Rehabilitation Service and Workforce Forecast
Final Report
December 2011
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Executive Summary

There is currently no comprehensive rehabilitation system in New Zealand. Provision of, and access to services is fragmented and varies greatly between regions. The main funders of rehabilitation - the Ministry of Health (the Ministry), Accident Compensation Corporation (ACC) and District Health Boards (DHBs), all purchase different components of rehabilitation leading to the provision of varied and often inequitable services and therefore different outcomes for clients. Services are provided through public and private providers in in-patient, out-patient, community and home based settings.

The current rehabilitation workforce faces issues of recruitment and retention at all levels; from the unregulated workforce of caregivers, through allied health professionals to rehabilitation medicine specialists. Training in rehabilitation is limited and uptake is not currently adequate to meet the needs of a comprehensive system.

As a population, Maori have on average the poorest health status of any ethnic group in New Zealand. Current work under Whanau Ora, which involves facilitating positive relationships and recognising the interconnectedness of health, education, employment, housing, justice and welfare can contribute significantly to achieving real gains for Maori and improved rehabilitation outcomes.

Research, in New Zealand and overseas, has demonstrated that rehabilitation can significantly reduce the costs to the health system and increase a return to productivity for many of those affected by disabling injury or illness. By providing a system that supports clients from acute care through to returning to their communities and homes, outcomes can be improved not only for the clients and their families, but for the health system as a whole.

This review was informed by input from the experts on the review team, from interviews with other rehabilitation experts in New Zealand, by literature scans and evidence of innovative and good practice from New Zealand and from overseas.

Amongst the many contributions rehabilitation can make to assisting those after injury or illness, the group identified four key benefits of comprehensive rehabilitation that address both societal and economic imperatives. An illustrative condition was selected to identify common themes, opportunities and issues that could be translated to the wider rehabilitation system.

The four benefits and conditions selected were:

- reduce hospital readmissions: Chronic Obstructive Pulmonary Disease (COPD)
- increase work and productivity: Low Back Pain (LBP)
- decrease levels of care needed: Paediatric services and transition to adult services – Spina bifida/cerebral palsy
- increase number of disability free years: Stroke (particularly in people under 65*). *Stroke in people under 65 years old was chosen to highlight the inequalities and problems associated with the current funding model; however, the benefits are relevant to all clients who have had a stroke, regardless of their age.

From the key themes identified, a series of recommendations (below) are proposed to achieve the group’s vision of a comprehensive rehabilitation system for New Zealand. It is acknowledged that it would be unrealistic to expect all components of the system to be initiated immediately, but some changes could be made which would be the foundations for building a world class system for 2020 and beyond. The recommendations include setting up a demonstration site, which is intended to show not only the clinical and social benefits of rehabilitation for clients and their families, but also the financial benefits to the health system as a whole.

**Recommendation:**

**The development of a comprehensive rehabilitation system in New Zealand**

Achieved by:
1. Implementation of the actions A-E below
2. HWNZ funding a demonstration site as a foundation for building a rehabilitation system
3. Extending the findings of the demonstration site by putting in place further rehabilitation initiatives with monitoring, review and evaluation
4. Building a nationwide system from the components described in 1.3 (above).
A. **Raise the profile of rehabilitation in New Zealand**
   Achieved by:
   1. Awareness raising in the community by media campaigns
   2. Identifying areas where rehabilitation can make a significant difference and ensuring policy delivers on that potential
   3. Advocating for medical leadership through the establishment of a Department of Rehabilitation Medicine with an appointed medical Chair of Rehabilitation in a University
   4. Ensuring that a comprehensive rehabilitation component is part of all undergraduate health professional training
   5. Supporting the uptake of evidence based guidelines such as New Zealand Clinical Guidelines for Stroke management (2010), COPDX Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease (2009)
   6. Promoting rehabilitation services within Integrated Family health Centres and Whanau Ora services
   7. In line with current government recommendations, supporting the establishment of a National Stroke Network and provision of organised stroke services in all DHBs.

B. **Increase the provision and opportunities to undertake rehabilitation training and increase the rehabilitation workforce**
   Achieved by:
   1. Enhancing nurses and Allied Health Professionals (including physiotherapist, chiropractors, and osteopaths) participation in advanced trainee qualifications in rehabilitation (currently provided by Auckland University of Technology and the University of Otago)
   2. Providing an interdisciplinary approach to the development of training that is supported by individual professional bodies
   3. Training more rehabilitation specialists, including paediatric rehabilitation specialists
   4. Supporting the development of competencies underpinned by different cultural values and concepts of health
   5. Increasing and upskilling the trained workforce at all levels to better respond to different population groups to strengthen the capacity to deliver effective and appropriate services and to ensure the demography of the workforce reflects the community it serves.
   6. Providing rehabilitation training for GPs
   7. Reviewing the scope of work of rehabilitation practitioners and upskilling the workforce to take on new roles that enhance outcomes, including introducing advanced scope roles.
C. Develop care coordination to support clients following discharge from an acute facility
Achieved by:

1. Developing the role of rehabilitation coordinator - including training and a career pathway
2. Engaging the primary sector in the continuity of rehabilitation and shared care planning
3. Supporting the development of shared electronic patient records
4. Demonstrating integration between hospital and community based services
5. Demonstrating improved outcomes for clients and cost benefits
6. Developing care coordination which incorporates the cultural values, beliefs and practices of the community being served.

D. Provide appropriate dosage intensity of rehabilitation treatment
Achieved by:

1. Upskilling current workforce e.g. nurse specialists, advanced Physiotherapy practitioners, advanced Occupational Therapists and others as appropriate
2. Developing roles of Rehabilitation Assistants - including Physiotherapy and Occupational Therapy and others as appropriate
3. Ensuring sufficient staff to provide high intensity dosage of rehabilitation (e.g. 5 hours per day) 7 days per week.
4. Developing an inclusive approach to providing services and opportunities to whanau and families.
5. Demonstrating improved outcomes for clients and cost benefits of correct dosage at correct time.

E. Support the review and alignment of services purchased by ACC, the Ministry and DHBs to more equitable and sustainable model
Achieved by:

1. Encouraging ACC, the Ministry and DHBs to review how services are purchased, including differential funding split at age 65 years.
2. Changing current funding models to fund a comprehensive system
3. Development of a national ‘purchasing for outcomes’ framework for rehabilitation services.
Introduction

The purpose of the Rehabilitation Service and Workforce Forecast was to develop a vision of a world-class rehabilitation system for 2020.

Unlike other Workforce Service Forecasts (also referred to as Workforce Service Reviews), which are reporting on ways of improving existing services and systems, there is currently no comprehensive rehabilitation system in place in New Zealand. Therefore the work of this review group has been to establish a vision for such a system, demonstrating the benefits of rehabilitation in terms of improved outcomes for clients and for reduced costs to the health system as well as identifying some key areas to be worked on over time to achieve the vision.

Like the other service forecasts, the rehabilitation team is made up of strategic thinkers (see appendix 1) with expertise across the sector. The team was asked to consider:

- a 30-40% increase in funding over the next ten years
- maintenance of quality in service provision
- a continued need to address health inequalities
- no loss of access or quality
- the status quo if there are no superior alternatives.

The group identified four benefits of a world-class rehabilitation system, which could improve outcomes for people with disabling conditions. An illustrative condition was selected for each of these benefits, to explore the current situation, future need and to consider evidence of best practice from New Zealand and overseas. From this work, key themes were highlighted, recommendations made and an initial demonstration site is described.

The vision was:

*To develop a world class, comprehensive rehabilitation service for people with disabling health-conditions that maximises individual’s levels of independence, enabling them to function well and contribute to their community.*

The four benefits of rehabilitation and the illustrative conditions selected are:

1. Reduce readmissions: Chronic Obstructive Pulmonary Disease (COPD)
2. Increase work and productivity: Low Back Pain (LBP)
3. Decrease levels of care needed: Paediatric services and transition to adult services – Spina bifida/cerebral palsy
4. Increase number of disability free years: Stroke (in people under 65*).
The conditions were selected as they are significantly important to the current health system in terms of costs now and in the future, and the benefits of rehabilitation are proven and are immediately applicable. Achieving the four benefits outlined above would provide the building blocks for the development of the wider system. Key elements of achieving these benefits were identified as:

- early intervention
- a client and family-centred approach
- providing culturally appropriate services
- reducing inequalities
- appropriate intensity of response
- care coordination.
Background

Rehabilitation covers a wide range of accident and illness related conditions. For the purposes of this report, the following definition of rehabilitation has been used:

*Rehabilitation is a person centred process of problem solving, education, training and support, which facilitates a person with an impairment to achieve optimal health and independence and therefore an ability to participate in usual life roles and activities, as far as practicable.*

Currently, rehabilitation services in New Zealand are funded by the Accident Compensation Corporation (ACC), the Ministry of Health (the Ministry), through the National Health Board and by District Health Boards (DHBs). Rehabilitation providers are based in hospitals, private facilities, community clinics and centres and clients homes.

In order to consider the rehabilitation system in more detail, the group decided to focus on specific, illustrative conditions to explore the benefits. These were selected as they were known to be of particular concern to the Ministry, the Ministry of Social Development (MSD), DHBs, ACC, as well as reflecting the changing demographics in New Zealand. A number of key issues were also raised by the Welfare Working Group⁴ as being crucial for enhancing outcomes for sick and disabled people including timely access to appropriate services and supports. The group was aware of the other reviews taking place and the linkages with rehabilitation, in particular the reviews of aged-care, palliative care, musculoskeletal and mental health, and so the conditions chosen were also selected to complement the work of those reviews.

The conditions chosen also covered the range of conditions from those that exist from birth (Spina Bifida and Cerebral Palsy) as well as those with sudden onset (Stroke and Low Back Pain) or gradual deterioration (Chronic Obstructive Pulmonary Disease).

The conditions selected also have a significant cost to the New Zealand Health System and therefore, describing a future rehabilitation service in a time of financial constraint, requires consideration of cost effectiveness, while retaining or improving quality outcomes for clients and the workforce involved.

Effective health gains require culturally responsive services, systems, training, education, and relationships. To this end, developing culturally appropriate

⁴Further information about the Welfare Working Group can be found at [www.ips.ac.nz/WelfareWorkingGroup/Index.html](http://www.ips.ac.nz/WelfareWorkingGroup/Index.html)
rehabilitation services relies heavily on collaborative efforts from the health sector as a whole that draws from but is not limited to Western and clinical paradigms.

High-level indicators, such as life expectancy, show disparities for Maori and Pacific people and this is also evident across a range of condition specific statistics (for example COPD rates below). Regardless of their ethnicity, New Zealanders should expect that reliable health services are appropriate and there when they need them, that their opinions will be valued, they will have a say in the shape and direction of health services and the strengths of family/whanau are recognised and supported by the health sector.

