

**District Nursing Service
Development in
New Zealand**

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MANATŪ HAUORA

Foreword

Faced with the twin challenges of an ageing workforce and an ageing population, the findings of both this and the accompanying *District Nursing Services in 2010* report will be useful for both health planning and district nursing services as they continue developing in response to an increasing need for community-based health services.

At the Ministry of Health, we are keen to support both innovatory and high-quality practice and are pleased to be able to assist in dissemination of this report.

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List of Abbreviations

24/7	24 hours a day, seven days a week
ATR	Assessment, treatment and rehabilitation
DHB	District health board
DN	District nurse
DNS	District nursing service
ED	Emergency department
FTE	Full-time equivalent position based on 40 hours per week
GP	General practitioner
GPAL	General Practice Assessment and Liaison
IT	Information technology
IV	Intravenous
NASC	Needs assessment and service co-ordination
NGO	Non-governmental organisation
NHS	National Health Service (UK)
NZNO	New Zealand Nursing Organisation
PCT	Pharmaceutical cancer treatment
PEDALG	Post Emergency Department Assessment and Liaison
PHC	Primary health care
PHO	Primary health organisation
PIMS	Patient information management system
PN	Practice nurse
RN	Registered nurse
UK	United Kingdom

Glossary

Intermediary care	Health care that transitions individuals, family and community from illness to recovery, promoting independent living by fostering conversion from medical dependence to functional independence
Primary care	First level of contact for individuals, family and community with health systems involving health promotion, illness prevention and disease management
Secondary care	Health services involving specialist, high-tech diagnostic and treatment services and specialist hospital services

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Executive Summary

This report presents findings from phase two of a project funded by the Ministry of Health. There is a companion report on phase one, entitled *District Nursing Services in New Zealand in 2010* (Ministry of Health 2011), which profiles current district nursing services (DNSs) and the district nursing workforce in New Zealand. This phase two report describes a broad range of creative and responsive service delivery models that New Zealand DNSs are directly involved in and aims to inform the future development of New Zealand DNSs to support sector progress.

The need for innovation

Evidence of increasing age and rising co-morbidity levels within New Zealand, challenges of after-hours access to health services in the community, increased use of hospital emergency departments and rising hospital admission rates have created a necessity for innovation in DNSs. The need to simplify increasingly complicated health care systems in order to remove inefficiencies and the need to reduce care duplication and fragmentation are also identified as initiators of change.

Range of DNS innovations identified

Data gathered from May to November 2010 from all district health board (DHB) regions identified 59 DNS service innovations, grouped and presented under the broad headings of:

1. care focused on specific populations, in particular, Māori and Pacific peoples, older adults, and those with long-term conditions
2. hospital avoidance, early hospital discharge and rehabilitation
3. collaboration with specialist and hospital services, primary health organisations, general practice and other primary health care (PHC) services
4. education of district nurses (DNs) and/or PHC colleagues to increase or broaden skills in community care provision
5. quality assurance and clinical governance.

DNS innovation case studies

Four DNS innovations from different DHB regions were selected for more detailed exploration. These services provided examples of:

- a hospital avoidance programme
- care of the frail older person in the home
- community access to specialist wound care services
- provision of acute and complex care in the home.

Analysis of these case studies highlighted the following key features in all innovations.

- **The innovations were triggered by an urgent service need**, such as in response to a 'service review', health policy directive and/or the need to improve productivity or increase efficiency.
- **Nursing leadership was a vital component** in operationalising the change. Nurse Leaders had a key role in leading and promoting collaboration with other health providers and reshaping DNS delivery models to best respond to emerging community/sector needs. They were in touch with patient needs through their nursing patient interface.
- Gaining traction for the service innovation was achieved through **meeting the needs of interface providers**, such as supporting hospital avoidance, moving service provision closer to the patient and enhancing inter-provider collaboration.
- **Co-location with interface providers** was another feature of these innovations. This seemed to enable a smoother and clearer pathway for the patient. Outcomes of the innovations included: establishing integrated documentation; facilitating patients' and PHC partners' access to the wider multidisciplinary team; advancing the knowledge, skills and practice of their own district nursing team and/or their PHC colleagues; progressing towards patient outcome monitoring; and achieving cost neutrality.
- **Challenges encountered** in each example were the complexities of changing traditional practice, particularly the move towards referral from doctor/hospital to nurse; the rigidity of service contracting; and the difficulties associated with gaining outcome data.
- **Future opportunities** for development included the promotion of PHC-led hospital avoidance with support from DNSs, in particular through the development and increased utilisation of the advanced aspects of the DN role.

Adapting DNS in response to emerging needs

While having generic service specifications, nurses in these services appear to have been actively adapting their care delivery to meet the unique needs of the communities they work in. Such adjustments to service provision demonstrate their responsiveness to health service developments and opportunities. From information provided, it is clear that New Zealand DNSs have worked extensively on collaborative relationships with health providers from across the continuum of care in order to provide the whole sector with transitional care support.

Future developments and opportunities

The report concludes that although the DN sector has developed and innovated its practice to enhance patient outcomes, there remain more opportunities for future development and health care achievements. With strengthened strategic governance, nursing leadership, national networks, clinical outcome development, evaluation processes, information sharing, collaborative links, and resourcing to advance the DN scope of practice, progress could be made. Such support would facilitate and optimise the patient's journey through the health system enabling better, sooner, more convenient and efficient health care.

Introduction

This phase of the district nursing profile (2010) project focused on innovation in New Zealand district nursing services (DNSs). The report highlights the range of creative and responsive service delivery models designed to meet local needs and challenges that currently exist for DNSs across New Zealand. In total 59 innovations directly involving DNS in New Zealand are identified, and four examples of these are presented in more detail. Key themes associated with barriers and enablers to such nursing innovation, and the future opportunities for developing and maximising the use of the district nurse (DN) workforce will also be discussed.

The following definition of innovation in service delivery and organisation is provided by the National Health Service's (NHS) National Co-ordinating Centre for NHS Service Delivery and Organisation Research and Development.

Innovation is described as 'a novel set of behaviours, routines and ways of working, which are directed at improving health outcomes, administrative efficiency, cost-effectiveness, or the user experience, and which are implemented by means of planned and co-ordinated action', in addition to it being sustainable and future focused (Greenhalgh et al 2004).

New Zealand's former Chief Nurse, Frances Hughes (2006, p 95), states that 'in order for innovation to occur, processes and mechanisms need to exist in organisations for encouraging creativity, as well as opportunities to be creative'.

Drivers for innovation in district nursing services

Like many countries, New Zealand has an ageing population. While the size of the population below the age of 40 years is decreasing, the group aged 75 years and over is increasing significantly in size. Table 1 below demonstrates this population growth, with some district health board (DHB) regions likely to be affected sooner than others. The northern North Island, Nelson Marlborough and the West Coast of the South Island are projected to be the regions that are most affected within the next 20 years.

Table 1: Projected population growth by DHB, 2010

District Health Board	Population estimate from Statistics New Zealand				% increase in population 75+ between 2010 and 2020
	Total 2010 population	2010 population aged 75+	Total 2020 population	2020 population aged 75+	
Northland	157,160	10,310	166,290	15,100	46.5%
Waitemata	540,280	28,440	622,200	41,730	46.7%
Auckland	451,920	19,370	513,610	24,380	25.9%
Counties Manukau	493,550	18,780	584,490	29,520	57.2%
Waikato	363,980	21,860	390,430	30,020	37.3%
Bay of Plenty	211,010	16,370	234,570	22,590	38.0%
Lakes	103,000	5,650	104,930	7,630	35.0%
Tairāwhiti	46,240	2,520	46,380	3,090	22.6%

Taranaki	108,805	8,270	108,885	10,355	25.2%
Whanganui	63,570	5,030	61,575	6,140	22.1%
Hawke's Bay	155,310	10,570	159,220	13,810	30.7%
MidCentral	167,440	11,730	175,100	15,630	33.2%
Capital & Coast	290,880	14,490	317,530	19,340	33.5%
Hutt Valley	143,170	7,970	145,760	10,530	32.1%
Wairarapa	39,955	3,315	40,125	4,525	36.5%
Nelson Marlborough	138,405	10,255	146,920	14,420	40.6%
West Coast	32,695	2,140	32,555	3,025	41.4%
Canterbury	507,820	33,920	552,220	44,290	30.6%
South Canterbury	55,655	5,290	56,100	6,890	30.2%
Otago	188,610	13,560	193,710	16,790	23.8%
Southland	111,730	6,950	113,575	8,970	29.1%
Total	4,371,185	256,790	4,766,175	348,775	35.8%

The main function of a DNS is to enable people to remain in their home during health challenges that would otherwise require hospitalisation.

The rising age of the population will place increasing pressure on the district nurse (DN) workforce, hence their interest in developing innovative ways to provide care in the home and local community.

The increasing age and corresponding morbidity of the population will also place a growing strain on hospital beds, facilities and the general health care workforce capacity (Sheerin et al 2006; Malcolm 2007). Table 2 below illustrates the emergency department (ED) presentation rates and corresponding admission rates for those over 75 years of age in one DHB region. While admission prevention strategies have reduced admission rates for this DHB, Table 2 confirms the use of secondary care facilities for this particular population group continues to be high.

Table 2: Emergency department presentations and medical admissions for people aged 75 and over in one DHB region

Patients presenting to emergency department	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
75–84 years	2619	2764	2990	3326	3398	3466	3419	3761	3954
85+ years	1176	1166	1331	1526	1585	1642	1741	1813	2057
Total 75 and over	3795	3930	4321	4852	4983	5108	5160	5574	6011
% increase of 75+ years presenting to ED	–	3.4	9.0	10.9	2.6	2.4	1.0	7.4	7.3
% of 75+ years admitted to hospital following ED presentation	48.4	42.5	36.8	37.2	40.2	41.4	*34.7	37.8	39.9

Note: * A DNS hospital avoidance programme had been introduced the year before.

In addition to increasing age and rising co-morbidity levels, the following factors have been identified within the New Zealand medical literature as leading to dependency of hospital-based services:

- a steady reduction in access to after-hours medical services in many, particularly urban, communities, leading to increased utilisation of hospital ED services and thus a greater likelihood of admission to hospital (Wilson 2005)
- increasing costs associated with medical care in the community and access to free health care through use of ED services (Aish et al 2003; Raymont and Cumming 2003; Wilson 2005)
- lack of understanding by health care referrers of health services available in the community for patients with chronic conditions (Lillis et al 2008; Jackson et al 2009).

The Ministerial Review Group report, *Meeting the Challenge: Enhancing sustainability and the patient and consumer experience within the current legislative framework for Health and Disability Services in New Zealand* (Ministerial Review Group 2009), makes clear that health services need to **adapt to meet the twin needs of a rapidly changing patient demographic and reduced human and financial resources.**

Rather than simply focusing on finding the financial resources to better meet the demand, the more effective approach is to adapt to meet these needs by focusing on improvements in preventative and acute care programmes, and seeking new technologies, treatment techniques and modalities to reduce the rate of demand. Reallocation or change of focus of resources within the health and hospital sectors also offers the potential to promote efficiencies. The DNS innovations demonstrate that this workforce has been active in exploring such options.

As modern **health care systems have become more complicated** there is an associated risk of **inefficiencies and duplication of services**, particularly at the point of interface between different health care services. Good communication between sectors is vital; however, the very complexity of health systems can impede this. A tendency for each aspect of the system to focus on its own tasks and resources rather than on the system as a whole can lead to patients moving from one part of the system to another and feeling left 'in limbo'. In addition, poorly executed transitions of care (when patients move between care settings or when their condition or situation changes) can expose patients to inappropriate or dangerous care, increase the cost of care, and lead to greater utilisation of health services.

Collaboration, co-ordination and case management are considered integral to minimising these risks (National Transitions of Care Coalition 2008). Recognising that opportunities to maximise efficiencies and effectiveness can be realised at the point of interface between different health care services, a number of DNS innovations have focused on improving co-ordination and continuity of health care as patients transfer between different locations or different levels of care within the same location.

