Health and Social Care in the community

Health and Social Care in the Community (2010) **18**(1), 91–99 doi: 10.1111/j.1365-2524.2009.00878.x

A non-randomised controlled trial of the Home Independence Program (HIP): an Australian restorative programme for older home-care clients

Gill Lewin BSc Hons Psych MSc Clin Psych MPH PhD[1,2] **and Suzanne Vandermeulen** BPsych[2]
[1]Centre for Research on Ageing, Curtin University of Technology and [2]Silver Chain, Perth, WA, Australia

Correspondence
Prof Gill Lewin
Centre for Research on Ageing
Curtin University of Technology
GPO Box U1897
Perth, WA 6845, Australia
E-mail: g.lewin@curtin.edu.au

Abstract

The Home Independence Program (HIP) is a short-term restorative programme targeted at older home-care clients, who do not have a diagnosis of dementia, when they are first referred for assistance or when they are referred for additional services because their needs have increased. This study compared the outcomes for individuals who participated in HIP with those of individuals who received 'usual' home-care services. The study was conducted in metropolitan Perth, Western Australia, between 2001 and 2003, when HIP was being trialled as a service in just one region. One hundred clients were recruited into each group and were visited at home on three occasions – service start and at 3 months and 1 year. Standardised outcome measures were used to measure functional dependency, morale, confidence in performing everyday activities without falling and functional mobility. Service outcomes were also examined at 3 months and 1 year. The HIP group showed improvements on all personal outcome measures compared with the control group. These improvements were, except for the morale scale, significantly associated with group assignment even when baseline differences between the groups were adjusted for. As regards service outcomes, the odds of the individuals who received HIP still requiring services was 0.07 (95% CI = 0.03–0.15, $P < 0.001$) times those for the individuals in the control group at 3 months and 0.14 times at 12 months (95% CI = 0.07–0.29, $P < 0.001$). The results of this study supported the hypothesis that older individuals referred for home care who participated in a programme to promote their independence had better individual and service outcomes than individuals who received usual home care.

Keywords: ageing, home care, intervention research, service evaluation

Accepted for publication 11 May 2009

Introduction

While assisting older people to remain living independently in their own home and avoid premature institutionalisation has been the goal of the Australian Home and Community Care (HACC) programme since its inception in 1985, few home-care services have included specific interventions to assist individuals to optimise their functioning and thereby reduce their need for support. Rather, they have tended to focus on supporting independent living by providing assistance for the daily living tasks that people are finding difficult.

Australia, however, has in recent years seen itself as facing an imminent crisis in home-care provision. Population projections show the number of older people in our community as increasing, while reductions in the availability of informal carers to assist with their care is seen as a likely future scenario and shortfalls in the number of home-care staff available are already being experienced (Australian Institute of Health and Welfare &

Department of Health and Ageing 2004, Department of Health and Ageing 2006). Australia like other countries (notably the UK) has responded to the ageing of the population with an increased emphasis on health promotion and prevention. Thus, the National Strategy for an Ageing Australia has as its first goal within its healthy ageing strategy 'All Australians have the opportunity to maximise their physical, social and mental health throughout life' (Andrews 2001). Home-care programmes that are specifically designed, not to just support individuals living at home but to assist them to optimise their functioning across all life domains and thus reduce or limit their demand on services, are not only consistent with this goal but may also help us avoid the expected service shortfall.

In 1999, in response to the demand for home-care services exceeding supply, Silver Chain, one of the largest home-care providers in Western Australia, developed a restorative programme that had the specific objective of reducing individuals' need for ongoing home care. At the time, such a strategy had already been adopted by a small number of home-care providers in the UK, when they too could not meet the demand for services (Dale & Letchfeld 2000, Lewis & Milne 2000). While a service evaluation conducted by one of these agencies demonstrated positive client outcomes in terms of a return to independent functioning (Le Mesurier & Cumella 1998), this study did not compare the outcomes of the enablement service with those of standard home-care services.

Further support for the concept of developing a home-care service model to promote independence came from similar work being conducted at the time in the US by Baker *et al.* (2001). When conducting a study on the effectiveness of a home-based rehabilitation programme for older people with a hip fracture they found that the home-care workers would often be working at cross-purposes with the programme (Tinetti *et al.* 1997). As a result they concluded that there was a need to develop and test a restorative model of home care that would focus on improving older adults' functional outcomes at the same time as meeting their healthcare needs. A controlled trial of the programme which they subsequently developed showed that older individuals who received restorative home care after acute illness or hospitalisation had a greater likelihood of staying at home, and a reduced likelihood of visiting an emergency department, than if they had received 'usual' home care. In addition, after adjustment for baseline scores, restorative care patients had significantly better scores on self-care, home management and mobility at discharge than did usual care patients (Tinetti *et al.* 2002).

