CHAMP – Advancing Home Health Care Excellence for Older People



PHYSICAL FUNCTION

EVIDENCE BRIEF

VNSNY CENTER FOR HOME CARE POLICY & RESEARCH

APRIL 2009 | SERIES C | REPORT 5

Many older people depend more on others and pay more for medical care because of limited mobility and falls. In 2005 almost 79 percent of people covered by Medicare and living in the community had problems performing everyday activities such as cooking and bathing, or basic physical tasks, such as walking and reaching.¹

What are the key findings?

Frail health and aging lead to harmful physical limitations that detract from the quality of life and contribute to increased hospitalizations, nursing home admissions and health care costs. Physical limitations, often compounded by medication side effects, may also cause falls. Falls, in turn, can lead to further decline – 20 to 30 percent of people who survive falls have trouble getting around or living independently.² For older adults in the U.S., falls cause death more than any other injuries and they are also the most common cause of nonfatal injuries.³ In 2000, treatment for older fall victims cost patients and insurers \$19.2 billion.⁴

Home health care aims to promote recovery and prevent the cascade of decline due to illness, injury or a hospital stay. Effective interventions can help older people maximize their function and prevent falls so they can reach their highest possible level of independence.

Studies show a number of proven and promising approaches that clinicians can take to help older people increase their physical activity, maintain physical abilities and reduce their risk of falling:⁵

- <u>Progressive resistance programs</u> using weights or resistance bands can improve strength.
- <u>Varied exercise programs</u> can improve balance and walking speed.
- <u>Multifaceted, targeted programs</u> can reduce risk of falls. Such programs should: (1) assess an individual's risk of falling, and (2) address the many complex risk factors identified for that person.





This cube graphically represents CHAMP's National Framework for Geriatric Home Care Excellence. The goals of older adults comprise the foundation of the Framework. The three sides represent what home care providers must do to achieve these goals. Cross-Cutting Principles are the core characteristics of excellent care that cut across specific practice areas. Key Practice Areas are the main domains of home care. Strategies for Implementation are the actions home care providers must pursue to improve. The full set of Framework materials and recommendations is available at http://champ-program.org/framework/.

• Care plans should include <u>exercise and physical activity</u> for all home health care patients because evidence demonstrates that exercise can prevent or delay future disability.

Why is physical function essential in home health care for older people?

Most older people admitted to home health care have this in common — difficulty performing physical tasks.

Home health patients over 65 require help from another person with an average of seven activities of daily living (ADLs) and instrumental activities of daily living (IADLs).

- ADLs are the basic activities people do to take care of themselves. ADLs measured in home care are grooming, dressing, bathing, using the toilet, transferring from one location to another (for example, from bed to chair or into and out of the tub), getting around by walking or using a wheelchair, and eating.
- IADLs are the activities people perform to manage their daily life. IADLs measured in home care include shopping, preparing meals, transportation, laundry, housekeeping, and using the phone.
- Nearly nine out of 10 older people in home health care (88 percent) need help walking; three out of four (74 percent) require help getting in or out of a bed or chair, and nine out of 10 (90 percent) need help from a person or need to use a device such as a shower chair or grab bars to take a shower or bath.⁶





More than 20 percent of older people in home health care have "abnormal gait" listed as their primary diagnosis or reason for home care.⁶ Abnormal gait means uncoordinated walking and might be caused by balance problems, pain, muscle weakness, or a specific disease. Abnormal gait, which limits a person's ability to get around, increases the risk of falling.

Despite its important role in promoting physical function, home health care has not realized its full potential.

