

# Executive Summary

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Over the past nine years a number of different models of home-based rehabilitation have emerged in Victoria. There are currently 19 rehabilitation in the home (RITH) programs in Victoria. The program models range from those that provide outpatient level services in the home to those that replace all the services that would have been provided by an inpatient rehabilitation service. Although all these programs are funded by the Department of Human Services, Victoria (DHS), some programs are funded as inpatient services according to CRAFT or bed-day funding rates, some are block funded and some are funded as Community Rehabilitation Centres (CRC) according to an episode of care model. Each program has developed slightly differently according to their understanding of the funding requirements, the policies of their host health service and their assessment of client need. As demand for health services increases, it is important to ensure that sub-acute services provide the right care to clients in the right environment in an integrated and seamless way and that there is equity across health services. No previous study has documented the range of home rehabilitation services that exist in Victoria or compared outcomes for home rehabilitation clients from one program type to another. This means that it has been difficult to determine best practice in home-based rehabilitation in Victoria. The "Evaluation of home-based rehabilitation in Victoria" research project was conducted by the National Ageing Research Institute (NARI) for the Victorian Department of Human Services (DHS) in 2003 and 2004. It was designed to complement the sub-acute ambulatory care guidelines that were being developed by the DHS during this time frame in order to improve and integrate care of older people in Victoria.

## Project aims

The evaluation of home-based rehabilitation had the following aims:

1. To describe the current practice models in home-based rehabilitation in Victoria.
2. To compare outcomes for clients (with orthopaedic and neurological diagnoses) and carers between inpatient rehabilitation only and when inpatient rehabilitation is combined with or replaced by different models of home-based rehabilitation (ambulatory and bed-substitution).
3. To recommend a framework for best practice in home-based rehabilitation.

## Service types

Three rehabilitation service types were included in this project. These were **inpatient rehabilitation** and two RITH service types – bed substitution and ambulatory care. For the purpose of this study, **bed substitution** refers to a home-based rehabilitation program that acts as an alternative to inpatient rehabilitation. As far as possible all aspects of rehabilitation and care that would be provided in a hospital setting are provided (or offered) in the client's own home. **Ambulatory care** home-based rehabilitation services have been defined as interdisciplinary, time limited services

delivered according to a case plan that is based on goals negotiated with the client and his or her carer(s). These services aim to improve the client's functional status and facilitate the client's reintegration into the community. Although these services also aim to reduce hospital length of stay, they are not a substitute for inpatient rehabilitation.

## **Project Methodology**

The project used a combination of qualitative and quantitative methodologies to achieve the research aims. A literature review was undertaken to examine current evidence relating to outcomes and best practice in home-based rehabilitation. Focus groups were conducted with seven home-based rehabilitation teams and one inpatient rehabilitation team to examine current practice and perceptions of best practice in home-based rehabilitation in Victoria. Seven of these programs were then involved in recruiting orthopaedic and neurological clients who were admitted to rehabilitation during the recruitment period. Once client consent was obtained, rehabilitation teams undertook a variety of outcome measures including the Barthel Index (BI), the Domestic Functioning Assessment of Activities of Daily Living (DFADL), the Handicap Assessment and Resource Tool (HART) and the Timed Up and Go (TUG). In addition to these measures an admission form was completed including demographic information, aims of rehabilitation, referral source and length of stay in referral source (if applicable). Participating clients were also asked to complete the Assessment of health related Quality of Life Scale (AQoL) and carers the Caregiving Demand Scale (CDS). Included on the AQoL was a request for participants to report up to 5 goals they would like to achieve through rehabilitation. These measures were repeated on discharge by the rehabilitation team and at 3-months post discharge by the research team together with information on services provided and goal achievement. For each rehabilitation team, 4-5 participants were randomly selected to complete an interview during the 3-month follow-up assessment. This interview involved in-depth questioning about their experiences, expectations and satisfaction with the rehabilitation they had received.