Thus, in 2001, when the present study was conceived, although there was evidence that could be taken to indicate that clients who received a restorative home-care programme would have better outcomes than clients receiving usual home care, this had not yet been demonstrated. The US research had not yet reported and included only post acute clients, who are not the target population for HACC funded home care in Western Australia. This study was designed to fill this gap in the evidence by testing the hypothesis that individuals referred for home care who participated in a restorative programme would have better personal (functional gain and improved well-being) and service (need for ongoing home care) outcomes than individuals who only received 'usual' home care.

Methods

Study setting

Silver Chain provides a broad range of nursing and home-care services, which are mostly funded through the Home and Community Care (HACC) programme, a joint Commonwealth and State Government programme. Having developed and successfully piloted their restorative programme, the Home Independence Program (HIP), Silver Chain received support from the WA Department of Health to implement the programme in one metropolitan region for an operational trial. This trial provided the opportunity to conduct the present study. Thus, when it was conducted, in 2001–2003, HIP was only available to the clients of two of Silver Chain's six Perth metropolitan service delivery centres. 'Usual' HACC funded services were the only option available to individuals living in the catchment areas of the other four service centres.

Study design

A non-randomised controlled trial in which the outcomes for elderly clients referred for home-care services who participated in HIP (the intervention group) were compared with the outcomes of similar individuals who received usual HACC home-care services (the control group).

Random assignment to intervention or control group was not possible as the operational trial had been implemented such that individuals living in the areas where the trial was being run were either directly referred to HIP or had chosen at referral to participate in the new programme. The control group therefore included clients living in suburbs outside the catchment area for the operational trial, who were similar to clients in the intervention group in terms of commencing services in the same week and meeting the study inclusion criteria.

The study was approved by Silver Chain's Professional Services Advisory Committee and the Human

Research Ethics Committee of Edith Cowan University. It was funded by the Western Australian Lotteries Commission.

Study population and inclusion criteria

The study population comprised elderly persons living in Perth suburbs who were referred for assistance with domestic or personal care tasks and found eligible for both HACC and HIP. Thus, they were over 60 years of age, were experiencing difficulty in completing one or more tasks of daily living, did not require acute or post acute care, did not have a diagnosis of dementia or other progressive neurological disorders and were able to communicate in English.

Study sample

Two hundred individuals from the above population who commenced HIP or HACC services in the study period and agreed to participate in the study, formed the sample. One hundred individuals living in suburbs serviced by the centre running the operational trial received HIP, while the other one hundred received 'usual' HACC funded domestic assistance and/or personal care services. A sample size of 96 was calculated as being sufficient to detect a 20% difference (45% to 65%) in the proportions of the groups requiring ongoing assistance at follow up, and 100 sufficient to detect 0.4 SD effect size on the personal outcome measures, with 80% power and a significance level of 0.05. To allow for losses to follow up, the original research plan was to recruit 150 individuals into each arm of the study. However, the rate of referral to HIP was slower than expected and it was necessary, because of funding constraints, to cease recruitment when there were 100 in each group.

Sample recruitment

Each week, a report was generated from the client database containing the names and contact details of clients meeting the study inclusion criteria who were referred to the HIP team and those who lived in nearby suburbs not serviced by a HIP team. Individuals referred to HIP that week were recruited first and then, as far as possible, an equal number of controls were recruited. Recruitment was by phone and clients were asked whether they would be willing to participate in a study that was looking at the outcomes of different models of community care. Interested clients were told about the project and a date and a time to visit them in the next few days, arranged. An information statement, a consent form and a reminder of the date and time of the arranged visit were then mailed out.

At the home visit, prior to the collection of any data, the research assistant ensured that the client understood the project and that any questions they had, were answered to their satisfaction. They were then asked to sign the consent form when it was again reiterated that they were free to withdraw their consent to participating in the study at any time and that this would not affect their services from Silver Chain.