INITIATIVE DESCRIPTION

This Evidence Brief is part of CHAMP, a national program to advance excellent home health care for older people. The Brief was produced during development of a National Framework for Geriatric Home Care Excellence to inform improvement efforts in the field. A National Advisory Council of experts in geriatrics and home care guided development of the Framework. The Center for Home Care Policy & Research, Visiting Nurse Service of New York, spearheaded the effort with funding from the John A. Hartford Foundation. The National Advisory Council reviewed evidence from literature reviews, commissioned papers and three regional focus groups. Informed by these sources, it developed a consensus on cross-cutting principles and overarching strategies for advancing home care excellence. It amplified these with specific practice, policy and research recommendations in six key practice areas for home care of older adults:

- Care Coordination, Management and Transitions
- Medication Management
- Cognitive Function
- Physical Function
- Chronic Pain Management
- Palliative Care and Advanced Illness Management

This Brief summarizes the literature review conducted by project staff in the area of **Physical Function**. The full set of Framework materials and recommendations, including short biographies of the members of the National Advisory Council and the proceedings from a National Conference convened in July 2008, are available at:

http://champ-program.org/framework/.



- Natural changes resulting from aging, when combined with bed rest and hospitalization, start a cascade of events that can result in functional decline and increased risk of nursing home placement.⁷
- Home care aims to interrupt this downward cascade and help patients regain as much function as possible. At home health discharge, just over half (51 percent) of patients are better able to get in and out of bed, while about 38 percent have gotten better at walking or moving around.⁶ Almost certainly, a portion of patients who do not improve could gain some function with more systematic intervention.
- Falls create both direct and indirect harm. Emergency care for patient injury caused by falls or accidents at home occurs more frequently than other adverse events in home care.⁸ For this reason, home care providers are focusing on fall prevention and seeking more effective interventions.

What does the research tell us about improving physical function?

Exercise and Physical Activity

Strong evidence from large, descriptive studies shows that <u>people who exercise</u> regularly are less likely to be disabled and people who engage in physical activity are likely to have disabilities for shorter periods of time than people who don't exercise.⁹

Intervention research shows that <u>several different types of exercise programs</u> <u>benefit older people</u>.

- Interventions and their effects vary, depending on the focus of the study. Some interventions focus on improving general aspects of physical function (strength, balance, aerobic fitness, gait speed, sway). Others focus on improving an older person's ability to perform specific tasks (walking, stair climbing). Some studies seek to link improvements in physical function or task performance to outcomes such as quality of life, hospitalization, health services use, or rate of falling. Others simply focus on a "proximate" outcome such as strength or balance. Across the board, these studies tend to use small sample sizes, ¹⁰ short follow-up periods and non-standardized outcome measures.¹¹ All of these factors limit cross-study, cross-intervention and cross-outcome comparisons.
- Progressive Resistance Training (PRT) interventions using weight machines, elastic bands or tubing can improve strength.¹⁰ PRT often focuses on balance, too. However, ambiguous research findings in this area are partly because individual studies measure balance in different ways, making conclusions difficult.^{11,12} Also, available studies have not shown a clear link between PRT as a stand-alone strategy and selected outcomes such as reduced disability or improved quality of life.¹⁰
- <u>Exercise programs</u> designed for older people living independently <u>can</u> <u>increase their normal and maximum walking speed</u>. Such programs must be "high intensity" or "high dosage" to be effective.¹³ This means the people exercising must work hard and that the exercise must occur several times a week.



METHODS

Staff searched four databases (Medline, CINAL, AgeLine and GreyLit) between January and May 2008 to locate meta-analyses and systematic reviews in the six key practice areas. The searches included evidence-based guidelines and individual studies where systematic reviews or meta-analyses were not available. Two project investigators reviewed titles and abstracts to identify articles for full review. Tables with information abstracted from the reviewed articles were prepared for the National Advisory Council and are available at http://champ-program.org/ framework/.

LIMITATIONS

Geriatric research is plentiful, but some topic areas lack a robust body of research evidence, even though expert guidelines may be available. Much research is descriptive, many intervention studies include small sample sizes, and evaluations often cannot isolate the effectiveness of individual intervention components due to reliance on multifaceted interventions and/or research design. In addition, relatively few rigorous research studies have focused on older adults in the home care setting. Thus generalizations about "what works best for whom" are necessarily limited, and it is possible that evidence about both the effectiveness of specific strategies and the relative value of different strategies will change as more research is done and more data become available.