Overview of Innovative Approaches

DNs are a key community-based health care workforce who have become involved in a wide range of service innovation activities. All 65 DNSs were asked to detail their service's more recent innovations, and identified a total of 59 approaches to innovative practice. These innovations are summarised in the overview charts below, which outline activities based on the type of innovation involved (see the appendix for details on each type of activity). This will not be an exhaustive list of all innovations currently being implemented in New Zealand DNSs; for example, some of the innovations cited are being practised in other regions as normal activities.

Innovations related to care of the older adult

Home-based restorative care	Several DNSs and home support providers collaborating to deliver required level of home support. Aim: To prevent residential care admissions by providing rapid access to short-term, intensive home-based nursing and carer support. Function restoring rather than taking a 'tasks of care' approach.
Integration of community services for older adults	1. Bringing home support, personal care and DNS into a more integrated model. 2. Integrating primary and community services into six clusters across the region. Configured into practice- or clinic-based nursing and mobile nursing. Incorporating case management role. Overarching leadership structure.
Regular monitoring of frail and at risk older adults	Scheduling regular reviews of older adults identified as frail or at risk of functional or physical health decline. Aim: To 'keep an eye on' them to check they are safe, well and managing at home, to quickly notice deterioration and to keep the general practitioner (GP) updated. DN assistance with medication administration, making phone calls to monitor and remind about this.
Carer support	Developing a network of local people able to provide urgent carer support. DN sets it up and then retrospectively liaises with needs assessment and service co-ordination (NASC) provider regarding package implemented. Some examples also provide DN personal cares over weekend specifically to give the main family carer a holiday/break, or until alternatives can be put in place. DNS health care assistant provides short-term functional support post hospital discharge to promote recovery under registered nurse (RN) supervision.

Activities targeted at specific population groups

Pacific health service	Pacific nursing outreach team. Also provides twice weekly clinic at Pacific Island Advisory Trust.
Kaiāwhina / support worker	Kaiāwhina or support worker in DNS team. Social and cultural follow-up using uniquely Māori settings and ways of interacting, promoting services available and supporting people to access/navigate them, reminding about and encouraging appointment attendance and providing transport if needed. Provides liaison, brokering and care co-ordination resource after RN care no longer required to ensure people stay healthy at home and receive services required to manage.

Hospital admission, readmission or rehabilitation

Long-term condition management	<p>Preventing or minimising exacerbation of long-term conditions in collaboration with general practice teams and other primary health care (PHC) services. Strategies include:</p> <ul style="list-style-type: none"> • scheduling regular nursing review to monitor for deterioration/impaired self management • 'drop-in' DN clinic or self referral if unwell/concerned • individual action plans or DN standing orders.
Use of local community, day hospital or clinic facilities	<ol style="list-style-type: none"> 1. Making arrangements with local community hospital, clinic or health care facility for DNS to be able to send patients there if it has identified them as becoming unwell or needing a level of observation or intervention it cannot provide in the home. 2. Making arrangements for DNS to be able to admit patients to local community hospital or rest home for short-term convalescence and health monitoring.
Collaboration with local EDs	<ol style="list-style-type: none"> 1. Implementing DNS initiatives with local EDs to prevent hospital admission such as DN working in or liaising with ED. 2. Referrals from ED to DNS for 'one-off checks' to ensure patient is managing after discharge.
Local supply of equipment	<p>Purchasing or administering a small pool of equipment to have quick access to equipment to assist people experiencing moderate functional decline due to ill health or ageing.</p> <p>Aim: To prevent hospital admission or readmission, or residential care admission.</p>
Outpatient acute care	<p>Delivering acute nursing care in the home or clinic setting to avoid admission to hospital. Focuses on aspects of care traditionally provided in the hospital setting.</p>

Collaboration with specialist and/or hospital services

Multidisciplinary case review and care planning	<ol style="list-style-type: none"> 1. Holding regular meetings of DNS and community, inpatient and specialist services to discuss impending discharges and collaboratively plan to prevent readmission where possible. DNS uses forum to facilitate admission for short-term convalescence where necessary. 2. Holding fortnightly multidisciplinary team meetings involving both primary and secondary care sector to collaboratively review complex and high need patients and to plan management together. 3. Implementing 'in-reach' DNS programmes to promote discharges, assist with complex discharge planning, and improve awareness of and communication with DNS.
Care partnerships	<p>Establishing care partnerships between DNS and a range of other services/providers, most commonly local hospices and other palliative care specialist services.</p> <p>Generally DNs assist these partnership teams by providing the intensive short-term, home-based nursing support and monitoring. The specialist team contributing to the partnership maintains the oversight of treatment/management.</p> <p>Many partnerships involve shared, integrated documentation. In some circumstances the DNs provide the specialist component of support to generalist services, eg, residential care.</p>
Joint visits	<p>DNs holding joint patient visits, either clinic-based or home-based, with other members of the health care team.</p>

Collaboration with primary health care, general practice or primary health organisation services

Care Plus assessments	Assisting general practice by providing home-based Care Plus assessments, particularly for high needs patient groups.
Multidisciplinary case review and care planning	Weekly liaison meetings between DNS and local health centre or general practice to discuss and plan care for patients with complex and high health needs. Key DNs designated to be liaison link, each to a particular general practice team.
Home-based triage for general practice	DN providing home visit to patients requesting an acute GP review in order to: <ul style="list-style-type: none"> • provide preliminary assessment data • assist general practice team to triage priority or need for GP review • resolve health care needs in home if possible to avoid GP review.
Knowledge sharing and collaborative practice	Sharing DN expertise through several initiatives such as: <ol style="list-style-type: none"> 1. DNs delivering clinics in PHC or general practice settings to collaborate and share knowledge with PHC or general practice colleagues 2. DNs contributing to the training of other non-nursing health professionals 3. holding integrated DN and multidisciplinary team clinics incorporating a number of different health professionals 4. giving other services/regions access to the DNS's own education.

Wound care innovations

Range of wound care innovations	<ol style="list-style-type: none"> 1. Establishing wound care pathway for the region. 2. Holding joint wound care clinics. 3. Establishing wound care role for clinical nurse specialist to support PHC. 4. DNS utilising Doppler for assessment of leg ulcers to aid diagnosis and management.
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Education

Education and professional development networks	<ol style="list-style-type: none"> 1. Several separate DNSs pooling resources and expertise to collectively meet DN education. Collaborative professional and educational DN network between many separate DNSs across a region. 2. DNS giving other services/regions access to its DNS education.
Work-based and structured DN clinical practice development	<ol style="list-style-type: none"> 1. Implementing a three-staged, workplace-based training programme on DN knowledge and skills. 2. DNS providing 10-month supernumerary placement for PHC new graduate nurse programme.

Quality assurance or nursing governance

Ministry of Health pilot of the UK NHS 'Productive Communities'	Five DNSs across New Zealand involved in pilot. Organisation-wide change programme applies 'lean-based' techniques. Key goals: To increase patient-facing contact time, reduce inefficient work practices, improve the quality and safety of care, revitalise the workforce, and put staff at the forefront of redesigning their services.
Quality assurance or nursing governance activities	<ol style="list-style-type: none"> 1. Undertaking internal clinical-led service review to identify areas for quality improvement/productivity. 2. Undertaking audit activities or internal service review leading to service delivery enhancements such as development of DN specialist roles to assist wider health care team, introduction of Liverpool Care of the Dying in the Community Pathway, and improvements in management of acute, chronic and palliative patients. 3. Establishing nursing governance or service improvement framework structured around the Nursing Professional Practice Model of Research and Education, Clinical Practice, Leadership and Management. 4. Internally developing an information technology (IT) system to regularly provide a range of quality assurance and nursing activity data to inform team decision-making, and to analyse performance and quality of care.
Research	<ol style="list-style-type: none"> 1. Research co-ordinator within the DNS seeking out, delivering and co-ordinating the DNS contribution to a range of regional and international research. 2. New Zealand Institute of Community Health Care undertaking a range of research projects to inform community health and community nursing practice.

Use of information technology

Range of information technology	<ol style="list-style-type: none"> 1. Using laptops or palm-held devices to electronically document care and nursing activity data during home visits. One service also uses small portable printers to print out and provide home with copy of care plan/documentation. 2. Making electronic referrals from hospital setting using a set electronic referral template. 3. Documenting care delivery or summary in the electronic patient information management system (PIMS) used by team with which DNS co-located (most often MedTech if co-located with general practice, or inpatient PIMS if located with other secondary services). 4. Using computer-based PIMS rather than paper-based file to document care (eg, Palcare, Goldcare, Isoft). 5. Computer-based workload scheduling and patient priority allocation system, monitoring nursing activity or care delivery, auditing quality of care. Internally developed by DNS.
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Innovative Practice Case Study Profiles

These case studies were used to highlight a variety of service innovation activities that DNSs have developed to meet the specific needs of patients and services in their localities. The case studies are briefly described in order to inform discussion around the initiators, barriers and enablers of such service innovations.

Process for identifying DNS innovations

The survey distributed to the 65 DNSs throughout the country for phase one of the district nursing profile project also captured information on service innovation projects that the DNSs were involved in. The Project Advisory Group was invited to provide advice on a selection of several initiatives from these innovations to explore in more detail for phase two of this project. A framework for data capture, analysis and reporting on these innovations was also reviewed by the advisory group and Ministry of Health.

The four case studies of innovative practice within DNSs were selected using the following criteria.

- They were a project-based initiative, rather than the result of a service evolution process.
- They had an alternative approach to the other case studies.
- They were from different geographical locations.
- They were able to provide activities and outcome data on their patient group.
- Both DHB and non-governmental organisation (NGO) examples were included.

The lack of activities and outcome data for many innovation activities reduced the choice of innovations considerably. Data on the innovations selected were collected via video conference using a semi-structured interview template during November 2010. Each service was also asked to provide any summary documentation and data it had relating to the innovation. These innovation case studies are summarised below before each is described in more detail.

Case studies of DN innovation

From the 59 DNS innovations identified during the district nursing profile project, the following four practice examples were selected to showcase in more detail. The four case studies chosen represent similar activities that are occurring in a number of DNSs in various parts of the country, demonstrate new opportunities to take advantage and broaden usage of the advanced aspects of the DN role, incorporate a multidisciplinary approach and demonstrate the potential for DNSs to support the wider health sector in progressing the goals of better, sooner, more convenient health care. The chosen case studies are:

1. **Hospital avoidance focus:** MidCentral DNS hospital avoidance programmes – Post Emergency Department Assessment and Liaison (PEDAL) and General Practice Assessment and Liaison (GPAL) services
2. **Care of the frail older person at home:** Clutha Health First wellness and preventive care programme for the frail elderly living in Balclutha and the surrounding rural area
3. **Access to specialist wound care in the community:** Capital & Coast DNS specialist nursing leg ulcer clinic in a primary health organisation (PHO) setting and piloting of a lower limb assessment tool to identify risk for lack of or delayed wound healing
4. **Provision of acute and complex care in the home:** Nurse Maude and Pegasus Health Acute Demand Management Service focusing on the acute nursing services component of this wider programme.

1. MidCentral Health DNS prevention of hospital admission

MidCentral Health (MidCentral DHB) introduced two projects to promote hospital prevention for patients: the Post Emergency Department Assessment and Liaison (PEDAL) service and subsequently the General Practice Assessment and Liaison (GPAL) service.

PEDAL service innovation

Rationale for service innovation

Admission prevention services were initiated by Palmerston North Hospital Services in response to:

- increasing length of hospital stay
- disproportionate use of hospital services by those over the age of 65 years
- an increasing number of presentations to the emergency department.

Initiation of the service

The PEDAL service was initiated from a review of Palmerston North Hospital Services. The review recommended the establishment of a team focused on assessment, treatment and rehabilitation (ATR) in ED in order to:

- provide ED with home-based recovery and rehabilitation, assessment and discharge planning capability
- enhance ED's knowledge of and links with community resources to support home-based recovery.

The project was managed by a project group consisting of key MidCentral Health staff, led by the DNS Nurse Leader. All parties were engaged in communication and planning including development of service objectives, IT requirements and mechanisms for outcome data and reporting. Members attended GP peer group meetings throughout the region to inform, update and gain feedback on the project. PEDAL commenced in September 2006.