In addition to the above activities, surveys were sent to referring agencies regarding their perceptions of the participating RITH programs, focusing in particular on the referral process from referring agencies to RITH. Participating RITH teams also completed surveys providing feedback about the outcome measures used in the project.

### *Participants involved*

The eight rehabilitation teams participating in the project including:

- 1 rural inpatient program (where RITH was not offered)
- 2 bed-substitution programs (1 rural and 1 metro)
- 4 ambulatory programs (1 rural and 3 metros)
- 1 metro program that had a bed-substitution and ambulatory RITH program

In total 164 client participants took part in the study. Of the 130 participating clients who had a resident or non-resident carer, 75 (58%) had carers who agreed to participate in the study. Some teams were unable to recruit the target of 30 participants but each team recruited a minimum of 16 participants. In total there were, 28 inpatient,

60 bed substitution and 76 ambulatory client participants. Twenty-seven percent of the sample were from rural programs. Sixty-three percent of participants were female.

There were no statistical differences between rehabilitation types on admission for the BI, DFADL and TUG indicating no differences in impairment and disability/activity. However, inpatient participants had a significantly higher number of participation restrictions (HART items rated as "Not OK") than RITH participants and both RITH programs had significantly more participants with co-morbidities than the inpatient program.

Sixty five percent of clients who were asked to participate agreed, however, only just over half of the eligible clients were asked to participate. This was due to clinicians deciding not to ask some eligible clients. However, in comparison with all clients referred to the service during the recruitment period, participant characteristics matched client characteristics for gender, age, referral source and diagnosis with the exception of diagnosis for bed substitution participants. There was a tendency for more clients with a neurological diagnosis to be recruited in bed substitution programs (55% compared to 44% of the bed substitution client base).

## **Key Findings**

Participants in all three rehabilitation service types improved significantly from admission to discharge and post discharge. For most clients the goal of their admission (set by therapy staff) was achieved by discharge and approximately half of the clients' own goals were fully achieved by the 3-month follow-up assessment. Client outcomes were found to be related to the intensity of therapy provided. Inpatient participants showed the greatest level of improvement across discharge and post discharge and bed substitution participants improved more than ambulatory participants. Clients and carers who had experienced home-based rehabilitation expressed a preference for home-based rehabilitation as did some of the inpatient rehabilitation clients who had not experienced home-based rehabilitation. Staff also noted many benefits of home-based rehabilitation such as, the applicability of therapy; the opportunity to involve the carer and other family members in the rehabilitation process; and the facilitation of the transition from hospital to home. Centre or hospital-based care was seen as having the advantages of better equipment (eg hydro) and the possibility of sharing the rehabilitation experience with others.

### *Objective 1: Current models of care*

There were many similarities between the three rehabilitation service types involved in this study but there were also some important differences.

#### **Similarities included:**

- *Service aims:* All three service types accepted all clients who were considered able to benefit from rehabilitation. Both RITH service types aimed to provide an intensive, short-term, multi or inter-disciplinary, flexible, and client goal directed rehabilitation service to clients in their own homes that incorporated carer support and education.

- *Eligibility criteria:* Similar except that the inpatient program did not need to assess the home environment for provision of the rehabilitation program.
- *Issues from referrers:* The issues identified by the survey of referral sources were similar for both RITH service types. Referrers to both services were generally happy with the referral process and the service provided but felt that communication and service capacity could be improved.
- *Marketing:* Neither RITH service (nor inpatient rehabilitation) needed to market their services as they were always at full capacity.
- *Multi-disciplinary team approach* employed by all three service types.

