eligible patients are then visited in their home/community by a member of the Silver Chain PRA team (nurse practitioner, clinical nurse, specialist or medical officer) within four hours of referral for advanced assessment²⁴. Depending on the outcome of PRA patients may then be transferred post-diagnosis/treatment to care by GP/other provider (including other Silver Chain services including HATH and CN), or to the hospital ED for emergency response if deterioration is identified.

HATH – “Silver Chain Group takes clinical governance for the patient and is totally responsible for care 24/7 including provision of all medication and equipment, if required, additional support of personal care workers to assist the patient remain at home.” Most referrals for HATH come from hospitals and GPs²⁵. HATH includes both medical and nursing staff, and after admission into HATH the best treatment is decided by the referred specialist in consultation with a nurse. The specialist oversees the patient’s progress and treatment appropriateness, whilst a registered nurse monitors their condition and administers treatment. Reassessment is conducted in line with the treatment care plan developed during admission and the patient is discharged once treatment is completed²⁶.

PAC - Nurses provide immediate post-discharge period care for patients leaving hospital or a hospital in the home program. Following an in-hospital visit by a registered nurse for clinical

²² p17 <http://www.silverchain.org.au/assets/GROUP/publications/Non-hospital-based-health-services-in-SA.pdf>

²³ p18, <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

²⁴ p19 <http://www.silverchain.org.au/assets/GROUP/publications/Non-hospital-based-health-services-in-SA.pdf>

²⁵ p18, <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

²⁶ p19, <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

assessment, care planning and care delivery, PAC services are provided under the clinical governance of the patient's GP or referring consultant/specialist²⁷.

CN - Nurses provide up to 28 occasions of nursing service for patients not requiring 24 hour medical supervision. GP retains governance of patient and Silver Chain reports to GP²⁸.

Patient transition and technology: Patient entry to Silver Chain HITH is generally based on referral by their GP, specialist or Silver Chain Home Hospital medical officer²⁹. Patient transition from one Silver Chain service to another, or to an external care program including hospital, depends on assessment by Silver Chain medical and nursing staff, and is aided by the use of novel technology developed by Silver Chain group. To facilitate patient transition (and patient care overall), Silver chain has developed a number of technology based approaches, including Telehealth use of video phones set up in the client's home and linked directly to the Client Care Centre staffed by qualified nurses 24/7. As outlined in a Silver Chain study report on remote monitoring of Chronic Obstructive Pulmonary Disease (COPD) patients measure their vital signs and answer questions via the Docobo hub and this data is then automatically transferred via telephone to a secure website. Nurse access to this information is via a secure telehealth website and they communicate with the patient via telephone, whilst the patient's GP/consultant is provided with a log-in ID and password to view their patient's daily readings should they wish to do so³⁰. Silver Chain has also developed a client management application called ComCare, which uses a computer or smartphone to capture referral, assessment and relevant patient information, as well as providing staff with a screening tool for primary assessment to identify client eligibility. ComCare is available for desktop and mobile devices, and with different features according to needs and setting e.g. for residential care a ComCare application optimised to facilitate the transition from community care to residential care has been developed, or it can be tailored to an organisation's needs.

²⁷ p 14, (<http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>)

²⁸ Figure 3, p15, <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

²⁹ <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

³⁰ page 7 <http://silverchain.org.au/assets/GROUP/research/TELEHEALTHREPORT-2010.pdf>