Achieving real gains for Maori and improved rehabilitation outcomes requires action by the entire health system. Therefore approaches need to be implemented in a way that considers the impact on Maori and their whanau needs.

Orienting the health sector to respond effectively to a Maori health approach will require the development of competencies for the workforce through the strengthening of both cultural and technical/expertise, models of practice, training opportunities and the valuing of both bodies of knowledge to achieve improved Maori health gain. The group acknowledges the work that HWNZ are currently undertaking in regards to Maori workforce development and support linking the recommendations contained in this report, to the findings of that review.

By drawing out clear themes, principles and issues from the four illustrative conditions, the intention of the group was to describe elements that can be translated and extended, to be applied across the wider rehabilitation system.

For each of the conditions, scenarios were described, based on actual patients’ experiences of the current rehabilitation system. The scenarios highlighted areas where changes could be made to lead to better outcomes. These can be found in appendix 2.

Each of the conditions is outlined below, giving details (where available) of the prevalence and predicted future trends of the condition and the associated costs, current service provision and examples of effective interventions and practice. Key issues and themes are then identified that link to the recommendations highlighted by the review group.

A demonstration site is also described, which will act as a starting point for implementing some of the recommendations made in the report.
Benefits and illustrative conditions

1. Reduced readmissions to hospital: COPD

Why this condition was selected
Rehabilitation for COPD can reduce health care costs through earlier discharge and reduced readmission rate therefore easing pressure on acute beds and subsequent costs, as well as improving outcomes for clients.

Scale /incidence
COPD is the fourth leading cause of death in New Zealand, after cancer, heart disease and stroke. In 2003, The Thoracic Society of Australia and New Zealand (TSANZ), together with the Asthma and Respiratory Foundation of New Zealand, commissioned a report, ‘The Burden of Chronic Obstructive Pulmonary Disease (COPD) in New Zealand’.

The summary of that report estimates that each year in New Zealand, COPD:
- is responsible for 9,250 hospital discharges and 88,800 bed-days (1.5% of all bed-days)
- accounts for about 200,000 GP visits and more than 453,300 medications
- as a cause of death, ranks 4th after cancer, heart disease and stroke
- causes years of disability and of greatly reduced quality of life
- is estimated to cost between $102-$192 million in direct health care costs.

COPD is also a common comorbidity for hospitalisations for people admitted for other reasons, adding to the lengths of stay and therefore to costs. COPD is a chronic condition, and the main risk factor is tobacco smoking.

Associated costs
Direct costs to the New Zealand health care system for diagnosed COPD amounted to a minimum of $102.6 million in the year 2002. The projected annual cost is likely to reach $128.3 million, and in the highest cost scenario, as much as $192.4 million. These exclude personal costs and those relating to domiciliary care. It also excludes the burden through indirect costs such as loss of earnings and quality of life. Based on 1997 data, direct costs per year to each patient are likely to be almost $2,600.

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6 ibid p.2
7 A Portrait of Health – Key results of the 2006/07 New Zealand Health Survey
8 ibid, Section 4.2, page 38
What is currently being done in New Zealand?
A set of guidelines have been developed and revised by The Australian Lung Foundation and the Thoracic Society of Australia and New Zealand as part of a national COPD programme. ‘The COPDX Plan: Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease 2009’ is written as a decision support aid primarily for general practitioners and other primary health care clinicians managing people with established COPD and acknowledges that much can be done to improve the quality of life, increase activity capacity and reduce morbidity and mortality. Pulmonary rehabilitation – a combination of exercise, disease education and psychological and social intervention for at least 6 weeks, has been shown to improve function and reduce symptoms.

What is currently being done overseas?
The COPDX plan is itself based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD), which was formed, by the WHO and the US National Heart Lung and Blood institute. This initiative has strong international leadership and is based on best practice from around the world. The GOLD report notes that a systematic review of the effectiveness of integrated disease management programmes for the care of patients with COPD demonstrated that there were improvements in exercise capability, health related quality of life and reduced hospital admissions, but no affect on mortality. Better compliance was noted when GPs and practice nurses were combined in one model of care. This integrated care intervention including education, coordination among levels of care and improved accessibility, reduced hospital readmissions in COPD after 1 year.

In the UK, The National Institute for Health and Clinical Excellence (NICE) guidelines (2004) on the management of COPD, are:

- offering pulmonary rehabilitation to patients who consider themselves functionally disabled by COPD
- offering pulmonary rehabilitation at times and venues suitable for the patient within a reasonable time of referral
- providing programmes that are multicomponent, multidisciplinary and tailored to the individual patient’s needs.

There is extensive research to demonstrate the effectiveness of pulmonary rehabilitation in improving the quality of life for clients with COPD, reducing admissions to and length of stay in hospital and reducing costs to the health system.
An example of this in Perth, Western Australia showed that:

*Pulmonary rehabilitation provided in an Australian teaching hospital was associated with a reduction in COPD hospitalisation, and the resultant savings outweighed the costs of providing the program.*

The following scenarios describe the different stages of the disease and appropriate rehabilitation and service provision at each stage.

**Issues**

COPD is significantly under-diagnosed, under-treated, and predictions indicate that numbers are likely to increase over the next ten years. It is probable that at least 223,000 New Zealanders have obstructive disease – with only around 22% of cases being diagnosed. Hospitalisation rates for COPD are still increasing among men and women, Maori and non-Maori. Age-standardised rates from 2000 show average annual increases over the past three years of 32-33 per 100,000 for non-Maori men and women, 46 per 100,000 for Maori men, and 61 per 100,000 for Maori women. Not only are rates for Maori already very high, they are still rising steeply at twice the rate of non-Maori.

Key themes for reducing readmission to hospital:

- early and improved rates of diagnosis
- timely and appropriate interventions and provision of pulmonary rehabilitation
- community based and group services
- integrated care teams and multi-component rehabilitation
- patient and family centred responses
- care coordination
- easy access to evidence based services
- accessible patient records.

Although pulmonary rehabilitation has proven benefits, it is doubtful if more than 2% of new COPD patients or 10% of existing patients in New Zealand have access to a programme.

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10 Chronic Obstructive Pulmonary Disease and Lung Cancer in New Zealand, A report prepared for the Thoracic Society of Australia and New Zealand by Joanna Broad and Rod Jackson, Section of Epidemiology and Biostatistics, School of Population Health, Faculty of Medicine and Health Science, University of Auckland, October 2003, revised November 2003, Section 3.1.2, p25
11 ibid, Section 3.6.2, p34
12 ibid, Section 4.2.7, p40
2. Increase work and productivity: Low Back Pain

**Why this condition was selected**
Poorly managed Low Back Pain keeps people from work, therefore reducing productivity – which can be mitigated through rehabilitation, advice and education.

**Scale/Incidence**
- no firm agreement on a definition of what is “chronic pain”
- often the pain is non-specific and no precise diagnosis is possible
- the majority of people with Low Back Pain (LBP) recover within 2 months, however 2-3% go on to experience disabling Chronic LBP (CLBP), and these people account for 80% of the costs of LBP compensation costs
- a 2001 Australasian study found that 17% of men and 20% of women were experiencing pain of 3 months duration or longer (i.e. chronic). 11% of men and 13.5% of women reported the pain was interfering with their daily activities.

**Associated Costs**
- chronic LBP causes significant socio-economic problems in the form of long-term disability, work absenteeism, income compensation, and healthcare costs.
- 2004 research based on a young adult population estimated the cost of LBP in New Zealand to be approximately $500 million annually\(^\text{13}\)
- ACC reported that the 9655 active “back claims” (lasting 26 weeks or more) between August 2007 and July 2008 cost $250,481,000, however these statistics do not include CLBP sufferers who are not ACC claimants.

**What is currently being done in New Zealand?**
ACC have produced guidelines for the diagnosis and treatment of low back pain. The key messages of this report are:
- acute Low Back Pain is common. Episodes are nearly always short-lived and reassurance is very helpful
- investigations in the first 4-6 weeks do not provide clinical benefit unless there are Red Flags (clinical clues to potentially serious conditions) present. There are small risks associated with unnecessary radiology (X-rays and CT scans)
- the evidence for the benefits of activity has strengthened. This means staying or becoming physically active and resuming usual activities,

\(^{13}\) McBride, Begg, Herbison and Buckingham, 2004, “Low Back Pain in Young New Zealanders” in NZMJ v117,issue 1203
including work, as soon as possible

- analgesia and manipulation may provide short-term symptom control
- some clinical interventions may be harmful, especially extended bed rest and use of opiates or diazepam
- advice on early return to work is helpful.

**What is currently being done overseas?**

European Guidelines for the management of chronic non-specific Low Back Pain (November 2004):

- mainly clinical guidelines, but recommends multi-disciplinary bio-psycho-social rehabilitation with functional restoration for patients with chronic lower back pain who have failed mono-disciplinary treatment options.

Evidence supporting back pain clinical practice guidelines (CPGs) suggests that acute back pain is a benign self-limiting condition (Gross, 2006) in most cases. A comparative review of 17 international practice guidelines by van Tulder et al (2004) identified a number of consistent recommendations from these evidence-based guidelines including:

- reassurance to patients of a favourable prognosis;
- advise to patients to stay active and exercise;
- discouragement of bed rest;
- prescribing medication only if necessary on an individualised basis; and,
- consideration of spinal manipulation for pain relief
- acupuncture (UK guidelines only).

However, the literature reviewing the uptake of these guidelines shows low uptake with primary care physicians and surgeons not always following the evidence-based treatment guidelines (Bishop and Wing 2003, 2006).

**Issues**

Evidence supporting physiotherapy interventions for Low Back Pain are equivocal. There does appear to be strong evidence for providing assessment and advice and allied health professionals such as physiotherapists, chiropractors and osteopaths are well placed to fulfil this role.

Back pain patients seldom require more interventions than are provided by a physiotherapist. Work is important for health and can promote recovery from back pain if managed well. To that end, work status should form part of all discussions during assessments with advice provided to clients (including the

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15 Report can be found at http://www.acc.co.nz/for-providers/clinical-best-practice/acc-review/wcmz003162
benefits of staying connected to the workplace even if off temporarily) and, if necessary, their employers.\textsuperscript{16}

Self-management strategies to prevent further recurrences should also be strongly emphasised.

