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Preliminary Data from Community Aging in Place, Advancing Better Living for Elders, a Patient-Directed, Team-Based Intervention to Improve Physical Function and Decrease Nursing Home Utilization: The First 100 Individuals to Complete a Centers for Medicare and Medicaid Services Innovation Project

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Abstract

Current medical models frequently overlook functional limitations and the home environment even though they partially determine healthcare usage and quality of life. The Centers for Medicare and Medicaid Services (CMS) Innovation Center funds projects that have potential to affect the "triple aim," a framework for decreasing costs while improving health and quality of life. This article presents preliminary data from Community Aging in Place, Advancing Better Living for Elders (CAPABLE), a model funded by the CMS Innovation Center and designed to overcome the functional and home environmental barriers of older adults. CAPABLE is a patient-directed, team-based intervention comprising an occupational therapist, a registered nurse, and a handyman to decrease hospitalization and nursing home usage of community-dwelling older adults with functional limitations who are dually eligible for Medicare and Medicaid. Activity of daily living limitations improved in 79% of the first 100 people who completed the intervention. Preliminary findings of this novel intervention may have implications for other older adults with functional limitations.

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Keywords

models of care; health disparities; physical function

The Centers for Medicare and Medicaid Services (CMS) Innovation Center has funded projects across the country with the goal of achieving a triple aim: decrease costs and improve health care and quality of life. One such project funded through the CMS Innovation Center is a patient-directed, team-based intervention comprising an occupational therapist, a registered nurse, and a handyman working to decrease hospitalization and nursing home use of community-dwelling older adults with functional limitations who are dually eligible for Medicare and Medicaid.

Older adults with functional limitations use a vastly higher percentage of healthcare resources than those without functional limitations.[1] Despite this, clinicians under-treat function in routine medical practice because of lack of reimbursement, workforce training, and clinical practice barriers. Furthermore, the home environment, so important in the ability to function, is often overlooked in mainstream care models because care usually occurs in clinical settings. This article presents preliminary data on the first 100 individuals to complete a model funded by the CMS Innovation Center designed to overcome these barriers: Community Aging in Place, Advancing Better Living for Elders (CAPABLE).

DESCRIPTION OF THE MODEL

Theory- (person–environment fit[2]) and evidence-based practices inform CAPABLE. Adapted from the successful previously developed and tested Advancing Better Living for Elders program,[3–5] CAPABLE is a structured program that an occupational therapist (OT), a registered nurse (RN), and a handyman deliver in older adults' homes that is directed by functional goals that the older adult identifies as important. CAPABLE involves at most 10 home sessions each 60 to 90 minutes long over a 5-month period. CAPABLE draws on clinical approaches to enhance uptake and adoption of intervention strategies such as patient-centered care and motivational interviewing.[6–9] Each intervention participant receives every component of the intervention (assessment, education, interactive problem-solving), but clinicians clinically customize content to each participant's self-identified needs and goals.[10] CAPABLE was piloted in 2009,[11] and the protocol is described fully elsewhere.[12]

Occupational Therapist

In the first two home sessions, the OT meets with the participant and conducts a semistructured clinical interview[13] that helps the participant identify and prioritize problematic functional areas. For each of three areas that the participant prioritizes, the OT observes the participant's performance, evaluating it for safety, efficiency, difficulty, and presence of environmental barriers and supports. For example, if the participant identifies that it is difficult to get into the bathtub, the OT observes and may find that the participant is holding onto an unstable towel rack to get in or is clutching the flat wall. The OT also assesses the home for aspects that support or undermine participant function such as poorly

lit entrances, cracked concrete stairs, or unstable or unsafe flooring. The OT and participant discuss possible environmental modifications and assistive devices, which the OT synthesizes into a work order for the handyman that is prioritized in the order of the participant's functional goals. In each of the remaining sessions, using motivational interviewing and action planning, the OT and participant work on the participant's identified functional goals such as to get upstairs to sleep or stand long enough to cook. The home modifications occur within the first month so that the OT can help instruct the participant in their use to achieve the participant's goals. In the final OT session, the OT reviews all three goals, discusses what was achieved, and helps the participant to generalize the skills he or she has learned to other functional challenges.