### **Differences included:**

- *Team composition:* there was a greater degree of nursing and medical input and program co-ordination in the inpatient program compared with both RITH service types. Two out of three bed substitution services provided nursing directly, compared with one of five ambulatory programs. Two of the four ambulatory programs that did not have access to nursing said that there was an unmet need for rehabilitation nursing on their programs. Only the bed substitution RITH services routinely allocated a case manager or contact person to the client who was known to the client and carer.
- *Diagnostic categories:* Ambulatory services were more likely to have older clients and clients with "other rehabilitation" conditions compared with the bed substitution and inpatient services.
- *Co-morbidities:* Both bed substitution and ambulatory programs had significantly more participants with co-morbidities than the inpatient program.
- *Referral source:* Ambulatory programs had more referrals from the community than the other two service types and generally a longer waiting time for admission to the service.
- *External networks:* Bed substitution RITH services appeared to work more closely with the hospital services and ambulatory services were more closely connected with community and primary care services. Clients were most often referred from inpatient rehabilitation or acute wards and were often admitted on the day of discharge from hospital.
- *Level and type of services provided:* With the exception of nursing and medical care, bed substitution RITH and inpatient rehabilitation provided similar service levels for orthopaedic participants. Each service provided just over one hour of therapy per day, compared with just under half an hour for ambulatory care. For neurological participants, the inpatient service provided more therapy with two and a quarter hours per day, compared with one and a half hours per day in bed substitution and forty minutes per day in ambulatory services. The total therapy for inpatient

participants with a primary neurological diagnosis is probably underestimated here because no data were provided for speech pathology. For both diagnostic groups, ambulatory programs involved significantly fewer therapy disciplines compared to the inpatient and bed substitution programs.

- *Brokered services:* Bed substitution services provided more brokered services than the other two service types with 124 services brokered during the study period compared with 12 for ambulatory and one for inpatient.

### *Objective 2: Participant outcomes*

- *Overall changes in activity:* For outcomes related to activity limitation (Barthel Index, DFADL, HART OK by self), participants in all three settings improved significantly from admission to discharge and post discharge (n=137 complete data sets). Overall outcomes relating to activity generally indicated that:
  - Inpatient participants showed the greatest level of improvement across discharge and post discharge (n=24).
  - Bed substitution participants (n=52) tended to improve more than ambulatory participants (n=62). The greatest difference occurred between discharge and 3-months post discharge where bed substitution participants continued to improve but ambulatory participants' progress tended to slow. This pattern was more pronounced for neurological participants than orthopaedic participants.
- *Overall outcomes 3-months post discharge:* The majority of participants (n = 115; 70%) maintained progress or continued to improve on outcomes after discharge. Thirty-five participants had adverse outcomes (14% of inpatient, 18% bed substitution and 26% of ambulatory participants). Most adverse outcomes were illness, readmission to hospital and deterioration probably due to the influence of co-morbidities. Across the study period one bed substitution and two ambulatory participants died.
- *Client goals:* A large proportion (98%) of the sample who completed the AQoL (n=126) recorded at least one goal at the end of the AQoL form. Half of these goals were considered fully achieved and another quarter of goals were considered partially achieved by the participant at the 3-month follow-up assessment. There was a slightly higher proportion of participants with goals fully achieved in the inpatient program (56%) compared to the home-based programs (46% of bed substitution and 43% of ambulatory).
- *Rehabilitation team goals:* From the therapists' perspective the overall goal of admission was achieved for 92% of inpatient, 86% of bed substitution and 71% of ambulatory participants.
- *Reason for discharge:* Most participants were discharged because, from the rehabilitation team's perspective, they had completed their rehabilitation (83%) and had fully (80%) or partially (17%) achieved the rehabilitation program's goals. Prior to discharge, 3 participants had been readmitted to hospital and one had died. Of the participants who did not complete their rehabilitation or achieve their goals, most

were from ambulatory programs and were continuing rehabilitation through an outpatient program such as CRC. Of the four participants who did not fully or partially achieve their goals, 3 were admitted to hospital and one participant reported that they did not feel that rehabilitation helped.