Key themes for increasing work and productivity:
\begin{itemize}
\item informed, patient-centred treatment options
\item family centred approach
\item appropriate, accessible rehabilitation programmes
\item education on self-management of condition
\item value of assessments
\item advice on return to or continuation with work
\item availability of appropriately trained and funded workforce
\item care coordination.
\end{itemize}

3. Decrease levels of care needed: Paediatric services and transition to adult services

\textit{Why this condition was selected}
Transition to adult services is patchy and fragmented leaving many patients and their families unsupported through adult years. Rehabilitation can decrease the levels of care needed.

Specific conditions considered – spina bifida and cerebral palsy.
Transition has been defined as “the purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centred to adult oriented healthcare systems, with the goal being to provide comprehensive and developmentally appropriate care in a coordinated and uninterrupted manner”\textsuperscript{17}.

\textit{Scale/incidence}
Cerebral Palsy:
The prevalence of cerebral palsy has remained relatively stable at 2.0 to 2.5 per 1,000 live births. Approximately 7,000 people in New Zealand have some degree of cerebral palsy (one third are under 21 years of age). The complexity of cerebral palsy and its effects vary from one person to another. It is often difficult to classify precisely which type of cerebral palsy a child has.

\textsuperscript{16} A. Indahl\textsuperscript{1}, L. Velund\textsuperscript{1} and O. Reikeraas\textsuperscript{2} (1995). \textit{Good prognosis for low back pain when left untampered. A randomized clinical trial}. Spine; 20(4):473-477.

\textsuperscript{17} Callahan S, Winitzer R, Keenan P. Transition from Pediatric to Adult-Oriented Health Care: A Challenge for Patients with Chronic Disease. \textit{Current Opinion in Pediatrics} 2001; 13: 310-316.
Children and young people with cerebral palsy have progressive musculoskeletal pathology and their function in childhood deteriorates with growth and time. With good and timely interventions such as spasticity management, serial casting, splinting, therapy and orthopaedic surgical intervention, functionality can be maintained and the potential to be independent with resultant less care needed as an adult is maximised.

Spina Bifida:
Estimates of rate approximate 0.2-0.4 per 1000 live births.
In 1999 in New Zealand, the prevalence of neural tube defects (NTDs) was 0.5 per 1000 live births. Many pregnancies complicated by NTDs result in termination – therefore the incidence increases to 0.91 per 1,000 total births and terminations. It was:

"estimated the 20-year cost of treating, managing and caring for one person with spina bifida in New Zealand is about $355,060 (Singh & Elliot 1997). On average there are approximately 15 children born with spina bifida per year. It we assume that this rate occurs every year for the next 20 years, then the cost of 300 people with spina bifida would come to $106,518,000 over 20 years, which equate to approximately $5 million per year. These costs do not take into account other potential costs, such as the loss of parental income, special schooling needs, family stress, wheelchairs, crutches and occupational therapy. In addition, the emotional costs associated with stillbirths, miscarriages and therapeutic abortions cannot be quantified."

What is currently being done in New Zealand?
There is a wide variation in the services being provided. Transition to adult services depends greatly on the availability and capacity of adult services to manage the clients.

There is currently only one specialist children’s rehabilitation centre in New Zealand, the Wilson Centre, Waitemata DHB. This facility provides child rehabilitation and respite care, particularly for children with high and complex needs. Transition from the facility recognises that:

“some young people will need additional help to acquire skills and support systems necessary to access adult care effectively. Focus on personal development during transition, assisting young people to acquire the skills necessary to negotiate adult service environment, and assistance to families to help redefine their roles in a manner which

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accommodates young person’s ongoing personal development and progress towards autonomy\textsuperscript{19}.

What is currently being done overseas?

Australia:
The services in Australia for the management of musculoskeletal issues in cerebral palsy (Westmead Sydney as illustrative example) consist of established rehabilitation programmes from a young age until transition to adult services. These include; programmes such as for spasticity management, for example botulinum toxin and other complex interventions such as intrathecal baclofen pumps and selective dorsal rhizotomy, hip surveillance programmes to detect hips at risk of dislocation based on well developed CP registry/database, specialised therapy teams dedicated in their management of the conditions and a responsive orthotic service.

These programmes are well supported by a large team with specialised skills that include paediatric rehabilitation medicine specialist, orthopaedic/neurosurgeons, nurse specialists, therapists, orthotists, social workers etc who work in multi/interdisciplinary teams to administer such programmes.

There are formalised transition process to adult services, where the process is initiated and discussed at an early stage, interventions are planned with this in mind, and clients are transitioned to experienced adult disability physicians who mainly manage adults with cerebral palsy or like conditions. They also continue to advocate and manage these clients in a multidisciplinary setting in adult rehabilitation services\textsuperscript{20}.

Issues
There is still no formal transition process and service in New Zealand, as the problem is larger than what one service is capable of managing on its own and there are few adult physicians who would see patients once they leave the paediatric service. Patients are currently discharged back to their GP for coordination of their needs.

There is limited resourcing for specialist rehabilitation services for children and there are large inequities of care throughout New Zealand e.g. numbers of therapists, adequate orthotics service, nursing specialists etc. as there is no focussed funding stream for these services.


\textsuperscript{20} Personal correspondence with Dr Eewe Lim FRACP FA FRM, Rehabilitation Paediatrician, Child Rehabilitation Service, Wilson Centre and Starship Children’s Health (June 2011)
There is no pathway for training of paediatric registrars who may be interested in rehabilitation to become paediatric rehabilitation specialists in New Zealand as the rehabilitation service is not considered a priority in times of major junior staff shortages by local DHBs. There are major resourcing issues in DHBs so opportunities to develop cost-effective complex interventions to maximise outcome are limited e.g. intrathecal baclofen pumps.

**Key themes for decreasing levels of care needed:**
- Developing rehabilitation teams
- Increasing numbers of trained personnel
- Providing multidisciplinary settings
- Timeliness of appropriate service delivery
- Access to appropriate treatments and technologies
- Formalised, planned transition to on-going services
- Increased training of relevant staff
- Care coordination.

**4. Increase number of disability free years: Stroke (in people under 65)**

*Why this condition was selected*
People under 65 years of age who experience a stroke are currently not directly funded by DHBs and there is no dedicated nationwide service. Providing rehabilitation and appropriate funding can increase the number of disability free years for these stroke patients.

*Current situation*
Stoke is the third greatest cause of death in New Zealand (after all cancers combined and heart disease). However, most strokes are not fatal and therefore the major burden of stroke is chronic disability. According to a 1997 study, there were approximately 32,000 people in New Zealand living with stroke, and only 30% of those were independent in activities of daily living.

- In 2009 there were approximately 6,000 first ever strokes and 2,000 recurrent strokes in New Zealand.
- Each year, approximately 2,000 people die from stroke. This has remained fairly constant with the ageing population balancing out a decline in age-standardised mortality rates for stroke victims.
- More than 90% of stroke sufferers are admitted to hospital
- A recent study in Auckland following up five years after stroke showed a range of on-going functional impairments:
  - Dementia (22.5%)
  - Recurrent stroke (20%)
  - Institutionalised (15%)
  - Depression (30%)
• Bladder control problems or falls (33%).
• Approximately one-quarter of all people with first stroke in New Zealand are aged under 65 at stroke onset. Maori and Pacific New Zealanders are disproportionately represented among this group, as stroke sufferers from these ethnicities have a younger age profile than European New Zealanders.

Associated costs and projections
Lifetime costs per stroke patient are estimated at $73,600 per person, with a total cost to the country of over $450 million annually. (Brown 2009 in New Zealand Clinical Guidelines 2010)

If current trends in incidence and mortality continue, then the number of people living with stroke will reach 50,000 by 2015, with overall annual costs of more than $700 million.

What is currently being done in New Zealand?
There is currently no comprehensive stroke management system in place across DHBs.

In December 2010, the New Zealand Clinical Guidelines for Stroke Management were released. The two main recommendations of these guidelines are that:
• all DHBs should provide organised stroke services
• all people admitted to hospital with stroke should expect to be managed in a stroke unit by a team of health practitioners with expertise in stroke and rehabilitation.

Currently only 39% of New Zealand stroke patients are admitted to a stroke unit.

According to the Guidelines, a stroke unit is made up of an interdisciplinary team comprising:
• Doctors
• Nurses
• Physiotherapists
• Occupational therapists
• Speech-language therapists
• Dieticians
• Social workers
• Psychologists
• Pharmacists
• May also include psychiatrists, ophthalmologists, orthoptists, podiatrists, orthotists, recreation therapists, therapy assistants and general ward staff.

Return to work – in the ARCOS study (2002-2003 Auckland Regional Community Stroke study), they found 20% of people presenting with first time stroke were employed. Their mean age was 55, and 75% survived 6 months post-stroke. Of those working people who survived 6 months, 53% had returned to full-time work. New Zealand Europeans were disproportionately represented in this group. 86% of those who were still in hospital one month after their stroke were unable to return to work.

Stroke in working age people has other social consequences, including the impact on family relationships – marital problems, impaired sexual relationships, difficulty with childcare, the impact of children as caregivers.

While funding of rehabilitation and community support for stroke survivors over the age of 65 is funded by DHBs, the funding for services for those under 65 is provided through the National Health Board, Ministry of Health. This means they are not necessarily able to access DHB-funded stroke-specific rehabilitation and community support services.

It is often difficult for under 65s to access community support, appropriate facilities for rehabilitation and there is a perception of significant unmet need.

The Laura Fergusson Trust in Auckland has established and funded the first dedicated stroke rehabilitation pilot programme in New Zealand and works actively with the Laura Fergusson Chair in Rehabilitation at Auckland University of Technology in the development of appropriate programmes and review of results. The outcomes to date in terms of mobility and socialisation have been most encouraging.

What is currently being done overseas?
The proportion of New Zealand patients receiving stroke unit care is low by international standards – 39% compared to 74% in the UK and more than 80% in Scandinavian countries.

Australia:
In Australia, about 90% of stroke patients are treated in hospital, but only 23% of hospitals have a formal stroke service\(^2\).

UK:

- the direct cost of stroke to the National Health Service (NHS) is estimated to be approximately $5.5 billion (£2.8 billion). The cost to the wider economy is approximately $2.5 billion (£1.8 billion). The informal care cost is approximately $4.7 billion (£2.4 billion).
- stroke patients occupy around 20 per cent of all acute hospital beds and 25 per cent of long term beds.
- stroke units save lives: for stroke patients, general wards have a 14% to 25% higher mortality rate than stroke units.