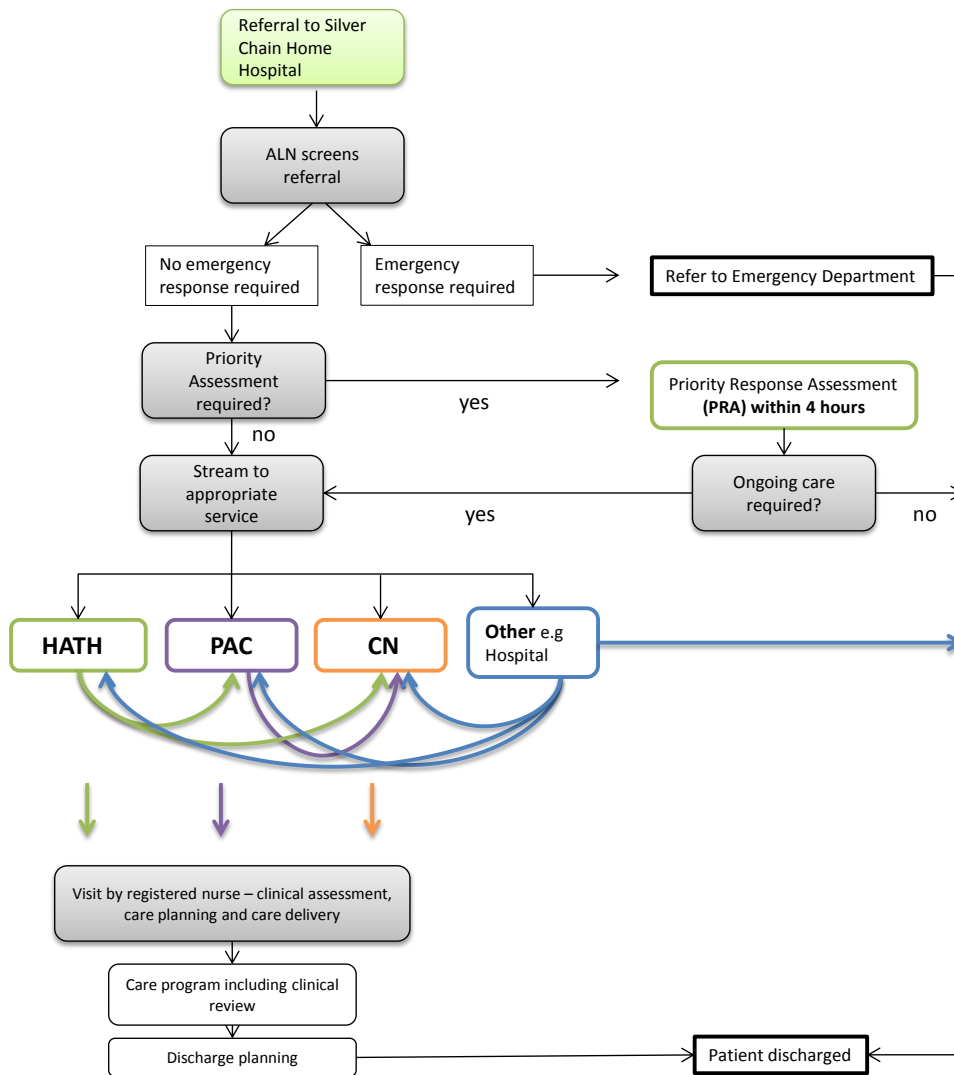


Figure adapted from the [Economic Value Proposition for Home Hospital](#)

Business Practices: The Silver Chain group provides access to ComCare information management systems for all staff via stationary and mobile devices. ComCare is the core information system utilised by Silver Chain, providing extensive one-system integration of patient information and alerts (including referrals, diagnosis, and care actions), fees and billing, appointment schedules, staff rosters (to aid identification of staff availability in real time), access to clinical guidelines etc. No mention of ePrescribing was found.

The Silver Chain group is a not-for-profit organisation governed by a board of health care and business experts including RDNS SA board members (following the merger with RDNS SA in 2011). Access to Silver Chain HITH depends on Medicare eligibility, and hence Medicare structure and requirements are certain to influence the Silver Chain business practices. From a financial perspective, the Silver Chain Home Hospital is supported by public donation and the Friend in Need Emergency (FINE) scheme established by the WA

Government in 2008-09. FINE funding to Silver Chain group has increased from \$16,732,500 in 2009-10 to \$22,066,293 in 2010-11.

Outcomes, Enablers, and Barriers: Analysis of WA Silver Chain for 2010 found that PAC and CN services were the most highly utilised, with the majority of patients being aged 60 years or older. Approximately 99% of PAC and 82% of HATH referrals came from hospitals, similarly 69% of referrals to CN come from hospitals. In contrast PRA referrals generally came from community nursing/health services (41.3%), GPs (23.1%) and residential aged care facilities (22.95%)³¹. Silver Chain HITH is a range of interconnected services, dependent on collaboration between doctors and nurses, and between different care sectors including GPs, hospitals, aged care facilities and community. Although no statement of enablers and barriers has been identified, it is expected that the ability to effectively connect the different carers and services is an integral component of the success of the Silver Chain group.

An evaluation report prepared by Deloitte in 2012 demonstrated an HITH-associated reduction by 29% in ED presentations for potentially avoidable conditions, as well as a decrease in average length of stay of potentially avoidable separations from three to two days, and an 11% reduction in GP referral letters for potentially avoidable conditions. An [economic analysis of Silver Chain WA](#) demonstrated financial benefits associated with the program largely based on avoided health system costs due to the care of patients in a low cost setting as opposed to high cost hospital settings, reduced use of ambulance and ED facilities, and a reduction in lost working days for carers.