- *TUG*: Significant improvements occurred for participants who completed the Timed Up and Go (n=26) with scores improving from 31.3 seconds at admission to 24.1 at discharge and 23.4 3-months post discharge. The sample was too small to compare rehabilitation types.
- *Health-related quality of life*: Overall, there was a significant improvement in quality of life for participants (n=79), however, the rate of change differed between rehabilitation types. Of all groups, inpatient orthopaedic participants reported the highest quality of life at all time points. Bed substitution participants for both diagnoses reported the poorest quality of life at admission but improved the most across discharge and 3-months post discharge. Ambulatory neurological participants reported poorer quality of life at discharge than admission although at 3-months post discharge scores were slightly better than at admission.
- *Carer Demand*: CDS scores (n=25 complete data sets) for both RITH types remained the same from admission to discharge but improved significantly from discharge to 3-months post discharge. Highest areas of demand were additional household tasks, provision of transport and emotional support.
- *Client and carer satisfaction with rehabilitation*: Overall satisfaction was high. Carers and clients reported less satisfaction on items about information on the nature of the illness and on allowances and services, quantity of therapy and getting support from services such as meals on wheels, home care and nursing. If provided again in the future significantly more inpatient participants indicated a preference for rehabilitation in hospital. The majority of inpatient and ambulatory participating carers would prefer a combination of rehabilitation types while bed substitution participants would prefer home-based rehabilitation (not significant).
- *Correlations between improvements during rehabilitation and service levels*: Improvements in outcome measures (BI, DFADL and HART-OK by self) during the study rehabilitation were related to higher total hours of therapy (particularly direct hours of service), hours of therapy per day and total number of therapies received for neurological participants. For orthopaedic participants the relationship was significant for the Barthel Index only. Improvement in health related quality of life was not related to service provision.
- *Correlations between improvements post rehabilitation and service levels*: Improvements made post discharge for orthopaedic participants were related to combined number of therapies and services received during rehabilitation (suggesting ongoing community service provision may play a role).
- *Outcomes for those referred to CRC*: Neurological participants referred on to CRC had slightly better outcomes post discharge than those not referred on (significant

difference for HART OK by self). There were no significant differences for orthopaedic participants.

Overall, findings indicated that participants achieved significant improvements in activity and health related quality of life through the course of the study and most were able to fully or partially achieve the goals they had set at the commencement of rehabilitation. However, greater improvements for both diagnostic groups appeared to be achieved in the inpatient setting than at home. Also, greater improvements were identified for bed substitution than ambulatory participants, particularly for those with a neurological primary diagnosis.

### *Objective 3: Best Practice Framework*

Interviews and focus groups were conducted with staff, clients and carers involved in the three rehabilitation service types. The clients interviewed who had experienced home rehabilitation preferred it to hospital-based rehabilitation although hospital-based rehabilitation was acknowledged as important for people who are really unwell or in need of specialist equipment. Home-based rehabilitation was generally experienced as an effective, individually tailored, high quality service that enabled clients to achieve their rehabilitation goals whilst enjoying the benefits of being at home with their friends and family. Hospital-based rehabilitation was also experienced positively by most clients who had gone through it. However, therapy in hospital was more often (than home-based therapy) perceived as not intensive enough, even though it was (objectively) more intensive than home-based therapy. At home, even if therapy was less intensive, simply engaging in activities of daily living at home with friends and family seemed to help clients to progress. Carers also seemed to be generally happy with the service. The main areas that clients and carers felt could be improved were: the provision of information regarding their medical conditions; preparation for discharge from RITH; carer support; and for some clients, involvement in their care plan and follow-up post discharge from RITH.

According to the staff working in this area, rehabilitation in the home had numerous benefits for clients and carers. Not only did therapy in the home provide situation specific therapy in a realistic environment but it assisted clients in the adjustment from hospital to home, often reducing hospital length of stay. Clinicians were better able to identify motivators and barriers for therapy and how well the client and carer would cope at home, which was sometimes difficult to determine in hospital. RITH was advantageous for clients who couldn't access centre-based therapy and it gave clients more control of their therapy. Through RITH, carers could be more involved in therapy and didn't have to visit the client in hospital. It also reduced boredom for clients as medically stable patients were often bored in hospital.

