

Enabling independence: restorative approaches to home care provision for frail older adults

Bridget Ryburn ^{D_{Psych}}, Yvonne Wells ^{PhD} and Peter Foreman ^{BSc}

Australian Institute for Primary Care, Faculty of Health Sciences, La Trobe University, Victoria, Australia

Correspondence

Bridget Ryburn
Research Fellow
Lincoln Centre for Research on Ageing
Australian Institute for Primary Care
Faculty of Health Sciences Building 2
La Trobe University
Victoria 3086
Australia
E-mail: b.ryburn@latrobe.edu.au

Abstract

This study reviews the 'real world' potential (i.e. efficacy and effectiveness) of restorative approaches towards home care for frail older adults. Such approaches aim to go beyond traditional home care goals of 'maintenance' and 'support' towards improvements in functional status and quality of life. Our review of the literature included searches of health and gerontology databases as well as 'grey literature' across Australia, the UK and the USA. We provide an initial overview of the efficacy of a range of single component restorative interventions, including occupational therapy, physical therapy, health education and social rehabilitation. In order to answer questions about the overall efficacy and cost-effectiveness of restorative home care provision, we also review the nature of in-house programmes across the three nations as well as the evidence base for such programmes, particularly when they have been compared to home care 'as usual'. A range of positive outcomes has emerged, including improved quality of life and functional status and reduced costs associated with a reduction in the ongoing use of home care services postintervention. Questions remain about which components are most beneficial, which clients are likely to receive the greatest benefit, and the appropriate intensity and duration of such interventions.

Keywords: frail older people, home care, multidisciplinary occupational therapy, physical therapy, restorative

Accepted for publication 24 June 2008

In many developed countries, a clear shift towards community-based aged care is taking place. Governments are increasingly aware that the provision of home care services results in an overall improvement in the quality of life and maintenance of a basic standard of living for many frail older adults in the community, and that it may reduce or delay high intensity, high-cost services such as residential care or hospital admission (Elkan *et al.* 2001, World Health Organisation 2002, Department of Health 2006). Services, such as prepared meals, domestic care (i.e. house cleaning), support to undertake personal activities of daily living and planned activity groups have been found to be effective and are commonly utilised. Although the levels of provision and nature of home care services vary between nations (Hallberg & Kristensson 2004, Davey *et al.* 2005, Howe *et al.* 2006), the challenges faced by each government in maintaining

and improving home care services, in the context of rapidly ageing populations and changing expectations, remain similar.

It has been argued that programmes are often not as successful as they could be, because they lean too far towards an outdated 'dependency' model of service provision rather than a new focus on activity, independence and successful ageing – as outlined in several frameworks (Kane 1999, Baker *et al.* 2001, World Health Organisation 2002, Browning & Kendig 2003, Hallberg & Kristensson 2004, Baker 2006, Lewin *et al.* 2006, O'Connell 2007, Glendinning *et al.* 2008). In other words, current approaches often lack an emphasis on the promotion of healthy lifestyles and daily routines, social support, exercise, and autonomy and control, despite the fact that there is now strong evidence that these are strongly linked to the maintenance of health and independence in

older adults (Stuck *et al.* 1999, Seeman & Crimmins 2001, Peel *et al.* 2004). Most approaches to home care provision pay insufficient attention to an individual's rehabilitative potential, and, via well-meaning attempts to substitute function with assistance, may result in a premature reduction in important physical and social activities (e.g. shopping and cooking). Some older people may become entrenched in a 'sick role', characterised by an absence of self-motivation and the view that because they are limited by being aged or unwell they must remain dependent upon continuous professional management of care (Verbrugge & Jette 1994, Baltes 1996, O'Connell 2007). The funding and commissioning mechanisms that underpin many services may limit the capacity for services to provide restorative care. That is, many services are funded for short, task-focused home care (e.g. 'please provide 1 hour of domestic cleaning'), which makes it very difficult to provide a flexible goal-oriented approach, such as that would be required to undertake a more restorative work (e.g. 'please help this client to purchase and use a light weight vacuum cleaner'; Ware *et al.* 2003). Home care staff may also hold a view that 'bed rest' can be beneficial for an older individual with illness, despite considerable evidence to the contrary (Baker 2006). They may also exacerbate this situation with too much emphasis on task completion and a tendency 'to do as much as they can for the client', rather than to try to assist the client to do things for themselves.