UK Stroke Strategy:

- at present only around half of individuals who have experienced a stroke receive the rehabilitation to meet their needs in the first six months following discharge from hospital, falling to around a fifth in the following six months.
- three-quarters of younger individuals want to return to work.
- a third of individuals develop depression.
- a third of individuals experience communication difficulties.
- currently around a third of people who have strokes will die as a result; many of these people will not do so immediately, but within three months of the stroke.
- components of multi-faceted stroke specialist rehabilitation and support:
  - mobility and movement;
  - communication;
  - everyday care activities e.g. dressing, washing, meal preparation;
  - depression and distress;
  - swallowing;
  - nutrition;
  - cognitive difficulties;
  - vision and visual perceptual difficulties;
  - continence; and
  - relationships and sex.
- early supported discharge (ESD) to a comprehensive stroke specialist and multidisciplinary team (which includes social care) in the community, but with a similar level of intensity to stroke unit care, can reduce long-term mortality and institutionalisation rates for up to 50 per cent of patients and lower overall costs.}

Canada:

- has its own guidelines, which were based on a range of guidelines including the previous version of the New Zealand ones.

• covers the same principles, but fund from prevention right the way through acute in hospital and community care into community reintegration
• telestroke (telemedicine for stroke patients) is showing improved outcomes in terms of rehabilitation and reduced costs of $1.2 (NZD) million ($1million CAD) over four years.\(^{23}\)

Key themes for increasing the number of disability free years:
• early intervention
• excellence of acute care
• consideration of impact on whole family
• availability of age and condition appropriate facilities
• importance of specialist rehabilitation facilities
• accessible community based services
• integrated care teams and multi-component rehabilitation
• patient and family centred responses
• care coordination.

\(^{23}\)http://www.heartandstroke.com/site/apps/nlnet/content2.aspx?c=ikIQLcMWJtE&b=7759141&ct=11251321
Discussion

What needs to change to achieve the outcomes of a world-class rehabilitation system in New Zealand?

Members of the review group described models of what the healthcare system with a world-class rehabilitation system could look like and the components that would need to be present to be successful. These can be found in appendix 3.

Several recurrent themes emerged from consideration of the illustrative conditions. These are discussed below in relation to the four benefits of a comprehensive rehabilitation system.

Reducing readmissions to hospital
Acute services need to be accessible as soon after the event as possible, with individualised rehabilitation programmes started as soon as the patient is able. Variation in the provision of rehabilitation services can lead to clients taking longer to rehabilitate and therefore costing the system more.

Earlier, supported and planned discharge home with connection to proven rehabilitation services in the community can greatly reduce the costs and improve outcomes for clients. The period immediately following on from discharge from hospital is a big risk area in terms of clients succeeding in rehabilitating back into the community. Timely interventions at this stage can address a range of issues related to health, social and workplace needs and enhance independence and functionality.

Supported discharge requires the skills of someone who can act as a link to all the agencies and services required by the client and their family as well as to a multidisciplinary team providing appropriate and timely rehabilitation. It is also important that this connecting function is available to clients at various points along the rehabilitation journey, not only at the initial stage.

An effective community based multidisciplinary team requires links to a specialist centre for advice, training, referral and specialist treatments. Appropriately trained personnel can offer a range of therapies and supports, link to social services and work in collaboration with specialists. Key to the success of this, is shared patient records, accessible to all who are involved in supporting the client at whatever stage of their treatment or rehabilitation. This should be linked to the care plan worked out with the client. Future opportunities, such as telemedicine could be introduced to provide opportunities for diagnosis, care planning and appropriate and timely admissions to hospital. Provision of centres of excellence, with a focus on
specialty areas could provide services to rural areas and community clinics as well as providing opportunities for staff development and training.

Transferring some services from specialists to trained professionals in the community can free up specialist time e.g. nurse professionals trained in the use of Spirometry, GPs providing botulinum toxin injections and advanced Occupational Therapists could sign off driving assessments following strokes.

Growing evidence demonstrates the need to improve the quality of services to Maori patients and whanau. High-quality care is about performance and user satisfaction: the right thing, for the right people, in the right way, at the right time by:

- taking account of whanau, hapu and Maori community views on quality of care
- fostering consistency of practice through shared learning, benchmarking and clinical governance within a standards framework
- take account of the need for cultural and clinical safety.

Most progress in ensuring clinical safety and effectiveness for Maori will come from teams of health professionals and community workers working and learning together to establish agreed protocols and processes and to share best practice initiatives.

Providing individual, patient centred rehabilitation programmes, which offer easily accessible rehabilitation sessions for individuals or groups, can also contribute to reducing readmissions. Involving the clients, their families or whanau can help determine the range of health and social services required. Providing training and support for a client’s family can also add to the rehabilitation package being provided, such as that currently provided by some social workers who are trained and skilled to support families and assess the social determinants of health.

**Increased levels of work and productivity**

Raising awareness about, and changing perceptions of rehabilitation can make a difference to increasing a clients capacity for work. A shift in the perceptions of some health professionals is also required, from working on the pathology of a condition to working with function i.e. a shift from working to cure the condition, to living and working well with the condition. An example of this currently working is in sports medicine practice where a focus on function has led to great success in the management of players injuries.

Vocational rehabilitation for non-injury clients is very varied and patchy. Lessons could be learned from ACC and services delivered by primary care based, multidisciplinary teams.
Working with clients and their workplaces, with relevant information and education could allow limited or change of roles during rehabilitation to enhance functionality and participation levels.

Using appropriate services to provide initial assessments and advice on return to work and self-management techniques lead to better health and social outcomes as well as increased productivity.

Raising the profile of rehabilitation, not only in the professional sector, but also in the public sector is also important. A public awareness campaign, such as the ‘Be Accessible’ campaign could help to raise the profile of rehabilitation and inform about available services and how to access them.

**Decreased levels of care needed**
Reducing time spent in acute services can therefore allow funds to be directed to the community. Providing higher dose intensity of rehabilitation therapies leads to shorter stays and increased functionality.

Decreasing levels of care needed requires a level of self-management by the client, their family or by both. This requires appropriate levels of assessment, advice and provision of services to support the individual in managing elements of their rehabilitation.

Providing case coordination can link clients into available local services and opportunities for rehabilitation (e.g. falls prevention programmes) and to access equipment and other services that they may need. For example, providing equipment can reduce the need for assistance with some activities and provision of transport can allow clients to attend group and clinic based sessions.

Continuity of care when transitioning from paediatric to adult services with access to services can lead to early detection of complications, reduced readmissions and better quality of life, in addition to less reliance on care support.

Focussed funding across the country for people transitioning into adult service and training of the workforce to deliver the services required, is necessary to provide equitable access and to improve outcomes. Collaboration between paediatric and adult services with fully trained staff can lead to increased continuity of services, better understanding of clients and their conditions and

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development of client centred plans. Care coordination is particularly relevant here also.

Provision of more complex interventions can also decrease levels of care over the longer term. Involving families and/or care givers in rehabilitation and care plans and providing necessary, quality training and equipment can also help decrease the reliance on services provided by health professionals.

**Increased number of disability free years**
For many clients, early intervention and receiving high dosage of rehabilitation treatment (e.g. 5 hours per day) can increase recovery rates.

Advanced techniques and access to complex interventions can improve quality of life for some clients.

Use of technology, such as telemedicine, linking community services to specialist centres of excellence can reduce admissions and avoid travel to specialist centres. Telemedicine has been shown to decrease the number of emergency admissions to hospital and improve clients’ levels of confidence and activity.

Continuity of care and provision of care coordination and holistic, multidisciplinary care teams will provide for client’s needs as they move from acute care into the community setting.

Social benefits of group activities, such as walking groups and Tai Chi extend beyond the immediate health benefits and include increased levels of confidence and decreased levels of isolation, particularly for older people.

Linking in a broad range of services – e.g. housing, education to a shared care plan can facilitate increased participation and a range of activities to enhance quality of life.
Current obstacles to a comprehensive rehabilitation system

The following obstacles to a comprehensive rehabilitation system have been identified and need to be addressed as part of the development of a comprehensive rehabilitation service for New Zealand. This list is not exhaustive but highlights some of the key issues raised during this review process.

Funding model
Currently, funding for rehabilitation is provided from a number of sources - ACC, the Ministry and DHBs, leading to inequalities in access to and provision of services (stroke services are a good illustration of this). A comprehensive framework would provide an opportunity to align services and target funds. While acknowledging that there is no additional funding available, redistributing funding to support a new rehabilitation model is vital to ensure its success.

As rehabilitation can often involve different agencies, departments, funders and Ministries (e.g. Health, Education and Justice), all of these need to be included in the development of a new funding model.

Leadership
Rehabilitation needs effective leadership at all levels including undergraduate and postgraduate health professional training, clinical delivery and at the level of purchasing and policy.

Facilities
Access to rehabilitation facilities, both inpatient and community based, is patchy and facilities vary in their ability to deliver high quality services, the latest technology and appropriate options.

Service provision
There is no comprehensive rehabilitation service in New Zealand. DHB rehabilitation services are often established around geriatrics and not rehabilitation in its widest sense. Geriatricians, who have a rehabilitation component to their work, are often employed by DHBs but they are often only available for rehabilitation work on a limited basis.

Limited access to residential care in some areas of New Zealand, leads to younger patients being admitted to geriatric units. Access to age and condition specific facilities (e.g. stroke units) is very varied and may require clients to receive treatment a long way from home.
Workforce and training
There are insufficient numbers of trained personnel to provide home and community support as well as to provide therapy at the time and levels required. This is in part due to:

- difficulties of recruiting graduate therapists, who often go straight into private practice and therefore don’t get the wider experience of the public system
- a perception that retention of staff is impacted by low wages and increased opportunities overseas
- insufficient numbers of people trained in rehabilitation having an effect on the quality of rehabilitation being offered. Due to the variation in provision of services, patients are taking longer to rehabilitate, therefore costing the healthcare system more
- rehabilitation training for clinicians is limited, for example, specific undergraduate training is not available to nursing trainees. Training needs to be provided for rehabilitation specialists as well as providing an appropriate level of training for all health professionals.

Education should be designed to meet the needs of the client, not of the sector. A stronger emphasis on interdisciplinary training is needed, which would require no additional costs, just a change to the content of the curriculum.

The perceptions of medical practitioners need to change to focus on working with clients to live with their condition, rather than a focus on finding a cure. Having a focus on the functional abilities rather than on the impairment can change the way rehabilitation is provided.

Some rehabilitation services are provided only by a limited number of practitioners e.g. pulmonary function tests (test for COPD). Not all DHBs have pulmonary function test and in some DHBs only specialists are trained to do this. In other areas, specialist primary care nurses are trained to deliver this, thus allowing the specialist to focus on other work.

There is no pathway for training of paediatric registrars who may be interested in rehabilitation to become paediatric rehabilitation specialists in New Zealand as the rehabilitation service is not considered a priority in times of major junior staff shortages by DHBs.