Intervention – HIP

HIP was developed as an early intervention programme directed at optimising functioning, preventing or delaying further functional decline, promoting healthy ageing and encouraging the self-management of chronic diseases. It is designed to be targeted at individuals when they are first referred for home-care services or at existing home-care clients who request an increase in level or amount of service, with the expressed intention of minimising the individual's need for ongoing support services.

The key components of the service model have been previously described by Lewin and her colleagues (Lewin *et al*. 2006) and include:

- An inter-disciplinary team consisting of a nurse, physiotherapist and occupational therapist just one of whom would work with the individual,
- Comprehensive multidimensional assessment,
- Goal-oriented care planning in partnership with client,
- Targeted evidence-based interventions to optimise functioning in daily living activities,
- Minimised face-to-face contact – telephone support and follow up,
- Education about self-management, healthy ageing, use of medications and illness/accident prevention strategies,
- Use of language and patterns of communication that encourage clients and families to participate in all care decisions and which promote their sense of autonomy rather than exerting power or control over the client,
- Recognition of the importance of the social support aspect of home-care services for older people and the need to assist the client to develop other avenues for gaining this support,
- Use of local resources – facilitated by a resource file.

The areas of functioning and types of interventions that are incorporated into HIP include: the promotion of active engagement in a range of daily living activities using task analysis and redesign, work simplification and assistive technology where appropriate; strength,

balance and endurance programmes for improving or maintaining mobility; chronic disease self-management; falls prevention strategies; medication, continence and nutrition management; and the improvement or maintenance of skin integrity.

Individuals participate in HIP until they achieve their goals or for up to 12 weeks, whichever is the sooner. In a small minority of cases, an individual has remained on the programme for longer than 12 weeks when they are considered to be progressing well towards achieving their goals but continue to require some support, but most people achieve their goals well within the period allowed. The average length of stay was 62 days in 2001–2003. If at discharge from HIP individuals still need assistance from a home-care service, this is set up by the Care Manager who then passes over co-ordination of the individual's care to a HACC care co-ordinator.

Exactly how the service operates, and its evidence-base, is described in the HIP User Manual, which has been written as a 'How To' manual to assist new staff joining the Independence Team to deliver the programme exactly as designed, as well as to assist other agencies wishing to implement a similar programme (Silver Chain 2007).

Usual HACC home care

No changes were made to the way HACC home-care services were usually delivered. Thus following telephone assessment of an individual's eligibility for service, individuals with low needs who required only assistance with domestic tasks would have a service scheduled. Individuals with higher needs would have a face-to-face assessment from a care co-ordinator who would complete a care plan and then schedule direct care. The most common care plan would include three personal care visits a week to assist with bathing/showering and a fortnightly home help visit to clean and do the heavy laundry.

Data collection

There were two data sources and three data collection points for this study. Comcare, Silver Chain's client database was the source of demographic and service data routinely collected on all home-care clients. Demographic data are collected at referral and updated annually while service data are collected throughout an individual's episode of care. In addition, individual outcome data were collected specifically for this study by visiting the client at home on three occasions: service commencement, 3 months and 1 year.

Measures were chosen on the basis that they measured key outcomes of interest in this study, i.e. functional independence, confidence and well-being, and because they have established validity and reliability with older people. The measures used were: the Primary Assessment Form (PAF), a tool developed for use by community care providers in Western Australia, which includes Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) scales based on the Modified Barthel Index (Colin *et al*. 1988) and the Lawton and Brody Scale (Lawton & Brody 1969) with the scoring modified to increase according to the amount of assistance required on a task (Calver *et al.* 2002); the Timed Up and Go (TUG) (Podsiadlo & Richardson 1991); the Modified Falls Efficacy Scale (MFES) (Hill *et al*. 1996) and the Philadelphia Geriatric Morale Scale (PGMS) (Lawton 1975).

A data collection manual was developed for the study, which included a detailed protocol and copies of all forms to be used. Research assistants were trained to collect the data in a standardised format and their ability to collect consistently reliable data assessed. They were not permitted to complete visits on their own until they had demonstrated in supervised visits that they were able to conduct the interviews according to the protocol and record the same values on the outcome measures as the supervising Research Officer. The research assistants could not be blinded to whether the individual was in the intervention or the control group as it was common knowledge throughout the organisation which service centre was running the HIP operational trial.

Data analysis

Data were analysed using SPSS version 12 (SPSS Inc., Chicago, IL, USA) and STATA version 10 (StataCorp, College Station, TX, USA).