Registered Nurse

The four RN visits start 1 month after the first OT visit. The RN also works on functional goals with the participant during the same 5 months, focusing on helping the participant identify whether and how pain, depression, strength and balance, medication management, and ability to communicate with the primary care provider affect daily function. The RN does not focus on adherence to medical regimens unless this is a participant-identified goal, which underscores the critical CAPABLE value that engagement is more likely when participants are working on their own priorities.[14] As in the first OT session, the RN uses a semistructured interview to help the participant identify and prioritize goals related to the nursing domains mentioned above.[15] In the next three visits, the RN and the participant work on the goals. In each session, the RN reinforces strategies used, reviews problem-solving, and refines strategies. A common example of what the RN might implement based on participant goals is simple Otago-based exercises[16] to help the participant improve strength while concurrently focusing on pain management so the participant can walk upstairs to sleep in bed instead of on the couch. In the final (fourth) session, the RN reviews the participant's effective strategies and helps generalize them to future challenges.

Handyman

Civic Works, an AmeriCorps site located in Baltimore, contracts for and delivers the handyman portion of CAPABLE. The handyman visits the participant's home to measure and determine what equipment is necessary and returns within a few weeks to complete the agreed-upon work order. Common fixes include installing a railing on each side of the stairs or grab bars at the participant's height in the shower and repairing broken flooring. The home modification budget is up to $1,300 per household based on expenditures in the CAPABLE pilot study.[11] For a summary of the 10-most commonly prioritized modifications and repairs, see Table 1.

Coordination Between Team Members

The OTs and the RNs (hereafter called clinicians) are located in the same office building, which allows for on-going communication and informal case sharing in addition to formal biweekly clinician meetings to discuss particularly challenging or illustrative cases. One of the OTs has a lower participant load to enable coordination with the lead handyman. The handyman often calls whichever OT is working with a particular participant with questions that arise while implementing the work order.

CAPABLE INNOVATION AWARD

Funded in 2012 by the CMS Innovation Center, CAPABLE is being tested as a way to decrease hospitalizations and nursing home admissions. It could be scaled up nationally through home- and community-based service waivers (commonly called Medicaid waivers). If CMS actuaries conclude that CAPABLE saves money while improving quality of life, CAPABLE could become a Medicaid benefit.

The setting for the CAPABLE Study is Baltimore, Maryland, and its surrounding counties. The challenge the model seeks to address is functional decline in older adults. Although older adults desire to age at home, declining function poses a threat, yet there is no systematic assessment of the ways in which older adults' medical conditions interact with their home environment to impede their function. The CAPABLE model exists outside of the primary care system but is designed to be integrated as a referral from primary care, health departments, or home health providers.

Participant Population

Participants were recruited mainly through letters sent on behalf of the state Medicaid director containing a response card that interested older adults or family members could return to the study team. Eligible CAPABLE participants are aged 65 and older, are eligible for Medicaid or at risk for Medicaid because their income is low enough to qualify for partial Medicaid (Qualified Medicare Beneficiary Program, Specified Low-Income Medicare Beneficiary Program), and report some difficulty or worse with at least one activity of daily living (ADL; bathing, grooming, transferring, toileting, eating, walking across a small room). Other inclusion criteria include living in a house, being cognitively intact (Mini-Mental State Examination score ≥24), not currently receiving nursing or occupational therapy home care, and not hospitalized more than three times in the prior 12 months. Participants do not have to be home bound to be eligible for CAPABLE. Table 2 displays demographic data at baseline for the first 100 participants. They had an average of 3.5 home hazards at baseline (e.g., slippery rugs, low toilet seats, missing handrails.

Preliminary Results

Data are presented for the first 100 CAPABLE Innovation award enrollees who completed their 5-month postenrollment reassessment (Figure 1). This does not include the 11% of the sample it was not possible to reassess because seven withdrew, one died, and four were lost to follow-up. At baseline, participants reported some to a lot of difficulty in an average of 4.1 ± 2.0 of a possible eight ADLs.[17] This was reduced to 2.2 ± 2.1 ADLS at 5 months. Thus, the number of ADLs for which they were having difficulty was reduced by almost 50%. The number of instrumental ADLs (IADLs)[18] participants reported having difficulty with were reduced from a mean of 4.1 ± 2.2 to 3.1 ± 2.2 at follow-up. CAPABLE tripled the percentage of people who reported no difficulty with walking and increased by 50% the number who said they had no difficulty in self-care. The number of people who reported no difficulty with performing their usual activities more than doubled from baseline to reassessment. For those with depressive symptoms at the baseline visit (Patient Health Questionnaire-9 score ≥5, n = 60), depressive symptoms were reduced from an average

severity score of 10.1 to 6.3; a magnitude of difference that is clinically significant.[19] Home hazards were decreased by half from 3.5 ± 2.0 to 1.5 ± 1.3.