Maori providers are key players in improving access to, and the effectiveness and appropriateness, of health services for Maori. Maori providers are essential to supporting the development of services that practice Maori views of health and healing and have developed within hapu, iwi and Maori
communities and are particularly well placed to understand and meet the needs of Maori.

**Delivery**
Several sets of guidelines e.g. New Zealand Clinical Guidelines for Stroke Management (2010), COPDX Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease (2009) have been distributed to all DHBs with limited uptake.

There are some highly performing specialist facilities, which provide for workforce training and delivery of high level, innovative and evidence based services.
Proposed demonstration site

The group propose a demonstration site, to identify the benefits of recommendation C - the development of care coordination and recommendation D - providing the appropriate dosage intensity of rehabilitation treatment.

These two recommendations were selected as they are applicable to all conditions which involve rehabilitation services and provide evidence of the four benefits of reduced readmissions, increased productivity, reduced levels of care and increased levels of disability free years. It is proposed that this demonstration will be a comparative demonstration project comparing two groups of patients – one receiving standard current rehabilitation care and the other receiving high dosage rehabilitation, with seamless co-ordinated care into the community. The cost benefit of each will be assessed and reported.

Care coordination

It is proposed that a care coordinator is appointed when a person is admitted to an acute care facility and that their role continues for the first three months after discharge. The role involves working with clinicians and the client and their family to work out a care plan and overseeing the implementation of that plan. This role could include organising multidisciplinary meetings, working with funders, sourcing education materials and equipment, accessing community programmes and linking in social services as required.

It is envisaged that the care coordinator will be a community based role, which serves to work with the client to assist with transition back into the community and any adaptation to changes in functionality. Working with clients and their families and whanau, the care coordinator will ensure that transition from the acute facility is timely and fully supported and to bridge the gap between secondary and primary services.

There is currently no specific training available in New Zealand for this role. In other countries, e.g. USA, post graduate certification is required to take on this role.

It is proposed that the care coordinator would need to have:

- understanding of the health sector and the work of rehabilitation practitioners
- understanding of the broader determinants of health and the ‘living well’ stage of the model
- advocacy skills
- facilitation and education skills
• management skills
• confidence, competence
• respect for and be respected by professionals
• mandate to carry out their role.

It is recommended that care coordination be recognised as a career, with appropriate levels of qualification and career progression. Specific qualifications could be built onto existing programmes, such as health sciences.

Through the use of a care coordinator in the demonstration site, the scope of the role could be clarified and the necessary skills, knowledge, and training required to deliver could be highlighted to inform future educational opportunities.

The intended outcomes of the demonstration of care coordination are:
• seamless service provision from acute care to community setting
• better linkages to services, including those outwith the health sector
• improved levels of satisfaction for clients and their families
• better access to rehabilitation programmes and therapies
• increased productivity
• decreased levels of care needed
• reduced readmissions
• increases in disability free years.

The demonstration could also identify gaps in current service provision.

NB: Strongly support linking this with HWNZ work on ‘Managed Care’ currently being undertaken.

**High dose rehabilitation provision**

It is proposed that a high dosage rehabilitation programme is developed. The aim would be to provide 5 hours of rehabilitation per day. Intensive rehabilitation at this level has been shown to improve outcomes for clients with acquired brain injury and the demonstration could extend this to include other rehabilitation clients with associated measures of effectiveness and cost benefits\(^\text{25}\).

In order to provide 5 hrs per day of rehabilitation, Rehabilitation Assistants would need to be employed to deliver the required rehabilitation under the delegated authority of Physiotherapists, Occupational Therapists and other

rehabilitation specialists. The 5 hours would be a combination of appropriately supervised and led activity. The role of Physiotherapy Assistant has been clearly defined by the New Zealand Society of physiotherapists. Careerforce is currently developing a National Certificate in Health, Disability, and Aged Support (Health Assistants) which would be a useful starting point for training staff for the demonstration site. The option of having one rehabilitation assistant who could assist with the delivery of more than one rehabilitation therapy programmes would be useful in smaller hospitals or more rural areas. Utilising health care assistants allows for more intensive rehabilitation to be offered - 5 hours per day and 7 days per week.

Ensuring the successful delivery of high dosage rehabilitation will require the regulated professions to delegate tasks and to supervise assistants appropriately to ensure that quality rehabilitation is being delivered.

The intended outcomes of high dosage rehabilitation are:

- improved functionality
- reduced length of stay in hospital and reduced readmissions
- reduced costs by utilising healthcare assistants
- reduced readmissions to hospital
- increased levels of productivity

The demonstration site would compare the outcomes for the two groups of clients over the following year (or longer) and would focus on demonstrating the four identified benefits, client and workforce satisfaction and overall cost savings.

A potential demonstration site would be Middlemore Hospital, where there is commitment in principle to undertaking such an initiative. It may also be useful to look at demonstration sites where there is the widest disparity in access or quality of services.

27 New Zealand Qualifications Authority Qualification Overview Health Assistants URL http://www.nzqa.govt.nz/nzqf/search/viewQualification.do?sessionid=13A03A2DCFDE1F62B31F1CE064C8375F.k5A?selectedItemKey=1677
Recommendation

The development of a comprehensive rehabilitation system in New Zealand

Achieved by:
1. Implementation of the actions A-E below
2. HWNZ funding a demonstration site as a foundation for building a rehabilitation system
3. Extending the findings of the demonstration site by putting in place further rehabilitation initiatives with monitoring, review and evaluation
4. Building a nationwide system from the components described in 3 (above).

A. Raise the profile of rehabilitation in New Zealand
Achieved by:
1. Awareness raising in the community by media campaigns
2. Identifying areas where rehabilitation can make a significant difference and ensuring policy delivers on that potential
3. Advocating for medical leadership through the establishment of a Department of Rehabilitation Medicine with an appointed medical Chair of Rehabilitation in a University
4. Ensuring that a comprehensive rehabilitation component is part of all undergraduate health professional training
5. Supporting the uptake of evidence based guidelines such as New Zealand Clinical Guidelines for Stroke management (2010), COPDX Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease (2009)
6. Promoting rehabilitation services within Whanau Ora Centres
7. In line with current government recommendations, supporting the establishment of a National Stroke Network and provision of organised stroke services in all DHBs.

B. Increase the provision and opportunities to undertake rehabilitation training and increase the rehabilitation workforce
Achieved by:
1. Enhancing nurses and Allied Health Professionals (including physiotherapist, chiropractors, and osteopaths) participation in advanced trainee qualifications in rehabilitation (currently provided by Auckland University of Technology and the University of Otago)
2. Providing an interdisciplinary approach to the development of training that is supported by individual professional bodies
3. Training more rehabilitation specialists, including paediatric rehabilitation specialists
4. Supporting the development of competencies underpinned by different cultural values and concepts of health
5. Increasing and upskilling the trained workforce at all levels to better respond to different population groups to strengthen the capacity to deliver effective and appropriate services and to ensure the workforce reflects the community it serves
6. Providing rehabilitation training for GPs
7. Reviewing the scope of work of rehabilitation practitioners and upskilling the workforce to take on new roles that enhance outcomes, including introducing advanced scope roles.

C. Develop care coordination to support clients following discharge from an acute facility
   Achieved by:
   1. Developing role for rehabilitation coordinator - including training and a career pathway.
   2. Engaging the primary sector in the continuity of rehabilitation and shared care planning
   3. Supporting the development of shared electronic patient records
   4. Piloting the role linking hospital and community based services
   5. Demonstrating improved outcomes for clients and cost benefits
   6. Developing care coordination which incorporates the cultural values, beliefs and practices of the community being served.

D. Provide appropriate dosage intensity of rehabilitation treatment
   Achieved by:
   1. Upskilling current workforce e.g. nurse specialists, advanced Physiotherapy practitioners, advanced Occupational Therapists and others as appropriate
   2. Developing roles of Rehabilitation Assistants - including Physiotherapy and Occupational Therapy and others as appropriate
   3. Ensuring sufficient staff to provide high intensity dosage of rehabilitation (e.g. 5 hours per day) 7 days per week.
   4. Developing an inclusive approach to providing services and opportunities to whanau.
   5. Demonstrating improved outcomes for clients and cost benefits of correct dosage at correct time.
E. Support the review and alignment of services purchased by ACC, the Ministry and DHBs to more equitable and sustainable model
Achieved by:

1. Encouraging ACC, the Ministry and DHBs to review how services are purchased, including differential funding split at age 65 years.
2. Changing current funding models to fund a comprehensive system
3. Development of a national ‘purchasing for outcomes’ framework for rehabilitation services.
Appendix 1: Acknowledgements

Rehabilitation Workforce Service Review Team
- Andrew Wong (Project lead) - MD Healthcare holdings LTD, Health Workforce New Zealand Board
- Chris O’ Brien - Non-executive Chairman of the Board at Laura Fergusson Auckland
- Max Cavit - MD Cavit ABI Rehabilitation
- Martin Chadwick - Director of Allied Health, Counties Manakau DHB
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- Brenda Wraight - Director, Health Workforce New Zealand
- Angela Bell and Kay Sheikh – Health Workforce New Zealand

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- Susan Stott - Associate Professor University of Auckland
- William Levack - Senior Lecturer in Rehabilitation, University of Otago, Wellington
- Peter Sharplin - General Manager, QE Health
- Laura Lambie - Ministry of Health
- Anne O’Connell, Jon Gaupset and Ross Livingstone – Ministry of Health, Disability Services
- Claire Stearne, Liz Cairns and Jane Kelley - ACC
- Janette Peebles - General Manager Service Development and Innovation Laura Fergusson Rehabilitation
- James Murphy - Chief Executive Officer Laura Fergusson Trust
- Tanya Povey - General Manager Community Rehabilitation Laura Fergusson Rehabilitation
- Heather McLeish - General Manager Transitional Rehabilitation Laura Fergusson Rehabilitation
- Vicki Currie - Health Workforce New Zealand Managed Care review
- Te Miria James-Hohaia - Maori Services Manager, ABI Rehabilitation
• Chris Milne - Past President Australasian College of Sports Physicians

Current rehabilitation related work
The group is aware of the following work which is currently being undertaken that may impact or contribute to the recommendations being made in this report.

Workforce Service Reviews
The group is aware of and has linked in with several of the other workforce service reviews, in particular Aged Care, Palliative care, Musculoskeletal and Mental Health.

The work that Vicki Currie is undertaking through the review of managed care has strong synergies with the recommendations in this report and particularly around the care coordination role proposed in the demonstration site.

Work being carried out by HWNZ looking at Maori workforce development can also link in to strengthen the recommendations made in this report.