Differences in client characteristics between the HIP and HACC groups at the start of care were assessed using chi-squared tests for categorical variables and *t*-tests for age as it was normally distributed and the variance of the two groups being compared were similar. As the distributions of the outcome measures were significantly skewed, Mann–Whitney *U*-tests for independent samples were used to identify any differences between the two groups' functioning at baseline, 3 months and 1 year, and to look at differences between the groups in how much change there was in these measures over the follow-up period. Change over time on each of the individual outcome measures was then further investigated at 3 months and 1 year using linear regression, with the group assignment and baseline scores as the independent variables and the outcome score as the dependent variable.

Routinely collected service data were available for all clients recruited to the trial. It was therefore possible to determine at 3 months and 1 year whether individuals

were still receiving Silver Chain services and if so what the services were and whether they were more or less than they had been referred for when they were recruited for the trial. For those no longer receiving services, discharge information was available, which included reason for discharge and destination. The factors contributing to different service outcomes (i.e. level of ongoing service use, categorised into none or reduced, increased or the same level of service) at the two follow-up points were examined using logistic regression.

Results

Figure 1 shows the flow of participants through each stage of the study.

To successfully recruit 100 into each group, 131 HIP and 147 HACC clients were asked to participate. The majority of clients who declined said they were either unwell or just did not feel up to it. Baseline data were then collected on everyone although not all clients completed the TUG, as noted in relation to Table 3. One hundred and sixty-five clients were visited and individual follow-up data collected at 3 months and 140 at 1 year. The reasons for the losses to follow up are shown in Table 1.

Baseline

The baseline characteristics and scores on the individual outcome measures for all recruited clients can be seen in Tables 2 and 3. These tables show that the groups were somewhat different at baseline in terms of their living arrangements and their scores on four out of the five outcome measures. HIP clients were more likely to live with others and have a carer and they were more dependent in their IADLs and ADLs, slower to perform the TUG and had lower well-being scores than the HACC group.

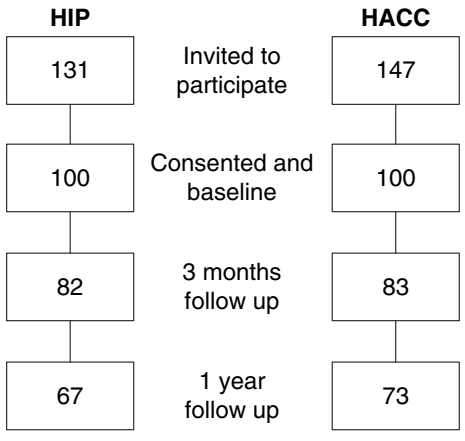

Figure 1 Participant flow in study.

Table 1 Reasons for loss to follow up

Follow up	Reason lost	HIP	HACC
3 month	Declined a visit from RA	8	7
	Deceased	4	4
	Moved to residential	1	2
	Transferred to hospice	2	0
	In hospital	2	0
	Unable to contact	1	4
	Total	**18**	**17**
12 month	Declined a visit from RA	13	7
	Deceased	11	11
	Moved to residential	3	3
	Transferred to hospice	0	0
	In hospital	1	1
	Unable to contact	5	5
	Total	**33**	**27**

There were however no baseline demographic differences between groups for those completing the 3 month follow up, indicating that proportionally more clients in the HIP group who had a carer and lived with others had dropped out from the study. Baseline differences between the groups were, however, still evident on all the outcome measures except for the MFES. Similar results were found for those individuals who completed the 12-month follow up.

Follow up

The mean scores for the two groups on each of the outcome measures at 3-month follow up are also shown in Table 3. The HIP group can be seen to have shown improvement on all measures, whereas the HACC group showed little change, or in the case of the TUG slight worsening.

Mann–Whitney *U*-tests showed that the HIP group was no longer scoring significantly worse on the ADL, IADL, TUG and PGMS measures, as they were at baseline, and they now scored significantly higher than the HACC group on the MFES ($z = 2.12$, $P = 0.034$). The results were similar at the 1-year follow up, although the difference between the groups on the MFES is no longer significant. It can be seen in Table 3 that the HIP group is still showing improvements, as compared with baseline, on all measures while the HACC group has remained much the same.