Outcomes have been examined quarterly for the CMS Innovation Center. The magnitude of these observed effects on disability, depressive symptoms, and home hazards has been stable since the first quarter. Data on CAPABLE's effects on hospitalization are incomplete. Of those currently enrolled, 37% reported being hospitalized in the year before enrollment in CAPABLE, and 12.4% were hospitalized during 5 months of enrollment. None of the 100 individuals who completed the program have moved to a nursing home. The overall cost for each clinical visit, mileage reimbursement, parts and labor for the home modifications, repairs and assistive devices, and clinical coordination between the clinicians averages $3,300.

Other Assessments

In addition to the CMS Innovation demonstration described here, a randomized controlled trial (NIAR01AG04011) of CAPABLE is being conducted. The randomized controlled trial will allow more-rigorous assessment of whether CAPABLE resulted in lower healthcare costs than in a predetermined randomly selected control group.

Lessons Learned

The 5-month time frame of the CAPABLE intervention in supporting older adults' functional goals may not be long enough for all participants. It may be important to titrate intervention length depending on functional concerns and health status. This could be accomplished with follow-up assessment telephone calls that could result in in-person visits, if needed.

There are few challenges in implementing CAPABLE. The most important one is training clinicians to focus on participants' own functional goals rather than medically determined disease management goals or imposing their own. Once clinicians fully embrace a participant-directed perspective, they observe over the 5-month time frame the power of the participant directing the course of the intervention and become more comfortable moving forward with other participants in this way.

The program includes three novel aspects. First, it is patient directed, not just patient centered. Second, a nurse, OT, and handyman work as a team to help participants achieve their functional goals. Third, CAPABLE invests healthcare dollars in the home environment to save healthcare expenses. Because there have been few interventions that improve physical function in functionally limited older adults, it may be that one or more of these novel aspects are responsible. Although the fiscal return on investment is most relevant to Medicaid, it is likely that these preliminary findings are relevant to functionally impaired older adults not receiving Medicaid. If future CAPABLE studies find cost savings, the results may be of interest to insurers and individuals.

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References

1. Alecxih, L.; Shen, S.; Chan, I., et al. Individuals Living in the Community with Chronic Conditions and Functional Limitations: A Closer Look. Falls Church, VA: The Lewin Group; 2010.
2. Lawton, MP.; Nahemow, L. Ecology and the aging process. In: Eisdorfer, C.; Lawton, MP., editors. The Psychology of Adult Development and Aging. Washington, DC: American Psychological Association; 1973. p. 619-674.
3. Gitlin LN, Hauck WW, Winter L, et al. Effect of an in-home occupational and physical therapy intervention on reducing mortality in functionally vulnerable older people: Preliminary findings. J Am Geriatr Soc. 2006; 54:950–955. [PubMed: 16776791]
4. Gitlin LN, Hauck WW, Dennis MP, et al. Long-term effect on mortality of a home intervention that reduces functional difficulties in older adults: Results from a randomized trial. J Am Geriatr Soc. 2009; 57:476–481. [PubMed: 19187417]
5. Jutkowitz E, Gitlin LN, Pizzi LT, et al. Cost effectiveness of a home-based intervention that helps functionally vulnerable older adults age in place at home. J Aging Res. 2012; 2012:680265. [PubMed: 21876812]
6. Reuben DB. Better care for older people with chronic diseases: An emerging vision. JAMA. 2007; 298:2673–2674. [PubMed: 18073365]
7. Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. Am J Health Promot. 1997; 12:38–48. [PubMed: 10170434]
8. Von Korff M, Gruman J, Schaefer J, et al. Collaborative management of chronic illness. Ann Intern Med. 1997; 127:1097–1102. [PubMed: 9412313]
9. Richards KC, Enderlin CA, