



**Review of International and New
Zealand Literature
Relating to Rural Models of Care,
Workforce Requirements and
Opportunities for the Use of New
Technologies**

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Introduction

The New Zealand Institute of Rural Health commissioned AC Research Associates New Zealand to undertake a research project in 2012 to evaluate the key issues regarding rural hospital and rural health service provision. The Kaipara Health Centre in Dargaville is one model of rural health delivery. Such a project falls within the broad purposes of the Institute, which seeks to advance the health of rural people through excellent rural health service provision. The first part of that work is a literature review presented below.

A review of the international literature has identified factors which have influenced the availability of health and disability services in several countries which have rural and remote populations. The countries reviewed included Australia, Canada, the United States of America, the United Kingdom and New Zealand. Australia, the USA and Canada have indigenous people who have special needs, as does New Zealand with the Māori population. Many of these indigenous people live in rural situations.

The international literature has portrayed various attempts to remedy problems in rural health delivery and has described projects which have attempted to solve these problems.

Rural health in New Zealand has a range of problems very much in common with these overseas countries and a recent publication by the National Health Committee (National Health Committee, 2010b) has identified factors which have influenced the provision of health services to the rural communities. Financial limitations and political decisions influence the provision of rural healthcare. New Zealand has its issues which are peculiar to the population makeup and dispersal and these will be reviewed and possible innovative solutions will be explored. Various rural populations have reacted to changes in rural health services with a variety of proposals and solutions.

In a paper reporting on a Roundtable convened by the Ministry of Health in 2010 on Acute Care in Provincial Hospitals, the Ministry identified provincial

hospitals as those offering the Role Delineation Model Level 3 Services to a population of less than 120,000 people. These hospitals include Whakatane, Rotorua, Gisborne (Cook), Masterton (Wairarapa), Blenheim (Wairau), Greymouth (Grey), Ashburton, Timaru and Invercargill (Kew). (Ministry of Health, 2010). By exclusion, rural hospital services are those provided at the Role Delineation Model (RDL) Level 1 (“Community-based services provided by primary care practitioners. May be in a rural, provincial or urban setting”) or at RDL Level 2 (“General and convalescent services, sometimes in rural communities, providing sub-acute care and access to acute services.”) This is consistent with the definition of New Zealand Rural Hospitals proposed by Janes in 1999:

A facility with no resident medical specialists, where acutely ill patients are admitted and cared for solely by generalist doctors, either general practitioners (GPs) or medical officers of special scale (MOSSes)

(Janes, 1999)

This definition has been subsequently refined further to:

A rural hospital is a hospital staffed by suitably trained experienced generalists (both medical officers and rural general practitioners), who take full clinical responsibility for a wide range of clinical presentations. While resident specialists may also work in these hospitals, specialist cover is limited to 24 hr /7 day cover in no more than one specialist area.

(Dawson & Nixon, 2008; Nixon & Blattner, 2008)

There were 33 rural hospitals in New Zealand in 2009; about half the medical staff are employed full-time in the hospitals and about half also work in rural general practice. Williamson, Gormley, Dovey, and Farry, (2010) reported on the diversity of service provision at New Zealand rural hospitals in 2002/03, and noted a considerable variation between hospitals. They commented,

Medical and nursing workforce availability and skills, services and resources targeted to the rural hospital, and the degree of clinical and managerial support from the base hospital are all likely to play a role. The capability of local clinical governance to provide a clear vision and

strategy of service development appropriate to their population's need is also important. (Williamson et al., 2010, p. 27)

Rural health policy

Watt (1995) in reviewing the health needs of rural populations in Britain argued that if services are to be provided in rural areas, this required deliberate action by society. He contended that these services would not normally be expected to develop as a consequence of the free market. He commented on the economic aspects of rural care. They were:

- Lack of economies of scale
- Additional travel costs
- Additional telecommunication costs
- High level of unproductive time
- The extended timescale and slow pace of development work
- Extra costs of providing outreach and mobile services
- Extra costs of training and other support

He advocated information systems that allow detailed rural analysis and contended that any decisions on this would ultimately be political.

According to the Consultation Draft of the Rural Health Policy released in New Zealand in October 1998, "The rural sector is an essential part of the economic and social fabric of New Zealand society". (English B, 1998, p. 1) After more than eight years of rural restructuring and the closure of a significant number of rural hospitals, it was somewhat surprising to hear what the Minister of Health said in a speech one month prior to the release of the Rural Health Policy. He claimed, "...no one actually knows how you can best provide services in Gisborne or Wanganui or any number of smaller towns or cities if you take away their hospitals". He went on to speak of the need in rural communities for an evolutionary change governed by "local perceptions of local needs, by local creativity and motivation" (Bill English, 16 September 1998).

Meaning of success

It is useful to consider what success looks like from the perspectives of the stakeholders in rural health service delivery. Litchfield (2002) undertook research in Maniopoto, a small rural community in New Zealand, exploring the question of what factors should be taken into account in judging *success* of rural health service design and delivery. She found that perspectives of community, GPs and Nurses were all different. Community representatives wanted to ensure that the provision of healthcare took account of the particular conditions of rural living in their community, which would be appropriately responsive for all residents when needed, particularly noting cost, and that would address health in its broadest sense. GPs were interested in sustainability of services, and constraints on infrastructure and funding together with co-location, shared rosters, and expanding the range of services to involve other health professionals, especially nurses. Nurses saw employment arrangements, ability to expand capability and capacity, provision of health promotion and collaboration across services and sectors as important. In all, there was no one single perspective regarding the success of rural health services. Bidwell (2001) found success for New Zealand models incorporated the following factors:

- Local leadership
- Local commitment
- Involvement of the GPs
- Operational flexibility

In a subsequent paper, Grimwood and London (2003) documented how different rural communities in New Zealand have brought successful change in their health services through strong leadership, community buy-in, commitment and belief in themselves and the process.

Models of care in rural and remote primary health

A review which examined the current state of knowledge in the literature pertaining to 'innovative' primary health care (PHC) in rural and remote areas was conducted by Wakerman (2009). He argued that four key mechanisms were necessary to support rural PHC. They were: funding; quality and performance frameworks; regional structures to support PHC (e.g. divisions of general practice) and practice infrastructure. He reviewed both the Australian and Canadian health systems, and concluded that there was "a dearth of rigorously collected information" (p. 23) regarding delivery in rural and remote settings.

Wakerman put forward five separate models.

- *Discrete services* which consisted of stand-alone general practice (GP) practices
- *Integrated services* in which there were various models of integration and coordination of services with focus on continuity of care
- *Comprehensive PHC services* with a full range of clinical, preventive and health promotion activities
- *Outreach services* which consisted of non-resident visiting services from a hub or within a network
- *Virtual outreach services* which involved IT/telehealth

Wakerman (2009) described the political problems that were common to Australian and Canadian health systems. These, he contended, were the interaction between federal and provincial or state division of powers with both sides complaining about the failures and meddling of the other. As a result there had been no sustained focus beyond trials and pilots. Wakerman considered that there was a need for appropriate community participation in governance and for enhanced self-management. Finally, he argued that there was an "identified need" (p.25) for comparative studies of different models for organising PHC rurally.

Brabyn and Barnett (2004) used a geographical information system (GIS) approach to demonstrate the extent to which different areas in New Zealand

vary in their geographical access to GPs and found that such an instrument was useful in effective planning of services for geographically disadvantaged populations. They used three methods to demonstrate geographic accessibility to GPs. Their findings suggested that more attention needed to be paid to the spatial information base in primary care in order to achieve more effective planning of services for disadvantaged populations.

Rural hospitals in New Zealand are generally owned by District Health Boards or community trusts and occasionally both. Rural GPs work generally in group practices although some work independently.

Barnett et al reported that 'in the 1990s, a shortage of funds and a competitive market for public sector health services created both threats and opportunities for rural health services in New Zealand'. They noted that the process of trust formation for the ownership of community hospitals allowed the continuation of small rural hospitals in those communities. They identified that local leadership, local financial and other commitment, involvement of local professionals, learning from each other, local operational efficiency allowed the trusts to 'survive and thrive' (Barnett P & Barnett R, 2001)

The aspects of local leadership and the involvement of local professionals were key factors in communities that resisted the closure of community hospitals in the 1990s (Kearns, 1998). Coster H. found in research conducted in the Balclutha and Dannevirke communities that the role of social entrepreneurs was important when those communities were faced with the closure of their rural hospitals. (Coster H, 1999) This was further explored by Farmer and Kilpatrick who evaluated the role of rural health professionals as social entrepreneurs. (Farmer & Kilpatrick, 2009)

In 2002 a Rural Expert Advisory Group reported *in Implementing the Primary Health Care Strategy in Rural New Zealand*. Amongst their recommendations to the Ministry of Health were two relevant to this review:

2.7 Together with DHBs, review the utilisation of rural hospitals/rural health centres, and examine ways of improving integrated care across primary, emergency, referred, older people's, maternity, trauma capacity, and community-based services

2.8 Address issues of the retention of the rural maternity workforce and improvement of access to rural maternity services through a review by a rural maternity group, including a GP and midwife who provide obstetric services. p.19 (Rural Expert Advisory Group, 2002)

The New Zealand Institute of Rural Health reviewed progress against the *Implementation of the Primary Care Strategy in Rural New Zealand* in 2008 and proposed that there were a number of issues where it believed that action was urgently needed to respond to and support the rural sector. Those issues included addressing the declining rural health workforce, the role of rural hospitals, and the need for a refreshed rural health strategy. Regarding the role of rural hospitals, the Institute noted that New Zealand lacks a common vision on the role of rural hospitals, service modelling, and evaluation of those models. Common services noted were outpatient visiting specialist services; inpatient services for maternity, aged care, and general practitioner admissions; base for co-location of community health service providers; serviced by GPs or MOSSs, and sometimes community owned and operated, if not by the District Health Board. (New Zealand Institute of Rural Health, 2008)

A recent review undertaken by an expert panel examined the provision of sustainable health services for the people of the Wakatipu Basin in the Southern District Health Board (SDHB) in New Zealand. This panel recommended that the Southern DHB continues to own and support this rural hospital, but works in an integrated way with local health care providers such that they could co-locate in order to enhance rural health care service provision. (Southern District Health Board, 2011)

The importance of air transportation services in New Zealand from rural communities to more central facilities was highlighted by Nagappan et al. (2000) as follows:

With the reduction of health services in the rural areas, efficient transit care of the critically ill is indispensable to good medical care and ensures equity of access to good health care by the rural populace. HEMS [Helicopter Emergency Services] are but one part of a continuum of excellent care. It must be integrated with a well-organised ambulance service and sound practice of hospital medicine.

Rural Workforce

Rural Practitioner Workforce

In the USA Pepper, Sandefer, and Gray,(2010) examined the recruitment and retention of doctors in rural areas. They argued that being raised in a rural area increased the likelihood of subsequent practice in that area and suggested that outreach efforts should be made to recruit future physicians from very rural areas into medical schools¹. They contended that the retention of doctors in these areas was also important. Pepper et al (2010) cited research that found that successful rural doctors reported that they valued the rural life, outdoor activities, the safety of a small community and close relationships with patients, their families and the community.

Dunbar (2011) in a review of Australian rural health service provision commented that the Australian government funded the rural medical schools in that country to ensure that 25% of students completed their clinical training in rural areas. He also stated that Australia was fortunate to “have a publically funded infrastructure to be able to undertake research into rural health, health services and workforce” (p.109).

The Australian Rural Clinical School system was subsequently reviewed by Eley, Synnott, Baker, and Chater, (2012). The expectation of this initiative,

¹ Both New Zealand and Australia have rural entry programs for medical schools

which had been running for 10 years, was that it would improve recruitment to the rural medical workforce through the rurally based clinical training experience. The authors reviewed the literature and found that two key factors that consistently influenced the likelihood of students pursuing rural practice were:

- Rural background where the student was raised and educated in a rural environment and
- A positive rural experience.

Additionally they claimed that the length of rural exposure increased the interest and intention to pursue more rural training. Their interim findings were that the two features above had probably the greatest influence on students pursuing rural careers but that life decisions were frequently layered on, or took preference over, career decisions at decisive periods in life. Eley et al. contended that because of the longitudinal nature of the initiative the definitive evidence of its impact was yet to be provided. They argued that a full evaluation of the effect of the rural training would probably be at least 5-10 years away.