Pressures for improved home care outcomes

Current practice within home care services for frail older adults contrasts sharply with the highly progressive changes in philosophy that have occurred with other disabled groups across developed countries. These movements include the concepts of normalisation and social role valorisation, which have permeated approaches to the management of intellectual disability (Wolfensberger 1972), the large-scale deinstitutionalisation of millions of people with psychiatric and intellectual disabilities, and the emergence of more flexible community management models (Killaspy 2006, Mansell 2006) and, more recently, the chronic disease self-management movement from the USA (e.g. Chodosh *et al.* 2005). In this context, it has become increasingly difficult to justify a system in which older adults are not entitled to the same 'empowerment-oriented' and independence-focused approaches as other groups of people with disability.

The steadily rising demand for services also continues to place pressure on many traditional home care providers (Parker 2001, Howe *et al.* 2006, Pilkington 2006). In some countries, this has resulted in longer waiting lists or cessation of service for those clients assessed as having

low-level care needs. There is ongoing concern about this situation, as evidence suggests that risk may be imposed on clients, if delivery of small amounts of critical services, targeted at clients at the time that need is expressed, is delayed or services are not available at all (Elkan *et al.* 2001, LaPlante *et al.* 2004).

In the absence of any further improvements in effectiveness of our health and community care systems, it is unlikely that there will be any deceleration in the growing demand for home care services. A number of systemic issues apply across many countries, such as an increase in the number of clients remaining at home with complex care needs, difficulties accessing residential care, shorter hospital stays and more outpatient and day treatments, the projected decline in family care with an increase in the number of women entering or remaining in the workforce, and skills shortages of aged care workers. These changes are likely to impact on demand for community services (Wittenburg *et al.* 2004). Furthermore, despite overall improvement in health and medical care across most developed countries, there is no consistent evidence of a trend towards 'compression of morbidity' – the condensation of disability and ill health into a shorter period at the end of the lifespan (e.g. AIHW 2006, Parker & Thorslund 2007).

Restorative home care programmes: can they both improve quality of life and reduce ongoing demand and cost?

Restorative approaches to home care have been proposed as a potential method to reduce dependency in home care provision and to improve our capacity to cope with growing demand for care, via more timely and preventative services. A range of programmes have been developed and evaluated, including those involving a single component, such as physical therapy, and those involving multicomponent programmes implemented by multidisciplinary teams.

This article aims to provide an overview of the current evidence on whether restorative programmes result in an improvement in functional and social well-being. In order to focus on the 'real world' potential for such programmes within existing home care services, our focus is on the small body of research evaluating the effectiveness of multicomponent, multidisciplinary programmes in comparison to traditional models of home care provision, including their capacity to reduce ongoing use of services and cost-effectiveness.

Search strategy

Four online databases – AgeLine, MEDLINE, CINAHL and PsychINFO – were used to identify peer-reviewed,

review articles and original research published since 1996 and reports describing programmes involving the provision of restorative models to promote functional independence and quality of life of frail older people within the community. Search terms included combinations of 'aged', 'home-care', 'community', 'independence', 'restorative', 'rehabilitation' and 'independent living'. Each topic was combined with either 'generalised frailty' or with a common disease-specific condition, including dementia, stroke, depression, fear of falling, hip replacement, incontinence and osteoarthritis. All abstracts were scanned for relevance. If the article appeared pertinent and evaluated one or more of four pre-identified intervention components – occupational or physical therapy, social rehabilitation or health education – the full article was retrieved and assessed for inclusion in the review. In addition to searching the electronic databases, the references cited in retrieved articles were scanned and any articles not previously identified were assessed for likely relevance.

Studies were chosen for inclusion in the review if they were published in 1996 or later; were in English but not restricted to studies in English-speaking countries; were formally published in refereed journals or publications of equivalent standard; referred to older adults particularly 65 years and older; and were about community care services delivered in the home or day centres. Studies were excluded from the review if they specifically focused on hospital in the home, mental health services or workforce interventions.