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• <u>Multifaceted exercise programs can benefit older</u> <u>people</u>.¹⁴ Interventions that include strength, cardiovascular exercise, flexibility, and balance training have shown small, positive effects on physical function and quality of life. Their positive effects on fall prevention have been more pronounced (see Fall Prevention below).¹⁴

Additional research can further advance understanding of the benefits of exercise interventions for sick or frail older people living in the community. Many studies of exercise programs designed to improve motor function (gait, negotiating obstacles, and walking endurance) target only healthier adults. The studies specifically focused on frail older adults or the oldest old, have been conducted in nursing homes or have significant methodological limitations.¹⁵

Research tells us...

Fall Prevention

Numerous research studies suggest that multifaceted treatments and exercise may prevent falls. To be effective, fall prevention interventions should target people at high-risk, address factors driving this risk, and customize the intervention to specific complicating factors such as dementia. Many fall prevention activities seem like common sense. However, available evidence underscores the complex factors contributing to falls. The challenge is to identify the most effective prevention interventions.

Three out of four major reviews conducted since 2003 found that <u>various single component and multifaceted</u> <u>interventions reduced the number of people who fell</u> <u>and the number of times people fell.</u>¹⁶⁻¹⁸ A fourth review, conducted in 2008, did not find a benefit from a smaller number of more recent studies.

In 2003, 62 randomized controlled trials were identified that included 13 types of interventions ranging from exercise to home modification to nutrition.¹⁶ Overall, evidence of a small reduction in falls was found. <u>The ability to focus an intervention on factors underlying a specific individual's risk produced the best results.</u>

Data from 40 randomized controlled trials of single component and multifaceted interventions showed that, compared to normal care, both types of interventions reduced the rate and frequency of falls. <u>Multifaceted treatments and exercise were most effective.</u> In contrast, environmental modifications and education alone had no impact.

• Interventions promoting home modification include installing safety aids such as hand rails and reducing or eliminating poor lighting or trip hazards. These programs have demonstrated increased knowledge and use of hazard-reduction strategies by older people. However, they do not appear to translate into reductions in falls or fall-related injuries.¹⁹

A meta-analysis of 14 studies followed people for at least one year, comparing the effectiveness of multifaceted versus single component interventions. Fall reductions were similar for both (23 percent for single interventions and 22 percent for multifaceted interventions). <u>Effective interven-</u> tions either targeted a single intervention component to a common risk in the selected population or used a multifaceted approach to target an individual's specific risks.¹⁷

• A recent review of randomized fall prevention studies using interventions ranging from exercise to home modification to nutrition found no significant impact on the risk of falling or fall-related injuries.²⁰

More specialized studies have examined interventions to overcome fear of falling.

• Several different interventions (tai chi, exercise, multifaceted programs and hip protectors) reduced fears of falling.²¹ This is important because anxiety about falls may cause older people to restrict their activity, leading to future decline.

Ability to Walk at Home Care Admission*





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Two national fall-prevention guidelines combine research evidence and expert experience. The Guideline for the Prevention of Falls in Older Persons by the American Geriatric Society²² and A Clinical Guideline for Assessment and Prevention of Falls in Older People by the National Institute for Clinical Excellence²³ both recommend that:

- Clinicians routinely screen older people for risk of falls. People who report one fall should be evaluated further by observing how they walk and stand and/or using a standardized test such as a gait/speed test. A comprehensive fall assessment should be conducted for people (1) who have observable difficulties walking or score poorly on the standardized test, (2) who report multiple falls or (3) have suffered an injury from a fall.
- Multifaceted interventions should include medication review, exercise, treatment of low blood pressure and cardiovascular disorders, and environmental modifications.