The service model and activities

The service placed a full-time RN DN and social worker in the Palmerston North ED 8 am–4.30 pm Monday to Friday, to work in partnership with the wider ATR services to promote a robust, safe and sustainable discharge programme. The team aimed to collaborate with the ED and specialist multidisciplinary teams to identify ‘at risk’ patients attending ED. ‘At risk’ here is defined as having a high likelihood of admission to hospital or representation to ED due to being unable to independently manage their chronic or acute health needs at home. Once a patient was identified as belonging to this category, the PEDAL team would:

- advise ED and multidisciplinary teams to support decisions and planning for community-based care
- provide a holistic and comprehensive multidisciplinary team assessment
- highlight when patients require additional assessment or management, either in ED or with follow-up from PHC or secondary care outpatient services
- collaborate with the multidisciplinary team, patient, family and PHC team to develop a plan that would enable the patient to both recover and remain well within the community or that advocated for admission if necessary
- broker the required support package with community, secondary and/or PHC providers
- forward information identified by the PEDAL team to the patient’s PHC team and other relevant health care professionals, with an outline of the planned support package
- review the patient within 24–48 hours post discharge to ensure plans are in place and meeting the patient’s needs, and facilitate alternative support plans as required.

The team identified a wide range of services, providers and stakeholder groups with whom it would be necessary to collaborate to achieve successful home-based recovery, and established networks with them. PEDAL assessments, planning and other information were recorded in the ED electronic record, with both the patient and GP receiving a copy. A patient held clinical care record was used for all PEDAL patients referred to the DNS.

Service results and outcomes

The PEDAL team:

- facilitated discharge from ED for home-based recovery for 80 percent of patients assessed; fewer than 3 percent returned to ED within 72 hours of that discharge
- prevented inpatient treatment, achieving savings in inpatient bed day stays
- took the lead role in discharge planning from ED for referred 'at risk' patients, thus freeing up ED staff for other activities
- contributed to an overall reduced rate of medical admissions from ED.

People aged 75 years and over were the age group that PEDAL assisted most often (representing 68 percent of all those assisted by PEDAL). The most common factors prompting the need for PEDAL assessment and support were:

- recent experience of an episode of poor health (29 percent)
- impaired mobility (19 percent)
- impaired ability to manage their own activities of daily living (16 percent)
- impaired self management of their own long-term condition (9 percent)
- fall(s) contributing to the need for ED presentation (28 percent).

Less common factors were social stressors, impaired social support, cognitive decline and carer strain.

As the frequent need for physiotherapy and occupational therapy assessment became apparent, the ATR Allied Therapy department arranged for set personnel to provide daily resources to the PEDAL team. The PEDAL team presence in ED prompted all teams to consider a different approach for key patient groups, which is considered the key success factor in promoting referrals to PEDAL.

GPAL service innovation

Rationale for further service innovation

The PEDAL team identified that in many circumstances ED presentation could be prevented by extending the concept and model of hospital avoidance to the PHC setting.

Initiation of the service

The MidCentral Health DNS initiated the GPAL project to provide general practice teams with access 24 hours, seven days a week (24/7) to rapid response, home-based, short-term and intensive health recovery packages for its 'at risk' patients. The project was piloted in 2009 with a small number of local general practice teams and extended to all general practice teams in Manawatu in 2010. A project team developed the necessary referral, communication and care documentation tools and clinical protocols, including a system/clinical status scoring tool to enable prompt identification of health deterioration.

The service model and activities

The GPAL model is aimed at patients:

- with an 'at risk' profile – ie, frail, elderly patient living in the community
- suffering an acute episode of unwellness without high likelihood of sudden or serious health decline
- who without GPAL intervention would be likely to experience functional decline, making it difficult for them to achieve health recovery independently, or to currently manage their chronic health needs.

GPAL support for these patients includes:

- up to six days of short-term intensive DN care, monitoring of health status, and management of symptoms to aid recovery
- collaboration and liaison with the general practice team in the event of deterioration in a patient's condition
- support of rest homes with DN oversight for patients with acute episodes of unwellness
- discharge of patients back to the general practice team following completion of health recovery.

Frequency of DN visits is determined according to the patient's clinical status risk score. A medical assessment is required prior to referral to GPAL, as is an expectation of recovery within four to six days. DN visits commence within one to two hours of referral.

All GPAL patients are reviewed by their general practice team on the fourth day of GPAL care. The DN provides an update to assist with that review. On day six the general practice team and DN decide if the patient's condition requires:

- a couple more days of intensive home support
- alternative options for their care to be sought.

Once the patient's need for intensive GPAL care is over, the DNS continues to support the patient with any less acute health care needs. In addition, in collaboration with the general practice team, the DN refers the patient on to the most appropriate service(s) as required.

Service results and outcomes

GPAL assisted general practice teams to provide home-based acute care for patients with the same profile of health care needs as those described in the PEDAL model above. In particular:

- 80 percent had experienced a recent episode of poor health
- 90 percent of referred patients were aged 75 years or older
- 30 percent were aged 90 years or older.

Challenges to these service developments

The general practice team's interface with PEDAL and GPAL was challenging due to the lack of a regular liaison forum between the services. Phone call liaison and follow-up on a case-by-case basis were used instead.

The rate of referrals to GPAL was lower than expected considering that GPs referred a significant number of patients to ED who then went on to home-based recovery through PEDAL planning. Feedback was sought from general practice teams, who indicated that support for the concept remained strong, but their challenge was to remember it was available and, therefore, to trial an alternative course of action to the traditional approach of ED referral.

2. Clutha Health First DNS community wellness and preventative care for over 65s

Clutha Health First NGO DNS, in collaboration with the Balclutha General Practice Group, piloted a programme focused on wellness and preventative care for patients over the age of 65 years with high health needs.

Rationale for service innovation

A key focus of the Clutha Health First community service team had been to promote integration between itself and PHC services, leading to the establishment of:

- twice-monthly interdisciplinary team meetings where staff from community and primary services met for complex patient case planning, discussion and review
- bi-monthly professional/service development meetings between the practice nurses (PNs) and DNs.

Initial discussions at these forums identified two key issues.

1. Some patients were being managed by both primary and community services, causing duplication and fragmentation.
2. A GP shortage was placing pressure on the existing Balclutha General Practice Group team. In addition to creating a high workload, the shortage meant patients could not always see their regular GP or PN.

This pilot project developed in response to these issues. In summary, the DN component of the community service team saw an opportunity to assist the general practice team, and promote integration between the community and primary services by delivering the Care Plus programme on behalf of and in collaboration with general practice for people over the age of 65 years with high health needs.

Initiation of the service

Health and wellness for this patient group are influenced by the dynamic inter-relationship of cognitive state, ability to manage activities of daily living, functional and mobility state, and ability to manage one's own long-term condition(s) satisfactorily. It was felt the DNS could best support general practice to manage these complexities due to the:

- value of home-based DN assessment and interventions
- frequent need to draw on the DNS for assessment and management
- capacity for the DNS to provide flexible, intensive and rapid response if required.

Service model and service activities

The pilot commenced mid 2008 for the three winter months. The pilot was facilitated and led by the Clutha Health First Community Service Leader who formed a small project team with the senior DN and senior PN. The wider community service team was kept informed via the Service Leader. Through a series of meetings the project team established the aim of the pilot, which was to:

enhance the wellbeing of chronically ill older adults living in Balclutha via consistent, regular home-based health monitoring and proactive case management ensuring health issues are promptly identified and managed in conjunction with the Balclutha General Practice Group.

The team would undertake an evaluation at the end of a three-month period in order to:

- ascertain outcomes of preventative care and provide some analysis
- guide development of future long-term preventative care work involving DN.

Patients suitable for the pilot would:

- have had multiple previous admissions to hospital
- be receiving regular follow-up and home visits by the PN
- have had multiple previous unplanned visits with the general practice team
- already be enrolled in Care Plus.

The service was to be provided by a DN and PN. Ten to fifteen patients would be a feasible number to manage over the course of the pilot and all would receive home-based monitoring for the duration of the pilot. The agreed service pathway was as follows.

- The general practice team would actively seek suitable patients. The GP would refer to the PN for consideration of inclusion after which the PN would refer to the DN.
- Specific identified tasks or client needs, including health monitoring requirements and visit frequency (which would be at least weekly and according to identified needs), would be agreed in partnership with the DN and clearly stated.
- The DN would notify the PN to facilitate GP review within 24 hours if the client circumstances or condition changed

- The DN and PN would jointly carry out monthly evaluations of the patient's progress.
- The project team would present a weekly report to the meeting of Clutha Health First Hospital and the Health Centre Manager.

A specific assessment form was developed for the pilot and the patient's files were available for other members of the community service team to view. The pilot DN documented a summary of care and update on patient condition in the general practice team's MedTech PIMS in addition to the DNS clinical file.

Service results and outcomes

The average age of pilot patients was 87.6 years. The average number of home visits from the pilot DN per person was 22.6 visits over the three months of the pilot. None of the patients was being actively seen by the DNS prior to the pilot and all patients remained in the pilot for three months.

Reducing the number of people involved in the care of this group of patients reduced duplication and promoted continuity as patients were able to access the same professional consistently. Patients received regular education about their condition, signs and symptoms to monitor and respond to, and how to manage their health. In addition, the DN responded to issues such as social isolation, linking patients in with recreational clubs focused on providing friendship and social networks for older adults.

The holistic assessment conducted in the home uncovered a range of health issues related to functional, cognitive and self condition management that had not been identified previously. Changes in health state could be responded to and monitored more closely and in a more flexible manner. The DN was able to make the most of co-location and collegial networks, with the wider community services team facilitating prompt assessment and assistance to address patient issues.

The pilot was not extended. However, it was described as enhancing the relationship between the DNS and general practice team. The pilot raised awareness of the expanding DN role and how district nursing could support general practice to enable older adults with complex and fluctuating health care needs to remain at home. Planning is under way for the Clutha Health First DNS to provide a greater role in care plus for the Balclutha General Practice Group. The concept and aims of the pilot will be built into that wider collaborative project.

Challenges to this service development

- The low number of referrals to the pilot was believed to be due to the high use and turnover of GP locums. The change in locums was a challenge for maintaining education and awareness of the pilot
- If, in place of GP-led referrals to the pilot, the PN had identified suitable patients for the pilot on an ongoing basis and had made referrals, it may have promoted uptake.
- Lack of full time equivalent (FTE) staff for the pilot impacted on the wider DN team.
- Changes in IT midway through the project impacted on the collection of outcome measurement data and the pilot's formal evaluation.

3. Capital & Coast DNS development of a specialist wound care clinic in a PHC practice setting

Capital & Coast DNS has piloted a specialist leg ulcer/wound clinic within an urban PHO (Ora Toa Medical Centre in Cannons Creek). Project aims were to pilot a newly developed tool which assessed the risk of non-healing leg ulcers and to relate the tool's use to wound healing rates after specialist nursing intervention.

Rationale for the service innovation

An internal DNS-led review highlighted the need to increase integration and collaboration with other PHC teams. The venue for this project was chosen for three main reasons.

1. The population of higher health need was accessing less specialist health care.
2. The current DN specialist clinic was located away from that residential population.
3. The Community Health Service had a good relationship with the PHO and the practice had offered a clinic room for use at no cost.

Initiation of the service

The project was led by a clinical nurse specialist from the DNS with project management support. The project team consisted of key staff from the medical centre and personnel from the DNS including a DN wound care specialist.

All parties were engaged in communication and planning including development of service specifications and service objectives, IT requirements and mechanisms for outcome data and evaluation. Local general practice teams were informed through a series of meetings and verbal and written communications. The local newspaper published an article on the clinic and the DNS sent a brochure to all medical centres in the area. No additional nursing resource was used for the project set-up and maintenance.

The project started in April and was evaluated in October 2010.

Service model and activities

The clinic operated weekly from a health centre between 8 am and 4.30 pm. Any patient from the community could attend the clinic, with all patients being admitted into the DNS. The Ora Toa Practice Nurse was offered training in lower limb assessment and management. It was hoped such education would promote awareness and uptake of specialist nursing intervention. Although referrals to the service were made via the Care Co-ordination Centre, the Ora Toa staff members were able to request an immediate specialist nursing assessment while the wound care nurse was on site. A retrospective referral would then be made.