A review by Playford and Cheong (2012) compared the results obtained from the Rural Clinical School (of Western Australia), and Rural Undergraduate support. They argued that the impacts of undergraduate education projects are clearly positive, but that the task of determining their differential influence and identifying those most critical to the rural-decision education pathway was more difficult. They noted that the John Flynn Scholarship program had shown an increase in rural career intention with each successive 2 week rural undergraduate placement. The authors also factored in the positive effect of the Rural Australian Medical Undergraduate Scholarship. Their findings showed that 30% of the basic immersion in rural undergraduate exposure students elected to undertake postgraduate rural rotations. When the extended immersion group from the rural clinical school was analysed, the majority chose rural work.

Canadian authors Mathews, Seguin, Chowdhury, and Card,(2012) reviewed the experience with the recruitment of more rural students into Canadian medical schools in an attempt to address rural physician shortages. They contended that there was a generational gap between physicians. The younger doctors placed greater emphasis on work-life balance and spouse's employment than older generation physicians. They argued that these differences had important implications for small populations which might not be able to support "physician-spouse pairs" or certain subspecialties. Economic factors have been important in the past and the authors argued that the findings highlighted the importance of addressing the needs and expectations of younger physicians in order to attract them.

New Zealand Medical schools operate the Regional Rural Admission Scheme where,

Places in undergraduate programs in medicine and pharmacy are allocated for students of regional or rural origin. These places are to ensure equitable access for such students. Workforce shortages in both professions are apparent in regional and rural New Zealand. Evidence shows that students identifying with regional or rural backgrounds are more likely to work outside urban areas.(The University of Auckland)

The criteria for accessing the scheme in order to enter the University of Auckland Medical School program as a rural origin student are defined as follows:

As defined by The University of Auckland, you qualify under the Regional Rural Admission Scheme if you meet one of the following criteria:

- *Undertaken their pre-secondary education whilst living in a regional/rural area; or*
- *Spent at least three years at a secondary school which is located in a regional/rural area.*

www.fmhs.auckland.ac.nz/faculty/undergrad/rras.aspx

The areas which do not qualify for rural entry are also defined on the site.

Williamson, Wilson, McKechnie, and Ross, (2012) contended that the effect of rural origin is strong in influencing recruitment and retention in the rural workforce but argued that the effect of rural-based programs was less robust, especially for shorter term rotations or placements in rural practice of a few weeks rotation. They examined attitudinal outcomes regarding rural practice careers of Otago medical school students in the three clinical schools associated with the University of Otago. Their aim was to determine if the rural placements of seven weeks for 5th year students had a long term effect in the positive attitude towards rural health. They examined the 2000-2001 cohort in 2009. Additionally a differentiation was made between the attitudes of the students who were in the three different clinical schools (Dunedin, Christchurch and Wellington). The authors found that 56% of the Dunedin graduates reported a positive influence in their attitude to a career in rural practice compared with 24% from Christchurch and 15% from Wellington. The difference was attributed to the seven week rural immersion program only available at the Otago Clinical School in Dunedin.

The retention of rural practitioners has become important. One such scheme to promote this has been used in Australia. Moran, Page, Birden, Fisher, and Hancock, (2009) reported on a scheme where remote practitioners traded positions and living arrangements with a GP in a rural group practice. This allowed the remote practitioner to sharpen clinical skills and experience practice in a more supported environment while allowing the rural GP to experience solo or group practice in a remote setting. This was a pilot trial and appeared to be successful according to the authors.

Some NZ initiatives regarding retention of rural general practitioners have been studied by Poynton (2006), McGrane, Williamson, and Egan, (2007) and Goodyear-Smith and Janes, (2007). Poynton,(2006) in reviewing the Rural Workforce Retention Fund and the Reasonable Roster Fund argued that these had had an positive impact on retention of rural GPs. However, he contended that as the funding had not increased in five years, during which

time many nurses had received a pay rise and locum fees in the New Zealand locum scheme had increased, the value of the funding had been eroded.

McGrane et al. (2007) focused on the Reasonable Roster funding and the Rural Workforce Retention funding and found that these schemes lacked sophistication and highlighted the importance of “designing context-sensitive solutions” which were focused to the needs of the GPs. Goodyear-Smith and Janes reviewed five schemes which included the two referred to above and additionally the Rural Bonus, the PRIME (Primary Response In Medical Emergencies) scheme and NZ Locums scheme. They found that there were significant benefits from the retention and recruitment schemes, but despite these, many practices still reported workforce shortages. The NZ Locums scheme was accessed by 56% of respondents. The uptake of the PRIME scheme was “patchy at best”.

Hore et al (2003) had reviewed the acceptability of the PRIME scheme to rural general practitioners in New Zealand. The PRIME scheme utilised the skills of rural GPs and/or rural nurses in areas where an ambulance crew (two ambulance officers, where one is a paramedic) is more than 20 minutes away (40 minutes in the South Island). The PRIME provider is required to have undertaken appropriate medical training especially to manage accidents occurring in rural settings, including road traffic accidents. They are provided with special medical kits, and communication systems, and work on a roster. The key objectives of PRIME are to ensure primary assessment, essential resuscitation, and the rapid and safe delivery of patients to the appropriate place of definitive care. Higher levels of payments are made to these practitioners, funded by the Accident Compensation Corporation. Participants in the research identified components of the scheme that they regarded as excellent, and there were opportunities for enhancements. (Hore T, Coster G, & Bills J, 2003)

Poynton (2006) also commented that 40% of North Island GPs and 35% of South Island GPs were over 50 years old and cited a study showing that 34% of respondents were intending to leave rural practice within the next five years. The Rural Health Workforce Study by the New Zealand Institute of Rural Health (NZIRH) and the Ministry of Health (2005), echoed many of the findings of the *RNZCGP 2005 Membership Report Part III* (2006) around age, gender, current work arrangements and future work arrangements. (Goodyear-Smith & Janes, 2006) The latter report noted that while the samples of the two studies differ slightly, the issues highlighted by both reports were very similar, i.e. increased paperwork and compliance costs, the need to improve current working conditions, the inadequacy of the current rural ranking system that were a source of important funding for rural health, and a depleting rural workforce. Evidently, the two reports had drawn similar conclusions by raising concern around the future of rural GP and primary health care workforce. Recruitment and retention of health professionals in rural areas will be critical for the sustainability of primary health care.

Overall there have been many schemes which have been designed to combat the shortage of health personnel in rural situations, but so far none have been shown to relieve the 'workforce' situation to a great extent. It is interesting to note that when quantified into actual numbers, approximately 386 practices (out of 1135) are based in rural New Zealand, supported by approximately 573 GPs. Further analysis shows that approximately 44 solo GPs (37% of solo practitioners) work in 44 or 29% of rural practices. (Royal New Zealand College of General Practitioners, 2007)

It is of interest that approximately 48% of GPs working in rural general practice are overseas trained doctors (OTDs) (Royal New Zealand College of General Practitioners, 2006) As expected, the majority of rural OTD GPs (75%) are based in the North Island. Similarly, more male OTD GPs are based in rural New Zealand (Table 20).

Kearns et al (2006) reported on a study based on in-depth interviews conducted with nine OTDs working within rural areas in New Zealand in 2004. Recurring themes were the attractiveness of place, including community loyalty and the enjoyment of 'fully practising medicine'. Offsetting these positive attributes were the lack of choice of schooling, restricted spousal employment opportunities, lack of cultural and entertainment activities, and difficulties in accessing continuing medical education. The authors concluded that "addressing the question of what makes 'place' attractive to overseas-trained general practitioners in rural New Zealand requires an understanding of place as context rather than mere location" (Kearns R, Myers J, Adair V, Coster H, & Coster G, 2006).

These findings are supported by Canadian research among physicians reported by Matthews et al (2012). They report that although Canadian medical schools have increased enrolment and recruited more rural students in an effort to address general and rural physician shortages, there are now generational differences influencing physicians choosing work locations. They found that younger physicians placed greater emphasis on work-life balance and spouse's employment than did older generation physicians. The authors highlighted the importance of addressing the needs and expectations of younger generations of physicians in order to attract them to smaller and rural communities. (Matthews M, Sequin M, N., & Card RT, 2012)

In an editorial, London M. (2004) in the NZMJ highlighted the importance of ensuring the availability of continuing medical education and a career structure for rural general practice, including financial incentives. London (2004) and Janes et al (2004 a) reported that positive themes for the recruitment and retention of rural general practitioners included: forming strong relationships with patients and the community, and practising the full spectrum of general practice including emergency medicine. They highlighted negative themes such as: heavy workloads, frequent on-call, inability to get time off, and feeling undervalued and underpaid by funders. (Janes R & Dowell, 2004)

In another paper, Janes et al (2004) also confirmed in their survey-based research, the importance of recognising and addressing the specific difficulties faced by part-time female rural GPs, such as by providing more flexible work options that would create a more favourable work environment, likely to retain and recruit more women.

Geyman et al (2000) undertook a comprehensive literature review reporting on the successes and failures of medical education and government programs and initiatives that were intended to prepare and place more generalist physicians in rural general practice, mainly in a North American context. They noted that preparation for rural practice is a long and complex pathway with many reasons for attrition. However, the findings are in common with others:

Many factors have been found to be associated with the extent to which educational programs can cause rural physicians to emerge at the end of the educational pipeline, including rural mission of the program, credible mentoring by faculty, types of rural educational experiences, the background of students and residents, and desires of their partners or spouses and others. (Geyman P, Hart G, Norris T, Coombes J, & Lishner D, 2000)

Maternity Services

Of the 55,000 women who gave birth annually in New Zealand, nearly a third lived in rural areas (Simmers, 2006). (In the year 2011 there were a total of 61,403 live births in New Zealand (Statistics New Zealand, 2012)). In 2006 it was estimated that there were 54 GP obstetricians (GPO) still providing intrapartum care with in NZ's maternity system. Many rural non-GPO GPs are still required to deal with emergency obstetric situations where the Lead Maternity Carer (LMC) is not available. Simmers argued that these GPs were often able to manage these situations as a result of past experience but he reported that within a decade all this knowledge will be gone. He also reported that many LMC midwives were unable to survive in smaller locations because there was not enough work for them as opposed to GPs who did not have this problem as they had ongoing occupations in other fields of medicine.

The Rural Midwifery Recruitment and Retention Service (RMRR), is funded by the Ministry of Health and is a joint collaboration between the New Zealand College of Midwives (NZCOM) and the Midwifery and Maternity Providers Organisation (MMPO). The service has been established with the overarching aims of supporting the retention of midwives practicing rurally as Lead Maternity Carers (LMCs) and supporting the recruitment of midwives to set up practices in rural areas that are experiencing a shortage.

<http://www.midwiferyrecruitment.org.nz/>

The formation of the Royal New Zealand College of General Practitioners (RNZCGP) Division of Rural Hospital Medicine has introduced a vocational training and registration pathway for rural doctors, but Simmers (2006) had concerns that there was no suggestion of a maternity component in this.

There is much discussion in the Canadian literature concerning rural maternity services. As far back as 1997 (Osmun, Poenn, & Buie), it was recognised that increasing workload and concerns about physician exhaustion necessitated the reorganization of obstetric services in remote Ontario. The solution for this was the organisation of a centralised prenatal clinic at the local rural hospital which was run by a nurse-midwife and local doctors rotated through the clinic and provided obstetric care on their roster days.

Eight years later, Kornelsen and Grzybowski,(2005) noted the “precipitous decline” in the number of rural communities in Canada providing local maternity care and suggested that the outcomes for newborns could be worse as a result. Because women cannot plan for birth with certainty, many of them experience labour and delivery as a crisis event fraught with anxiety. The authors reviewed current literature and suggested that within a regionalised system, small maternity services can offer safe care, provided that an efficient mechanism for intrapartum transfer has been established.

Orantia, Poole, Strike, and Zelic,(2010) reported on the evaluation of a model of care in North-western Ontario. This involved the local providers of obstetric care each taking one month of the year in rotation and following any woman due in that month for prenatal and intrapartum services. They found that of the

patients surveyed 97% reported that their expectations for care were met. The doctors reported an increased quality of life with this new model and preferred it to the previous model.