A [cross-over trial of Telehealth for COPD](#) found that for those receiving some telehealth service in the past 12 months, there would be an annual cost saving of \$2,931 per person after accounting for the cost of equipment and labour associated with the intervention. Although the difference between intervention and control groups in terms of mean COPD-related ED presentations, hospitalisation or length-of-stay was not significant, the total number of these outcome events was halved. The study also demonstrated that short term use of telehealth remote monitoring (6months) provided similar outcomes to longer-term use (12 months).

³¹ page 18, <http://www.silverchain.org.au/assets/GROUP/publications/PWC-Evaluation-Home-Hospital-28-Feb-2011.pdf>

15. Telegeriatic services (Queensland)

Overview: The telegeriatic model of service delivery was first developed to support access to services for geriatric patients. The key focus is on alleviating the need for patients, families and health professionals having to travel for specialist appointments. The ongoing development of this approach has been supported by the [Centre for Online Health](#) at the University of Queensland. An example of the services delivered using this model of service delivery include memory disorder clinics, multidisciplinary case conferencing for aged care assessment teams, inpatient rehabilitation services, transition care and full ward service (Martin-Khan and Varghese 2007, Martin-Khan, Varghese et al. 2007).

Recent reviews have identified [Australian and International applications of telemedicine in primary health care](#), as well as the role of [videoconferencing for allied health practitioners](#). In addition an ebook has been published on [how to make Telehealth Work](#). These reviews highlight the capacity of technology, such as videoconferencing and online assessments, to enable increased cross-sector collaboration and improved clinical engagement enabling patient outcomes. For example videoconferencing has been used in wound care, dialysis, aged care, palliative care, psychiatry, diabetes education, speech therapy, plastic surgery, dermatology, pain management, psychology, cardiology, and physiotherapy. Other uses include supervision and mentoring of staff and students, education, staff meetings. Psychiatric services have used videoconferencing for case conferences, discharge planning (involving external agencies and relatives), and exam preparation (Bywood, Raven et al. 2013, Raven and Bywood 2013).

Governance and Workforce: In the telegeriatic model, services are configured like a virtual 'hub and spoke' whereby there is a centralised referral centre and selected regional centres radiating outwards (Figure 12). Telehealth requires infrastructure and technical assistance with maintaining operational technologies like videoconferencing at both specialist and patient sites during consultations. The workforce required in these instances is varied and depends on the location of the service delivery: hospital-based, primary or community health centre-based. For example in the case of geriatric assessments the local nurse initially sees the patient and administers a battery of standard cognitive tests, then the psycho-geriatrician interviews the patient and formulates a diagnosis based on the combination of the test results. In contrast, until recently access to anti-dementia medications for treatment of early-onset dementia could only be made through prescriptions from specialists. For patients in rural areas this was amended so that it was permitted based on a video consultation with the patient, their general practitioner and a specialist. Patients, relatives or carers at home or in an aged care facility are also able to seek advice with behavioural issues via video

consultation. The service aspect of the model requires interpersonal collaboration of professionals across-sectors and both initiating and providing sites.



Figure 12. Telegeriatric Services delivered in Queensland

Patient transition and technology: Patient transition in the Telegeriatric model is virtual. Referrals can derive from ambulatory, community, aged care facility or hospital settings. If a specialist consultation is required the referring clinician calls a toll-free number to a coordinator; a specialist response is guaranteed within 24 hours (Smith and Gray 2009). This model incorporates a range of technologies including email, telephone and predominantly videoconferencing consultations. However the primary mode of telemedicine is videoconferencing. Queensland Health has a dedicated unit specialising in videoconferencing technology, the State-wide Telehealth Services. Mobile teleconferencing units were developed which can be used for regional meetings, training, case analysis as well as patient care. Online case assessment and electronic records use by telehealth models have progressed shared data by way of online standardised assessments which enable records to be shared, reviewed and progress notes recorded at both clinical and distal sites reducing the delays or duplication of information.

Business Practices: Two models are being considered.

Model 1- fitting a low level of telehealth activity into an existing health care services OR

Model 2- development of a new service which is large enough to sustain itself with sufficient referrals and activity to justify dedicated staff and infrastructure (Wade 2013).

Outcomes, Enablers, and Barriers: There appears to be good stakeholder acceptance of the telemedicine model of service delivery from professionals, patients and their families (Smith and Gray 2009) which has seen this approach grow from straightforward consultations to more complex assessments across a variety of disciplines. The reliability of clinical decisions using telemedicine tools has been evaluated. In particular assessment of successes and failures in assessing cognitive function in older adults using videoconferencing has been investigated (Martin-Khan and Varghese 2007, Martin-Khan, Varghese et al. 2007).