The DN wound care specialist based at the clinic assessed all patients against the newly developed tool for assessing risk of non-healing leg ulcers and entered these assessment data into a Microsoft Access database. These data were captured so that wound healing rates and patient care outcomes could be measured. Assistance from the DHB Decision Support Unit in the development of this database was invaluable.

The specialist wound care nurse documented wound healing progress and other relevant clinical information in the general practice's PIMS. By this means, the Ora Toa PHC colleagues could receive immediate updates of patient assessment and management status. Communication regarding patients from other practices occurred in alternative ways, namely through phone conversations and discharge letters.

The DNS supplemented the patient's care during the complex wound healing phase when patients required dressings more frequently than once a week. All the consumables for wound care were provided by the DNS. Initially running the clinic required two DNs due to patient education requirements and embedding the use of new IT systems. As no additional DN resource was available for this project, the wider Community Health Service team restructured the workload to make the necessary DN wound specialist resource available.

Service results and outcomes

The clinic provided 6–10 appointments per clinic day, with first assessments taking 1.5 hours and follow-up assessments and treatment generally requiring 20 minutes. Most patients using the specialist wound clinic were referred by their general practice team, male and aged between 45 and 84 years. There was higher representation of Māori and Pacific peoples using the service.

The tool for assessing risk of non-healing leg ulcers was piloted with the first cohort of patients. These patients were scored according to a multitude of factors predicted to influence the goal of healing their lower limb wound. These factors were broadly categorised into areas such as social, psychological, physical, co-conditions, pharmacy, and age. The detail in each category varied but included status such as nutritional, mobility, social isolation, diabetes, arterial insufficiency, venous hypertension, smoking, and inflammatory disease. Each risk factor was allocated a value and patients scored a low, medium or high risk of non-healing according to their numerical score from the assessment. Most patients scored either a medium (n = 19) or low (n = 22) risk.

The health profile of patients who attended this wound specialist clinic was broad: many older patients presented with long-term conditions and other younger patients with few medical problems. The size of the wounds was initially and subsequently closely monitored with the largest wound measuring 17 cm². The presenting size of the wound was a determinant of the healing outcome and the length of stay in the service until healing. Data were collected to ascertain how long each patient had their wound prior to attending the clinic. Ten patients had their wounds for longer than a year and eighteen had their wound for over six months.

The DNS average waiting time for patients to receive lower limb and Doppler assessment reduced from 31 days in 2008–2009 to 1 week for the project clinic patients. Healing response to the leg ulcer clinic appeared good, with some patients' wounds that had been present for over a year healing in four to eleven weeks. Some wounds in this category had not healed but were steadily reducing in size. This anecdotal evaluation is hoped to be supported by the future data analysis on already collected information.

Chronic condition management during wound management processes was enhanced due to the extra time taken for patient education, which covered advice on diet, diabetes and chronic respiratory disease, as well as all supporting self management using up-to-date, evidence-based practice. In addition, there was enhanced communication among DNs, PNs, GPs, vascular outpatient specialists and the patient.

Collecting and organising patient data to support efficient and effective care and evaluation of the project was promoted by the developed database and the willingness of the nurses to take the time to enter the patient information into the database. The service aims to correlate the data gathered to validate the tool, the wound management plans and the value of the clinic itself. The risk assessment tool is currently undergoing refinement in an attempt to develop its accuracy in determining the risk of non-healing.

The Cannons Creek DN wound specialist clinic afforded an opportunity for the DNS to inform and update the PHC sector on its specialist skills and service provision. At the time of planning, it was apparent that the local general practice teams were unaware of the DNs' breadth of skills and scope of practice. However, as the communication about the clinic intensified, there were increasing numbers of referrals from the local general practice teams. Hence it appears the Ora Toa clinic was instrumental in increasing the understanding of the role of the DN in the community.

Challenges to this service development

The challenges for the project were:

- the requirement for duplicating patient record keeping as electronic systems were not integrated
- finding increased resource from a service that already felt it was functioning at capacity
- developing data systems, data capture and evaluation process without formal access to personnel with skills to support.

4. Acute Demand Management Services Canterbury

Nurse Maude and Pegasus Health, two Canterbury NGOs within the Canterbury Clinical Network, established the Canterbury Acute Demand Programme in 2007 to reduce hospital admissions. This programme provides acute nursing services in the community.

Rationale for service innovation

The programme's underlying principle has been to support the management of acutely unwell patients in the community, with the aim of avoiding hospitalisation.

Initiation of the service

While components of the Acute Demand Programme have been in place for many years, the acute community team was not formally established until late 2007. Nurse Maude is a provider of district and specialist nursing in the Canterbury region and has collaborated with Pegasus Health to support this multi-faceted programme of hospital avoidance. The cost of the initial implementation of the service was met by the separate funding negotiated with the Canterbury District Health Board.

Service model and activities

Acute nursing services are delivered in the patient's home or nursing clinic rooms by the acute community team. Nurse Maude and Pegasus Health provide the home-based nursing care with the support of a Medical Director. The service is available from 8 am–11 pm, seven days a week and is closely linked to the 24/7 General Practice Observation Area, with both Nurse Maude and Pegasus Health also providing nursing resources to staff this area. The DNS, based in a rural PHO general practice, provides home-based DN care when required for this programme.

Patients are referred for assessment or treatment by the acute community team via the Acute Demand Co-ordination Centre, operating as a component of the wider Nurse Maude Community Care Co-ordination Centre. The Centre's nurse co-ordinators will discuss the referral with the referrer and advise of the best solution for the patient. Some treatment regimens are guided by one of the several pathways that have been developed as the service has evolved:

- intravenous (IV) antibiotics pathway (ie, cellulitis treatment)
- community acquired pneumonia pathway
- deep venous thrombosis pathway.

The Acute Demand Service Co-ordination Centre then processes a referral and liaises with all relevant providers of acute care that the patient requires. It is the aim of the service to respond to a patient care request within an hour.

Each pathway has some variables in terms of the initiating referrer, processes and steps. Referrals are received from general practitioners, ED physicians, hospital consultants, ambulance crew and St John mobile nurses.

Appropriate clinical records are maintained in both the Co-ordination Centre and throughout ongoing care via a specific electronic PIMS established for the acute community team. Such a facility has enabled the Nurse Maude and Pegasus Health nursing partners in the team to share information easily, improving communication and collaboration, and enabling a more seamless health record system for the patient. The general system has been well utilised and has enabled data capture, but currently does not interact with IT systems or PIMS of other secondary or PHC services.

Close contact is maintained with the medical support for patient care in each situation, often requiring daily medical review. With reference to the pathway the patient is utilising, decisions regarding the requirements for diagnostics, treatments and ongoing assessments are made.

Although the acute community team has one Nursing Team Leader (provided by Nurse Maude), the two nursing teams within the service continue to be employed separately and have separate nursing governance structures. The service has 5.9 FTE nurse resource from Pegasus Health and 6.8 FTE nurse resource from Nurse Maude.

Nursing staff have been supported with an education programme. The acute nursing team members often achieve level 7 postgraduate papers, and study areas such as palliative care, wound care, advanced care in life support, paediatric advance care in life support and health assessment. The nurses are required to be competent in areas of advanced nursing assessment and management of the unwell patient.

Service results and outcomes

The development of the programme initially meant that the acute community team from the two organisations worked from two separate venues and as a consequence there were occasions when information sharing and collaboration were problematic. To counter such issues, regular meetings were held between the two nursing teams. However, recently the two separately employed teams within service moved into the same premises. This development has been reported as improving the information sharing and collaborative links.

At the beginning of the project in 2007, the uptake of the service was slow. However, with continued and ongoing information sharing with the stakeholders and potential users of the service, the use of the service began to grow. It was reported that it took time to gain the confidence of the community of health professionals who utilised the support of the service. In addition, the relationship between the acute community team and key stakeholders has improved over the duration the service has operated and through proactive campaigns to promote stakeholder understandings.

The acute community team has a variety of patients with the aim of avoiding hospital admission. Conditions treated or investigated under the programme include: chest pain, deep venous thrombosis and, less frequently, chronic obstructive pulmonary disease (COPD), asthma and congestive heart failure. Patients receive intravenous antibiotics for cellulitis, pneumonia, mastitis, wound infections and pyelonephritis. Acute nursing assessments are carried out and chest pain diagnostics completed. Rehydration treatment is delivered for gastric disorders and hyperemesis, and in addition acute catheterisations and pain management are carried out.

The service manages about 140 visits in the community per week and evaluation data have shown that Canterbury DHB has a reduced age- and sex-standardised ratio of bed days, case weights and discharges compared with the New Zealand average. An audit of cellulitis patients treated by this service over a 12-month period (April 2009–March 2010), demonstrated a saving of 4154 hospital bed days.

Challenges to this service

- There is room to enhance the efficiency and capacity of the service, particularly through a better connection with the wider district nursing team.
- Resourcing a service with unpredictable demand is a challenge.
- Provision of services in the provincial and rural localities is more difficult; the full potential of acute district nursing may not be being realised.

Summary of the Four Case Studies of District Nursing Innovative Practice

Table 3 presents a summary and comparison of the four case studies detailed in the previous section.

Table 3: Summary of the four district nursing innovative practice case studies

Services	MidCentral Health hospital admission prevention programmes	Clutha Health First community wellness service for over 65s	Capital & Coast DHB DN wound clinic based in PHO	Nurse Maude and Pegasus Health acute demand service
Initiators	Review of ED admissions and hospitalisation, particularly in 75+ age group. PEDAL: An ATR services-driven project. GPAL: A DNS-driven project.	To assist with general practice team workload, particularly with services for the frail elderly. Mainly district nursing-driven.	DHB review and need to provide more services closer to patients. Desire for outcome measuring.	Effort to reduce avoidable hospitalisation. Driven by both primary health care and DN services in the community.
Service innovation intent	Provide more complex and acute care in patients' homes thereby reducing avoidable hospitalisations. Collaborate with general practice team to manage acute demand.	Maintain the frail elderly in their own homes by maximising the use of DNs.	Collaborate with PHO. Reduce assessment time for patients with wounds. Develop wound healing risk assessment tool, relate to wound healing rates/outcomes.	Provide more complex and acute care in patient's home thereby reducing avoidable hospitalisations.
Involvement of district nurses	PEDAL: DN and social worker placed in ED to identify people suitable for home-based recovery as an alternative to hospitalisation (eight hours, five days a week). GPAL: DNS made available to general practice teams for 24/7 direct referral as an alternative to admission for unwell people.	DN worked in partnership with a PN to identify and manage monitoring and treatment of patients at home.	DN initiated project and liaised with PHC team. The DN wound specialist and DN provided an eight-hour clinic for one day each week. DN set up databases and piloted new tools. Project manager provided support.	DNs provide home-based treatment for patients with complex needs who would otherwise be admitted to hospital. The service operates 16 hours every day.
Those involved in the planning and implementation	PEDAL: Mainly hospital and DNS staff. GPs were kept informed. DNS nurse leaders led project. GPAL: DNS and four general practice teams. DNS nurse leaders led project.	Nurse manager of Clutha Health First, senior DN, and senior PN from the general practice team. GPs were informed of the project. DNS nurse leader led the project.	Capital & Coast DHB DN service planned and negotiated with the PHO.	Nurse Maude and GP Independent Practice Association both planned and negotiated together.
Funding source for the innovation	Funding from within hospital service's current ATR budget. PEDAL: DNS and Allied received funding for one additional DN and social worker. GPAL: DNS received funding for one additional DN.	Funding was from within the DN current service budget. Reallocation of workload within DN team necessary to support project.	Funding was from within the current DN service budget. Reallocation of workload within DN team necessary to support project.	Specific funding from CDHB Funding and Planning was obtained for the service.

Services	MidCentral Health hospital admission prevention programmes	Clutha Health First community wellness service for over 65s	Capital & Coast DHB DN wound clinic based in PHO	Nurse Maude and Pegasus Health acute demand service
Service referral process	Patients were referred either through the ED following a medical assessment or by their local GP as an alternative to ED referral.	Initially patients identified by general practice team and enrolled in the service with the approval of the GP. Subsequent referrals to be via GP identification.	Referrals were accepted directly although always required to go through the Care Co-ordination Centre retrospectively.	Referrals came from a range of providers via the Acute Demand Co-ordination Centre, operating within wider Community Care Co-ordination Centre, Nurse Maude.
Management of clinical information	PEDAL: team documented in ED electronic PIMS. Copy provided to patient and GP. Patient held record developed for patients referred to DNS. GPAL: Patient held record used.	Project DN documented in general practice team's PIMS as well as within DNS paper clinical file.	Project manager set up new data capture systems to enable clinical evaluation and DN contributed to MedTech for all practice patients.	Use of electronic record system unique to service.
Enablers of the service	PEDAL: Level of collaboration from all key stakeholder services. Dedication of DN and social worker to the aims. Level of networking across hospital services and the community. GPAL: Belief of general practice team partners in the value of the service.	Belief of the service leader/ manager in the value of the service. Dedication of DN and PN to the service's establishment.	Willingness of the PHO to provide the venue and resources for the service. A DN wound care specialist confident to work in a community setting. Support of wider DNS team.	Collaboration of GP providers and DN provider to work together on the service. Confidence of the GPs in the DNS' capability of providing acute care in the home.
Barriers	A key barrier was altering traditional approaches to referral and patient management at point of treatment decision, eg, admission from ED or GP referral to ED for acute patient's care.	Slow/low referrals to the service likely to be due to high turnover of locum GPs and lack of understanding of the service.	Duplication of some documentation processes to enable better integration of records with those of partners. Information technology support specific to needs of project	The service remains dependent on GP referral, with some GPs preferring to provide care in their own clinics.
Outcome monitoring	Specific PIMS developed to support data collection and reporting.	To occur via review of clinical notes at end of pilot. No specific tool or PIMS. Changeover to new PIMS during pilot impacted on data available for evaluation.	Specific systems developed to enable clinical outcome monitoring, testing of the pilot risk assessment tool for non-healing wounds, stakeholder and patient satisfaction	Data have been collected to enable evaluation of project outcomes and patient satisfaction.
Learning from the innovation project	Patients referred to ED, particularly those over 75 years, can be successfully diverted to home-based care if the ED team and the GP have knowledge of and confidence in community packages of care available. ED/GPs need to be regularly reminded about community-based services available.	The frail elderly can be maintained in their own home with intensive nursing support and proactive environmental management. GPs need to be regularly reminded about the community-based service available.	Provision of wound clinics in the community increases access for a greater diversity of patients. Ability to develop systems to assess risk and monitor clinical outcomes valuable tool for clinical practice.	Avoidable hospitalisation can be achieved through access to an acute nursing service in the community capable of caring for acute patients with complex needs. GPs need to be regularly reminded about the community-based service available.

Themes Emerging from the Case Studies

Reflection on the survey data and interviews with those involved in the DNS service innovation activities enabled the following themes to be identified.

Theme one – impetus for change

Service review

Three of the four projects emerged from service reviews. The fourth emerged from a desire to relieve an overstretched service. Two reviews were initiated by the DHB involved, and the other by the DNS. Experiences of review may have stimulated the services to reconsider their activities and prompted a desire to reconfigure elements of service provision.

Clinical leadership

Clinical leadership was an element that positively motivated the impetus for change in all the projects. Nurses knew what was possible and how best to operationalise the change. In three of the four projects, nursing leadership was actively positioned and promoted engagement from the nurses delivering the care, and in each of these examples the way that the service was redeveloped appears to have been guided by the 'grass roots' of the DNS. The fourth project was initiated by DHB planning and funding, with both nursing and medical clinical leadership roles in the community. The actual development of the acute nursing service was reliant on strong nursing leadership that was capable of merging two groups of community-based nurses into one service.

Overall, the value and contribution of nursing leadership in initiating and facilitating innovation and strategic direction was evident in all four models. This positive role enabled DNs to lead an expansion of their practice to offer a more holistic service to patients with complex needs.

Cost

All four projects appear to have been influenced by the pressures of either an under-resourced or an overcommitted health service. They were forced to find ways to attain an improved health outcome for their population at a lower cost.

Theme two – focus for service development

Hospital avoidance

A focus on hospital avoidance and reducing acute demand on hospital services was a strong theme in three of the four initiatives. The point at which each programme directed its activities ranged from health maintenance and surveillance of 'at risk' patients to identifying patients in ED and facilitating a discharge home rather than admission into hospital. The projects all appeared to include flexible and individualised 'rapid response' from community nursing services. Such activities were aimed at supporting better management of patients with chronic conditions, thus slowing disease progression and avoiding exacerbations. Also common to these projects was a focus on 'pulling' patients away from hospitalisation.

Moving service provision to the patient

All four projects focused on moving health service activities closer to the patient and supporting the wider health care team to promote recovery and health outside a hospital setting, closer to or in the home. These activities ranged from moving specialist clinics into a community with perceived high health need to supporting acutely unwell patients at home who would normally be admitted to hospital.

Enhanced collaboration between providers

Project implementation appeared to rely on collaboration with and between community providers. In particular, the project teams established and maintained collaborative relationships and information sharing. Additionally, to promote referrals, it appeared that collaborative partners needed to be confident and have an understanding of the potential of the service to care for complex acute patients. Ongoing communication and information sharing were reported as activities that supported this. Finding strategies for bringing teams together, such as through co-location, regular liaison, joint visits or access to a common electronic PIMS, was common to each example.

Theme three – outcomes in common

Co-location

For three of the four models presented, co-location occurred to varying degrees. Such co-location was achieved by arranging for DNS team members to work within their key partners' practice setting, or by bringing together two teams, separately employed and managed but delivering the same services, to work out of one facility. The fourth example was already co-located with both secondary and PHC services.

From information provided by the four projects, it would seem co-location itself did not increase collaboration between the DNS and its co-located partners. Instead, it seemed that the key to increasing awareness of each other's roles was the regular liaison that started between the DNS and its co-located partners as a feature of the innovative project. Such regular liaison increased project partners' ability to meet patients' health care needs, develop positive working relationships and increase collaboration and new ways of working.

Integrated documentation

Three of the four models initiated integrated electronic clinical documentation between DNS team members and their key partners, thereby promoting collaborative and efficient information sharing. In two examples, access to the general practice's PIMS was arranged. In the third example, where team members were co-located within the ED, arrangements were made for them to document directly into the emergency department's section of the hospital's electronic PIMS. In this case, the ED provided the patient, family and general practice with a paper copy of their electronic clinical ED record.

Facilitating access to the wider specialist multidisciplinary services

All four nursing teams had well-established collaborative links with their specialist services colleagues/teams (eg, regular case review meetings, care partnership relationships, proactive referral processes). In each example, the nursing service utilised these links to facilitate prompt assessment and assistance from specialist multidisciplinary services when necessary. Consequently the innovations appeared to assist general practice by promoting easy and timely access to the wider specialist multidisciplinary team. In addition, the DNS supported timely, well-coordinated transition into alternative care settings such as residential or inpatient care when necessary.

Increasing service capability

Increased capability within the teams and for their collaborative project partners is common to all examples presented. Respondents indicated each project promoted increased knowledge of each other's teams, services and professional roles and a greater understanding of how each role could be utilised to meet their population's health care needs. Advanced practice and skills sets within teams, necessary for the delivery of each innovation, were also developed. Examples are joint wound assessment and treatment planning consultations between district nursing and general practice, practice nurse education on lower limb assessments, and health assessment training to support home-based health recovery.

Outcome monitoring

All the projects developed and utilised outcome monitoring processes. The sophistication of data capture and analysis varied but each project had developed systems to enable examination of its activities and project consequences. One of the projects had developed processes to measure clinical outcomes in conjunction with a newly developed clinical risk assessment tool. The attempt to develop data capture to such a specific clinical level illustrates a growth in DNSs aiming to utilise health outcome data to support clinical practice.

Cost-neutral change

Three out of the four projects were implemented cost neutrally with no additional funding or other resources utilised for the projects. Such fiscal neutrality is possibly due to the ongoing financial restraints that health systems are under. In addition, projects often utilise a cost-neutral pilot process prior to developing a business case for expansion of the initiative.

Theme four – challenges in common

Changing traditional practice

Slow, or lower than expected programme uptake by general practice teams was a common challenge. When implementing a project to change traditional practice approaches, it appears vital to ensure those who actually make the treatment decisions for patients are well informed about the service, what it offers and how to refer. If this issue is not addressed, the multidisciplinary team members do not have the necessary knowledge of or engagement with the project to enable successful implementation. For example, several informants highlighted challenges related to raising GP awareness and education of alternative options for patients and consequently obtaining GP involvement in the project. These challenges arose even where the project team was co-located with the general practice team.

While co-location of general practice and project teams could be considered the necessary circumstance for facilitating GP involvement, evidence from the projects indicates that, rather than co-location, opportunities for regular liaison, education and collaborative planning are required to collectively change traditional practice. It appears that co-location can assist with changing traditional practice provided it facilitates the involvement of those offering alternative options at the point of treatment decision-making and planning.

Outcome monitoring

The challenge of obtaining outcome data for evaluation was common to each example. Three of the four services implemented a specific electronic PIMS to support clinical outcome monitoring. This action was necessary because their organisation's current electronic PIMS and reporting systems did not accommodate the project's requirements for data collection, outcome monitoring and reporting. In two of these three situations the database was locally developed specifically by and for the project.

For two of these three services, the use of a specific database, while supporting the goal of collecting clinical outcome data for the project, required double entry of data as these services also documented in their key partner's electronic PIMS database to enable information sharing.

The fourth service opted to audit the clinical notes of all pilot patients to identify the clinical outcomes achieved. Unfortunately changes to its PIMS during the pilot period led to the loss of some clinical data, limiting the information available for audit at the end of the pilot.

The case studies highlight the importance of planning for outcome monitoring right at the beginning of the project. In particular, it is essential to develop the necessary evaluation measures in the planning phase and to build the IT systems and resources needed to collect and analyse these into the project plan.

Theme five – future development opportunities

PHC-led hospital avoidance

Information provided indicates proactive prevention of hospital admission cannot be driven from the hospital setting alone. Rather hospital avoidance is best achieved as part of a wider collaborative approach, supported by a 'pull' focus from PHC. For example, future opportunities for preventing more hospital admissions could be realised through PNs reviewing their enrolled population to identify patients suitable for home-based management of their next health exacerbation, and then preparing a hospital admission prevention plan with the DN, PN and GP. Increased uptake of these 'in readiness' hospital admission prevention plans could be enhanced by the PN providing a joint clinical decision role with the GP when the patient presents at (or contacts) the practice and then liaising with their local DNS to implement the necessary plan of care.

Developing the DN role to promote hospital avoidance

Two projects established a separate team within their wider DNS, or only utilised specific key DNS staff for project-associated care. Such an approach appears to enable efficient 'testing' of a new model of care without need to arrange education and training for the whole team. However, once piloting is complete, given the similarities between project nursing care and urgent/acute DN care, extending the wider DNS role to include acute home-based nursing offers the opportunity to redirect DN resource into the area of hospital avoidance.

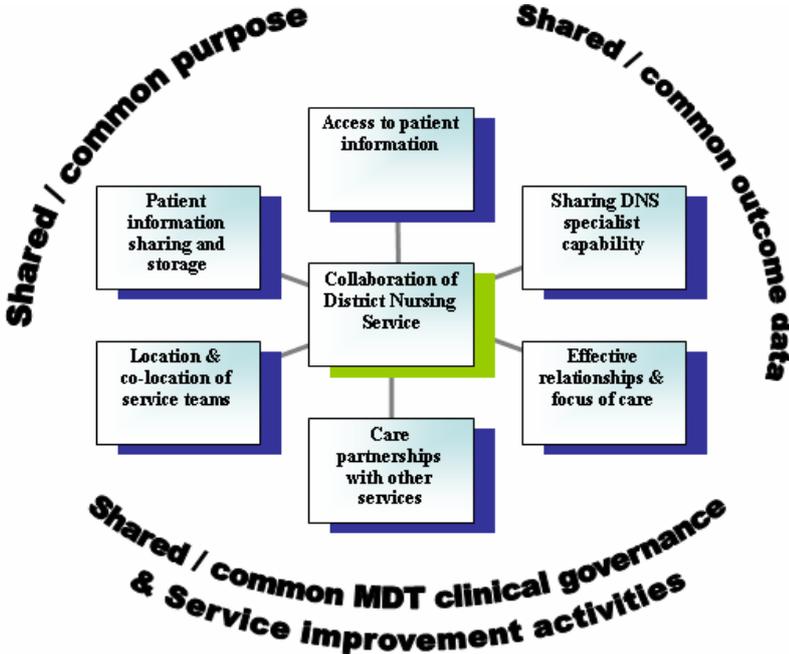
Such service provision tends to require intensive, flexible and rapid response nursing resources and promotes cost-effective utilisation of the generalist and specialist DN roles. Freeing up DN resource for this direction of care may require 'shifting' some nursing activities to other PHC nurse roles (eg, PNs providing routine, non-complex catheterisations or non-complex wound care for patients who are not house bound).

Optimising seamless health care

Phase One of this project to profile New Zealand DNSs presented six key features to promote seamless health care, all of which are apparent in the case studies. However, information gained from the exploration of these four projects indicates three additional features are vital for promoting collaboration aimed at seamless health care. These additional features are that the general practice and other key health care partners have:

1. a shared or common purpose across the continuum of care
2. shared or common outcome data
3. shared or common clinical governance and service improvement activities for the multidisciplinary team, underpinned by a continual focus on optimising patient management.

Figure 1: Features of collaboration supported by optimal circumstances for seamless health care



Note: MDT = multidisciplinary team

Ensuring effective, productive, equitable and sustainable service provision

Phase One of the district nursing project 2011 identified the variety and complexity of ways that district nursing services are provided across New Zealand. However, lack of sufficiently detailed and robust patient outcome data prevented meaningful comparisons of either clinical effectiveness or productivity between the various models. Among the recommendations that the National Health Committee (2010) made regarding rural health care was that all aspects of sustainable delivery of home-based care (including district nursing) be supported. Such support would involve systematic examination and implementation of the following three components: service delivery; system performance and planning; and data collection and research.

Service delivery

This project has identified evidence of ingenuity and commitment by nurse leaders and their DN teams. They have devised innovative ways of improving services and outcomes for patients in the face of increasing funding constraints coupled with challenging demographic trends. The continuous need to be innovative is promoted by the home environments on which DNs practise. Local ‘grass roots’ innovation is a strength of the DN sector; however, currently no formal strategic linkages between the various developing DN innovations exist to prevent ‘reinventing the wheel’.

Rigorous evaluation of innovation, together with dissemination of best practice, requires research skills and resources. With the drive for more efficient and effective health care it seems vital to ensure DNSs develop nurses with skills in leadership, project management and evaluation.

These skills are needed if the potential benefits of the innovations are to be realised for the sector and patient population. Potential clearly exists among current innovative practice to further improve the service and productivity of the systems by taking a more 'whole sector' approach to innovation development within and across New Zealand DNSs. A community nursing sector-wide network for strategic clinical leadership and governance could assist with guiding and facilitating good examples of DN local innovative approaches to become DN sector-wide innovation.

System performance and planning

DNs are one key specialist part of a multidisciplinary system for delivering home-based care. Both the Phase One report and this report clarify the value of the generalist and specialist, and a comprehensive and holistic nursing model of care that New Zealand DNSs contribute to the wider system. The importance of recruiting and retaining this experienced, skilled nursing workforce, particularly in rural areas, is clear.

Funding mechanisms can inadvertently create perverse incentives and cost shifting. DNSs felt the tension between resource availability for the community-based health sector and that provided for hospital services. Support for activities of daily living and medication management that enable people to age safely in place is more cost-effective than hospitalisations related to wound healing, falls, poor nutrition/hydration, or exacerbation of chronic disease. DNSs can potentially save health care costs, a focus of all the innovations.

Data collection and research

Both this report and the Phase One report highlight the lack of agreed and sector-wide DN activity and patient outcome measures, and the lack of IT systems to support data collection, reporting and analysis. Obtaining regional or New Zealand-wide data on demographics, patient clinical profile, and nursing activity for benchmarking of services, or to support evaluation of services or innovation, is likely to be impacted by these issues.

Nursing has not received research and development resources proportional to its role or numbers in the health workforce. Support for these activities would enable service evaluation activities. Echoing the findings of the New Zealand Health Committee, it would seem sensible to:

- combine resources across DHBs where appropriate to provide well co-ordinated, efficient and effective home-based care services
- develop a set of health status indicators and service activity data that would adequately reflect the work of DNs and contribute to service evaluation
- develop a DN sector-wide system to support robust collection and analysis of the above measures.

Alignment with ‘Better, Sooner, More Convenient Health Care’ Focus

The call for expressions of interest to implement transformational PHC initiatives was intended to trigger significant improvements in the way health and other services are delivered so that services would be relevant to the communities they serve. The four innovative projects detailed in this report, emerging prior to the expressions of interest, appear to demonstrate that they fit with the principles of ‘better, sooner, more convenient health care’ in the ways set out in this section.

Firstly, clinical leadership is actively fostered in each case study, and has been mandated and supported to lead the development of more effective services for communities and support the training of health care professionals in primary care settings.

In addition, the four providers have worked to deliver significant service improvement initiatives. They have established collaborative relationships with key stakeholders, clinicians, practitioners and the community, focusing on increasing the use of the wider PHC workforce and supporting multidisciplinary teams. The increased collaboration between roles and services that is facilitated by these innovations appears to be providing patients with faster, more effective services. Features of such collaboration include the following.

- Revised clinical pathways across the primary to secondary continuum of care have resulted from these innovations, reducing hospital admissions and enabling care to be provided in settings that are more convenient to the patient (ie, closer to or within their home).
- Each innovation’s key objective is to reduce acute demand on publicly funded hospital services and assist with meeting the Government’s key health targets of:
 - shorter stays in EDs (ie, through avoiding the need for ED presentation or by assisting the ED team with discharge planning)
 - support for better management of patients with chronic conditions to slow disease progression
 - co-ordinated models of care, including through increased support for chronic care management and the care of frail elderly.
- The local provision and increased co-ordination of services provided by each innovation has benefited those with chronic conditions requiring long-term care, and empowered their patients and families/whānau to manage their conditions and support self care. Evidence of achieving fewer visits to the hospital for the innovations patient groups was available for some case studies.

In each case study, care is being provided at a level appropriate to need. Consideration of the needs of the frail elderly and other vulnerable populations is a common focus in these innovations.

Each innovation provides evidence of workforce development and training and innovation in the primary care setting. Such activity increases the capacity and capability of both their own team and other key health care partners to best meet the health care needs of their communities.

Barriers and Enablers to DNS Innovation

Review of the innovations identified both barriers and enablers to innovation by district nursing services.

Innovation is **enabled** by:

- team members with the capacity, energy and desire to effect change and to ensure services progress to reflect changing health care needs
- a clear mandate, policy directive or identified need for change, such as increasing admissions to ED, increasing length of hospital stay, pressure for hospital avoidance measures, or better, sooner, more convenient health services
- good project management including pre- and post-innovation evaluation to identify the impact of change
- nurses with the desire and confidence to broaden their practice skill set who are supported to contribute to the innovative and strategic direction of their service
- clinical leadership that promotes and supports nursing professional development, clinical governance and strategic development
- facilitated opportunities to collaborate with the wider interdisciplinary health care team to effect sector-wide service improvement and innovation, including the involvement of both hospital and primary health care teams at the planning stage of innovation
- extensive knowledge of the community health setting and existing collaborative networks
- referrer confidence in the service and understanding of the potential of the service to care for complex acute patients.

Barriers to innovation include:

- lack of understanding or knowledge of the capability and capacity of community-based nursing
- continuation of 'traditional' referral pathways despite alternatives being available
- high turnover of the health workforce and their corresponding lack of knowledge about local services
- challenges of 'marketing' alternative options for patient management and referral pathways
- concerns such as 'encroachment on' or 'blurring of' professional and individual roles or boundaries, and 'threat' to income
- lack of project evaluation, clinical outcome measurement systems and expertise
- lack of clinical governance and strategic planning that enables clinical leadership from all key services to contribute to sector-wide service improvement and innovation.

Conclusion

This profile demonstrates that New Zealand DNSs have worked extensively to **integrate** their services with other health care providers. DNSs have established and maintained **collaborative relationships** with others from across the continuum of care, and **adapted** their service delivery models to better meet the needs of their communities and other health providers. In addition, services have proactively **reached out** into their PHC settings, making positive manoeuvres to develop care partnerships with their PHC colleagues.

Range of innovation

This project uncovered 59 service innovations that provided evidence of **creative and responsive** service delivery models designed to **meet local needs and national challenges**. Examples of innovations were multiple and varied, ranging from acute care hospital avoidance to employment of a kaiāwhina to support health maintenance of vulnerable populations.

In many DHB regions, DNSs are providing a viable alternative to hospitalisation of patients. Such service provision supports the concept of delivering health care out of the cost-intensive hospital setting, but maintaining optimum health outcomes.

Innovations that related to information sharing, IT, clinical governance, better multidisciplinary team planning and delivery of services, and collaboration with PHOs have all been identified in this report. The wider adoption of such activities has potential to contribute to the sustainability of services, if systems allow and are adequately supported, resourced and fostered.

Evaluation

The need for service evaluation and clinical outcome monitoring has been shown to be more common in the sector especially when a service development occurs. However, more support is needed for this area of health practice to be implemented more widely.

Communication across the sector

The learning and experiences from each service's innovation development appear not to be widely shared with other DNSs. Effective innovations are not spreading quickly and the learnings from less successful projects are not being shared. Despite good local leadership for services, there seems to be minimal strategic, overarching nursing governance and leadership for the sector and as a result each service appears to reinvent service developments and systems.

Future directions

From this report it could be concluded that future DNS sector developments require several key areas of activity:

- a New Zealand-wide strategic governance and leadership model for community nursing to support the strategic direction of service delivery, service evaluation and dissemination of information
- development of New Zealand clinical outcome indicators for community nursing patients and a national IT-focused system for collecting evaluation data, supporting a systematic approach to evaluating, recording and sharing information on practice development and innovation
- continued development of the holistic, comprehensive and broad DN generalist and specialist roles, underpinned by broad-based competencies
- continued inclusion of hospital avoidance, in collaboration with general practice teams and PHOs, in the DN role throughout New Zealand
- shared clinical governance and service improvement activities between DNSs and general practice teams or PHC services at local and regional levels, particularly those focused on hospital avoidance.
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Future opportunities

The DN workforce seems to be well placed to respond to future health service challenges, and in particular, to support the wider sector to achieve the Government's policy of 'better, sooner, more convenient health care'.

Through DNSs focus particularly on meeting transitional care needs, they have the capability to link health communities.

DNSs have the support mechanisms to meet the requirements of populations with high health needs. Their services are positioned to develop and fulfil population health needs for complex interventions in the community setting.

As such there is a clear opportunity for future development of the sector, with strengthened strategic governance, nursing leadership, adequate resourcing and advancement of the DN role all contributing to enhanced patient outcomes.

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Appendix: DNS Innovations throughout New Zealand

District nursing service providers shared with the project team the variety of innovations they were involved in. Below is a brief summary of each of the innovations by innovation type.

Innovations related to care of the older adult

1. Home-based restorative care

Christchurch DNS providers – Nurse Maude, Access Health, Ali's Home Healthcare, and Health Care New Zealand, along with several other home-based and community support providers – are currently participating in a pilot of a home-based restorative care approach within Christchurch. This project, initiated by the Canterbury DHB planning and funding division, aims to prevent residential care admissions by providing older adults experiencing functional decline with rapid access to short-term intensive and flexible packages of home-based support services and delivering those services from a function of restoring approach rather than a 'tasks of care' delivery focus.

The home support services work in partnership to deliver the required level of intensive home-based carer support, individualised to each person's needs. The DHB is now working with local DNSs and home support services to change the way medication management and other support services are delivered to people, particularly where their assessed needs can be met by support workers under the supervision of a RN.

2. Integration of community-based services for older adults

Canterbury

In Canterbury, planning is now under way to bring home support, personal care and DNS into a more integrated model, with needs assessment processes remaining with NASC services but responsibility for care co-ordination functions transferred to the integrated cluster of services. A leadership structure to enable the best use of resources to support this and other DHB-led projects has been established via the Canterbury Clinical Network. This network, a collaborative team made up of urban and rural PHC leaders (GPs, PNs, pharmacists, physiotherapists, district and community nurses and the Canterbury PHOs), has been working with the Canterbury DHB for more than four years on innovative ways to avoid hospitalisation and keep people in the community.

Taranaki

Project Splice was initiated by Taranaki DHB. It involves a range of community services aimed at addressing the projected health needs of older people and people with chronic or long-term conditions. The intention of the project is to configure PHC services into six clusters across the district (incorporating Hawera, Stratford, New Plymouth and western areas, Inglewood, Waitara and surrounding areas) and to align district nursing, community allied health, NGO and pharmacy to these clusters. Primary and community nursing will be configured into practice- or clinic-based nursing and mobile nursing, and extended to include case management for people aged under 75 years with long-term conditions.

The NASC function will be developed into care management which will be delivered in the six clusters for people over the age of 75 years with complex needs. Each cluster will be provided with a Care Manager for people with complex needs to work in partnership with their general practice in order to facilitate 'connected' care delivery. NASC care management for people with non-complex needs will be delivered within the District Wide Support and Development Unit.

The unit will provide the clusters with professional leadership, specialist nursing and medical input, oversight of care processes and professional development. The project is also intended to:

- introduce InterRAI to support comprehensive assessment for older people
- integrate the triage and co-ordination of district nursing, short-term home-based support and non-complex, long-term home-based support
- implement a restorative home support services model.

3. Regular monitoring of frail and at risk older adults

Clutha Health First, Malvern, Waikohu and Ngati Porou Hauora DNSs schedule regular reviews of older adults identified as frail and at risk of functional or physical health deterioration. The purpose of this monitoring is to 'keep an eye on' whether the patients are well and safe at home, and to keep their GP abreast of changes in their condition.

For example, the Ngati Porou Hauora rural health nurses, chronic care nurses, kaiāwhina and general practice teams work in close collaboration to monitor the health state of their older adults. For the Oxford (Canterbury) DNs, monitoring of older adults includes assisting with medication management such as by filling their medication trays each week along with regular visits and phone calls to monitor that they are taking their medications as prescribed.

4. Carer support

Akaroa, Waikohu, Roxburgh and Milton DNSs have developed a network of local people available to provide carer support. For example, when the Akaroa DN identifies an urgent need for home-based carer support, s/he will make arrangements with the local carers available, and then retrospectively liaise with Access Services (NGO) regarding the package being implemented. The Waikohu and Milton DNs also provide carer support themselves over the weekend to give the main carer a weekend or short holiday break, or until alternative carer arrangements are put in place.

Waiau DNs arrange for their Health Care Assistants to provide short-term intensive functional support post discharge to promote recovery and reduce the need for readmission.

Activities targeted at specific population groups

1. Pacific health service

The Southern DHB DNS has a Pacific mobile outreach nursing team which targets Pacific patients for nursing interventions and provides a clinic twice a week at the Pacific Island Advisory Trust.

2. Kaiāwhina as a support worker

Ngati Porou Hauora, Reporoa Health Trust and Nurse Maude have kaiāwhina within the team, providing a vital link to whānau and communities through practical assistance. Social and cultural follow-up is made using uniquely Māori settings and ways of interacting, promoting services available and supporting people to access and navigate them. The role often includes enabling people to access a greater amount of subsidised care for conditions like diabetes and heart disease. The kaiāwhina encourage attendance at health appointments through follow-up reminders or transporting patients to those appointments. Kaiāwhina also provide a liaison, brokering and care co-ordination resource on behalf of and with the whānau (eg, with NASC, community carer services).

For example, Ngati Porou Hauora kaiāwhina provide ongoing follow-up and monitoring for those who may no longer need 'hands-on nursing care' but are considered at risk of deterioration. In these circumstances the rural health nurse arranges for the kaiāwhina to visit for a period to ensure they remain healthy at home and are continuing to receive the services they require to manage and stay well. The Reporoa Health Trust kaiāwhina provides a similar role. Nurse Maude has established a kaiāwhina role within its palliative care services.

Hospital admission, readmission and rehabilitation

1. Early identification and prompt management of exacerbation of long-term conditions

A number of DNSs – including Ngati Porou Hauora, Urenui, Nightcaps, Milton, Waiheke, Waikohu, Reporoa, Central Otago, Waiau, Malvern, Tuapeka and Maniototo – outlined their proactive approach to monitoring and managing long-term conditions. The aim of these activities was to prevent health exacerbations or detect them early enough so that they could be treated in a home-based or PHC clinic setting, avoiding the need for admission to secondary hospital services. Their strategies included:

- scheduling patients with complex and long-term conditions for regular nursing assessment
- providing a 'drop-in' DN clinic
- a self referral option for patients to access when feeling unwell, with the DN liaising with their GP regarding medication adjustment or additional treatments such as subcutaneous fluids, IV antibiotics and IV diuretics
- one service (Tuapeka) collaborating with a general practice team to develop individual action plans for patients who experience regular exacerbations of a long-term condition, with associated nursing standing orders for their treatment
- Ngati Porou Hauora nurses working in close collaboration with the chronic care nurses in their organisation to proactively manage patients with long-term conditions.

2. Use of local community, day hospital or clinic facilities

The NGO DNS of Central Otago, Reporoa and the Ngati Porou Hauora described collaborating with their local community hospital, clinic or health care facility for the management of patients they felt were becoming unwell or needing a level of observation or interventions that they were not able to provide in the home setting. For example, they might arrange for patients to attend the local facility for day stay observation, or to receive nursing interventions such as IV therapy, IV fluids and subcutaneous fluids.

Akaroa, Ngati Porou Hauora, Tuapeka, Waikari and Maniototo DNSs are also able to facilitate prompt admission to their local community hospital or rest home for short-term convalescence and health monitoring.

3. DNS in local emergency departments and collaborations

Several services were involved in initiatives with their local EDs to prevent hospital admission. MidCentral DNS employs a DN who works Monday for Friday, 8 am–5 pm within the ED alongside a social worker, assisting ED to identify people for home-based recovery rather than inpatient care. In collaboration with the wider multidisciplinary team, the DN then sets up a package of care for home-based recovery. Included in the MidCentral DHB's business case as parts of its expression of interest are plans to expand this service to assist ED and general practice teams seven days a week from 8 am–10 pm.

The Tairāwhiti, Southern DHB and Bay of Plenty DHB DNSs have also arranged for DNs in similar roles to work within their ED to prevent hospital admissions. Christchurch Hospital ED and inpatient services refer patients identified as at risk of readmission to Nurse Maude for a one-off 'check at home' to ensure they are managing and recovering post discharge.

4. Local supply of functional assistance equipment

Urenui, Ngāti Porou Hauora and Malvern DNSs have purchased and now administer a small pool of equipment (eg, commodes, over-toilet frames, walkers and shower stools). This initiative enables quick access to equipment that can assist people who are experiencing a moderate functional decline due to ill health or ageing. Therefore patients can use the equipment to manage at home until such time as they recover or long-term equipment options can be put in place. These services identified that this timely access to equipment is often a key element for preventing hospital admission, particularly for services some distance from base hospitals.

5. Outpatient acute care

The Canterbury Clinical Network established the Canterbury Acute Demand Programme in 2007 to reduce hospital admissions. This programme, managed by Nurse Maude, provides acute care for people enrolled in any general practice associated with the programme's PHO partners. The most common conditions treated under the programme are chest pain, deep venous thrombosis and cellulitis; less frequent conditions are chronic obstructive pulmonary disease (COPD) and congestive heart failure. The following are the key components of the programme.

- Acute packages of care are generally delivered at the practice through an extended consultation or practice-based observation. Practice staff may also provide consultation or care delivery (eg, IV antibiotics) in the patient's home.
- Acute nursing services are generally delivered in the patient's home by the relevant acute nursing provider, but may also be delivered at the practice by the acute nursing provider, such as when the practice requests nursing back-up for an acute patient. Some 24/7 practices also provide an observation service in the programme, with the option for other practices to refer their patients to that service. Within the programme, Nurse Maude provides both home-based DN care and nursing resource to staff the acute nursing team from 8 am–11 pm, based at the 24/7 practice and observation area. All the DNs based in rural PHO general practices (Kaikoura, Hanmer Springs, Amuri, Waikari, Oxford, Akaroa and Cheviot) provide home-based nursing as required to this programme.

Several other DNSs also provide or are currently establishing clinic- or home-based IV therapy, working with both general practice teams and EDs to prevent avoidable hospital admission, most commonly for the management of the cellulitis (eg, in Tairāwhiti, Lakes, MidCentral Health, and Wairarapa DHBs). The MidCentral DNS has set up a GP-initiated hospital admission avoidance programme, General Practice Assessment and Liaison (GPAL), which enables general practice teams to access up to six days of intensive short-term 24/7 DN support and monitoring for people with moderately acute health care needs as an alternative to inpatient nursing care and observation.

Collaboration with specialist or hospital services

1. Multidisciplinary case review and care planning

Gore, Balclutha and Waitaki DNSs participate in regular multidisciplinary team case review and care planning meetings with the inpatient services of their local community hospital. In these meetings the participants discuss impending patient discharges and collaboratively plan to prevent readmission where possible. The Gore DNS described using these forums to facilitate admission to inpatient services for short-term rehabilitation or convalescence, or multidisciplinary team assessment and interventions in the day hospital for patients the DNs had concerns about.

The Waiheke Island DNS contributes to a fortnightly case conferencing meeting of a multidisciplinary team, attended by health care professionals from both the primary and secondary care sectors. Participants in these meetings plan and evaluate complex patient care needs together. Waiau and Gore DNSs refer to and work in close collaboration with their local area's day hospital or centre for older adults, via a multidisciplinary team case conferencing forum. The DNs arrange for patients to attend their local day centre for older adults, and for allied staff to undertake function, cognition and mobility assessment within recreational and therapy-based activities.

The West Coast DNS has developed several nurse specialist roles that collaborate with both primary and secondary health services. For example, their respiratory nurse specialist, working with sleep apnoea and other respiratory disorders, holds weekly teleconferences with medical specialists in Christchurch. Their cardiac care clinical nurse specialist targets rural patients post myocardial infarction. The Wairarapa DHB DNS has developed links with the hospital services through an in-reach programme and complex discharge management to optimise understanding of and communication with the DNS. The Hutt Valley DHB DNS has developed links and processes including an information document to improve communication to and from its service.

2. Care partnerships

A significant number of DNSs participate in a wide range of care partnerships with other services. For example, the MidCentral DHB DNS delivers palliative care in partnership with the local hospice inpatient and community team and each patient's general practice team. This service has set up shared care partnerships with the hospital's nurse practitioner for cardiology, the specialist respiratory nursing team, and the nurse practitioner for pain management, assisting these teams to prevent avoidable hospital admission for patients with exacerbations of heart failure, chronic obstructive respiratory disease or chronic pain. The DNs provide intensive short-term support and monitoring where required with the specialist nursing teams providing the treatment plan and specialist nursing oversight, sometimes including a joint visit. The use of an integrated and patient held clinical record facilitates continuity of care and information transfer between all teams involved in the patient's journey.

Waikohu DNs provide diabetes and paediatric care in partnership with specialist diabetes and specialist paediatrics services. The Gore DNS has established integrated community notes for patients with long-term conditions who have multiple health care providers involved in their care. The Auckland DHB DNS has introduced an ongoing palliative care initiative involving care partnerships and interventions between specialist and generalist practitioners. Tuapeka and Milton DNs provide nursing advice and assistance/cover to their local rest home.

Other services such as the Capital & Coast DNS have conducted internal audits of their role in shared care partnerships to review optimal functioning of those relationships. The Waitemata DNS has worked with several hospices to set up a new palliative model of care.

3. Joint visits

A large number of services facilitated joint visits with specialist services, usually clinic based. For example, Clutha Health First and Hutt Valley DNSs facilitate regular joint clinics with visiting specialist services. Some services also described providing joint home visits with specialist services. For example, when a member of the Canterbury older adult specialist team, or the Access Home Health team visits a patient in their home after referral from the DN or general practice team, the Akaroa DN will usually also attend with them. The Tuapeka DNs conduct regular health check days in collaboration with their local Māori health provider at local shearing quarters.

Collaboration with primary health care, general practice or primary health organisation services

1. Care Plus assessments

The Nightcaps DNS assists general practice by providing home-based care plus assessments. Gore and Waikohu DNSs indicated they are currently planning with their general practice teams to commence the same kind of service.

2. Multidisciplinary case review and care planning

Eight DNSs based in general practices in rural Canterbury and the Tuapeka and Maniototo DNSs participate in weekly liaison meetings at the local health centre to discuss patients with more complex health care needs. The local NASC services sometimes attend these meetings as well. The Gore DNS is planning with the local general practice teams and allied health services to establish regular formal liaison meetings for collaborative chronic condition management and early identification of those experiencing frequent exacerbations and ED visits and/or hospital admissions. They also plan to designate each general practice team a liaison link DN, and to set up a single integrated community health file for patients with complex needs related to a long-term condition and multiple providers involved in their care.

3. Home-based triage for general practice

The Oxford DNS assists general practice by visiting patients requesting an acute GP review at home to provide preliminary assessment data to assist the GP to triage their priority for review on busy practice days.

The Southern DHB DNS has developed nurse-led clinics where there is limited or no GP availability (eg, in Stewart Island where the Southland DHB DNS is the main provider of PHC services).

4. Knowledge sharing and collaborative practice

Some services have actively promoted links and levels of co-location with other community providers of health care. For example, the Capital & Coast DNS has set up specialist wound care clinics in PHO sites to promote uptake of their specialist leg ulcer healing services and to collaborate and share knowledge with their PHC colleagues. Nurse Maude provides wound care education to many other South Island DNSs. Waikato DNS work within family health care teams over 22 bases. The Counties Manukau DNS has positioned a continence clinic in the community within a general practice team and has developed an integrated nursing and multidisciplinary team clinic with mental health nurses, a nurse practitioner, a Tamariki Ora nurse and a podiatrist. The Otago DHB DNS has enhanced its collaboration and communication with other community providers by developing an information booklet detailing the remit of its services.

The West Coast DNS diabetes and respiratory nurse specialists work closely with their general practice team and other PHC colleagues. In the Gore DNS, medical students during their training accompany DNSs to observe home-based DN care.

Wound care innovations

Innovative wound care practice was often described. The Southland DHB DNS established a wound care innovation led by its clinical nurse specialist. The Counties Manukau DNS has developed a wound care pathway for the region including joint wound care clinics with PNs. The Northland DNS is setting up a wound care clinical nurse specialist role and the Gore DNS is setting up a leg ulcer assessment clinic incorporating ultrasound for diagnosis. The Capital & Coast DNS is expanding the specialist wound care and leg ulcer clinics it implemented in the PHO setting. The Waitemata DNS has developed a wound care pilot programme to support general practice teams with routine wound care education, enabling the DNS to focus on management of more complex wounds.

Education

1. Education and professional development networks

Five rural Canterbury DNSs have pooled resources to meet DN education needs, facilitated by the Amuri Health Centre Practice Manager. Nine Otago DNSs (Otago DHB, Waitaki, Clutha Health First, Tuapeka, Maniototo, Roxburgh, Milton, West Otago, and Central Otago DNSs) also participate in a collaborative DN professional development and education network, sharing the hosting role. Many smaller DNSs described drawing on education resources and opportunities available from larger nearby health care organisations. For example, Urenui DNs arrange to accompany the Taranaki provider arm DN in order to observe and learn new nursing procedures or to 'brush up on' less frequent or less familiar nursing procedures.

2. Development of work-based and structured district nursing clinical practice

The MidCentral DNS has a three-stage, work-based programme for DN education and practice development. Each stage includes a number of 'aspects of DN care' and 'condition management' modules to be completed by the nurse using self directed learning packages, work-based learning opportunities with their designated preceptor and later mentor, and online learning and knowledge assessment tools. The DN must be signed off as competent in each module within agreed timeframes. The service's education and research committee monitors individual nurses to see that they achieve sign-off within the target timeframes. A resource package is available to assist with these modules.

The Waikohu DNS currently has its first new graduate nurse, funded by the DHB and working in a supernumerary capacity with the service for 10 months as part of the DHB's PHC new graduate programme.

Quality improvement and nursing governance

1. Ministry of Health's pilot of the National Health Service's 'Productive Communities' (United Kingdom)

The Productive Community Services is an organisation-wide change programme that helps all front-line teams to systematically engage in improving quality and productivity. Teams apply 'lean-based' techniques with the aim of increasing an organisation's capacity and capability for continuous improvement.

The programme focuses on the following key goals.

- Increase patient-facing contact time.
- Reduce inefficient work practices.
- Improve the quality and safety of care.
- Revitalise the workforce.
- Put staff at the forefront of redesigning their services.

The following services are currently involved in the Ministry of Health's pilot of this service improvement initiative:

- Waikato DNS
- Bay of Plenty DNS
- Whanganui DHB DNS
- MidCentral DHB DNS in collaboration with its regional PHO
- Hawke's Bay DNS.

2. Quality assurance and nursing governance

Other services described quality improvement activities with some services such as the Capital & Coast DNS carrying out an internal, clinician-led service review to identify areas for quality improvement. The West Coast DNS described audit activities leading to its development of a continence/stoma specialist role, involving an education programme for staff. It also described the introduction of the Liverpool Care of the Dying pathway with a clinical nurse specialist to co-ordinate. The Wairarapa DNS has developed its service to improve the care of acute, chronic and palliative patients. Patients are allocated to particular DNs according to their need and each DN's level of specialist capability.

The MidCentral DHB DNS has a nursing governance structure shaped around the nursing professional practice model, incorporating a Research and Education Committee, a Service Improvement Committee, a Leadership and Management Committee and monthly clinical practice and professional development meeting. This governance structure receives regular quality assurance data via an IT-driven quality monitoring processes and database incorporating a number of performance indicators and audit mechanisms to inform management decision-making, monitor clinical practice, analyse performance and evaluate service improvement activities.

3. Research

Nurse Maude has established the New Zealand Institute of Community Health Care, which undertakes research projects and service reviews that relate to community-based health services. Ngati Porou Hauora DNS employs a research co-ordinator and is currently participating in the following research projects with external partners:

- Stage 2, Process & Formative Evaluation of Ngati and Healthy Community-based Intervention (2007–2010), piloting the use of computers in homes for telemedicine
- Genetics of Gout in Ngati Porou (2007–2010)
- Diabetes Cohort Study
- Warfarin Management Clinical Improvement Project
- PILL Pilot and IMPACT Polypill, conducting clinical trials of combination pills for those at high risk of cardiovascular disease.

4. Use of information technology

Specialist roles within the Nurse Maude and Auckland DHB DNSs use mobile devices for documentation and recording of activities. All Counties Manukau and Access Health DNs use laptops for documenting care. In addition, Access Health has small portable printers that enable the DN to print out a copy of the patients care plan for them to sign and leave a copy of this with the patient. The Hutt Valley DNS has developed a process and plan to have electronic referrals from the hospital setting.

A number of DNs based in general practices (Akaroa, Amberley, Cheviot, Oxford, Hanmer Springs, Kaikoura, Waikari, Amuri, Nightcaps, Tuapeka, Milton, Ngati Porou Hauora, Waikohu, Waiau) use a PIMS to document care in, most commonly MedTech.

The Nurse Maude, Clutha Health First and Counties Manukau DNSs document in their inpatient services electronic PIMS. Reporoa uses Intrahealth Profile Electronic PIMS; Access Home Help uses Isoft PIMS. A number of services with DN teams co-located with general practice teams indicated they have plans under way to begin utilising the general practice's MedTech PIMS.

Health Care New Zealand uses an integrated electronic PIMS, workload allocation and human resource system called Goldcare, specifically designed to meet the needs of community health care providers. It operates from fixed site computers and mobile devices and through Web access. In addition to the usual functions of storing patient held records and scheduling care delivery, Goldcare includes the following features:

- financial management
- payroll and employee management information
- reporting
- incident reporting and tracking
- InterRAI community health assessment and other assessments
- outcome scores monitoring
- care plan builder.

The Inglewood DNS uses the electronic PIMS Palcare for its palliative patients only, in collaboration with the local hospice. The system, specifically focused for providers of palliative care, integrates acute and community care information into a single system. Palcare enables real-time information regarding the patient to be remotely accessed via a secure Web browser and updated from multiple locations and organisations.

The MidCentral DNS uses an electronic Community Health Information Processing System (CHIPS) for recording and reporting its nursing activity data, scheduling daily workload, and monitoring and reporting care delivery trends per nurse and area, as well as for its quality of care auditing. The system provides a detailed monthly report on volume of nursing care provided across the region and per nurse for a key set of nursing activities and the time associated with this care delivery including travel. The system also enables the DN to allocate each patient a priority for care delivery code. A live database of all patients according to their priority for care is available to assist with triaging patient visits during circumstances when care delivery needs exceed available nursing resources.

Other innovative projects planned or under way

Below is a brief summary of projects planned to get under way or just getting under way, which respondents have outlined. Again, it is not suggested that this list represents all projects occurring in New Zealand DNSs.

1. Auckland DHB DNS

- Continence management review of service, supply database and stock management
- Piloting accreditation for assessing for equipment for the Ministry of Health
- Community rehabilitation teams

2. Capital & Coast DNS

- Internal review of service
- Senior nurse role development
- Developing entry and discharge criteria, improving links with neighbourhood PHOs
- Improving IT integration capability with workforce allocation and outcome measuring

3. MidCentral Health DNS

- Increasing the role of patients and family in their own wound care, and promoting earlier discharge to self and general practice team management
- Establishing additional DN clinics with the aim of delivering 20 percent of care in DN clinics
- Setting up integrated referral management with PHO nursing services

4. South Canterbury DNS

- Refining continence and stoma client process
- Reviewing and mapping DN liaison/discharge co-ordinator position
- Oncology – more day patient services and a review of palliative care roles and responsibilities
- Changing in funding of meals on wheels
- Clarifying contracts, outputs and funding – ACC tidying of service policy

5. Otago DNS (urban Dunedin)

- Developing Associate Charge Nurse position
- Developing swing shift to improve reactivity
- Developing clinics

6. Central Otago DNS

- Feasibility planning to establish a palliative care nurse specialist role and after-hours/night DNS to support after-hours home-based palliative care etc

7. Waitaki DNS (rural Otago)

- Planning to set up a DN clinic

8. Amuri DNS (rural Canterbury)

- Exploring the possibility of the trust providing the administration of DNS delivery for its associated five practices directly rather than via the rural Canterbury PHO

9. Nurse Maude (Christchurch)

- Implementing a community-based electronic PIMS incorporating a nursing minimum data set, recording and monitoring nursing interventions and outcomes (considering OMAHA system for this)
- Implementing P2C, a service improvement tool using lean principles to reduce fragmentation and increase efficiency

10. Waitemata DNS

- Aged care integration project

11. West Coast DNS

- Standing order programme

12. Nightcaps DNS

- Getting ready to implement a weight loss clinic

13. Ngati Porou Hauora DNS

- Planning for Dom 101–104 contract rolled up into one and called ‘personal health contract’ – bulk funding

14. Urenui DNS

- Planning to move to as much clinic-based care as possible

15. Hutt Valley DNS

- Developing a team nursing model and a multidisciplinary team approach to managing complex patients