Attempts were also made to identify programmes utilising a restorative approach in Australia, the UK or the USA that may not have been described in the formal literature (i.e. the 'grey' literature). A number of key experts were approached within each country. Several project reports were identified using this approach and have been included in the literature review where relevant.

Single-component restorative interventions

A growing body of research literature has demonstrated that it is often possible to successfully improve health status and rehabilitate or re-enable occupational and social functions in frail older adults with chronic illness (see Table 1 or the earlier systematic review undertaken by McWilliam *et al.* 2000). Table 1 provides an overview of key studies and review articles investigating single-component restorative home care interventions between 1996 and 2007. The majority of reported research describes interventions as single components outside existing home care services (i.e. typically not undertaken by existing home care staff). This research has often not been directly compared with 'standard' home care

services and in some cases has been undertaken in conjunction with usual home care services. In order to narrow the scope of our review from the vast range of possible interventions that could be considered restorative (i.e. ranging from cognitive training to art therapy), we have focused on the main components that have been included as part of in-house (i.e. undertaken by home care providers) multicomponent programmes to date. These studies provide some encouraging findings, with particularly strong evidence for the effectiveness of occupational therapy (see Steultjens *et al.* 2004 for a systematic review) and health education, often undertaken by nurses visiting people at home (see Stuck *et al.* 2002 for a systematic review and meta-analysis) in improving functional and health status. There is more limited evidence for the success or otherwise of 'social rehabilitation' programmes, which directly attempt to assist older adults to increase their social networks and connectivity in the community. The exception is one unpublished qualitative evaluation undertaken by Le Mesurier from the University of Birmingham and commissioned by the non-profit UK organisation Age Concern in 2003.

In-house multicomponent restorative home care programmes

The extent to which the UK, Australia and the USA have adopted restorative programmes as part of their home care provision varies considerably. Of the three countries to date, the UK has most enthusiastically adopted restorative home care services. Approximately 24% of councils currently offer some kind of re-ablement service as part of their programme, and another 26% are in the process of developing or wish to develop a service (Pilkington 2006). 'Re-ablement' typically refers to intensive and time-limited multidisciplinary home care service interventions developed for people with poor physical and/or mental health, to help them learn or re-learn the skills necessary to manage their illness and to maximally participate in everyday activities. The majority of programmes are relatively unselective and have been developed to target clients at the beginning of their home care career, while others are targeted to specific clients post-discharge from hospital. Programmes vary widely in their structure, staff skill mix and nature of interventions, although they share general principles, such as a focus on helping people 'to do' rather than 'doing to or for', a specific outcome focus, and defined maximum duration. Each service provides comprehensive assessments and time-limited (up to 2 months) programmes of rehabilitation in the client's own home. Teams usually comprise occupational therapists, social workers and home care agency staff (these largely

Table 1 An overview of key studies investigating single component restorative home care interventions (1996–2007)

Home care component	Key studies	Outcomes
Occupational Therapy		
Adequate support to re-learn or learn alternative methods to undertake a particular task (e.g. cooking classes)	Gitlin <i>et al.</i> (2001) Logan <i>et al.</i> (2004) Mann <i>et al.</i> (1999)	Improved personal, domestic and community activities of daily living Decreased incidence of falls
The trial of different equipment (e.g. labour saving equipment such as new robotic vacuum cleaners)	Stark (2004)	Increased social participation
The provision of environmental modifications (e.g. grab bars and ramps)	Steultjens <i>et al.</i> (2004) (systematic review) Walker <i>et al.</i> (2004) (meta analysis)	Improved subjective quality of life Reduced caregiver burden
Physical Therapy		
Strength and balance classes, maintaining regular exercise and other physical therapies to address underlying physical issues that may have led to restrictions in mobility	Gill <i>et al.</i> (2002) Taylor <i>et al.</i> (2004) (systematic review) van der Bij. (2002) (systematic review)	Reduced decline in personal and domestic activities of daily living Improved health status
Social Rehabilitation		
Assistance and support to sustain or create new social networks via a short-term process of social rehabilitation that often involves significant volunteer input	Age Concern evaluation	Reduced symptoms of depression and anxiety Increased social integration
Health Education		
Principles of healthy ageing and encouragement to participate in local health promoting activities	Elkan <i>et al.</i> (2001) (meta analyses) Frich (2003) (narrative review)	Improved personal and domestic activities of daily living Improved health status
Falls prevention strategies	Halberg & Kristensson (2004) (narrative review)	Decreased mortality rates
Use of medications, continence, nutrition and skin integrity	Markle-Reid <i>et al.</i> (2006a) (systematic review)	Decreased use of hospitalisation
Chronic disease self-management	Markle-Reid <i>et al.</i> (2006b) Stuck <i>et al.</i> (2002) (meta-analysis) van Haastregt <i>et al.</i> (2000) (systematic review)	Delayed nursing home admission