Evidence of specific telegeriatric cost-savings is not available. However a cost-minimisation analysis of a similar program focussing on children from the same Centre based on two participating hospitals over a five year period indicated that the cost of providing telepaediatric service was approximately \$1 million, in comparison to \$1.6 million had patients had to transfer, resulting in a 37% reduction in costs for Queensland Health (Smith, Scuffham et al. 2007). Telepaediatric services show savings for the health department and patients and their families are also saved the inconvenience and cost of travel away from home. Less dependence on the Patient Travel Subsidy Scheme ([PTSS](#)) was also noted especially given the increase in subsidy provided as of the 1st of January, 2013.

Professional education, training and collaboration was also identified as a key success of telemedicine services (Smith and Gray 2009). It was reported that the telehealth videoconferencing equipment has helped increase the volume of assessments by geriatricians as well as geriatrician input into multidisciplinary team meetings ([Cordwell et al 2009](#)).

Enablers of telemedicine approaches include: the alignment of funding for example to implementation of [MBS videoconferencing Items](#); infrastructure meeting clinical requirements; organisational support, i.e., the development of protocols for preparing videoconferencing sessions as well as ongoing support for remote management of sessions; shared online standardised assessment and review of notes; ongoing input and collaboration with (non-health) industry from the inception of the initiative, providing consultancy, implementation and integration.

A review of 35 different telehealth approaches has found that it requires substantial changes to service delivery (Wade 2013). Work flow (i.e., development of new systems), work load increases and the need for additional 'telehealth coordinating' work roles have resulted from telehealth approaches. This review reports that uptake of telehealth has been slow; numbers of patients small, ongoing operational costs have at times been unsustainable. Technical issues have been identified based on logs of technical matters. Questions remain around reliability and stability of the communication infrastructure. Issues associated with longer consultations are linked to increased risk of degradation of quality or drop-out of video communication. Technical support is required for effective telehealth processes to be utilised, the quality of sound and image/picture is essential (Wade 2013). Additional barriers identified include patient specific vision and auditory impairments, especially in the case of geriatric patients; funding for ongoing operational costs and lack of alignment with current MBS funding arrangements (Smith and Gray 2009).

Appendix 2

Qualitative interview questions

Technology

Of the following technologies, which are you using within your program? (Describe Table 1)

- | |
|--|
| <p>1 Table 1: Technologies</p> <ul style="list-style-type: none">• Hardware based video conferences• Software based video conferences• Telephone consultations• Telephone• Email• Remote monitoring• E-scheduling technology, booking or reminders• Computer-assisted decision support• Electronic health records• Internet and media-delivered interventions |
|--|

You told me that you use _____. What are the benefits of using the technology you've specified? (Repeat for each technology used.)

Which technologies are used within your organisation?

Which technologies are used across organisations involved in the program?

How does the technology influence collaboration?

You don't use ____ or _____. Can you tell me why not?

Do any of these technologies have the capacity to integrate/interface with personally controlled electronic health records?

What software does the program use?

Is _____ a commercially available programme?

What do you think of it?

Do you have a dedicated IT support person?

Business practices

To what extent does the technology used support the administration of the program regarding

- eReferrals
- eprescription
- patient billing
- patient booking
- linking patient records to primary care
- linking patient records to acute care

Governance/workforce

What type of patient groups does your program service?

What other services or health care providers are involved in this program?

- Primary care
- Acute care
- GP
- Nurse
- Allied health professional
- Practice manager
- Hospital administrator
- Paramedics
- Aged care workers
- Dental professionals
- Other

How does the program influence relationships in multidisciplinary team care?

What factors act as enablers to the implementation of the program?

What factors act as barriers to the implementation of the program?

What incentives could increase use or uptake of this program?

How would you improve the program/model/initiative?

Appendix 3

List of Acronyms and Definitions

Acronyms

ACAT	Aged Care Assessment Team
ACSQHC	Australian Commission on Safety and Quality in Health Care
ASET	Aged care Services in Emergency Team
APHCRI	Australian Primary Health Care Research Institute
BSCDS	Brisbane South Complex Diabetes Service
CanNET	Cancer service NETworks national program
CCC	Chronic Care Collaborative
CDM	Chronic Disease Management
CI	Canterbury Initiative
CME	Continuing Medical Education
CNC	Clinical Nurse Consultant
COPD	Chronic Obstructive Pulmonary Disease
ED	Emergency Department
GP	General Practitioner
GPwSI	General Practitioners with Special Interest
GRACE	Geriatric Rapid Acute Care Evaluation
HARP	Hospital Admission Risk Program
HIP	Health Independence Program
ICDMS	Inala Chronic Disease Management Service
MDT	Multidisciplinary Team
ML	Medicare Local