Physical Function: Improvement by Discharge*

- Some interventions, such as education alone and walking, may be beneficial for other reasons but should not be employed as fall prevention strategies because the research to date has found that they do not reduce instances of falls.
- Organizations should adopt quality measures to foster falls assessment and falls prevention. For any older person with balance, sway, gait, strength or endurance problems, quality measures should specify exercise intervention and evaluation for an assistive device such as a cane or walker.²⁴

What are the implications for home health care practice?

Virtually all older home health care patients experience impairments in physical function related to chronic conditions or hospitalizations. Older people enter home health at a critical point in time – when they can decline further, improve, or stabilize following illness or injury. Functioning at the highest level possible is essential to quality of life and independence. Yet a significant portion of home care patients do not improve by the time they are discharged. To be sure that all patients improve as much as possible, home care therapists and nurses should incorporate currently available research evidence into practice. Specifically, they should:

- Establish physical activity goals that match abilities of their older patients and incorporate these goals into the care plan.
- Draw on expertise from multiple disciplines (nursing, physical therapy, occupational therapy) to develop and implement plans to improve physical function.
- Improve assessment of fall risk by asking older people if they have fallen and including a standardized performance-based measurement (e.g. gait speed) in all assessments. For people at high risk of falling, conduct a comprehensive assessment and implement a comprehensive care plan.
- Involve caregivers in setting physical function goals and provide them with the information and support they need to prompt or assist the older person.
- Engage direct care workers in helping patients with therapy and exercise.

Many exercise and most fall prevention interventions have been developed for older people living in the community. Although participants in these studies are often healthier than home health patients, it should be feasible to adapt the intensity and difficulty of these interventions to the needs and capacity of older persons receiving home health care.

The lack of scientific literature on physical function and fall prevention specific to home care limits the evidence base for both home care and geriatrics practice. Evidence about how to prevent falls among cognitively impaired older people also requires more study.²⁵ Given the importance of physical function in determining quality of life for older people and as an outcome for home health care, more work must be done. We must develop, adapt and test interventions designed to maximize physical function in older people recovering from illness or injury at home. And then, we must share the results.



For More Information

To learn more about CHAMP, the ongoing program to advance excellence in geriatric home health care, go to **http://champ-program.org/** or contact the Center at **212-609-6329**, **champ@vnsny.org**.

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References

- 1. Medicare Current Beneficiary Survey (MCBS). National Center for Health Statistics, Trends in Health and Aging; 2008. *Abstract*
- Alexander BH, Rivara FP, Wolf ME. The cost and frequency of hospitalization for fall-related injuries in older adults. Am J Public Health. Jul 1992;82(7):1020-1023. Abstract
- Centers for Disease Control and Prevention (CDC). National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) [online]: [cited 2007 Jan 15]; 2006. Abstract
- Stevens JA, Corso PS, Finkelstein EA, Miller TR. The costs of fatal and non-fatal falls among older adults. Inj Prev. Oct 2006;12(5):290-295. Abstract
- Agency for Healthcare Research and Quality, The Centers for Disease Control and Prevention. Physical Activity and Older Americans: Benefits and Strategies. June 2002. Abstract
- Murtaugh C, Peng T, Moore S, Maduro G. Unpublished data generated in producing: Assessing Home Health Care Quality for Post-Acute and Chronically Ill Patients. Final Report to Division of Disability, Aging and Long Term Care, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Service; 2008. *Abstract*
- Creditor MC. Hazards of hospitalization of the elderly. Ann Intern Med. Feb 1 1993;118(3):219-223. Abstract
- Ellenbecker CH, Samia L, Cushman JJ, Alster K. Patient safety and quality in home health care (chapter 13). In: Hughes, R. Patient Safety and Quality: An Evidence-Based Handbook. AHRQ Publication No. 08-0043. Washington, DC: 2008. Abstract
- Keysor JJ. Does late-life physical activity or exercise prevent or minimize disablement? A critical review of the scientific evidence. American Journal of Preventive Medicine. Oct 2003;25(3 Suppl 2):129-136. Abstract
- Latham N, Anderson C, Bennett D, Stretton C. Progressive resistance strength training for physical disability in older people. Cochrane Database of Systematic Reviews. 2003(2). *Abstract*
- Howe TE, Rochester L, Jackson A, Banks PMH, Blair VA. Exercise for improving balance in older people. Cochrane Database of Systematic Reviews. 2007;4. *Abstract*
- Orr R, Raymond, J., Singh, M.F. Efficacy of Progressive Resistance Training on Balance Performance in Older Adults: A Systematic Review of Randomized Controlled Trials. Sports Medicine. 2008;38(4):317-343. Abstract
- Lopopolo RB, Greco M, Sullivan D, Craik RL, Mangione KK. Effect of therapeutic exercise on gait speed in community-dwelling elderly people: a meta-analysis. Physical Therapy. Apr 2006;86(4):520-540. *Abstract*
- Baker MK, Atlantis E, Fiatarone Singh MA. Multi-modal exercise programs for older adults. Age & Ageing. Jul 2007;36(4):375-381. Abstract
- Mian OS, Baltzopoulos V, Minetti AE, Narici MV. The impact of physical training on locomotor function in older people. Sports Medicine. 2007;37(8):683-701. Abstract