comprise skilled workers who are certificate qualified); some teams also include physical therapists. Usually, these services are available to the range of frail older adults and younger people with disability who would be eligible for home care services in the UK, with some councils making participation in such a programme compulsory prior to commencement of home care services as usual. (The nature of usual home care services varies across different council areas in the UK, although the majority comprise specific task-specific components, such as house cleaning and personal care.)

In Australia, state governments have been inspired by the success of re-enablement programmes in the UK, and several pilot studies involving time-limited multi-component restorative home care programmes have been trialled. These include the development and evaluation of the Home Independence Programme by the private home care provider Silver Chain in Western Australia (Lewin *et al.* 2006, Silver Chain 2007), the Supported Independent Living Collaborative in Queensland and the recent implementation of four government-funded pilot programmes across the state of Victoria (unpublished evaluation reports are available). The

Western Australian state government has also funded the roll-out of a broad-based training package within a range of existing home care providers outlining the principles of restorative care. The Wellness Approach to Community Homecare, or WATCH (O'Connell 2007), has now been formally recognised as a key priority for its home care system.

The USA provides more limited government support for home care in comparison to Australia and the UK. Home care is provided in specific circumstances (e.g. with strict means-tested eligibility criteria and availability limited to post-hospital admission or in lieu of nursing home care), and much of the ongoing home care in the community is funded by health insurance or individuals in the community. In this context, the roll-out of home care programmes with an explicitly restorative emphasis has been less evident in the USA than in the other countries cited here. Nevertheless, The National Council on Aging, Centre for Healthy Aging, is actively involved in dissemination of recent findings (including the evidence base for chronic disease self-management, prevention of falls, improvement of nutrition, exercise promotion and treatment of depression) to both state

governments and a diverse range of community organisations across the country (NCOA 2006). They have also undertaken some methodologically sound research into the effectiveness of restorative approaches to home care.

The quality of the evidence base for in-house restorative programmes

The quality of research undertaken to specifically evaluate in-house restorative programmes across the UK, Australia and the USA varies widely, ranging from large matched group control trials to single group evaluations focusing on qualitative aspects of client experiences. Each study has utilised different outcome measures, although the majority have included functional outcomes and use of services post-intervention. The body of work that specifically evaluates in-house restorative programmes remains small; our review identified the existence of only three controlled trials of restorative programmes undertaken directly within home care (see Table 2 for an overview of the restorative programmes undertaken in each of these trials). Two of the studies had fewer than 200 participants. Furthermore, there has yet to be a fully randomised control trial of an in-house programme, leaving the possibility open that some bias existed in the allocation of participants. There is, however, a growing body of complementary evidence from single component trials, service evaluations, and other multicomponent programmes that have coordinated care outside or in addition to home care programmes.

The large controlled trial undertaken by Tinetti *et al.* (2002; $n = 1382$) in the USA (see Table 2) represents the most comprehensive and robust evaluation to date. This study builds on previous studies from the USA that have investigated multicomponent restorative programmes (Siu *et al.* 1996, Tinetti *et al.* 1999, Gill *et al.* 2002, Gitlin *et al.* 2006), but it is the first of its kind to attempt to develop a restorative programme in house (i.e. to be delivered and administered by home care staff; see Baker *et al.* 2001, for a detailed overview of the development and implementation of their restorative approach). Clients (restorative vs. control) were prospectively matched on a variety of characteristics, including age, sex, race, cognitive status and functional status.