Work currently being carried out by ACC and the Ministry:

• Traumatic Brain Injury Strategy (due for completion late 2011)
• Spinal Injury review - current work with NHB (service planning) to develop a joint strategy for spinal services, leading to a ‘National Spinal Cord System of Care’
• With the Ministry, visiting all DHBs to gather information on issues related to rehabilitation with the objective of producing a national snapshot of services to inform recommendations for the future of rehabilitation services
• Planned review of Child Development Services as part of Ministry’s DSS Group Work Programme.

The Australasian Faculty of Rehabilitation Medicine (AFRM) together with the New Zealand Rehabilitation Association
A working party has been formed to suggest mechanisms to address the challenges that currently limit rehabilitation services in New Zealand and to develop a cohesive Rehabilitation Strategy. Implementation of the strategy will enable equity of service provision and demonstrate the necessity and benefits of what organised and planned multidisciplinary rehabilitation would contribute towards the New Zealand Health System especially for people with a disability. Due to produce strategy late 2011.
Careerforce
Current development of a National Certificate in Health, Disability, and Aged Support (Health Assistants) (Level 3) with strands in Dietician Assistance, Dental Assistance, Healthcare Assistance, and Rehabilitation Assistance.

Laura Fergusson Trust (LFR) and Auckland District Health Board (ADHB): Community Based COPD Rehabilitation pilot programme
LFR and ADHB have partnered to run a Community Based COPD Rehabilitation pilot programme in the Auckland region over the next 18 months. The pilot programme will be delivered by a multi disciplinary team and from 2 to 3 community locations, central to the geographical areas of high COPD client numbers, so that attendance and access issues are minimised.

The objective is to have 100 participants complete the programme and follow up over the 18 months. The main outcomes sought are a reduction in hospital admissions or length of stay, reduced GP burden and better quality of life for participants.

The programme will consist of:

1. an assessment to establish baselines
2. an exercise and education session run over 2 hours, 2x/week for a minimum 8 weeks
3. a home exercise programme
4. self-management strategy handbook including assistance to stop smoking
5. discharge assessment
6. link to exercise/sport/recreation programmes in the community in order to facilitate sustainable outcomes
7. follow up assessments at 1 month and 3 months
8. data collection re service process and outcome measurement to inform future practice and service development.

The programme has been designed and developed based on, critiqued against and implemented in line with the Australian Lung Foundation Guidelines and a raft of research evidence now available worldwide.

The aim is to start the assessments for the initial referrals in January 2012 and begin the rolling programmes in the week beginning 6 February 2012.
Appendix 2: Scenarios and case studies
COPD case studies

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<th>The ‘early’ case</th>
<th>The problem</th>
<th>The solution</th>
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| Bob is a 55-year-old ex-printer who now works as a driver. He has a 35-year pack history and has developed early signs of chronic bronchitis and emphysema. He has a productive cough most mornings and some shortness of breath with mild exertion (like moving heavy objects and walking up hills). His job is sedentary but with some lifting. He has gained a lot of weight over the last 5 years and is developing a lot of knee pain. He is thinking about moving house to a place without stairs. | Bob puts his rapidly developing health problems down to ‘getting old.’ There is a lot of evidence that COPD is first diagnosed up to 10 years after first symptoms (possibly because of a sense of ageing, or because people think its ‘natural’ to have a bit of a smoker’s cough). Bob is at the beginning of a long predictable, highly costly cascade that could have been averted. He has been advised by ‘someone’ – he can’t remember who to cut down on his cigarettes. | 1. Help Bob quit smoking completely – cutting down is not enough to make a difference.  
2. To capture Bob’s changing lung function early and often. This means early spirometry (cheap and easy to do in malls, clinics, etc.; does not need a doctor to do).  
3. To keep Bob active. If his job is sedentary, he needs a ‘coach’ who he sees maybe every 3 months for his ‘WoF’. They work on an activity prescription reviewed annually.  
4. He gets his pharmacological management right, again reviewed annually.  
5. We have central data on Bob that tracks his progress. |

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<th>The ‘moderate’ case</th>
<th>The problem</th>
<th>The solution</th>
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| Jean is a 65-year-old retired school secretary who was diagnosed with COPD four years ago. She has had one admission to hospital with an acute exacerbation, but her main problem is Airways destruction (emphysema). She is breathless with minimal activity and is beginning to curtail her activity. She finds hills impossible, and is moderating her food intake because of her breathing. She is fearful of breathlessness and she increasingly avoids social situations (out of embarrassment and for fear of cross infection). | Jean is approaching a ‘tipping point’ in her condition and she has neither the resources nor knowledge to know what to do. This is the point where aggressive, dynamic intervention works and can have a major impact on the quality of her life, if it is given judiciously. | 1. Gather a detailed history of Jean’s illness, beliefs, attitudes, etc. to build a rehabilitation profile. Store it in a way that is easily accessible to others in the future.  
2. Provide Jean with active physical rehabilitation (by active, we mean |
well-targeted, purposeful and relentless, not necessarily ‘hard’), provide it often, and offer a network of opportunities with support of others to maintain her activity (this works better than solo efforts).
3. Offer her evidence based behavioural treatments. Fear of breathlessness and social withdrawal are predictors of poor long-term health. Help people to come to terms with the need to be active and engaged.
4. Teach Jean to manage her breathing (i.e. with PEP). Often missed from current programmes but a vital part of preventing respiratory muscle fatigue
5. Give her advice on nutrition and keeping her calorie intake up with good food planning (i.e. no big meals, snacking on high-nutrition foods)

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<th>The ‘severe’ case</th>
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<td>Jessie is a 75-year-old grandmother with severe COPD. She is limited to moving around her house on 16 hour-a-day oxygen. She is constantly breathless, breathes through pursed lips, is very thin, and shows signs of secondary heart failure. She has some informal care from her daughter who 30km away and good neighbours. She has had repeated admissions for acute exacerbations of COPD in recent years. She is very anxious about dying.</td>
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<tbody>
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<td>Jessie has major health problems but few of the physical or mental resources to cope with them. She requires increasing passive interventions and draws on complex networks of health care support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Jessie needs well-coordinated care that should be based on a palliative care model to support her and her family/whanau as they will be providing much of her care even though hospital will likely be required at some points.</td>
</tr>
<tr>
<td>2. Respiratory muscle failure will be Jessie’s likely cause of death. This is harrowing and highly distressing. Non-invasive ventilation is still expensive, but should be available to rest respiratory muscles and take over the work of breathing for all people with severe COPD</td>
</tr>
</tbody>
</table>
3. Jessie needs a lead-carer who can coordinate day-to-day care, nutritional advice, energy-saving adaptations, rest and recovery strategies, etc. A nurse or rehab assistant may be the most appropriate.

4. Comfort, care and rest are appropriate management strategies.

**Scenario for rehabilitation following low back pain**

Joseph is a 41-year man who works as a team leader at a call-centre. He has chronic low back and left leg pain that developed following an apparent muscle strain 8 years earlier. Several months after the onset of back pain, he was found to have a prolapsed disk on MRI and underwent surgical discectomy. His symptoms failed to improve and he underwent a further surgical procedure for persistent disk prolapse 6 months later. He continued to experience low back and left leg pain. Repeat MRI continues to show evidence for a disc prolapse but no further surgery was envisaged. His surgeon referred him to a medical pain specialist for epidural injections and analgesic medication.

One year later he presented to the emergency department following an overdose of pain medication (two different weak opioids, sleeping pills) and alcohol. He had become frustrated by the poor response to treatment and the narrow focus of his pain specialist, who appeared to consider pharmacological treatment only. He was admitted overnight and assessed by the crisis mental health team who did not think he was depressed and was not actively suicidal.

Six months later, he presented again to the emergency department with severe back pain after he had run out of codeine. He initially had difficulty moving around and was unwilling to move on the bed for examination purposes, but was eventually able to walk unaided to the toilet. During his stay in the emergency department he was aggressive and verbally abusive towards staff.

He underwent a multi-disciplinary pain management programme that included rationalisation of medications, graduated exercise, cognitive-behavioural therapy under supervision of a clinical psychologist and vocational rehabilitation in liaison with his employer. Treatment of depression with citalopram and then venlafaxine had also been instituted.

By the end of a 6-week outpatient-based programme, his pain and functional abilities had improved markedly. He was working full-time, although was no longer team-leader. He had resumed some of his non-work activities and had reduced the number of long acting codeine tablets taken each day. He felt more in control of his life than at any time since the original back surgery.

Six months later, he remained working full-time and was taking no analgesic medication. He continued to receive treatment for depression, but this was well
controlled. He reported at least weekly episodes of back pain, but at a relatively low level and manageable with exercise or changes in posture. He was not worried by these episodes and felt confident that he would be able to successfully self-manage in the future.

**Scenarios for young people with spina bifida and cerebral palsy**

Child with spina bifida - bladder issues are significant for children/adults with spina bifida. Transition to adult urology services seems to work well as adult urologists seem comfortable with managing the neurogenic bladder and can carry on the work of the paediatric urologist. Transition is a managed process through overlap of services and discussion about transition.

Child with Cerebral Palsy – generally poor transition to adult services as adult physicians are not knowledgeable about Cerebral Palsy as a diagnosis and there is no-one to refer to. Hence transition occurs abruptly, triggered by age.

This lack of transition limits options in childhood; for example there is evidence that intrathecal baclofen is a good adjunct to manage severe spasticity/dystonia (thus improving seating, quality of life, participation and conversely reducing cost of care). However this is not offered in New Zealand as this is a long-term therapy and would need to be continued by the adult rehabilitation service, who do not exist in sufficient numbers/expertise to take on this service in adults with severe Cerebral Palsy.

**Scenario for a young person with stroke**

Paul (not real name) is a 48 year old man who suffered a brain-stem stroke and had been an inpatient on the medical ward of a medium-sized hospital for two months.

His initial symptoms were confusing with frontal headache, fluctuating agitation, nystagmus, photophobia and right sided weakness. Investigations for encephalitis were negative. He developed generalised seizures and status epilepticus that required admission to the Intensive Care Unit, sedation and assisted ventilation.

Initially, his neurological deficits were profound with complete weakness of facial muscles, arms and legs, except for vertical eye movements. Progress was complicated by aspiration pneumonia on more than one occasion and he remained at high risk of further respiratory infections (maintained on prophylactic antibiotics).

*Comment – excellence of early medical care is essential for early diagnosis, correct treatment and prevention of complications in acute neurological disorders. Many district hospitals do not have specialist neurological staff on site and stroke care is often managed by generalists. A system of regional oversight and consultation is critical for such hospitals.*

Eventually there was some small neurological recovery. He had weakness of extra-ocular muscles (lateral movements of the left eye) leading to diplopia. He appeared to have retained sensation to light touch. His swallowing muscles were significantly affected and he required percutaneous gastrostomy feeding to maintain nutrition. His
respiratory muscle function was impaired but sufficient eventually to maintain adequate gas-exchange without assisted ventilation (mechanical ventilation and then continuous pressure assisted ventilation was initially required). MRI showed a large, acute, brainstem infarct involved both halves of the pons with signs of occlusion of the right vertebral artery and the basilar artery.

Initially, the extent of his neurologic impairment constituted the ‘locked in syndrome’ whereby he was able to communicate only by looking up. However, over time he made significant improvements: he had improved head control so that he was able to turn his head from side to side, lift his head and sit in a supported chair, there were useful movements of the fingers of the left hand sufficient to operate a call-button.

Comment – even patients with severe impairments can make small but important functional gains; often the time-frame for recovery for such patients is long [Turner Stokes, 2006 #3398].

He was referred to a private residential rehabilitation facility which had experience with patients who have complex needs, since the local DHB ATR service did not think it had sufficient skills and was geared towards shorter lengths of stay than appeared to be necessary for Paul. At first funding was declined for this, without clearly documented reasons, but a subsequent application that was supported by an assessment from a rehabilitation physician was approved.

Comment – unnecessary funding barriers should be minimised when properly trained health professionals make treatment recommendations that fall within budget constraints. Transparent criteria for admission to specialised regional, subnational and national services should be developed that prioritize patients who have the most to benefit from such services [Taylor, 2010 #3643]; when such criteria are met, funding should be available.

The main issues at the time of transfer were: emotional liability, painful spasticity (improved when sitting), communication difficulties (no speech) and mobility impairment. He required hoist transfer and tolerated seating in a reclined wheelchair for 40 minutes. The seating equipment was hired and the wheelchair was not actually suitable for his size (e.g. footrests touching the ground). The only communication device in the acute care hospital was a spelling board for which movements of his head or eyes indicated which letter he wanted to select, and picture charts in which he could indicate simple needs by selecting particular pictures. This was clearly very clumsy and permits only very basic communication.

Lesson – many acute care hospitals are not organised (and do not have the critical size to make this economic) to take advantage of advances in rehabilitation technology including improved mobility and communication devices. This will limit the extent to which functional gains can be achieved by people with severe impairments and mandates involvement of specialised rehabilitation facilities.

Paul remained in a residential rehabilitation facility for 6 months before returning home. By that stage, he had made further neurological recovery with useful
movements of his left upper limb sufficient to use a motorised wheelchair. He still required assistance with transfers, toileting, dressing and driving. He could communicate successfully using an electronic device that converted typed words into speech. Lower limb spasticity became more of a problem and he required large doses of oral baclofen and focal injections of botulinum toxin to several muscles to manage this.

Rose, his wife needed to reduce her hours in her work as an early childhood teacher in order to take on a care-giving role for Paul. Even with maximally available support from the local Needs Assessment and Service Coordination Service (14 hours per week), family involvement in caring activities were necessary for Paul to remain safely at home. At night, he woke frequently and needed reassurance and sometimes assistance with toileting. The family were not comfortable for Paul to be left alone at home for more than 2 or 3 hours at a time. Tracey, their 16-year-old daughter had a very difficult time coming to terms with the marked changes in her father and refused to touch him, or communicate with him. The relationship between Tracey and her mother also deteriorated and 2 months after Paul’s return home, Tracey left home to live with her boyfriend. Her attendance at school became very erratic.

Paul became very withdrawn and stopped using his communication device. He spent long periods of time watching TV or sleeping during the day. His general practitioner made a diagnosis of depression but Paul’s behaviour did not improve with conventional anti-depressant medication. Because the residential rehabilitation facility was located 70 km from Paul’s home, and the facility did not hold a contract for community based rehabilitation, there had been no follow-up subsequent to returning home. Both Rose and the general practitioner were unhappy with this, and felt abandoned by health-care services.

Comment – returning home after a major and life-changing disabling illness represents an enormous challenge not only for the person with the disability, but especially the family or care-givers. The process of rehabilitation should seldom finish with discharge from the residential facility, although commonly contractual arrangements relate to specific ‘episodes’ rather than ongoing needs. It is particularly important in New Zealand to provide a seamless transition between services since often specialised inpatient facilities will need to handover care to local community services when there are large distances involved.

Six months after returning home (now a little over a year since the stroke), Paul developed pneumonia and was admitted back to acute care hospital for treatment via ambulance when he became blue after a bout of coughing, at a time that Rose was at work and a funded carer was helping shower Paul. In the rush to the emergency department, his communication device was left behind at home. For the first hour, Paul was without a support person in the ED and the doctors made a decision to admit Paul to the Intensive Care Unit for assisted ventilation and intravenous therapy, since there was no advanced directive in place concerning medical treatment in the event of life-threatening illness.
Paul eventually recovered from the pneumonia and was able to be weaned off assisted ventilation through an endotracheal tube, to Bi-level Positive Airway Pressure assisted ventilation (BIPAP, which required wearing a mask for much of the day). By this stage he had been able to communicate his extreme anger and frustration that he had been treated in the ICU and that he would have much preferred to have died from pneumonia rather than continue with living in his current state. Rose found these feelings very distressing, difficult to talk about and was initially very adamant that she wished all possible medical treatment to be available for Paul. She was very glad that he was treated in the ICU.

Over the next several weeks, Paul and Rose saw a psychiatrist to discuss Paul’s feelings. It was determined that Paul was severely depressed and that he was not competent to make an advanced directive about life-sustaining treatment. Paul stopped eating and expressed suicidal thoughts. The psychiatrist recommended that Paul be admitted to an inpatient mental health ward, but the facility was not able to manage someone with such severe physical disability and admission was declined.

After many phone calls and meetings with staff from the acute medical ward, the adult mental health unit and the older person health service, it was agreed that he could be admitted to the psychogeriatric part of the older person health service for further treatment of his depression. This ward mainly housed elderly people with dementia and behavioural problems and one or two severely depressed elderly patients receiving electro-convulsive treatment (ECT). Rose was very unhappy with this arrangement and made a formal complaint to the DHB, but felt she had no alternatives.

Comments – depression following a major disabling illness is very common and can be difficult to treat. The combination of severe physical disability and severe depression compounds the difficulties posed by either condition alone and represents a major challenge to health care services. Expert secondary care services are often required and probably should have been involved much earlier when Paul’s condition failed to resolve with first line anti-depressant medication. Most mental health services are poorly equipped to manage people with severe physical disability, and it is likely that the best environment for inpatient management of these kinds of patients is a tertiary-level rehabilitation facility with sufficient critical mass to also include expertise in mental health.

Over a period of 8 weeks, Paul underwent several medication changes and formal counselling for depression. He and Rose declined an offer of ECT, but eventually a combination of venlafaxine and lithium appeared to be helpful and by the time of returning home, Paul expressed some hope for the future and was engaged in computer activities with a modified joy-stick and keyboard control.

He and Rose were provided with a larger package of carer support that included respite care in a local residential facility for younger people with physical disabilities. Although initially fearful of respite care, Paul and Rose enjoyed the break away from each other and were able to rebuild their relationship without such an emphasis on
basic care duties for Rose. A community-based rehabilitation service became involved who encouraged Paul to consider his abilities in numeracy and computers.

Over the next 12 months, Paul was able to develop his computer skills further and enrolled in distance-taught accounting and book-keeping. He works a few hours a week for his brother-in-law (accounts) and also manages the financial accounts for his church. He is not reconciled with his daughter and still harbours deep feelings of shame, guilt and resentment towards her.

Final comments – rehabilitation services are often funded and oriented towards individuals in need, whereas the true ‘client’ is often the family. Management of the individual without adequate consideration of the needs (and strengths) of the family can lead to poorer outcomes. In instances where a spouse assumes a major caregiver role, it is important to ensure other aspects of their relationship including love and reciprocity are enhanced, as far as possible.
Appendix 3: Possible models for a comprehensive rehabilitation system

Model 1

This model, tabled by Martin Chadwick, identifies which governmental agencies may be involved in which part of the patient journey. The Department of Labour (DoL), for example, is involved in workplace safety and integration back into the workforce, but not during the initial healthcare intervention. Health by comparison is more fully involved in the healthcare episode, and either side of that in more public/population health initiatives.

For a person to be involved in rehabilitation there needs to be an ‘event’ of some description. There is a continuum of care and there is a transition between various stages of rehabilitation and a person may pass to and fro depending on their course of care and progress.

In the living well section of the continuum, the patient is in the middle of the provision of ongoing rehabilitation in a monitoring capacity, which involves the GP and specialist. This is attempting to be explicit that it is the patient, and their family/whanau who are in the middle of this model.

Enabling this care continuum is a shared care plan, which will provide the linkages needed between the patient, their GP and their specialist and all other healthcare practitioners that will interact with the patient. This allows all to be linked in and current with the agreed plan of care.

Lastly is the overarching theme of rehabilitation education and how this needs to be better ingrained as a part of all healthcare practitioners training.
Expansion of this initial model was embedded in a wider aspirational vision of healthcare (figures 2 and 3), provided to the group by Janette Peebles from the Laura Ferguson Trust.

**Diagram 1**

![Diagram 1](image)

**Diagram 2**

![Diagram 2](image)
It has long been our belief that when a person who is living an ordinary community life has a health event (accident or illness) it is necessary to address not only the health condition itself but also the support that may be required for that person’s life roles and responsibilities if a sustainable outcome is to be achieved.

The current complex, siloed and dual system, in our opinion does not equitably address nor integrate these areas satisfactorily and as a result the current Acute and Tertiary Care hospitals (where most cost sits) have been forced to carry an unsustainable burden. Attempts to divest this burden back to the community, although right in theory, have not worked hugely well in practice due to the funding and process structures currently in place.

We have endeavoured to re-align and simplify the interaction between the health system and community living, rebalance the roles and responsibilities of the various health system components, define where Rehabilitation sits within this system and suggest funding models for each of the components which are based on the ACC funding models, as they are largely more transparent, sustainable and simple to deal with. There is no intent to combine the funding mechanisms i.e. insurance basis but rather to have similar specified services which can be funded under direct contract with either the Ministry or ACC.

Our vision for Rehabilitation remains based on provision of specialised continuums of residential, day facility based and in community and outreach services with an emphasis on client centeredness, goal setting, education, training, problem solving and integrated support with the main outcome that of maximal independent living and quality of life.

We are by no means experts in many of the aspects of an overall healthcare system but do have experience working with the Ministry and ACC funding systems which have such an influence on how services are delivered within each of these systems. We acknowledge therefore that some of our thinking may need to be tweaked. We are however confident that this system will be effective, efficient and sustainable. Healthcare will be delivered where there is a best outcome, processes will be streamlined and funding efficiencies gained in the Acute care area will fund rehabilitation specialisation and an expanded primary care area. ADHB is evolving such a pathway for COPD as we speak and this scenario is likely to be applied to other chronic conditions in the near future. This proposed Healthcare model will seamlessly accommodate these changes and our clients will receive sooner, better and more accessible Healthcare.