Hutten-Czapokis,(2009a) reviewed American studies concerning the need to travel to give birth (even to excellent centres) and found that outcomes were worse and that costs doubled.

In Australia, globalisation and market deregulation have led to social impacts in rural areas (Alston, 2007). This has affected the rural communities and Alston has argued that nothing illustrates the parlous state of rural health services better than the inadequate provision of rural maternity services. She commented that “Nevertheless governments have continued to close facilities in rural areas and high insurance premiums have forced many rural doctors to cease practicing obstetrics” (p. 198). She also cited the Rural Doctors Association (2007) deploring the closure of over 120 rural maternity services and outlining research that suggests that small maternity units were in fact, safe. Alston stated that “certainly they would be safer than forcing women to travel long distances for service while in labour and exposing them to the risk of birth along isolated country roads” (p.199)

The Rural Doctors Association of Australia (2007) in addition to the above citation also argued that while health authorities may anticipate savings through closing rural maternity units this was not always the case. They quoted the following:

- Delivery costs are usually lower in smaller hospitals
- Closure shifts the costs of the health budget to rural families
- The local hospital is an important employer²
- Ambulance services face higher costs

They advocated a range of strategies that include:

² See p. 42

- a community health impact assessment before a unit is closed
- prior development of compensatory services
- existing and evolving models of team care be rigorously evaluated and successful models be disseminated

In Australia, the National Rural Health Alliance (2010) contended that small rural maternity units provide safe birthing services and safety is compromised when these services are not available locally. They argued that closing rural maternity services did not make economic sense for families, the health care system or sustainable regional development and was likely to reduce the opportunities for midwives and procedural doctors to train and work in the bush. They claimed that in the short term, it may cost health authorities less but the cost is higher for mothers and babies in terms of increased risk and costs.

Overall, there are problems which appear to be consistent in the literature across the reviewed countries and the opinion is that presumed cost savings engendered by closing rural maternity hospitals represents the transfer of costs to the patients and to larger hospitals and that the risk to mothers and babies are increased. The problems of shortage of maternity personnel appear to be experienced in most countries. So far the measures undertaken in NZ to encourage maternity care into the community do not appear to have great success.

Nurses, rural nurse specialists and nurse practitioners

Rural area nurses

New Zealand has a system of rural area nurses who provide nursing services to the population who live in rural or remote areas of the country. Health Workforce New Zealand, (2009) reviewed the present and future supply of these nurses. Projections were made 20 years into the future comparing the forecast numbers of nurses with the anticipated demand. The forecast included both rural area and rural-outreach nurses, who deliver nursing services from an independent urban community/area and rural-area nurses

including rural hospital nurses who deliver services from within a rural community/area.

The predictions estimated that in the case of rural-area nurses, while the population will only grow by 8.6%, the demand will increase by 37.1% by 2026. Despite a current growth in the nurse workforce of 12.5% per annum, the survey predicts that the net growth will decline as the age of the rural workforce increases and exits increase. Where the rural-outreach nurses are concerned, it is estimated that supply will exceed demand.

Nurse specialists

In New Zealand, Rural Nurse Specialists (RNS) have become important members of the rural nursing team. The West Coast DHB (NZ) has a number of these positions located inside its area. The nurses work semi independently either in collaboration with a medical practitioner or under the guidance of standing orders. The rural nurse specialist position provides for a very large range of functions e.g. the rural nurse specialist will::

- Assess, diagnose and treat personal health problems in patients, in collaboration with medical practitioners or under the guidance of approved Standing Orders.
- Schedule and run self-referral health clinics on a regular basis at times and places that are appropriate to meet the community's needs.
- Promote immunisation in the area and run immunisation clinics
- Maintain a drug formulary for urgent and emergency supplies
- Maintain a controlled drug supply for controlled drugs prescribed for terminally ill patients

There are many other duties that the RNS is required to perform and these are listed in [Appendix 1](#). For the West Coast DHB, the required qualifications for this position were initially experiential but subsequently there has been a requirement to obtain the PGDip Rural Health.

Nurse practitioners

The topic of nurse practitioners (NP) in medicine in general and in rural medicine in particular has generated much dispute and heat between proponents and opponents of the position.

In Canada, nurse practitioners are becoming familiar figures on the Canadian health care scene (Canadian Health Services Research Foundation, 2011). The nurse practitioners are licensed in every province and the numbers have doubled from 2004 (800) to 2008 (1628). The authors quoted the perception by the general public³ that nurse practitioners compared with doctors, provided second class care, and were best suited to times and places where a doctor was unavailable. The authors asserted that NPs were trained and educated to conduct health assessments, perform a variety of medical procedures. These nurses prescribed drugs, diagnose and managed common illnesses and injuries through ordering and interpreting diagnostic tests. They also had expertise in health promotion and preventive care. The authors also claimed that the NPs may cost the health system less than primary care physicians.

In a patient survey conducted in 2009, (Canadian Health Services Research Foundation, 2011) it was found that:

- One in five had been treated by a nurse practitioner
- A majority would like to see the role expanded⁴
- Greater than three in four would be comfortable seeing an NP in lieu of the family doctor
- Four in five feel that expanding their roles would be an effective way of managing health costs⁵

DiCenso, Bourgealt, Abelson, and Martin-Misener (2011) also reviewed the situation of NPs in Canada although as in the previous situation this was not

³ This research was not confined to rural health

⁴ The figures were not given

⁵ The authors state that in Canada there is a paucity of evidence on their cost effectiveness relative to physicians

confined to rural situations. They concluded that there was an abundant amount of high quality research to demonstrate that NPs are effective and safe.

In rural and remote Australia it was the need for a new model of rural and remote health care in the 1990s that provided the impetus for developing the NP role (Mills, Lindsay, & Gardner, 2011). They argued that at a recent conference of the International Nurse Practitioner/ Advanced Practice Nursing Network, that research findings were presented demonstrating that NPs deliver care that was safe, timely and cost effective. Currently, however, the PN scope of practice remains significantly hamstrung because of lack of access to pharmaceutical benefits and Medicare benefits which was going to, in part, be corrected with new legislation in 2010. The authors contended that PNs were vital members of a multidisciplinary team and had the potential to transform health care in rural and remote areas.

In 1977 the US congress had enacted the Rural Health Clinics Act, which amongst other actions, encouraged the use of physicians assistants, nurse practitioners and certified nurse midwives in rural areas since many small communities could no longer support a sufficient number of physicians⁶ (Henry, Hooker, & Yates, 2010). Barnason and Morris (2011) contended, in a review of the American rural hospitals that there was role for NPs in emergency department and inpatient situations. They however argued that the education and training of NPs needed to include the essential critical thinking and skill sets to manage these types of health care needs.

There is remarkably little recent information on the role of NPs in rural situations. The New Zealand Institute of Rural Health commissioned a report in 2004 – “Identifying Training and Support Services required to Encourage Rural Nurses to Become Rural Nurse Practitioners” (Institute of Rural Health, 2004). This document identified that, because of the reduction in the numbers

⁶ Note in Canada and the USA the term physician is commonly used to indicate a general practitioner in New Zealand and Australia.

of junior doctors and the consequent difficulties of providing primary care services, combined with the expected growth in primary care activities, much of the health care provision traditionally carried out by general practitioners would need to be reviewed and apportioned to appropriately qualified personnel. The report argued that illnesses which could be treated without recourse to medical advice and minor self-limiting illnesses, but which required health education, health promotion and disease prevention could fall within this field. The report also acknowledged the difficulties which arise between the concept of nurse practitioners and doctors.

The report, amongst other recommendations, argued for the establishment of functions within a DHB that are defined Nurse Practitioner roles and for the removal of structural barriers which prevented career paths for nurses with advanced skills. It also suggested there be identification and assistance to nurses in attaining Nurse Practitioner status.

The NZ situation shows division of opinion. Gilmer, Smith, and Gorman, (2009) expressed contrasting opinions on the use of NPs in primary care in NZ. Firstly, Gilmer and Smith who are from a nursing background, argued that NPs could substantially perform many tasks performed in primary care with the emphasis that they were noting that the term was task substitution and not role substitution. They quoted the argument that “GPs have more training in diagnosing and treating medical disorders pharmacologically” (p. 140) but claimed that “where GPs and NPs can collaboratively agree, there is scope for NPs to perform many tasks that have traditionally been seen as only within the role of the GP” (p140). These authors also contended that NPs could complement the work of other primary providers, particularly GPs and gave the examples of prevention, health promotion and early intervention and working with chronic disorders. Additionally they used the examples to demonstrate that NPs were not as expensive as GPs and suggested that they could be used in task substitution where they could make the most positive contribution. They cited American research (<http://www.aanp.org/NR>) to substantiate their opinion. Finally they asserted that NPs do not take as long to train as a GP.

Secondly, Gorman from a medical background (Gilmer et al., 2009) discussed the use of a NP for task substitution in primary care.

He stated that:

The moot that nurse practitioners provide a substantive opportunity for task substitution in primary health care in New Zealand is not borne out by experience and is potentially in conflict with a fundamental objective of most health service planning which is that primary health care and/or general scopes of practice become the usual habitat of doctors. (p.142)

He argued that GP capacity had decreased by about 12.5%⁷ and that it was expected that NP-led chronic care clinics would compensate for any such decrease. Gorman stated that there were 47 NPs in NZ; 15 of those were in primary health care and eight had prescribing rights. He asserted that there were no data to show cost- or outcome-efficacy for a non-doctor patient differentiation role. He was of the opinion that the NP concept deserved closer attention as the principle was sound and the employment of a larger NP population in future health workforces would seem as inevitable as it was sensible. He questioned firstly, why this did not occur as a natural evolution of the Primary Health Care Strategy (Ministry of Health, 2001) and asked what could be done to address the consequently identified barriers and secondly which of the roles identified as being suitable for substitution involved nursing-related transferable skills and knowledge. He also suggested that the NP role could affect the recruitment and retention of nurses in traditional roles.

Carryer J et al (2011) in an analysis of the challenges in progressing rural nurses through to Nurse Practitioner roles observed that there were four themes encompassing the experiences of the 21 potential NP candidates surveyed. They were:

Uncertainty about opportunities for employment as an NP and legislative and funding barriers for NP practice; support or resistance from GPs and nurse colleagues, self-doubt, and the importance of mentoring; difficulties with the NP authorisation process; and meeting the NP competencies within the challenges imposed by rural location.

⁷ This statement was made in 2009 but does not say which year the figures were taken from.

(Carryer J, Boddy J, & Budge C, 2011)

As of 2010 there were a total of 63 Nurse Practitioners registered in NZ in all areas (McLean, 2010); an increase from 47 in 2009 (Gilmer et al). To become a Nurse Practitioner, the following requirements are necessary:

- a Master's degree in nursing or health science that involves on-the-job training and that appears on the list of qualifications approved by the Nursing Council of New Zealand
- at least four years' nursing experience in a specific area of practice such as emergency health, disease management or primary health care.

Innovations currently in force in New Zealand

In response to the recognition that rural health has specific health delivery needs, the NZ government has initiated several programs. (National Health Committee, 2010a) They are:

- The Rural Innovation Fund which funds projects to improve rural health delivery
- The Nurse Practitioner project targeting DHB planners and funders to consider the role of the nurse practitioner in rural settings
- The Māori Provider Development Scheme building the capacity of 280 kaupapa Māori health providers
- Collaboration between Ministry of Health (MOH) and other government departments on initiatives such as Rural Housing Program, the Primary Response in Medical Emergencies Scheme (PRIME), and the Rural Broadband Initiative
- The Connected Health initiative which is aimed at facilitating the sharing of health information in rural settings and identifying gaps in availability of ultrafast broadband and related technology for its effective use
- The Mobile Surgical Unit (<http://www.mobilesurgical.co.nz>)

- The Reasonable Rosters fund
- The Workforce Retention fund
- The Rural Bonus Scheme
- NZ Locums

The NHC (National Health Committee, 2010b) has recognised some new government initiatives relating to funding in rural health. These include:

- Devolution of some hospital services to primary care
- More training for health professionals in rural areas
- Voluntary bonding for hard-to-staff health professions and locations
- The rural immersion program⁸
- The Rural Midwifery Recruitment and Retention program
- Improved quality and supervision in residential aged care and respite care
- The Māori Innovation fund which supports innovative ideas and practices to improve services offered to Māori and their wider communities

The international literature has commented that “an effective systematic approach relies on alignment of changes at the health service level with those in the external policy environment” (Wakerman & Humphreys, 2011, p. 118) These authors argued that service providers, funders and consumers need to know what level and type of services they can reasonably expect.