In Australia, Lewin *et al.* (2006; $n = 200$) undertook a similar in-house matched group controlled evaluation with a smaller sample size (a larger randomised control trial is currently under way), albeit with a wider range of outcome measures and a longer duration before follow-up. Silver Chain (2007) provided further detail about the background, components and assessment tools developed for this programme.

In the UK, one small externally based university-led intervention included a control group comprising clients

who were similar in several respects, including age and gender, to those in the intervention group, but from a different region (Kent *et al.* 2000). In addition, a large body of 'grey literature' that describes and evaluates re-ablement services within the UK (e.g. Le Mesurier & Cumella 1999, Littlechild *et al.* 2006, Pilkington 2006, Newbrunner *et al.* 2007) exists, but is limited methodologically.

Do restorative programmes impact on the quality of life of clients and carers?

The majority of intervention studies involving an active approach have focused on improvement of basic functional status and measurement of ongoing use of services, rather than on the broader effects of interventions on clients' lives, including their well-being and psychosocial status. Only a few studies, albeit with generally positive findings, have directly investigated the impact of programmes utilising restorative approaches directly on clients' quality of life. Little or no research has examined carer outcomes or perspectives in relation to restorative programmes.

Of the three key examples of in-house programmes presented above, only the Western Australian Silver Chain programme specifically measured a factor that can be directly related to quality of life – geriatric morale (i.e. clients' morale). Clients who received the programme demonstrated significantly higher scores on the Philadelphia Geriatric Morale Scale than non-participants (Lewin *et al.* 2006). There is also some qualitative evidence from evaluations undertaken in the UK that multidisciplinary restorative programmes are generally well-accepted and seen to have positive outcomes from the clients' perspective (e.g. Le Mesurier & Cumella 1999).

In relation to specific components of the restorative approach, evidence suggests that comprehensive occupational therapy interventions may have a positive impact on the social ability and quality of life of older adults (Stultjens *et al.* 2004), and that participation in physical activity programmes can often have a positive impact on psychosocial health (Taylor *et al.* 2004). Evidence also suggests that use of aids and equipment may result in improved quality of life for clients; for many, the greater autonomy, privacy and self-sufficiency achieved is worth some residual difficulty in carrying out tasks independently compared to using personal care services (Verbrugge & Sevak 2004).

Do restorative home care programmes result in functional improvements and ongoing reductions in the use of home care services?

Overall, a small but growing body of evidence suggests that time-limited multicomponent interventions result in

Table 2 Restorative programmes utilising a multidisciplinary multicomponent model that have undergone formal evaluation and comparison with home care 'as usual'

Domain	USA Connecticut Restorative Home Care Agency	Australia WA – Silver Chain Home Independence Project (HIP) and Personal Enablement Project (PEP)	UK Leicestershire Home Assessment and Re-enablement Team
Intervention recipients	Clients receiving Medicare-covered home care lasting at least 7 days. Absence of severe cognitive impairment, not terminal, bedridden or requiring total care ≥ 65 years	Clients who are either first referred for home care services or at a point where their needs have increased (HIP) or following discharge from hospital (PEP) ≥ 60 years, English speaking and no diagnosis of dementia or neurodegenerative disorder	Community-based clients with a range of disorders and disabilities when they are first referred for home care. All ages; the majority were older adults (average age = 80 years)
Assessment	Assessment initiated by home care nurses using the 'Self-Care Progress Report' (Baker <i>et al.</i> 2001)	Comprehensive multidimensional assessment (Standardised Primary Assessment Tool, 'difficulty' scale and care planning tool, Silver Chain 2007)	Assessment undertaken by Occupational Therapy
Intervention content	The treatment plan included various combinations of exercise and training; behavioural changes; environmental adjustments and adaptive equipment; counselling and support; training and education of patient, family and friends; and medication adjustments	Targeted evidence-based interventions to optimise functioning in daily living activities (e.g. assistive technology, task analysis and re-design, exercises for strength and balance) Education about principles of self-management, healthy ageing, use of medications and illness/accident prevention strategies 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	Packages of home-based care for 4–6 weeks, focused on the re-learning of daily living skills or gaining new ones . . . the emphasis is on a social care model rather than a medical model of re-enablement (e.g. goals can include enabling a client to build up social networks)
Delivery personnel	Nursing, physical and Occupational Therapy and home health aide staff	Physiotherapist, occupational therapist and nurse	One occupational therapist who plays the role of commissioning services from the team One senior home care assistant, six home carers, one half-time home care manager, and one programmer
Method of communication	Face to face: individual	Face to face: individual Telephone follow-up	Face to face: individual
Intensity	Duration of home care was for an average of 24.8 days, with an average of two visits from physical therapists, 6.8 visits from nursing and 3.1 visits from home health aides	Duration of HIP was for an average of 53 days, with an average of 2-hour assessment, 2.5-hours care planning, 7-hours intervention from allied health, 5.5 hours of domestic assistance and 11 hours of personal care	Unknown, described as intense
Clinical outcomes for restorative programme vs. home care as usual	Improved self-care, home management and mobility Greater likelihood of remaining at home Reduced likelihood of visiting an emergency department	Reduced need for home care service or no ongoing need for service for a greater proportion of HIP clients Improved activities of daily living, mobility, reduced falls and higher morale	Reduced need for home care service or no ongoing need for service for a greater proportion of re-enablement clients
Cost of programme	Unknown	No significant differences evident between the direct care costs of HIP and standard home care clients for the year of the study	Unknown

a reduction in the ongoing use of home and community care services in comparison to what would have been anticipated with the provision of 'usual' home and community care services.

Each of the multicomponent programmes highlighted earlier produced some evidence that implementation of their programme resulted in functional improvements and significant reductions in the need for ongoing services or reduced length of service. For instance, both Lewin *et al.* (2006) and Kent *et al.* (2000) demonstrated significant reductions in home care usage. Similarly, the USA-based restorative agency programme that investigated the efficacy of short-term post-discharge home care provision demonstrated shorter and less intensive home care episodes for the intervention group (34.4 days vs. 35.7 days in the usual care group; Tinetti *et al.* 2002). These findings are consistent with other service evaluation data taken from similar re-ablement services across the UK, which consistently demonstrate a post-intervention reduction in anticipated service use post-programme as well as a possible reduction in health service usage (i.e. the reduction of length of hospital stay; Pilkington 2006). A recent study of service data from four re-ablement teams across the UK have demonstrated ongoing benefits from home care up to 2 years post-intervention for the majority of clients; between 34% and 54% continue to no longer require home care at 2 years post-intervention. The benefit is also clearly evident in clients aged 85 years or over (Newbrunner *et al.* 2007).

As well, single components, particularly use of aids, equipment and environmental modifications, have been demonstrated to have important preventative outcomes. For instance, Cornman *et al.* (2005) demonstrated that prophylactic use among those reporting no activities of daily living dependency appears to be an adaptation to preclinical disability, and that a lack of access to equipment can lead to an increase in reported dependency. A US study that investigated the factors contributing to a steady decline in the use of personal care over a 9-year period, using a very large-scale database from the US Medicare Beneficiary Survey, was able to demonstrate that as much as half the overall decline was attributable to a shift towards the use of aids and equipment (Freedman *et al.* 2006). Furthermore, the use of aids and equipment contributed to a decline in underlying difficulties and had forestalled disability.

Do restorative home care programmes result in cost savings?

A growing body of evidence suggests that implementation of home care programmes that utilise a restorative approach may result in ongoing cost savings for both health and future home care services. Some researchers

have now attempted to calculate cost-effectiveness of interventions, by comparing the cost of traditional home care over a specified duration with the cost of a restorative intervention programme. Using this method, Lewin *et al.* (2006; $n = 200$) were able to demonstrate that, at 12 months post-onset of services, the cost of the provision of their intensive multicomponent restorative programme (followed by home care as usual) was no more expensive than providing home care as usual, due to reductions in need for ongoing home care. Le Mesurier & Cumella (1999), in their evaluation of a re-ablement team in South Worcestershire, UK, estimated the savings made where residential care was avoided or home care was substantially reduced from previous levels for a subset of 17 clients. Programme costs in the sample ranged from £150 to £1600 (with programmes of varying lengths ranging from 7 to 99.5 hours), but in every case cost savings were demonstrated, and, for some clients, appeared quite high.

Evidence that particular components of restorative home care may be cost-effective also exists; provision of aids and equipment and home adaptations is likely to result in cost savings over the longer term. Lansley *et al.* (2004) undertook a detailed theoretical case study comparison of the feasibility and costs associated with the provision of home adaptations and aids and equipment in the UK. They carried out a detailed building audit of 82 properties in nine areas of England and Scotland, typical of those occupied by older people. They then calculated the costs associated with home modifications and equipment for seven notional users at two points in time (cases were developed based on prevalence data from two national surveys of people with disability). They concluded that the adaptability of properties varied according to design factors and the needs of occupiers. Nevertheless, in by far the majority of cases the initial investment in adaptations and equipment was recouped through subsequently lower care costs within the average life expectancy of the client.

As well, a growing body of evidence suggests that basic health education (typically associated with nurse-led home visits) is associated with lowered ongoing health and community care costs for older adults (Markle-Reid *et al.* 2006a). For instance, in a randomised control trial, Markle-Reid *et al.* (2006b; $n = 288$) were able to demonstrate that home visits to frail older adults (older than 75 years), involving health assessment, health education, use of empowerment strategies and coordination of services, resulted in no increases in the cost of health and home care services. Similar reductions in health care costs were found in a randomised control trial ($n = 163$) involving a preventative health promotion occupational therapy-led group intervention study with socially disadvantaged older adults in the USA (Hay *et al.* 2002).

Conclusions: a paradigm shift for home care provision

This article has highlighted the emerging body of evidence that suggests that a restorative approach to home care has significant advantages over the traditional approach aimed at maintenance and support only. Providing timely interventions, education and assistive technologies to encourage frail older adults to resume independence and activity in many cases appears to be effective in reducing demand for ongoing services in a cost-effective manner. Implementing restorative approaches into home care services will also align home care service provision more closely with recent models of healthy ageing and the progressive principles of service provision already well-established among other disabled groups, with their emphasis on independence, empowerment and community-based treatment. It may also assist home care providers to furnish a more efficient, effective service in the face of steadily increasing demand.

There are, however, limitations with the current evidence base. The 'real world' outcomes remain somewhat uncertain as the number of evaluations of in-house restorative programmes remains very small, and the two undertaken in the UK and Australia were limited by small sample sizes. As yet, research looking at the longer term outcomes (i.e. post 1-year duration) from restorative programmes has been limited, so the longer term benefits have yet to be substantiated. Although there is a growing body of evidence highlighting improvements in function and decreased use of services with a restorative approach, there has yet to be much work on how restorative programmes impact on the quality of life of clients and carers. More work is also needed to evaluate the most effective types of restorative programmes, and questions remain regarding which client groups are likely to benefit the most from a restorative approach (i.e. Is there a level of disability at which a client can no longer benefit from restorative care?) and the most effective duration and timing of restorative interventions (i.e. to implement at the start of a home care career or otherwise).

Even accepting the limitations of the evidence base, several challenges to implementation remain. Experience with each of the restorative programmes has shown that any attempt to shift home care services away from their traditional focus on maintenance and support involves a major paradigm shift for many home care providers, and is likely to require considerable retraining and restructuring of services (Baker *et al.* 2001, Pilkington 2006, Newbronner *et al.* 2007, O'Connell 2007). It is likely to take some time to determine both the level of retraining and/or restaffing required and the extent to which principles of restorative care can be integrated into existing

services. It may be more effective to establish new separate, intensive, time-limited services.

Acknowledgements

The article draws on findings obtained in a review commissioned by the Victorian Department of Human Services, Australia, on the international evidence for a restorative approach to community service provision for older people.

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