Diagram 1 and 2 illustrate the general model.
The narrative comments are to be read as drop downs for each component. The pathways for Stroke, COPD, Backpain and CP illustrate how they may be managed in the new model.

**Acute Healthcare Management Supplier**

*“Save a Life”*

Regionally based hub of acute and tertiary healthcare services.

These facilities are located within regions and based on population density. Where there is a high population density there may be more than 1 per region, where there is sparse population there may be only 1 per region.

These hubs have as their core business the retrieval (St John Ambulance), triage, advanced assessment, diagnosis and medical treatment of acute and critical conditions to the point of medical stability and/or rehab ready status. on an inpatient basis only and consultative, specialised healthcare which requires advanced assessment, diagnosis and medical treatment on an inpatient or outpatient clinic basis.

**Shared Plan**
The shared plan is added to at these interventions.

**Teams**
Teams will be made up of Medical, Nursing and Allied Health Specialists, Junior and senior doctors, assistant, junior and senior Nursing teams, assistant, junior and senior allied health teams, diagnostic technicians (laboratory technicians, radiographers to advanced investigation technicians), pharmacy staff, administration and support staff. The Health professionals will be closely linked to Health Professional training institutions (Medical school and other Universities) and be expected to participate as training centres for both under and post graduate students. They will also act as a specialised resource for their Specialised Rehabilitation and Primary Care regional spokes. Some clinic follow up may be conducted at centres within the spoke network.

**Facilities**
These are high tech hospitals.

**Timeframe**
Hours to 21 days

**Suggested Funding model**
Bulk funding per region on a per capita basis for the defined services.

**Dependent On**
- Shared PIM
- Specialisation and expertise held here for all acute and tertiary management.
- Strictly limiting high cost inpatient care to 21 days maximum
- Well developed d/c pathways to Specialised rehabilitation and/or Primary care via Healthcare Integration service.
- Shared high spec PIM (Patient Information Management) across all Healthcare system components
- National consistency of regional hub and spoke model
- Quality standardisation
- Nationally consistent pricing
- Specific workforce development and much improved links with training and research for acute and tertiary care
- Tele medicine, rehabilitation and support services.

**Healthcare Integration Management Service**

*“Support a Healthy life”*

Regionally based service which co-ordinates and facilitates a seamless and timely flow through the health system and enables optimally independent community living for all people requiring healthcare and support.

This service has 4 components:

1. Total needs Assessment which identifies event specific needs and social role and responsibility needs, brokers the appropriate services, links the client with the appropriate services and arranges the funding for those services directly with the Ministry, ACC, MSD, WINZ. Housing, Education, Justice etc, primarily on request from other Healthcare system services or in the case of a long term client on self request.
2. Holds funding for general equipment (mobility aids, personal and domestic support aids) where this would facilitate timely d/c from acute care and Specialised Rehabilitation services and enable optimally independent community living in the short term (up to 12 weeks).
3. Holds funding for Community Support Workers where this would facilitate timely d/c from acute care and Specialised Rehabilitation services and enable optimally independent community living in the short term (up to 12 weeks).
4. Holds funding for Meals on Wheels where this would facilitate timely d/c from acute care and Specialised Rehabilitation services and enable
optimally independent community living in the short term (up to 12 weeks).

*Shared Plan*

The shared plan is added to at these interventions.

*Teams*

Teams will be made up of experienced Allied Health Professionals, Needs Assessors with the appropriate attitude and training, brokerage agents with extensive knowledge of the health, rehabilitation, support (equipment and personnel), education, housing, Work and Income and Justice sectors) and administration support staff.

*Facilities*

1 regional office, for referrals and administration purposes, which could be located anywhere in the region. Assessors, brokerage staff and Allied Health staff, could work from home.

*Timeframe*

Hour or part thereof.

*Suggested Funding model*

1. Needs Assessment and brokerage - Fee for service plus travel time and mileage where appropriate, under a contract such as the ACC Lead supplier model, directly with the Ministry or ACC.
2. Funding held for equipment, Support Workers or Meals on Wheels via direct contract with the Ministry or ACC based on a per capita bulk funding for each region.

*Dependent on*

- Shared PIM
- Robust links, pathways and processes with all other Health system components
- Standardised assessment templates
- Experienced staff teams
- Robust relationships and knowledge of all related sectors
- Efficient IT systems

**Specialised Rehabilitation Management**

“*Establishing a healthy life*”

Regional spoke of the Acute and Tertiary Healthcare Management hub with a further spoke into the community from each Specialised Rehabilitation centre facility, in the form of community and outreach teams.
These specialised Rehabilitation centres manage the sub acute Rehabilitation continuum (residential to community) which facilitates the establishment of a maximally independent quality community life for clients with specific and/or complex needs. The health condition and the impairments, participation issues, environmental and personal factors relative to that health condition will be addressed in line with the WHO Classification of Function and a Rehabilitation model of service delivery will be utilised.

Specialised Rehabilitation Management centres will also hold funds for long term equipment, support personnel and other support services which may be required for management of the specific condition. Specialised Rehabilitation Centres will also partner with Primary Healthcare management centres to deliver prevention and health promotion.

In addition the centres act as a resource for the Primary Healthcare management centre in terms of the specialised knowledge and expertise they hold for the specific condition.

Specialisations are likely to be defined as follows:

- Neurology
- Cardio-respiratory
- Musculo-skeletal/orthopaedic
- Medical Conditions
- Surgical Conditions
- Paediatrics
- Older Persons Health.

Each region may have 1 of each specialisation or may share with other neighbouring regions where there is low population density or demand for specific centres.

Each centre will act as a lead supplier and develop collaborative agreements with local suppliers to ensure capacity and coverage.

Centres will hold robust relationships with research and training facilities to ensure best practice and will be required to act as training centres for under and post graduate Rehabilitation Physicians, Rehabilitation Professionals and rehabilitation Coaches.

*Shared Plan*

Plan will reflect these interventions
Teams
Teams will be interdisciplinary and consist of Rehabilitation Physicians, Medical Officers, Rehabilitation Nurses, Allied health Rehabilitation Professionals, Psychologists and Neuro Psychologists/Psychiatrists, Social Workers, Nutritionists and a specialised Rehabilitation coach workforce with the appropriate “cueing not doing” knowledge and attitude. The development of the Rehabilitation Coach workforce will be the single most important factor in containing cost within these centres.

In addition strong linkages will need to be developed with “other” health providers to ensure all needs can be met. Some of these services may be contracted and some may remain on a user pays basis.

Facilities
Fit for purpose centres able to accommodate 10 to 20 beds, gymnasium and hydrotherapy facilities, individual and group rehabilitation, education and activity spaces, computer labs, workshop facilities, gait labs, orthotic/prosthetic will be required. In addition suitably equipped, mobile community and outreach teams will deliver services throughout the local communities within their region.

Timeframes
Up to 45 days for residential programmes and up to 90 days for community and outreach programmes.

Suggested Funding Model
Direct contracting to the Ministry or ACC for specified services including travel and mileage where appropriate, on a limited vendor, lead supplier model.

Dependent On
• Shared PIM
• Appropriate workforce development
• Ability of these centres to keep clients out of the Acute Healthcare Management services
• Telerehabilitation
• Robust relationships with Primary healthcare suppliers and the Integration service teams.

Primary Healthcare Management
“Maintain a healthy life”

Community based spoke of the Acute and Tertiary Healthcare management regional hub.
These are centres/teams located within local communities which provide the first point of contact and first line assessment and management of all non-critical general health conditions, chronic and long term conditions and triage for some critical conditions through their 24/7 A&E services. They operate a “one stop shop model” so as to provide timely access to diagnostic services, medical, rehabilitation and support needs management on a generalised level, triage and referral for specialised or critical conditions, health promotion and prevention programmes and Public Health. Services will be delivered from a facility base e.g. Health Centre or by mobile community teams who provide home or outreach services e.g. District Nurse team.

**Shared Plan**

These centres will be responsible for initiating the shared plan for all clients that they see for the first time.

**Teams**

Teams will include experienced GP’s, Nurses, Physiotherapists, Occupational Therapists, Speech-Language Therapists, Social Workers, Psychologist/Counsellors, Nutritionists, Diagnostic Technicians (Laboratory, X-Ray, Imaging, Spirometry) and Pharmacists. Teams may also include such disciplines as Podiatrists, Massage Therapists, Osteopaths, Chiropractors, Traditional Medicine Practitioners and Herbal Therapists. All medical, Allied Health professionals, Diagnostic technicians and Pharmacists will have access to Specialist resources, support, training and supervision from the Regional Acute Healthcare Management supplier and/or regional Specialised Rehabilitation suppliers. They will also be linked to Health Professional training institutions (Medical school and other Universities) and be expected to participate in under graduate placements. The Primary Healthcare team practitioners may be employed, contracted or linked to the centres depending on the funding model.

**Facilities**

Facilities may be fit for purpose centres with space to accommodate the required consultation rooms (GP, Allied Health, other Health Practitioner, Nursing), group programme space, low tech diagnostic facilities and clinic and visiting Specialist space and consultation rooms or may be a collection of such facilities who work together within a close geographical area. In addition a small number of short term assessment and short term treatment beds should be linked to each centre in order to ensure the majority of clients seen are kept out of the acute pathway.
**Timeframe**
All consultation interactions will be based on a 1 hour or part thereof timeframe.

**Funding model**
Suggest a direct contractual arrangement with the Ministry or ACC for all medical, allied health, psychology, diagnostic and pharmacy services based on an hourly rate (plus travel time and mileage where applicable) or part thereof and outcome measures, similar to the current ACC lead supplier model and allowing for a private surcharge which would be up to the individual supplier’s discretion. All other “services” linked to individual centres would remain user pays.

**Dependent On**
- Shared high spec PIM (Patient Information Management) across all Healthcare system components
- National consistency of regional hub and spoke model
- Quality standardisation
- Nationally consistent pricing
- Specific workforce development and much improved links with training and research for primary care
- Higher specification of amenities and staff coverage for 24/7 A&E and short term assessment and treatment beds.
- Standardised Treatment profiles and pathways
- Tele medicine, rehabilitation and support services.
- Strong links with the Healthcare and Support Service integration team.
Pathways for Stroke, COPD, Back pain and Cerebral palsy and how they may be managed under the model.
Janette Peebles
GM Service Development and Innovation, Laura Ferguson Trust
September, 2011
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