Overseas Innovations

Physician's Assistants

Physician assistants (PAs) in America are health care professionals trained within the medical model and licensed to practise medicine under the supervision of a licensed doctor (Henry et al., 2010).

⁸ This program involved 5th year medical students completing their studies in a rural environment in selected practices.

The Physician Assistant is concerned with preventing, maintaining, and treating human illness and injury by providing a broad range of health care services that were traditionally performed by a physician. They conduct physical exams, diagnose and treat illnesses, order and interpret tests, counsel on preventive health care, assist in surgery, give medical orders and write prescriptions. The 1977 Act by the US Congress has been discussed above⁹. Henry et al., (2010) differentiated between PAs and NPs in that the rationale for a PA was that the PA was trained in the medical model and was in a dependant relationship with an employing physician whereas an NP was sanctioned to work independently and their role “may” (*their words*) be different. The most common type of practice for a PA was in primary care although the federal government employed PAs in a variety of roles outside primary care. The federal government did, however, employ PAs in the rural setting. The authors cited Krein 1997 who found that in Northern states, 50% of the rural hospitals utilised PAs. The PAs in rural situations covered a *very wide* range of activities. ([appendix 2](#)) Historically (despite the list in Appendix 1) the illnesses and procedures attended to were considered commonplace and not critical. (The training required for a PA is detailed in [appendix 3](#))

Everett, Schumaker, Wright, and Smith,(2009) reviewed the role of PAs and NPs in America. They suggested that the patients of PA/NPs differed from those seen by doctors. They contended that PA/NPs had been utilised to improve access and/or reduce cost while maintaining quality of care and that they are improving access by serving underserved populations. It has been shown that rural PA/NPs act as a primary provider for a sizable proportion of their patients.

In Queensland Australia, a Physician’s Assistant program was recently closed.

The reasons given were:

⁹ See page 24

This decision has been taken by the School of Medicine in the light of a combination of key factors. This includes the resignation of the Program Director and the difficulty in recruiting a replacement within this field, the significant uncertainty about the future of a physician assistant workforce in Australia, and the associated financial risk.

This was a very difficult decision for the School of Medicine to take, not least because of our commitment to health workforce development and reform, and our significant investment in developing the first physician assistant program in Australia.

(quoting Professor David Wilkinson, Dean and Head of the School of Medicine. Source: University of Queensland) at

<http://www.uq.edu.au/news/?article=23118>, Accessed 25 October 2012

In New Zealand, a Physician's Assistant trial was conducted at Middlemore Hospital in Auckland in 2010. The innovation program was commenced under the auspices of Health Workforce New Zealand (HWNZ) and was announced as below:

An innovation already approved will see the first demonstration site to test potential for the introduction of the Physician Assistant role. This will begin with Counties Manukau DHB trialling a model that works well in many other countries including the USA, Canada and Britain. This is a joint initiative between the four northern region DHBs and the University of Auckland Faculty of Medical and Health Sciences. Physician Assistants are trained in a medical environment with a two year post-graduate program and work under the specific direction and delegation of senior doctors. The doctor always remains responsible for the overall management of the patient. (New Zealand Doctor, 2010)

The program comprised two PAs from the USA and concluded in September 2011. An evaluation was conducted and information regarding the PA program at Counties Manukau DHB (Middlemore Hospital) is available at the HWNZ website at: <http://www.healthworkforce.govt.nz/new-roles-and-scopes/physician-assistant-role-in-new-zealand> (Accessed 25 October 2012).

The Director of Health Workforce New Zealand, Brenda Wraight (2011), said the pilot at Counties Manukau DHB was successful. She stated that another group of DHBs was keen to look at the role. She said “*the role needed to be tested in a range of settings and a robust model set up with employer buy in before considering setting up an NZ physician's education program.*” She

also stated that *“The Australian experience was that the education (providers) got ahead of the readiness of employers to employ graduates of the program”*.(p.1) The PA role has not been tested in rural hospitals or rural practice in New Zealand, but this may be worth considering at some point in the future, accompanied by a full evaluation of the effectiveness of such a program.

Generally the literature suggests that PAs may provide cost-effective and supplemental medical services to under-served rural populations and that these services are valued. This broad range of skills and procedures may be necessary to match the extensive healthcare needs of under-served rural populations (Henry et al., 2010).

Summary

The Physician’s Assistant appears to be a largely American initiative which has been trialled in New Zealand at one hospital on a one year basis, but no follow on has as yet occurred. In Australia there has been a university training course but this has closed due to a lack of available positions. The American use of the PA has gained wide acceptance in the rural community.

It should be noted that a new PA program is being planned where the PAs will be sent to a wider variety of situations including rural.(Health Workforce New Zealand, 2012)

Medical Assistants

Medical assistants perform administrative and clinical tasks to keep the offices of physicians and other health professionals running smoothly (US Bureau of Labor Statistics, 2010-2011). In small practices they do many different tasks, handling both administrative and clinical duties and report directly to an office manager, physician or other health practitioner. The Bureau states that in larger practices they tend to specialise in a particular area under the supervision of a department administrator. They are conventionally divided into two types:

- *Administrative medical assistants.* These update and file patient records, fill out insurance forms and arrange for hospital admissions. Additionally they may perform tasks less specific to medical settings such as telephone answering, greeting patients etc.
- *Clinical medical assistants.* In the USA they have varied duties depending on state law. Some tasks include taking histories and recording vital signs, explaining procedures to patients and assisting during examinations. They may collect blood samples and perform basic lab tests and sterilise instruments. They may also perform a range of more complex tasks under direction of a physician such as instructing a patient about medications and diets, authorise drug refills, do ECGs, remove sutures or change dressings.

Medical assistants work in a range of situations which include public and private hospitals, physicians' offices and with other health professionals.

Education of Medical Assistants in the USA

According to the US Bureau of Labor Statistics, (2010-2011) it is possible for there to be no formal training, although in the USA programs are offered at technical high schools, post secondary vocational schools and colleges. Many are trained on the job and only need to have a high school diploma.

Wilson, Fegan, Romence, Uhe, and Dionne (2011) examined the perceptions of those who were precepting medical assistants during a training program. They argued that "on the job education" was an essential part of medical assistant training. They described the preceptors as already certified medical assistants, physicians, office managers, and registered nurses. Wilson et al.,(2011) found that there were negative aspects for the preceptors such as extra paperwork, cultural differences, lack of communication and extra hours required. However these were exceeded by the benefits which included personal satisfaction, CME credits, teaching workshops and academic faculty appointments.

The job description of a Health Care Assistant (HCA) appears to be the UK equivalent of the Medical Assistant and covers a range of skills which are similar to the NZ specifications. The document also details the person specifications that are desirable in a person who is contemplating such a career and the methods by which the specifications are assessed (Royal College of Nursing, 2012). Petrova, Vail, Bosely, and Dale (2010) identified the benefits and challenges of employing HCAs in general practice. Overall the HCAs were seen as a valuable addition to the primary care team. Of interest is that they were found "to accelerate rather than extend services and allowed more appropriate use of nurses skills and enable cost containment" (p303).

In Australia medical assistants are trained to carry out delegated administrative and clinical assisting duties specific to the ambulatory care environment (Anderson, Proudfoot, & Harris, 2009). The role was first introduced into general practice in Brisbane in 2005. This was based on reports of work overload of GPs and their nurses.

The program for Medical Assistants is very similar to that of the Primary Care Practice Assistant (PCPA) in New Zealand. This is in the form of a pilot program which is being conducted by the Waitemata PHO in Auckland. This program contains both an academic component and "on the job" training and is being evaluated. One rural practice is involved in the evaluation.

It is possible that an initiative such as Medical Assistant/Health Care Assistant could be of benefit to the rural workforce in that it will be able to reduce the load of rural doctors and nurses.

Philanthropic Initiatives

At a conference in the USA in 2008 – Rural Health Care: Innovations in Policy and Practice (Grantmakers-in-Health), the desirability of raising the visibility

of delivery system improvements that showed results was emphasised. They argued that local challenges drove innovation and gave the example that resource scarcity and low volume drove the creation of formal and informal networks that shared personnel, expertise and technology. The conference also discussed how philanthropic investment could support and spread many rural innovations underway.

IT Medicine/telemedicine in NZ and Overseas

The challenges to providing effective health care in under-served rural areas are multifaceted but not insurmountable (Effken & Abbott, 2009). The advent of improved and rapid methods of electronic information transfer has had a potentially marked beneficial effect on rural medicine. Rural health practitioners by virtue of their isolation from centralised services may be deprived of the immediate help from specialised services. Ricketts (1999) argued that many of the local and regional health services were able to continue their role or healthcare activity because of the rapid diffusion of, amongst others, new systems of coordinating and networking and information technology.

Events since then have demonstrated the advantage of telemedicine and health-IT enabled care. The NZ government has recognised this with the Connected Health initiative (Bax, Shedda, & Frizelle, 2006; National Health Committee, 2010a). <http://journal.nzma.org.nz/journal/119-1236/2025/content.pdf> Accessed 25 October 2012

Telemedicine was introduced in New Zealand as early as 2000. However, Fraser (2006) found that of the initial systems in 2000, only half of those were currently operating and concluded that the pilot status of these projects had not developed into mainstream delivery.

It was too hard to maintain and assemble all the equipment and to coordinate the specialist and the patient appointments” (personal communication to authors)

The latter was in the case of tele-dermatology in a rural town.

In 2010 there was only one GP in the whole of South Westland, who saw patients in Hari Hari, Whataroa, Franz Josef, Fox Glacier and Haast. Dr Michael Sullivan, telehealth clinical leader for West Coast and Canterbury district health boards, said, "That's an enormous area. He might be doing a clinic in Hari Hari and 300 kilometres away there's a nurse down in Haast who's got a patient she'd urgently like the doctor to see. They often have to consult over the phone." Health practices at those five sites were outfitted with 22-inch high-definition video conference units that doubled as computer screens. "The nurses there will be able to dial into the system and talk to Greymouth or the GP or get a palliative care opinion or a cancer opinion from Christchurch." (Royal New Zealand College of General Practitioners, 2010)

Galli, Keith, McKenzie, Hall, and Henderson, (2008) espoused the view that telemedicine offered promise for improving the quality of care in rural areas in America, but up to that date models were not designed to provide affordable care to unstable patients. The TelEmergency program was developed to overcome these limitations. This program used specially trained nurse practitioners linked in real time with collaborating physicians in an emergency department. They chose nurse practitioners (NPs) because of their familiarity with hospitals rather than physician's assistants (see below). The NPs were required to have advanced special qualifications (these included a master's degree in nursing, certification as a family nurse practitioner, current basic and advanced cardiac life support, paediatric advanced life support and completion of a controlled substance workshop). The overriding goal of the program was to ensure that patients received appropriate treatment in a timely fashion. Patient surveys conducted relating to the program showed that 93.6% of patients were comfortable with the system.

Non-physician providers deliver "much" of the health care in rural communities in America (Effken & Abbott, 2009). They argued that clinicians in under-served rural areas often have higher workloads, cover large geographic

areas, have lower access to specialists and treat a broad array of complex patients. They argued that Health Information Technology (HIT) and the use of electronic health records that link rural areas and larger centres would enhance the continuity of care and improve access to resources. They contended that facets of HIT coupled with the increased emphasis on chronic disease management, health promotion, disease prevention and rural workforce challenges “point to significant opportunities for growth and innovation that fall clearly within the nursing practice domain” (p. 441).

Effken and Abbott (2009) also suggested that social networking media could help the promotion of health in rural areas.¹⁰ The authors named several health related networking sites.¹¹ An important part of their dissertation included the use of e-learning for patients and electronic personal health records. They concluded that deployment of health care IT would require leadership from technologically competent providers.