The significance of these differences between the two groups in terms of how their scores on the outcome measures changed over time was then examined, again using the Mann–Whitney *U*-test. There were significant differences between the groups in terms of the change in all outcome measures since baseline, at 3 months (ADL change $z = -3.71$, $P < 0.001$; IADL change $z = -4.20$, $P < 0.001$; MFES

Table 2 Demographics at baseline for whole group and those followed up at 3 and 12 months

	HIP			HACC		
	Baseline	3 months	12 months	Baseline	3 months	12 months
	n = 100	*n* = 82	*n* = 67	*n* = 100	*n* = 83	*n* = 73
Baseline demographics						
Age (mean in years)	79.6 (SD 7.8)	79. 7 (SD 8.0)	78.8 (SD 8.2)	79.8 (SD 3.9)	79.9 (SD 7.7)	79.9 (SD 7.8)
Female	77 (77%)	65 (79%)	56 (84%)	73 (73%)	64 (77%)	57 (78%)
Lives alone	66 (66%)	56 (68%)	47 (70%)	77 (77%)	64 (77%)	56 (77%)
Has carer	48* (48%)	35 (43%)	25 (37%)	34* (34%)	28 (34%)	27 (37%)

*Chi-squared = 4.05 $P = 0.044$.

Table 3 Scores on individual outcome measures at baseline, 3 and 12 month follow up

	HIP			HACC		
	Baseline	3 months	12 months	Baseline	3 months	12 months
	n = 100‡‡	*n* = 82	*n* = 67	*n* = 100	*n* = 83	*n* = 73
Outcome measures						
ADL† total mean	9.9** (SD 1.4)	9.3 (SD 0.9)	9.3 (SD 0.8)	9.6** (SD 1.4)	9.6 (SD 1.7)	9. 6 (SD 1.4)
IADL‡ total mean	16.4** (SD 4.1)	14.8 (SD 3.7)	14.0 (SD 2.8)	14.8** (SD 4. 5)	14.9 (SD 4.1)	14.5 (SD 3.9)
TUG§ mean time (seconds)	25.0** (SD 14.1)	19.9 (SD 13.9)	18.9 (SD 6.8)	20.3** (SD 11.8)	20.8 (SD 11.4)	20.8 (SD 11.2)
MFES¶ mean score	7.4 (SD 1.5)	8.4* (SD 1.1)	8.3 (SD 1.3)	7.7 (SD 1.6)	7.9* (SD 1.6)	7.9 (SD 1.7)
PGMS†† mean score	9.0** (SD 3.7)	10.4 (SD 3.6)	10.8 (SD 3.4)	10.1** (SD 3.8)	11.0 (SD 3.7)	10.9 (SD 3. 6)

†Primary Assessment Form (PAF) ADL score of 9 = independent on all tasks and 29 = totally dependent on others for all tasks.
‡PAF IADL score of 8 = independent on all tasks and 30 = totally dependent on others for all tasks.
§Timed Up and Go, the greater the time taken the poorer the mobility.
¶Modified Falls Efficacy Scale, the higher the score the more confident the person.
††Philadelphia Geriatric Morale Scale, the higher the score the higher the morale.
‡‡Only 87 HIP and 88 HACC completed the TUG at baseline. Others declined, usually as felt unwell.
*HIP (intervention) and HACC (control) groups significantly different at $P < 0.05$ on Mann–Whitney *U*-test.
**HIP and HACC groups significantly different at $P < 0.01$ on Mann–Whitney *U*-test.

change $z = 5.99$, $P < 0.001$; PGMS change $z = 2.41$, $P = 0.016$; TUG change $z = -5.98$, $P < 0.001$) and at 12 months (ADL change $z = -2.90$, $P = 0.004$; IADL change $z = -3.24$, $P = 0.001$; MFES change $z = 3.62$, $P < 0.001$; PGMS change $z = 2.04$, $P = 0.041$; TUG change $z = -4.58$, $P < 0.001$), the HIP group showing improvements that were sustained over time whereas the HACC group changed little.

Linear regression confirmed that the amount of change on any outcome measure was significantly influenced by the baseline score at the time of starting the intervention. Notwithstanding this confounding effect, this analysis also showed that people assigned to the HIP group had significantly better outcomes at 12 months than their HACC counterparts on all outcome measures except the geriatric morale scale (Table 4).

Service outcomes

The service outcome data can be found in Table 5, which show that whereas the largest proportion of the HIP group had been discharged as no longer needing a service, similar proportions of the HACC group continued to receive the services they were referred for and at the same level.

Looking just at those individuals who could potentially be using a service and adopting the binary outcome of continuing to receive a service vs. having been discharged as no longer requiring a service, logistic regression was used to examine which factors were associated with continuing to need a service. Analyses were performed for both 3 and 12 month outcomes and included the demographic and outcome variables (scores at the

Table 4 Linear regression estimates for group (HIP/HACC) and baseline scores for outcome measure at 3 and 12 month follow up

		3 months					12 months				
Outcome measure	Variable	*N*	Estimate	95% CI		*P*-value	*N*	Estimate	95% CI		*P*-value
ADL total	Group	164	0.43	0.12	0.74	0.006	140	0.40	0.09	0.71	0.012
	Baseline		−0.28	−0.40	0.16	< 0.001		−0.45	−0.57	−0.33	< 0.001
IADL total	Group	163	1.35	0.58	2.13	0.001	140	1.32	0.36	2.27	0.008
	Baseline		−0.25	−0.34	−0.15	< 0.001		−0.47	−0.59	−0.35	< 0.001
TUG minutes	Group	145	5.44	2.82	8.07	< 0.001	119	4.79	2.20	7.38	< 0.001
	Baseline		−0.19	−0.29	0.09	< 0.001		−0.39	−0.52	−0.26	< 0.001
MFES mean	Group	165	−0.85	−1.18	−0.53	< 0.001	140	−0.68	−1.14	−0.21	0.005
	Baseline		−0.42	−0.53	−0.32	< 0.001		−0.51	−0.67	−0.36	< 0.001
PGMS total	Group	165	−0.42	−1.28	0.43	0.333	139	−0.59	−1.61	0.43	0.254
	Baseline		−0.29	−0.42	−0.18	< 0.001		−0.45	−0.60	−0.29	< 0.001

Outcome measures were the change in score from baseline.
B coefficient estimates refer to the HACC group.

Table 5 Service outcomes at 3 and 12 months follow up

	3 months		12 months	
Service outcome	HIP	HACC	HIP	HACC
Discharged – no longer required a service	63	11	57	19
Service requirement remained unchanged	18	67	19	58
Required a lower level of service	3	0	8	7
Required an increased level of service	0	13	3	1
Deceased	4	4	11	11
Entered residential care	1	2	2	4
Service cancelled or on hold*	9	3	0	0
Total	**100**	**100**	**100**	**100**

*At the 3-month follow up some individuals had been referred to the palliative care service or the individual was in hospital, thus HIP or HACC had been cancelled or was on hold until the individual returned home from hospital. At 12 months these individuals had died, gone to residential care or were again receiving home-care services.

different follow ups) as well as the grouping variable. These results are presented in Table 6.

Group was the only variable found to be a significant predictor of service outcome. At 3 months, the odds of individuals in the HIP group still requiring services were 0.07 times those of people in the HACC group. Sixty-three (63%) of the HIP group had been discharged as no longer needing services as compared to only eleven (11%) of HACC clients. After 12 months, the odds for the HIP group of still receiving services were 0.14 times those of the HACC group, with 57 (57%) HIP and 19 (19%) HACC clients not requiring services.

Discussion

The results of the study supported our hypothesis that older individuals referred for home care who received HIP would have better personal and service outcomes than people who received usual HACC services. The HIP group showed improvements on all the personal outcome measures compared with the HACC group and these improvements were, for all except the morale scale, significantly associated with group assignment even when differences between the groups at baseline were adjusted for. The differences between the groups were even more stark as regards the service outcomes. The odds of still receiving home-care services at both 3 and 12 months for the HIP group were significantly reduced when compared with individuals in the HACC group.

There was, as indicated in the introduction, only one study that examined the outcomes of restorative home-care programmes that had been undertaken when we commenced our research and with which our results can be compared. Our results are similar to that study (Tinetti *et al*. 2002) in that they found that individuals

Table 6 Logistic regression for service outcome at 3 and 12 months follow up

	3 months			12 months		
Variable	*N*	OR (95% CI)	*P*-value	*N*	OR (95% CI)	*P*-value
Group (HIP/HACC)	165	0.07 (0.03–0.15)	< 0.001	140	0.14 (0.07–0.29)	< 0.001

Variables adjusted for: age; gender; living arrangements; carer availability; ADL, IADL, TUG, MFES and PGMS scores.

who received restorative home care showed greater improvement in their self-care, home management and mobility scores at discharge than did those receiving usual home care. They also found that the restorative home-care episodes were shorter than usual care episodes and concluded that reorganising the structure and goals of home-care holds promise for enhancing the outcomes for clients.

More recent work in the UK and in New Zealand provides further support for the effectiveness of home-care programmes that aim to restore function. The ASPIRE project in New Zealand examined the outcomes of three different services designed as 'ageing-in-place' initiatives to assist older people to remain living in the community (Parsons *et al.* 2007). The results from one of these, Community FIRST, targeted at older people with high and complex needs, found mortality risk and the risk of admission to residential care to be reduced for service recipients compared with individuals who received usual care and their ADL functioning to have significantly improved.

England has seen a recent burgeoning of Home Care Re-ablement programmes as a direct result of a government policy focus for local authorities, through the Performance Assessment Framework, on rehabilitation, prevention and re-ablement. When the Care Services Efficiency Delivery (CSED) Programme collated information about these services in 2006, they found that 60 local authorities had already established re-ablement programmes and that a further ten were in the process of implementation (Care Services Efficiency Delivery Programme 2007). However, only one systematic evaluation of service effectiveness had been completed and the number of participants (42 and 38 respectively in the intervention and control groups) was small. Nevertheless, the difference in outcomes in terms of ongoing service use for individuals who had received re-ablement compared with individuals who received usual home care was so large that the investigators concluded that there was no doubt that the service was extremely successful (Kent *et al*. 2000).

There are three major methodological limitations to our study. The first is reflected by the fact that the two groups were somewhat different at baseline, both functionally and demographically. The HIP group were more dependent in their IADLs, had poorer functional mobility and had lower morale than the HACC group. They were also more likely to have a carer and be living with others. Selection bias, related to the different referral processes associated with the HIP and HACC services may well have been the main contributor to these differences. Not all clients referred for home care in the area with the HIP team, who met the study inclusion criteria, were referred to HIP. Clients were either referred directly to HIP by their doctor or another health/home-care provider, or they said they would like to receive HIP when they were told about the programme when assessed for home-care eligibility (usually this was over the phone). They were therefore selectively referred presumably because they or their referee thought they would benefit from the programme. The HACC group on the other hand was recruited from all clients referred for HACC funded home care who met the inclusion criteria. It is possible that referrers and clients themselves are more likely to see the potential for benefit from a programme such as HIP when the level of assistance required has reached a certain threshold or when the person is having difficulties other than just with domestic tasks which many people are happy to have someone else do for them. This may be why the HIP group was more dependent than usual home-care clients. While the effect of the difference in baseline scores could be adjusted for when analysing the results, the effect of the different expectations/motivation, which may be associated with individuals selecting themselves or being referred for a restorative programme could not.

The second limitation of the study is the lack of independent data confirming service outcomes. In particular that clients who were discharged from Silver Chain as having improved status and no longer needing a service, really did not need a service and were not discharged because staff were committed to the idea that the programme worked to reduce service demand. There is also lack of independent verification that individuals did not access home-care services from elsewhere or require more help from informal carers, and if they did require home-care assistance in the follow-up period that they came back to Silver Chain. It is therefore possible that the effect of the intervention in terms of a reduction in need for services, could have been overestimated.

The third limitation is the lack of clinical information about the trial participants, which would have allowed a more detailed understanding of the equivalence of the two groups at baseline and could, for the intervention group, have been used to determine which clinical characteristics, if any, were associated with better outcomes. Detailed clinical information is not routinely collected by home-care services in Australia and was not included within the assessment data collected specifically for this study because of not wishing to overburden the participants. Although clinical data were collected routinely as part of the HIP assessment, this assessment is kept in the home notes and was not available to the researchers.

Generalisation of this study's findings is limited by the possibility of there having been a selection bias, as described. It is currently only possible to conclude that HIP is more effective than usual home care for individuals who have themselves selected, or been specially

referred to, an independence programme. It is therefore very important that if we are to consider implementing restorative programmes such as HIP as an integral part of a new paradigm for home care in Australia for all clients, as is being promoted in New Zealand and England, that we first conduct a randomised controlled trial in which clients are selected in exactly the same way to receive HIP or usual home care. It is also important that the trial include an independent masked assessment of service need (including standardised IADL and ADL measures); that it access home-care service data from a reliable independent source to ensure a completely accurate estimation of the effect size; that feedback from carers is sought as to the impact of the programme on the level of support they need to provide to the client; and, that a standardised set of clinical data are collected on all trial participants.