There were also many ways in which home rehabilitation services appeared to be working well at present. Staff valued the team-work, support and communication within their current work environments. Having experienced staff and working within an organisational context that provided opportunities for staff development (eg teaching hospital) were also regarded positively by staff. The service flexibility that RITH was able to provide to clients was also valued. However, staff were concerned about

occupational health and safety issues; access to practical support, such as cars; improving continuity of care for clients; and the provision of adequate services to clients.

The following principles of best practice were derived from the focus group discussion, the interviews with clients and carers and the quantitative outcome measure findings. These guidelines are presented in more detail in Chapter 8.

### *Referral and admission*

1. That each RITH service has a documented admission protocol that is provided to all referring agencies.
2. That contact should be made with client and carer prior to admission and they should be provided with information about the service.
3. Client (and carer) consent should be gained prior to admission to the service.
4. Client, carer and staff safety in providing a rehabilitation service in the home should be assessed on admission to the service.

### *Equity of access*

5. A process be developed that ensures equity of access to the range of rehabilitation services within each health service.
6. No client should be refused the service because of inability to pay, age or geographical location.
7. RITH teams should be provided with adequate resources to ensure equal access for clients from CALD backgrounds.
8. RITH programs should disseminate information about their services in community languages to GP surgeries, community centres, and other places that older people are likely to access.

### *Person-centred care planning and care co-ordination*

9. That the client is provided with a holistic assessment.
10. That the staff working with the client, the client and where possible, the client's carer/s and GP, work together to develop a care plan, based on the client's goals.
11. The care plan should be provided to all the parties involved verbally and in writing in a language that they can understand.
12. Clients, carers, the client's GP and other service providers should be kept adequately informed.
13. A key contact person, care co-ordinator, or case manager should be allocated to each client and the client (and carer) should be informed of his or her name, contact details and role.
14. The needs, capacity and wisdom of carer/s should be considered in the development of the client's care plan.
15. All clients should be followed up post discharge with a phone call or home visit.

Note: all information held or disclosed about the client must conform with the relevant privacy legislation.

### *Service provision*

16. That adequate resources are provided to the RITH team.
17. That RITH teams have the opportunity to work effectively as a team.

### *Individualised and flexible service delivery*

18. The service provided to RITH clients should be tailored to meet their individual needs and goals, including low intensity, long-term therapy for clients with progressive and/or chronic conditions.
19. Clients admitted to RITH programs should have access to centre-based services (as needed) as part of their RITH program (for example, group programs and hydrotherapy).

### *Staff support and safety*

20. OHS issues for staff working in RITH services should be fully identified and policies and procedures for ensuring staff safety be put in place.
21. Staff should be provided with adequate resources to provide a rehabilitation service in the client's home. Some important RITH resources are: cars, mobile phones; IT support; and administrative support.

### *Evaluation and quality improvement*

22. That RITH programs have mechanisms for collecting client and carer feedback.
23. That client and carer feedback is collected, analysed and acted upon in a timely way.
24. That validated, reliable and clinically appropriate tools are developed to enable consistent outcome measurement within RITH services.

### *Continuity of care*

25. Where possible a continuity of care model of rehabilitation service provision be adopted.
26. If the above model can't be implemented then other mechanisms for continuity of care should be adopted as outlined in Chapter 8.

### *Outcome measurement*

Considerable information was collected in this project about clinician's preferences and experience with outcome measures. Prior to the commencement of data collection, all RITH clinicians were surveyed to ascertain what measures they were currently using and what they regarded as important features in outcome measurement. A further survey was conducted at the end of the data collection period to gain feedback on the outcome measures used in the study. Of the tools used in the home rehabilitation evaluation, the FIM, client goals and the DFADL were seen as most applicable, practical and most useful for clinical purposes. Using a measure of carer burden or need was seen as important as was the use of a satisfaction survey for quality assurance. The HART was the least likely tool to be used in the future, with four of the seven services stating that they would not

use it again. The following is the researchers' critique of the outcome measures used in the study.