Telemedicine, telehealth monitoring, electronic health records and other technology will help physicians, long term care facilities to more efficiently track and coordinate care of patients (Watson, 2011). Home telemonitoring in which patients check their vital signs, blood sugar, weight and oxygen saturation and transmit the information electronically offers the opportunity to catch condition changes is still not widely adopted in America mainly because it is not reimbursed. Watson cited Mynatt (2011) as saying that elderly people accepted this technology in their home. Watson’s colleague, however, argued that there is the possibility that such data could overwhelm the physician and advised caution that what is needed is technology that would pick up trends.

A variation of telemedicine is that of medical/nursing video conferencing. Newman, Martin, McGarry, and Cashin,(2009) reviewed a video conference community in New South Wales, Australia and found that it was welcoming and provided useful information. The respondents, however, were generally of

¹⁰ Face book, MySpace and (Twitter – added by author)

¹¹ [http:// Patientslikeme.com](http://Patientslikeme.com); Dailystrength.org

the opinion that it was not necessarily easy to use and 34% felt that the community platform was not reliable from the technical aspect.

A commonly used form of telemedicine in New Zealand is “Healthline”. This is a free nurse-run triage 0800 phone which is available throughout New Zealand. People who need advice may ring this number free of charge. There is a wide variation in the rates of calls from different areas. However an important problem exists for those who do not have phone access – landline or mobile.

Other nursing triage systems are available in New Zealand including one commonly used by general practitioners – HML Nurse Triage Services <http://www.nursetriage.co.nz/index.html>, (Accessed 25 October 2012). Many GPs use this service to have night calls triaged by nurses before the call is put through to a doctor for action.

Research

The importance of peer-reviewed scholarly research for assuring that high quality and credible information is disseminated to the field of rural health practitioners, health policy makers and consumers was stressed by Borders (2011). He argued that applied research is intended to have direct implications for decision-makers and consumers. With the advent of the internet the ability to disseminate research has spread. There are various agencies, including governmental, private foundations and individuals who are able to disseminate “research reports and briefs”. Borders was of the opinion that non peer reviewed reports can serve an important role in providing summary and often descriptive information about rural health concerns but asserted that the problems facing rural health policy makers and managers are rarely simple and necessitate more rigorous analysis and review.

Borders (2011) contended that peer review for rural health practice and policy also contributed to the validity, quality and credibility of the findings. He also

suggested that, as decision-makers are “busy people” and may not have time to read full length research articles, that they be offered the abstract and discussion sections, which he claims should offer enough information.

Smith, Humphreys, and Wilson (2008) conducted a review of international literature. They argued that programs to improve rural health would be most effective when based on policies which targeted all risk determinants collectively contributing to poor rural health outcomes. Their findings showed some similarity to those of the National Health Committee (2010b) in that they described factors such as geographical location and rural environments, rural lifestyles, socioeconomic characteristics, race and ethnicity. They concluded that there was a paucity of rural-urban epidemiological evidence underpinning rural and remote health policy and programs. An important recommendation from these authors was that research be conducted to investigate why some rural areas exhibited health disadvantages while other similar areas have health outcomes that accord with national standards. They contended that rural health policies and programs would continue to be based on enduring misperceptions of what was required or the political need to respond to “squeaky wheels” that so often drive the policy agenda.

Current rural research organisations and institutes

All of the following countries have institutes of rural studies/research in one form or another which may advocate to government on rural health.

Canada

There are many organisations involved in Canadian rural health.

The Centre for Rural and Northern Health Research Unit appears to be an important centre for rural research in Canada. The statement below is taken from the website and outlines the principles which apply to their activities.

The Centre for Rural and Northern Health Research (CRaNHR) is an academic and applied research centre with sites at Laurentian University in Sudbury and at Lakehead University in Thunder Bay, Ontario.

CRaNHR's mandate is to conduct interdisciplinary research on rural health with a view to improving health services, access to health care,

particularly in rural and northern communities, and enhancing our understanding of the health care system.

The research by this organisation is clear and well defined. (appendix 4)

The centre has also been involved in the publication of a book “Health in Rural Canada”. <http://www.cranhr.ca/profile.html>

The Gateway Rural Health Research Institute is an innovative organisation which is located in Ontario and claims to be the only “community-driven” rural research institute in Canada. This group aims to improve the health and the quality of life of rural residents through research, education and communication. Their aim is to achieve collaboration between community health centres, rural health professionals, academic teaching and research institutions and the community at large. Thus, a primary goal of Gateway is to provide a community-based “point of access” where stakeholders meet to develop and implement research strategies designed to improve the health status of rural residents in South-western Ontario.

Gateway outlines what are considered to be the main rural health crisis factors. They are the:

- Percentage of people with high blood pressure
- Percentage of people with diabetes
- Percentage of obese adults
- Ischemic heart disease death rates

The group has conducted a range of research projects and has combined with the Centre for Rural and Northern Health Research Unit on a large diabetic study in rural areas.

A list of their heir activities is available on <http://www.gatewayresearch.ca/>

Australia

Australian rural research is difficult to identify in the form of individual research projects. However the website of the Australian Rural Health Research Collaboration gives an indication of current rural research in Australia.

[\(appendix 5\)](#)

The National Rural Health Alliance in Australia is an umbrella grouping of 33 organisations.

Rural and Regional Health Australia is a new federal organisation. The intention of this organisation is to advocate for government action on rural and remote health.

(The two above are also described in [appendix 5](#)

Monash University has a School of Rural Health.

<http://www.med.monash.edu.au>

The United Kingdom

The Institute of Rural Health is the umbrella organisation for rural health in the UK. (<http://www.rural-health.ac.uk>) It has well defined recent research and listed recent publications. ([See appendix 6](#)). It is based in Wales and has links to many government departments and works in association with several universities. In 2010 and 2011 it completed two research projects in each year. It has a reference library but does not specify if it is available on line. The National Health System has established an electronic [National Library for Health](#) which is a modern, integrated, hybrid service that comprises NHS funded services across the country plus commissioned information services and products. In Scotland the NHS hosts an e-library which contains a specialist library on <http://www.knowledge.scot.nhs.uk>.¹²

The Institute of Rural Health is available on <http://www.rural-health.ac.uk>

The United States

The USA has *multiple* groups which research and advocate for rural populations. These are funded both federally and by individual states. The WWAMI Rural Health Research Center institute works closely with the state departments of health, and Area Health Education Centers in the five WWAMI

¹² At present this site is under reconstruction and is not available.

states (Washington, Wyoming, Alaska, Montana, and Idaho) as well as other researchers and policymakers across the U.S. and internationally.

[\(see appendix 7\)](#)

New Zealand

New Zealand has the New Zealand Institute of Rural Health which is a charitable organisation which was founded in 2001. www.nzirh.org.nz/ It provides a range of information and services. The New Zealand Institute of Rural Health provides the following services to the rural communities.

- Research and teaching
- Rural health status
- Workforce development
- Resource and resource utilisation
- Service delivery

The University of Otago established a “Centre for Rural Health” in the late 1990s. Simon Bidwell published a review of the international literature pertaining to Successful Models of Rural Health Service Delivery and Community Involvement in Rural Health (Bidwell, 2001). He reviewed current (2001 and before) literature emanating from the USA, Australia, Canada and New Zealand. The Centre closed in 2002.

Rurality and environment

Veitch,(2009) reviewed the effect of the natural environment and potential hazards on the rural population in Australia. He examined firstly the physical environment, which included sun, weather extremes, water sources and soil born organisms. Also contained in this section were venomous and injurious animals. He included distance which separated people from each other and from support and took account of fatigue and wear and tear and the risks to survival posed by distance and the deterrence to seeking health care.

Veitch then superimposed the “built environment” which included chemicals, pesticides and the risk of physical injuries associated with rural living and work. He concluded that rurality contains many potential hazards and risks to health and wellbeing.

The findings of Veitch appear to illustrate important differences in the rural health environment compared with that of the urban/city environment.

Staffing of rural hospitals

General practitioners make up half the rural hospital work force in New Zealand (Nixon & Blattner, 2008). These are usually part time appointments and are viewed as part of the GP’s normal practice. However many younger doctors now feel that this aspect of medicine is outside the usual scope of general practice and feel vulnerable when expected to undertake rural hospital work (p. 403). The formation of the Royal New Zealand College of General Practitioners (RNZCGP) Division of Rural Hospital Medicine has introduced a vocational registration pathway for those wishing to enter into rural hospital practice. The Medical Council of New Zealand (MCNZ) has recognised this pathway for Vocational Registration. Many of the New Zealand rural GPs and rural hospital doctors are overseas trained and may work as a Medical Officer Special Scale (MOSS). This requires a collegial supervision situation and the new vocational registration pathway, when completed, will allow them to work independently.

Murdoch (2007) reviewed the staffing of rural hospitals in New Zealand. He found that 50% were general practitioners and 50% were MOSSs. However, MOSSs contributed **80%** of the total number of work hours worked.

Lawrenson, Nixon, and Steed (2011) in their survey of the rural hospital doctors workforce in NZ found that hospital managers of rural hospitals (n=28) considered that there was a shortage of medical practitioners and were required to make “significant” use of locum staff. Their findings differed from Murdoch in 2007 in that in 2011 there were now 68% (Murdoch 50%) who

were trained overseas. Lawrenson et al.,(2011) also found that they were predominately male and only 54% were vocationally registered. The suggestion that may arise from this is that the hours worked by MOSSs would be higher than the 80% described by Murdoch in 2007. Eighteen of the hospitals surveyed, directly employed doctors and of those only fourteen reported a credentialing process for verifying qualifications and references prior to employment. The authors expressed concern that the usual safeguards associated with devolving services from state control had not been rigorously applied. This was evidenced by the fact that many of the hospitals did not have a recognised clinical leader or an active process for credentialing new staff. Their survey identified that only 107 rural doctors were providing acute care in 28 hospitals and they described this as a “very vulnerable base” (p.4) from which to be operating such an important service.

Ownership of rural hospitals

Lawrenson et al., (2011) investigated the number of rural hospitals in New Zealand. They ascribed the ownership of rural hospitals as below:

District Health Board	15
Community Trust	11
Local Authority Trading Enterprise (Oamaru hospital)	1
Private (not specified)	1

For a list of NZ rural hospitals see [appendix 8](#).

Community economics and activism related to rural hospital closure

Rural health services difficulties in NZ have increased as the desire to limit health expenditure by politicians has increased over the years (Barnett & Barnet, 2002). This has also been described in the international literature (J Fraser, 2004; Holmes, Slifkin, Randolph, & Poley, 2006; Hutten-Czapokis, 2009b)

In a publication from the USA, Holmes et al (2006) described the situation where many of the community are employed or supported by the local hospital and the communities, as the hospitals “bring outside dollars into the communities via third party payers, provide jobs, stimulate local purchasing and help attract local industry and retirees” (p.467). This, they argued, affects the community economic health and closure of the hospital would have an adverse effect on that community. They do, however, cite other research, Pearson and Tajalli, (2003); and Probst, Samuels, Hussey, Berry, and Ricketts, (1999) which did not find this association. The probable reason for this 1999 finding was that Probst et al. initially *did* find that the income in the affected areas fell but after three years began to rise again and that the falls were not statistically significant.

Previous research in America by Cordes, Van der Sluis, Lamphear, and Hoffman (1999) had commented on the attendant loss of employment following the closure of a local hospital. Cordes et al. (1999) also argued that closure of a local hospital produced a “pervasive sense of loss and a reduction in the social capital of the community” (p.168). The authors argued that future economic consequences would vary by community. The differences would occur due to dissimilarities of the makeup of local health care sectors. They found that the average size of the closure hospitals was only 30 beds and two-thirds of these were located in towns with a population of 2500 or less. They posed the question of a hospital repositioning itself and scaling back its acute services and increasing outpatient services and long term care services. They claimed that this had a beneficial effect on the local economy for some types of hospital.

Barnett and Barnett (2002) reviewed one specific strategy – the creation of community trusts to retain essential health services for rural areas. They noted the international literature reasons for closure. Factors included small size, poor financial performance; low occupancy rates; changing patterns of funding; weak local economies; a declining population base and competition

from other hospitals. The authors also identified what they considered were the main reasons why communities resisted the closure of their local hospitals. They were: a source of civic pride, often the major source of employment, that their presence may help communities attract investment, and sometimes, perhaps above all, they are a source of security and a symbol of legitimacy for a town and its inhabitants.