Conclusions

The results of this study supported the hypothesis that older individuals referred for home care who did not have a diagnosis of dementia and participated in programmes to promote their independence had better individual and service outcomes than similar individuals who received usual home care. While these results contribute to building the evidence for the efficacy of restorative home-care programmes, further research, specifically randomised controlled trials of these types of intervention, is needed.

Acknowledgements

This research was funded by Lotterywest and supported by WA HACC and the Silver Chain Foundation.

The authors would also like to acknowledge the assistance of Brandi McCormack and other members of the research team and all the Silver Chain clients who participated in the research.

Conflict of interest

The authors had no conflicts of interest when conducting, or reporting on, this study.

References

Andrews K. (2001) *National Strategy for an Ageing Australia: An Older Australia, Challenges and Opportunities for All*. Commonwealth Department for Ageing, Canberra.

Australian Institute of Health and Welfare & Department of Health and Ageing (2004) *Careers in Australia: Assisting Frail Older People and People with a Disability* [WWW document]. Australian Institute of Health and Welfare, Canberra. URL http://www.aihw.gov.au/publications/index.cfm/title/10064 (last accessed 4 July 2009).

Baker D., Gottschalk M., Eng C., Weber S. & Tinetti M. (2001) The design and implementation of restorative care model for home care. *The Gerontologist* **41**, 257–263.

Calver J., Lewin G. & Holman C.D.J. (2002) Reliability of a primary, generic assessment instrument for home care. *Australasian Journal of Ageing* **21**, 185–191.

Care Services Efficiency Delivery Programme (2007) *Home-care re-ablement workstream: discussion document* [WWW document]. URL http://www.dhcarenetworks.org.uk/csed/Solutions/homeCareReablement/supportAndRoll/ (last accessed 4 July 2009).

Colin C., Wade D.T., Davies S. & Horne V. (1988) The Barthel ADL Index: a reliability study. *International Disability Studies* **10**, 61–63.

Dale P. & Letchfeld P. (2000) Promoting independence in Brighton and Hove. *Managing Community Care* **8**, 23–33.

Department of Health and Ageing (2006) The community based aged care workforce: a desktop review of the literature [WWW document]. URL http://www.health.gov.au/internet/main/publishing.nsf/Content/ageing-twf-cbw-report-pt2.htm (last accessed 4 July 2009).

Hill K.D., Schwarz J.A., Kalogeropoulos A.J. & Gibson S.J. (1996) Fear of falling revisited. *Archives of Physical Medicine and Rehabilitation* **77**, 1025–1029.

Kent J., Payne C., Stewart M. & Unell J. (2000) *External Evaluation of the Home Care Reablement Pilot Project*. Centre for Group Care and Community Care Studies: De Montfort University, Leicester, UK.

Lawton M.P. (1975) The Philadelphia Geriatric Center Morale Scale: a revision. *Journal of Gerontology* **30**, 85–89.

Lawton M.P. & Brody E.M. (1969) Assessment of older people: self-maintaining and instrumental activities of daily living. *The Gerontologist* **9**, 179–196.

Le Mesurier N. & Cumella S. (1998) *An Evaluation of the Effectiveness of Re-Ablement Provision in South Worcestershire*. University of Birmingham, Birmingham, UK.

Lewin G., Vandermeulen S. & Coster C. (2006) Programs to promote independence at home: how effective are they? *Generations Review* **16**, 24–26.

Lewis H. & Milne A. (2000) *Taking Prevention Forward: A Directory of Examples*. Anchor Trust, Oxford, UK.

Parsons M., Anderson C., Senior H., *et al.* (2007) *Aspire: Assessment of Services Promoting Independence and Recovery in Elders*. University of Auckland, Auckland, New Zealand.

Podsiadlo D. & Richardson S. (1991) The timed up and go: a test of basic functional mobility for frail elderly persons. *Journal of American Geriatric Society* **39**, 142–148.

Silver Chain (2007) *Silver Chain's Home Independence Program (HIP)*. User Manual. Silver Chain, Perth, Australia.

Tinetti M., Baker D., Gottschalk M., *et al.* (1997) Systematic home-based physical and functional therapy for older persons after hip fracture. *Archives of Physical Medicine and Rehabilitation* **78**, 1237–1247.

Tinetti M., Baker D., Gallo W., Nanda A., Charpentier P. & O'Leary J. (2002) Evaluation of restorative care versus usual care for older adults receiving an acute episode of home care. *Journal of American Medicine Association* **287**, 2098–2105.