- *DFADL*: Was found to identify a substantial shift in function. It was also short, easy to administer, did not have ceiling effects and was able to indicate changes in activity status across periods of only a few weeks of rehabilitation. Although to date it has had limited use it is also being introduced to home-based services through the Primary Care Partnership initiative.
- *BI*: was also able to identify change, however, use of the FIM would have enabled measurement of change in cognitive function as well as physical activity.
- *HART*: Adding another dimension to the HART by including a measure of assistance required (OK split into OK by self or OK with help) enabled greater change to be identified than the original two level scale allowed. The greatest change occurred in the proportion of participants undertaking tasks independently rather than the number of activities that were "Not OK".
- *CDS*: for a small sample of carers was able to identify a significant change and was also found to be quick and easy for carers to complete.
- *AQoL*: clients often requesting assistance in interpreting questions. If rehabilitation teams were considering implementing this for their clients, they may need to be available for responding to difficulties clients may have.
- *TUG*: generally quick and easy to administer although only appropriate for a sub-group of clients. Sometimes there were difficulties finding suitable space in the client's home to undertake the test.

## **Recommendations**

The study recommends that:

1. The Best Practice Principles outlined in Chapter 8 be discussed with the DHS personnel responsible for funding rehabilitation services, health service managers and the managers of home-based rehabilitation services and reviewed in terms of their practicability and feasibility for adoption.
2. Both home and hospital-based models of rehabilitation be maintained and developed and where possible clients be offered a choice to continue rehabilitation at home as soon as they are ready to do so.
3. That further research be undertaken to investigate:
  - The actual cost of provision of the different types of rehabilitation services in Victoria to enable a cost effectiveness analysis;
  - Outcome measures that are appropriate for home-based rehabilitation and practical to use;
  - The relationship between quality of life and rehabilitation; and
  - A process of client-centred (and carer inclusive) goal setting that could be adopted in rehabilitation and potentially used to measure outcomes.

## Study Critique

This study used a mix of qualitative and quantitative data to investigate different models of home-based rehabilitation, different outcomes for clients, and features of best practice in providing a home-based rehabilitation program. The qualitative focus group methodology for describing the models of rehabilitation in Victoria was comprehensive and in-depth and led to saturation of information indicating that the methodology was sound. The features of best practice were developed through a combination of qualitative information from clients, carers and service providers along with satisfaction surveys and surveys from referring agencies. The range of information allowed the perspectives of best practice to be considered from service user, service providers and referrers to the service. Again saturation of information suggested that an adequate number of participants from each perspective were collected. The examination of outcomes for clients, however, had some methodological limitations. These were: the lack of a control group; the potential for group differences between service types; the potential variation within service types; and the lack of a gold standard outcome measure for use in home-based rehabilitation. There were also some potential variations in the timing and administration of outcome measures; and a low overall response rate.

Despite these limitations, the methodology incorporated into this study builds substantially on the existing body of research in this area. Using the best available outcome measures and supplementary qualitative methods, the study methodology addressed gaps identified in the literature review and addressed the study objectives.

### *Conclusion*

In conclusion, the study found that clients and carers require a mix of hospital, home and centre-based rehabilitation that is able to respond to their needs and preferences at each phase of the rehabilitation continuum. Ideally, there would be a seamless service that enabled clients to make the transition from hospital to home, as soon as they felt confident about going home. This service would provide an individualised interdisciplinary service that was based on the client's goals. Community support services would be provided (brokered) by the service according to the principles of client and carer need and continuity of care. Clients and carers would be involved in all phases of care planning (unless they requested otherwise) and kept fully informed about their service entitlements, the causes and nature of their condition and provided with active follow-up after discharge. The service would have the flexibility to provide home or centre-based services depending on the client's needs regardless of the location of the client.

### *Format of the report*

The full report on this project consists of nine chapters. The report is available in full on both the NARI website <http://www.nari.unimelb.edu.au> and the DHS website <http://www.health.vic.gov.au/subacute/h-b-r-e.htm>.