Techniques used by communities to resist closure have varied. In New Zealand, Kearns and Joseph (1997) used the examples of the Hokianga and Tokanui communities to illustrate the success or otherwise of two approaches to the closure of local health services.

Tokanui hospital, while not large by international standards, was, Kearns and Joseph argued, a major institution in the South Waikato and provided a range of skilled and unskilled job opportunities to a neighbouring rural population and to the residents of nearby Te Awamutu, many of whom were Māori. They stated (p.26) that “despite the affective link between people, place and institution, the announcement of the closure of Tokanui hospital did not lead to community protest”. Tokanui was eventually closed.

With the election of the National government in 1990 and with the fears of a withdrawal of health care services in Hokianga a highly spatialised resistance was precipitated. Community opposition was initially articulated through a threatened hikoi tapu (sacred walk) by both Māori and Pakeha residents to Parliament Buildings in Wellington. “As a result of such activities, an embarrassed government gave in to local pressure” (p.27). A community committee negotiated initially pharmaceutical and later free health care and eventually became the budget holder for the area. The assets (plant, equipment and vehicles) were subsequently handed over. Kearns and Joseph attributed the ability of the Hokianga community to resist successfully, to the formal space of health care provision and the functional space of the community. This was reinforced by the congruence of a bicultural community of interest with no divisions along lines of interest. They also attribute the

convergence of the Māori and Pakeha communities of interest as being significant.

In contrast, at Tokanui the announcement of the closure was met with ambivalence. There was concern for jobs, but not with the loss of service. Kearns and Joseph argued that Tokanui was a site of reassertion of Māori identity (as well as a source of jobs) and appeared surprised at the muted response.

Fraser (2004) reviewed the closure of an Australian rural hospital. He noted initial resistance and anger to the proposed closure from key stakeholders in the community but found, with time, there were benefits to some sectors in the region. An example of this was an increased level of community health support services which enabled many elderly residents to remain at home rather than entering institutional care.

A similar finding was made by Barnett & Barnet, (2002). They cited the closure of the Milton hospital where the loss of this hospital was partly compensated for by improved community care, including provision of 24 hour district nursing services and free “hospital-at-home” care for geriatric patients averting the need for institutionalised care and means testing. They also noted three other communities where a new hospital was built and two were extensively refurbished.

Māori

Internationally, it has been shown that minority groups find access to health care is more difficult (Jansen, Bacal, & Crengle, 2008). These authors argued that New Zealand studies have shown similar trends.

In New Zealand rural Māori have a shorter life expectancy than urban Māori (National Health Committee, 2010a). The Committee noted that a larger proportion of Māori are in NZDep quintile 5 (high deprivation) than are Māori

in urban areas and stated “there is a direct correlation between rural areas with high levels of deprivation and the proportion of Māori in the community” (p.6). The report cited the Atlas of Socioeconomic Deprivation in NZ, White, P. et al. (2006) in making the assertion that socioeconomic deprivation is strongly linked with poor outcomes, including mortality, hospitalisations, health risk factors, chronic diseases and many acute conditions.

Additionally, the report states that “*Whanau ora* recognised the interconnectiveness of health, education, housing, justice, welfare, employment and lifestyle elements of whanau wellbeing.” Delivering appropriate health and disability services requires consideration of cultural factors.

John Fraser,(2006) in a literature review for the National Health Committee cited Rameka 2006 (p. 22-23):

“Within te ao Māori there is an inter linking of the tinana, hinengaro, wairua and whanau that encompass the various facets of life through a Māori world view. Within the contemporary context this can refer to how issues such as housing, accessibility to services, income levels and so forth can impact on hauora and wellbeing. A simple example is: housing for a number of our Pāhauwera whānau can be described as sub-standard – which will in turn have an adverse effect on hauora and wellbeing. This can be brought about by the stress associated with having sub-standard housing (e.g., no running water), the costs of maintenance and renovation for houses, and so on.”

Rameka was also cited (p.23) by Fraser

“The importance of having access to shops and services cannot be overestimated. [...] Accessing services of any nature, whether health, social or economic, is rather costly. Having to pay for petrol and car maintenance, as well as having money to attend the medical services and pay for prescriptions and other referral services, begins to add up for the whanau of Ngāti Pāhauwera.”

Rural Māori are also affected by rural hospital closure. When the Tokanui hospital closed, many of the workers at the hospital were Māori (Kearns & Joseph, 1997). This would have caused job losses with subsequent reduction in economic status. Additionally it was noted that the closure had special significance with the dismantling of the Māori initiatives resident at the hospital.

Hokianga is notable for the unification of Pakeha and Māori interests in the preservation of the health services with the handing over, by the government, of the assets to the chair of the trust – a Māori elder.

A government initiative has been the introduction of the Māori Innovation fund: Te Ao Auahatanga Hauora Māori: The Māori Health Innovations Fund.

This may be accessed on <http://www.health.govt.nz/our-work/populations/Māori-health/te-ao-auahatanga-hauora-Māori-Māori-health-innovation-fund>

Over the next four years (from 2009) the Fund will invest a total of \$20 million in the design, development, promotion and delivery of innovative whānau ora-driven health services, with Māori health and disability service providers who apply to Te Ao Auahatanga Hauora Māori.

There are multiple Māori health providers in both the North and South Islands. These can be accessed on <http://www.Māori health.govt.nz/>

A Whanau Ora based approach to Māori health is becoming established within the primary health care sector (Kidd, Gibbons, Lawrenson, & Johnstone, 2010). At the same time the authors asserted, a number of marae and community-based clinics which emphasise a positive approach to Māori health have emerged. The term whanau ora has become widely used to affirm the importance of whanau (family) planning and management of their own health. This view, Kidd et al. contend, is related to the policy *He Korowai Oranga*, and is defined as “Māori families supported to achieve their maximum health and wellbeing.”

Service delivery

Rural hospitals are at a disadvantage in many ways compared with the urban hospitals. This is seen to be the result of the differences in resources available to them (Ricketts, 1999). The author was commenting in an editorial on the situation in rural America which arose after increasing pressure came on rural hospitals with the reduction, in their case, of Medicare payments. Cordes et al.(1999) found that they were able to continue in their role as local and regional centres because of the development of new management techniques, networking and new information technology. The authors postulated the situation where a local hospital reduced its acute care capabilities, but added a nursing home and an array of outpatient services.

Fraser (2004) in a review of rural hospital closures in Australia, found that there was an increase in the community support services such as nursing which was appreciated by some (but not all) in the region as a benefit. He argued that there was an emphasis developing that reflected planning for the future rather than focusing on irreversible changes of the past.

The NZ National Health Committee (2010b) identified seven factors which would assist in reviewing health and disability services in rural areas to ensure that these services reach and are appropriate for rural people. These were:

- distance and time
- access
- community development approaches
- Māori way of working
- partnership and collaboration
- sustainability of services
- the changing environment

Distance and time

These factors are particularly important in emergencies but also have economic considerations particularly for NZDep quintile 5 persons. The NHC suggested reviewing the National Travel Assistance Policy which was

introduced in 2006, so people could claim travel expenses to attend any health service appointment that is beyond the agreed threshold distance from their home.

The NHC also suggested making it easier for people to travel to services, with an emphasis on disabilities and on older people. Additionally they suggested making it easier for services (including first response) to get to people. The NZ Mobile Surgical Bus Service (Bax et al., 2006) would be an example of this. It should be noted that one patient in three who were treated in this bus were Māori. The NZ Health Ministry agreed to fund the ongoing costs for five years from 2006.

Murdoch (2007) noted that in New Zealand there were estimated to be 167,295 people (at that date) who had to travel more than one hour to visit a basic public hospital and many of these people were located in the southern and northern regions of the country. The author suggested that a network of rural hospitals or regional resource centres within comfortable reach of rural and remote populations would seem to be the key in solving problems of access to complex medical care.

Community development approaches

The report of the National Health Committee,(2010a) recommended engaging local rural communities in their own health and disability services. They stated that this improved health outcomes and local service viability as well as reducing costs. Hokianga (Kearns & Joseph, 1997) is a good example of this. Barnett & Barnet (2002) cited the development of community trusts as a method of retaining essential health services in New Zealand. They described them as voluntary non-profit organisations owned and controlled by local communities. Many of these arose from the then Crown Health Enterprises (CHEs) and their attempts to balance their budgets. Of note was the decision of the Otago CHE to withdraw entirely from the provision of rural services. By 1998 nine community trusts had been formed in the Southern area. Of these

two were formed prior to the 1993 health reforms specifically to resist the closure of maternity services. The other seven trusts were formed in the 1990s, six of these were to counter the Otago CHE withdrawal and one to retain maternity services. Clutha Health First Hospital and Health Centre is an example of a community trust. (<http://www.cluthahealth.co.nz/>) By the time of a survey in 2011 (Lawrenson et al., 2011) there were only 11 community health trusts in the entire country.

Despite this activity, there have been a considerable number of local hospitals that have closed.

Partnership and collaboration

Rural partnerships, collaborative approaches and networks show how resources can be shared, capacity improved and new models of care. Queenstown Medical Centre is an example of this and is based on a collegial and co-operative relationship between doctors and nurses with the intention “To provide and deliver an exemplary level of comprehensive and easily accessible primary health care to the Wakatipu Basin in an equitable, financially sustainable and personally rewarding manner for all involved.”

Sustainability of services

The factors that ensure that the services are sustainable include: a locally available workforce, the certainty of ongoing funding and physical and financial resources.

Lawrenson, Nixon, and Steed (2011) argued that the sustainability of rural hospitals in New Zealand was a perennial problem. They identified shortages of doctors, funding crises, falling population and increasing specialisation of health services leading to the centralisation of many services to hospitals in larger centres. The authors commented that a number of hospitals had been closed or the facilities had been handed over to community trusts. They quoted the formation of the Rural Hospital Medicine vocational scope of

practice¹³ as opening the way for rural doctors to achieve vocational registration and support. Their research was intended to provide a baseline for assessing the impacts of future initiatives and changes to vocational registration. They surveyed hospital managers, who managed both DHB owned hospitals and those who managed community trust hospitals. Two other hospitals under a different form of ownership were also sampled. Doctors were also sampled and the registration status of doctors was confirmed. The results of the survey confirmed that there was a “serious/critical” shortage of appropriately qualified doctors available to work in rural hospitals. Of importance was the finding that acute hospital care was being provided in many cases by hospitals owned and run by community based organisations combined with the fact strong regulations to ensure the quality of care had not been rigorously applied. In particular the credentialing and supervision and support of staff was problematic. Other problems of concern were: the extra hours that doctors were required to work, the higher average age of the doctors, that many rural hospital doctors had been trained in other countries and the high proportion of doctors who were not vocationally registered.

American research has identified similarities to the New Zealand findings. The situation of international medical graduates working in the rural primary care workforce was noted by Thompson, Hagopian, Fordyce, and Hart,(2009) in the United States. They found that that these doctors were more likely to be female, older and less likely to practise family medicine. The problem of whether there was an adequate number of doctors in a rural community is complex (Biola & Pathman, 2009). The authors examined “physician to population ratios” (PTP) in a section of rural United States. The perceptions that the local physician supply was inadequate were more common for those who longer travel distances and have problems with affordability and little confidence in their physicians.

¹³ See elsewhere on this topic

Buykx, Humphries, Tham, Kinsman, Wakerman, Asaid and Tuohey (2012) reviewed the sustainability of small primary health care services in Australia. Four years into their evaluation they contended that the particular health service which they are evaluating (as part of a six year project) was responding to a series of threats and enablers which could have affected the viability of that service. They defined a framework for these.

Lawrenson et al.,(2011) in reviewing models of care in NZ stated that “further research is needed on the strengths and weaknesses of differing models of care” (p.5) and additionally that DHBs should assist in supporting NZ rural hospitals to develop “robust and sustainable processes to underpin the clinical governance of their health services”.

Summary and conclusions of findings and challenges in rural health

Introduction

It is apparent that rural health services around the world are facing multiple crises. There are major differences between the services offered in urban areas and those available in rural areas. The world literature has descriptions of deficiencies which have considerable similarity across the board and is quite clear that there are greater problems associated with rural health care than in the urban/city areas. The problems appear to be comparable in Australia, Canada and New Zealand although the distances involved in the first two are greater than in New Zealand. There are also similarities in these three countries in that each has an indigenous group of people many of whom tend to be in the in the lower socio-economic groups and have greater economic and medical problems associated with this. This is more obvious in those groups who are situated rurally. The situation in the USA has similarities, especially where distance is involved, but with the more marked division of responsibilities on a State by State basis, the methods of dealing with the problems are more varied. The UK has problems involving rurality,

but with the NHS and a greater population within a country the size of New Zealand the problems require different emphasis.

Problems in staffing rural hospitals

Many of our rural hospitals are staffed by international medical graduates. Frequently these doctors are not vocationally registered and are required to work under supervision. The proportion of hours worked by the IMGs has risen to (at the last report) 80% of the total hours. Several rural hospitals do not have a reference or credential checking system for IMGs.

Additionally the average age of rural general practitioners is higher than that in urban areas. Many younger doctors when choosing practice areas make “lifestyle decisions” when they choose where to practise.

Māori in rural areas

In New Zealand rural Māori have a shorter life expectancy than urban Māori (National Health Committee, 2010a). The Committee noted that a larger proportion of Māori are in NZDep quintile 5 (high deprivation) than are Māori in urban areas and stated “there is a direct correlation between rural areas with high levels of deprivation and the proportion of Māori in the community”.

Maternity services in rural areas

There were only 54 GPs providing obstetric care in New Zealand (in 2006). This number can be considered to be higher than it would be in 2012. However the exact numbers are difficult to find. Much of the load has been taken up by midwives but there are areas where, due to the low population it is not possible for a midwife to survive economically on maternity care alone. Many of the GPs who still do maternity will retire in the foreseeable future and the older GPs who cope with emergency obstetrics on the basis of experience will do likewise.

The Rural Midwifery Recruitment and Retention Service (RMRR), is funded by the Ministry of Health and is a joint collaboration between the New Zealand College of Midwives (NZCOM) and the Midwifery and Maternity Providers Organisation (MMPO). The service has been established with the aim of supporting the retention of midwives practicing rurally as Lead Maternity Carers (LMCs) and supporting the recruitment of midwives to set up practices in rural areas that are experiencing a shortage.

IT medicine and Telemedicine

Telemedicine was introduced in New Zealand as early as 2000 but by 2006 only half of those initially operating had survived. Events since then have demonstrated the advantage of telemedicine and health-IT enabled care. The NZ government has recognised this with the Connected Health initiative (Bax et al., 2006; National Health Committee, 2010a). However this innovation has struggled to take hold. Doctors in the South Island were reported to be pioneering a fresh approach to telemedicine after deciding to abandon a hi-tech telepresence system set up on the West Coast that was to become a flag bearer for ultrafast broadband.

Events since then have demonstrated the advantage of telemedicine and health-IT enabled care.

Rural GP workforce

It would appear that despite the initiatives provided by government¹⁴ there is still marked difficulty in recruiting and retaining rural GPs. The effects of the ROMPE (Rural Origin Medical Preferential Entry program)/ Regional Rural Graduate Entry program are not yet apparent although some indication of its possible success can be taken from the Australian data which in itself is incomplete and is essentially long term.

Nurses, nurse practitioners and rural nurse specialists

¹⁴ See pages 3 and 6

It is predicted that the supply of rural area nurses will be exceeded by demand. The prediction was based on the date 2026, but it is likely to occur well before that date with the rate of increase in demand combined with exits from the profession. The possibility of Nurse Practitioners and Rural Nurse Specialists filling many of the gaps which may be left by the reducing GP workforce is controversial and there are many differing opinions. In Canada, Australia and the US they have proved of great worth and are in widespread use.

Physicians Assistants and Medical Assistants

In New Zealand and Australia the Physician Assistant position has not been established. It has been trialled and abandoned in Australia and in New Zealand a one year trial in a city hospital has not been continued. There is a new trial proposed which will extend into a wider range of areas including rural. It is used widely in the USA.

The Medical Assistant role is used widely in the USA. A comparable role is in the pilot stage in New Zealand and is termed the Primary Care Practice Assistant scheme and is due to be completed in June 2013. As yet there is has been no distinction made between Clinical Medical Assistant and Administrative Medical Assistant.

Future Research

A study to ascertain where the students who have entered medical schools under the ROMPE/ Regional/Rural Graduate Entry program could be of benefit, but the timing would be very important and may as yet be premature. An indication of the possible intentions of the students/graduates would be very useful.

The production of a detailed Model of Care for Rural Health might be useful to provide a framework on which an ideal rural health scheme could be constructed. Smith, Humphreys, and Wilson (2008) concluded that there was

a paucity of rural-urban epidemiological evidence underpinning rural and remote health policy and programs. An important recommendation from these authors was that research be conducted to investigate why some rural areas exhibited health disadvantages while other similar areas have health outcomes that accord with national standards. This could be undertaken in NZ.

To cast a different light on the way that health issues facing residents of rural and remote communities are considered Bourke et al (2010) challenged the commonly expressed 'deficit' approach. Instead they advocated 'alternative ways of thinking about these disciplines and recommend a problem-solving perspective of rural and remote health' (p.205). Their intent was to adopt a 'problem-solving' stance in contrast to the more common "problem-describing' or 'deficit' approach. Not wanting to detract from all that has been done to highlight and describe the challenges of rural health services they contended that a narrow focus can mask 'the positive attributes of rural and remote life ' that draw people to live and work in these areas. Indeed their view is that 'scant attention' is paid 'to the social benefits and innovative health care models and systems that are working well ...For example, rural and remote communities are great incubators of innovation that can generate health service models , which better meet the whole-of-health needs of rural and remote communities'.(p.206) The differing responses of rural communities in New Zealand to meet the economic restructuring realities of their communities over the past two decades alone is testimony to that contention. (Bourke L, Humphreys, Wakerman, & Taylor J, 2010)

The situation can be well described by the statements attributed to the then Minister of Health in 1998

"The rural sector is an essential part of the economic and social fabric of New Zealand society". (English B, 1998, p. 1)

He claimed,

...no one actually knows how you can best provide services in Gisborne or Wanganui or any number of smaller towns or cities if you take away their hospitals”.

He went on to speak of the need in rural communities for an evolutionary change governed by

“local perceptions of local needs, by local creativity and motivation”

(Bill English, 16 September 1998).

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Appendix 1

Job description of a Rural Nurse Specialist

(West Coast District Health Board, 2012)

West Coast District Health Board

POSITION DESCRIPTION

RURAL NURSE SPECIALIST

HAAST

Department: Community Nursing Services

Location: Haast

Reporting to: Clinical Nurse Manager Community Nursing

Manager:

Senior Manager

Nurse Manager Community / Primary Health

General Manager Community / Primary Health

Working Relationships: Local Health team

Medical Officer Emergency Dept Greymouth Hospital

Midwives (Independent and Coast Health Care)

Medical Officer of Health /Community & Public Health

Community Health Services Staff

Hospital Services Staff

Community Groups

Māori Health Providers

Voluntary/Statutory agencies

PURPOSE

The Rural Nurse Specialist provides a holistic, culturally appropriate, comprehensive and cost effective nurse led Primary Health Care Service, to a designated geographically defined population including residents and non-residents within the West Coast District Health Board Area.

OBJECTIVES

1. To provide an appropriate personal health service to the Rural Community.

- The RNS will assess, diagnose and treat personal health problems in patients, in collaboration with medical practitioners or under the guidance of approved Standing Orders. The nurse will schedule self-referral health clinics on a regular basis at times and places that are appropriate to meet the community's needs. The nurse will refer patients as appropriate to medical practitioners, medical specialists, and other health providers, e.g. physiotherapists, mental health teams, social workers.
- The RNS either autonomously or in collaboration with medical practitioners will order and interpret an agreed range of diagnostic tests.
- The RNS will provide an emergency service that adheres to the P.R.I.M.E. protocols and meets the standards outlined in the Roadside to Bedside Document. The nurse will be available on an "on call" basis to provide this service at the times specified by WCDHB.
- The RNS will maintain a formulary that is appropriate for supplying urgent and emergency medication.
- The RNS will co-operate with other organizations and agencies to ensure safe communities, eg Police, Dept Conservation, Women's Refuge, CYPS. Local authorities and Māori agencies.

2. To manage patients with chronic diseases, rehabilitation needs and those requiring palliative care in the community.

- The RNS will provide a quality nursing service that includes education of patients to encourage self-management of chronic conditions, and support

and maintenance of patients in the community. Patient rehabilitation will be promoted by contributing to the development of solutions, which increase patient independence and quality of life.

- The RNS will work within the Home Hospice philosophy in caring for the terminally ill and the bereaved. This includes the supervision and storage of controlled drugs prescribed for terminally ill patients.

3. To contribute to the achievement of positive health outcomes for the designated population by providing a Health Promotion/Health

Protection Service that includes:

a) Well Child/ Tamariki Ora Service

- Promotes health care for 0-5 year olds including provision of health education and information to parents including well child checks as per Well Child/ Tamariki Ora contract. This will include B4 School checks as per DHB programs.
- Regular visits will be scheduled and evidence of same available for Preschool Centres and Primary Schools..
- Identify health related needs of the school environs and students.
- Self-referral clinics at schools where appropriate.

b) Immunisation Service

- Timely completion of immunisation programs.
- Immunisation offered to appropriate clients as per immunisation schedule including maximizing opportunistic immunizations in the 'hard to reach' groups within the community. Develops & maintains an immunisation register and recall system
- Promotes immunisation programs in the community.

c) Health Promotion

- Participates in Health Promotion/Health Protection activities, projects and programs in conjunction with promotion/protection staff (Community & Public Health)
- Responds to community initiatives (schools/parent groups etc) in health care by participating in health education programs promoting healthy lifestyles & focusing on requirements of provider plans incorporating the philosophies of the Ottawa Charter and the Treaty of Waitangi.

HEALTH AND SAFETY

- The Rural Nurse Specialist will be responsible for their own safety and will ensure that no action or inaction on their part will cause harm to themselves or any other person. The RNS will develop and participate in a process of personal and clinical supervision.
- The Rural Nurse Specialist will abide by the Organisation's Health and Safety Plan and will participate in plan development and Health and Safety Training as appropriate. The Rural Nurse Specialist will bring health and safety issues to the attention of the CNL in time for consideration during the preparation of plans and budget, in the form of a monthly report.
- The RNS will be responsible for the *oversight* of the safety, cleaning/maintenance clinic buildings and equipment and the company vehicle

QUALITY STANDARDS

It is expected the Rural Nurse Specialist will:

- Meet high standards nursing care as determined by current nursing practice, legislation and Company policy.
- Participate in the WCDHB Quality Assurance program as directed and abides by clinical protocols and procedures.
- Establish accurate and relevant records of each patient's initial and ongoing assessment and current care plans. These include an indication of the quality and quantity of consultation between various health personnel, and between patients, care givers and family/Whanau.
- Evidence of contribution to implementation and evaluation of Health Promotion/Protection will be available as determined by CPH/CHC contract (provider plan).
- Submit timely and accurate completion of daily patient contact statistical data, monthly returns and reports as required.
- Establish a Professional portfolio and be responsible for updating same.
- Initiate and participate in annual performance Appraisal.

- Identify and alert the CNM of learning/upskilling needs and undertake to up date any essential qualification with support and assistance of the WCDHB.
- Attend mandatory training sessions.

A Community Profile will be established and updated annually in consultation with the community, with appropriate information (demographics/ major changes in community) that may impact on service provision or assist with strategic planning for future service provision. An up to date orientation manual will be produced and regularly updated for each individual practice area in conjunction with CNM.

QUALIFICATIONS, SKILLS AND EXPERIENCE

- The Rural Nurse Specialist will be RGON or RcompN with a current Practising Certificate and will have at least three years experience including Accident and Emergency Services and Community Care.
- Experience in community consultation, implementation and evaluation of service related projects is desirable
- Has attended or be prepared to attend a PRIME training course and updates
- Hold an independent Vaccinators certificate or be prepared to attain the same.
- A current driver's licence is essential.
- Hold or be working towards recognised Post Graduate qualifications in Rural Primary Health Care.
- Qualifications and experience in the relevant field of practice is desirable.

PERSONAL ATTRIBUTES

The Rural Nurse Specialist will exhibit:

- Excellent written and verbal communication skills.
- A commitment to improving the health status of the community especially Māori Health.
- Ability to relate well to staff and management at all levels and to individuals, community groups and other health professionals.
- Must be flexible and able to adapt to a changing health environment.

- Ability to work autonomously and as part of a team.
- Ability to support colleagues/team members.
- Ability to prioritise workload.
- Ability to understand stress management and be able to use available resources in dealing with stress, critical incidents and consequences.

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Appendix 2

Activities covered by the rural Physicians Assistants in the USA

- Prenatal and post partum care
- House calls
- Night calls
- Nursing home rounds
- Athletic team coverage
- Follow up care for patients
- Routine administrative duties
- Ordering routine laboratory test and radiological studies
- Recording patient histories
- Patient education and counseling
- Routine physical examinations
- Diagnosing common illnesses
- Minor surgical procedures

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Appendix 3

Training required for a physician's assistant

(Source: United States Department of Labour Occupational Outlook Handbook, 2010-11)

Education and training Physician assistant educational programs usually take at least 2 years to complete for full-time students. Most programs are at schools of allied health, academic health centers, medical schools, or 4-year colleges; a few are at community colleges, are part of the military, or are at hospitals. Many accredited PA programs have clinical teaching affiliations with medical schools.

In 2008, 142 education programs for physician assistants were accredited or provisionally accredited by the Accreditation Review Commission on Education for the Physician Assistant. Eighty percent, or 113, of these programs offered the option of a master's degree, 21 of them offered a bachelor's degree, 3 awarded associate degrees, and 5 awarded a certificate.

Most applicants to PA educational programs already have a college degree and some health-related work experience; however, admissions requirements vary from program to program. Many PAs have prior experience as registered nurses, emergency medical technicians, and paramedics.

PA education includes classroom and laboratory instruction in subjects like biochemistry, pathology, human anatomy, physiology, clinical pharmacology, clinical medicine, physical diagnosis, and medical ethics. PA programs also include supervised clinical training in several areas, including family medicine, internal medicine, surgery, prenatal care and gynecology, geriatrics, emergency medicine, and pediatrics. Sometimes, PA students serve in one or more of these areas under the supervision of a physician who is seeking to hire a PA. The rotation may lead to permanent employment in one of the areas where the student works.[\(Return to text\)](#)

Appendix 4

Canada

The Centre for Rural and Northern Health Research Unit appears to be the major rural research unit in this country. It gives a clear picture of current research projects.

The Centre for Rural and Northern Health Research Unit has the following current research projects.

- Aboriginal Respiratory Health: Community, Family and Client Perspectives
- Case Studies of Mental Health Services in smaller Communities in Northern Ontario
- Developing New Researchers
- Developing Supportive Workplace and Educational Environments for Aboriginal Nurses
- Do Monash Rural Background Students Become Rural Doctors/
- Forestry and Health Revisited: Health Status and Social Wellbeing in the NW LHIN
- Impact of the Ontario Telemedicine Network on Medical Services Utilisation
- Improving End-of-life Care in First Nation Communities: Generating a theory of Change to Guide Program and Policy Development
- Indigenous Health Research Network
- Multi-year tracking Study of the Students and Graduates of the Northern Ontario School of Medicine
- Northern and Rural Family Physicians in Ontario: Who are they and what do they do?
- The Nurse Practitioner Tracking Study

- Pilot Project: Tracking Study for the Northern Ontario Dietetic Internship Program
- Social Inclusion of Informal Caregivers in Elliot Lake
- Socio-economic Contribution of the Hopital Regional de Sudbury Regional Hospital
- Suicide Prevention Targeting Aboriginal People – New Emerging Team Grant
- Sustaining the Nursing Workforce in North-eastern Ontario
- Teach Our Children: Stroke Awareness for Aboriginal Youth
- There is No Gentle Way: The Tragedy of Suicide among First Nation people in Canada
- Trauma System Development in Canada: Overcoming the Challenges of Geography through and Evaluation of Structure and Process

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Appendix 5

Australian Rural Health Research Collaboration

Information below copied from the website

<http://www.ruralhealthresearch.com.au/>

Current research

Six areas of research form the basis of our research program:

- Mental health research
- Health services research
- Health workforce research
- Remote health and Indigenous health research
- Agricultural health research
- Environmental health research
- Mental health research

The Australian Rural Mental Health Cohort Study is beginning to bear fruit after a major investment in data collection, cleaning and analysis. This project fills a major gap in our knowledge of the particular experiences of rural and remote residents which is often consigned to the "too hard basket" in metropolitan and national studies.

Health services research

Our health service research program addresses problems of access and service quality in rural communities, including: the quality and effectiveness of general practice preventive services addressing lifestyle risk factors, and an intervention to prevent vascular disease.

A local project to assess the viability of a screening service for abdominal aortic aneurysm, a condition which may be fatal in rural communities, was completed in Broken Hill.

Collaboration members contributed to a national publication to highlight evidence-based practice in rural and remote Australia published by the Australian Rural Health Education Network <http://www.arhen.org.au/>

Health and the workforce

The Rural Allied Health Workforce Study is in the reporting stage.

The "Ageing Well and Productively: pathways to healthy workforce participation" study is led by NHMRC Postdoctoral Research Fellow Sabrina Pit at the UCRH, as is the "Prolonging Working Life amongst Rural Older GPs: developing strategies and instruments" project.

Remote health and Indigenous health

The Broken Hill CRHR recently evaluated a mental health program provided by the Royal Flying Doctor Service (RFDS) South Eastern Division.

The NRUCRH conducts and trains people in health research, and includes an introductory research training workshop for Aboriginal and Torres Strait Islander people, entitled "Walking through Research".

Agricultural health

The National Farm Injury Data collection from the Centre for Agricultural Health and Safety has led the way in the provision of data on the nature and scope of farm related fatalities. There has been a 44% reduction in fatalities, dropping from an average of 146 to 82 deaths per year

Another new initiative has been the conduct of the first ever national assessment of farming enterprises addressing key factors related to safety management systems, control of major hazards and physical/mental health. Farming remains one of the most risky occupations in Australia. ACAHS has developed an evidence-based resource (the Farm Health and Safety Toolkit for Rural General Practices) for rural general practitioners to help make them aware of the health and safety issues faced by farmers and their families.

Environmental health research

This research includes an ARC Linkage-funded project into the health effects of bushfire smoke, wood smoke and dust storms in Australia. A project with the NSW Department of Environment Climate Change and Water looks at the effects of heat waves on mortality and hospital admissions.

The Broken Hill CRHR continues to provide research and evaluation support to the environmental lead management program run by the local health service, and provides public health leadership to the community Lead Reference Group.

A full-time PhD project explores three key issues: community engagement and perception of lead as a priority health issue, the current and likely future lead hazard profile in Broken Hill, and the social and political context of local decision making about lead. Also, a project to explore the reasons for low participation of local Indigenous children in the lead screening program is under way.

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National Rural Health Alliance in Australia

This is an organisation composed of 33 organisations that have joined to work collaboratively to improve the health and wellbeing of people in rural Australia. www.ruralhealth.org.au/

Rural and Regional Health Australia

Rural and Regional Health Australia is a new entity in the Department of Health and Ageing. It should be an effective advocate for whole-of-government action on rural and remote health, including through its relationship with other Departments and advocacy bodies like the Alliance. See www.ruralhealthaustralia.gov.au

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Appendix 6

The United Kingdom Institute of Rural Health

The Institute of Rural Health (United Kingdom) has identified the current and planned research

The Research Advisory Group has highlighted three cross cutting themes

- the aging rural community,
- poverty
- deprivation, community sustainability

These underpin the four identified foci for research during the next five years.

The four foci are:

- Access to services,
- Chronic disease,
- Health and the sustainable environment
- Rural medical, health and social care education.

Recent research projects have been:

Recent projects

DiARCH Powys — Diabetes Action Research in Care Homes Powys

This action research project (funded by the Foundation of Nursing Studies) was in collaboration with Powys LHB Diabetes Specialist Nurses. The project implemented the action plans developed in the first phase in each of the three care homes involved in the project. Action was taken on issues such as diet (removing 'diabetic' foods from the menu); establishing annual reviews for care home residents; and providing education sessions for staff. The impact of the project was evaluated and ways of working which are transferable to other care homes were identified.

It is possible to download the executive summary and report from their [recent publications](#) page.

A proposal to identify the additional skills and knowledge required by rural GPs to work in rural Wales.

This research (funded by the Postgraduate Deanery of Cardiff University) built on the findings of the research undertaken to contribute to the development of a Rural Health Plan for Wales and also some early research undertaken by IRH, using a Delphi study, to reach consensus on the work load of rural GPs and a research project on the Nature of Rural General Practice.

The aim of this proposal was to identify the additional skills and knowledge required by a general practitioner in order to work in rural Wales and addressed the following questions:

What are the perceived additional skills and knowledge required by rural GPs to work in rural Wales?

What impact does rurality have on GPs way of working?

How does the work profile and responsibilities of rural GPs differ from those in urban and less sparse areas?

What are the gaps in knowledge between under-graduate medical education and the knowledge required to work in rural general practice?

What are the skills required to be a rural GP? [Download the final report](#)

Health in Rural Wales — A research report to support the development of the Rural Health Plan for Wales

The research undertaken by IRH to support the development of the Rural Health Plan in Wales has now been published and accompanies the publication of the consultation document "[Rural Health Planning - Improving service delivery across Wales](#)".

Download the executive summary and report from our [recent publications](#) page.

South Shropshire Rural Campus — undergraduate medical education in rural South Shropshire

Internationally there has been an interest in under-graduate medical education in rural areas for several decades prompted by challenges in

recruiting and retaining rural doctors. In the UK initiatives to provide rural exposure during under-graduate training are relatively new.

The aim of this study has been to explore the potential opportunities and barriers to developing a rural element to the new under-graduate medical curriculum at Keele. [Download the executive summary](#) (PDF)

Natural Heritage — a pathway to health

The IRH has spent a year studying what impact the natural environment - everything from allotments, urban parks, woodland and lakes to the countryside, mountains, rivers and sea - has on health and wellbeing. The research show that the natural environment can play a key role in improving public health and wellbeing. [Download the report](#) (PDF)

Undergraduate medical education in rural settings

This report is premised on the increasing demand for undergraduate medical placements in rural areas, increasing student numbers and the evidence of the importance of rural exposure during undergraduate training on recruitment and retention of rural GPs. The survey took place

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Appendix 7

The United States

There are multiple rural research “institutes” in the USA. Most are federally funded.

[Maine Rural Health Research Center](#)

(207) 780-4430

Director: [David Hartley](#), PhD, MHA

Deputy Director: [Andrew F. Coburn](#), PhD

[North Carolina Rural Health Research & Policy Analysis Center](#)

(919) 966-5541

Director: [Mark Holmes](#), PhD

Deputy Director: [Victoria Freeman](#), DrPH, RN

[West Virginia Rural Health Research Center](#)

(304) 347-1348

Director: [Michael Hendryx](#), PhD

Deputy Director: [Cynthia Persily](#), PhD

[South Carolina Rural Health Research Center](#)

(803) 251-6317

Director: [Janice C. Probst](#), PhD

Deputy Director: [Amy Brock Martin](#), DrPH

[Upper Midwest Rural Health Research Center](#)

University of MN & University of ND

(612) 624-8618

Director: [Ira Moscovice](#), PhD

Deputy Director: [Michelle Casey](#), MS

[WWAMI Rural Health Research Center](#)

(206) 685-0402

Director: [Mark Doescher](#), MD

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Appendix 8

List of NZ Rural Hospital in 2009

Kaikoura Hospital
Hokianga Hospital
Hawera Hospital
Gore Hospital
Golden Bay
Dunstan Hospital
Dargaville Hospital
Dannevirke Community Hospital
Clutha Health First
Chatham Islands Hospital and Health Centre
Buller Hospital
Bay of Islands Hospital
Ashburton Hospital
Akaroa Hospital
Wairoa Hospital and Health Centre
Tokoroa Hospital
Thames Hospital
Te Puia Hospital
Te Kuiti Hospital
Taupo Hospital
Taumarunui Hospital
Taihape Health Limited
Opotiki Hospital
Oamaru Hospital
Murchison Hospital and Health Centre
Maniototo Hospital
Lakes District Hospital
Kaitaia Hospital

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