- Gillespie LD, Gillespie WJ, Robertson MC, Lamb SE, Cumming RG, Rowe BH. Interventions for preventing falls in elderly people. Cochrane Database of Systematic Reviews. 2003 (4). Abstract
- Campbell AJ, Robertson MC. Rethinking individual and community fall prevention strategies: a meta-regression comparing single and multifactorial interventions. Age & Ageing. Nov 2007;36(6):656-662. Abstract
- Chang JT, Morton SC, Rubenstein LZ, et al. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials.[see comment]. BMJ. Mar 20 2004;328(7441):680. Abstract
- Lyons RA, John A, Brophy S, et al. Modification of the home environment for the reduction of injuries. Cochrane Database of Systematic Reviews. 2006(4):CD003600. *Abstract*
- Gates S, Fisher JD, Cooke MW, Carter YH, Lamb SE. Multifactorial assessment and targeted intervention for preventing falls and injuries among older people in community and emergency care settings: systematic review and metaanalysis. BMJ. 2008;336(7636):130-133. *Abstract*
- Zijlstra GAR, van Haastregt JCM, van Rossum E, van Eijk JTM, Yardley L, Kempen GIJM. Interventions to reduce fear of falling in community-living older people: a systematic review. Journal of the American Geriatrics Society. Apr 2007;55(4):603-615. Abstract
- 22. Guideline for the prevention of falls in older persons. American Geriatrics Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. 2001. Journal of the American Geriatrics Society 49(5): 664-72. Abstract
- National Institute for Clinical Excellence (NICE). Falls: The Assessment and Prevention of Falls in Older People. London November 2004. Abstract
- Rubenstein LZ, Powers CM, MacLean CH. Quality indicators for the management and prevention of falls and mobility problems in vulnerable elders. Annals of Internal Medicine. Oct 16 2001;135(8 Pt 2):686-693. Abstract
- Hauer K, Becker C, Lindemann U, Beyer N. Effectiveness of physical training on motor performance and fall prevention in cognitively impaired older persons: a systematic review. American Journal of Physical Medicine & Rehabilitation. Oct 2006;85(10):847-857. Abstract

Credit for Data in Charts

*Murtaugh C, Peng T, Moore S, Maduro G. Unpublished data generated in producing: Assessing Home Health Care Quality for Post-Acute and Chronically III Patients. Final Report to Division of Disability, Aging and Long Term Care, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Service; 2008. Report available at: http://www.aspe.hhs.gov/_/index.cfm

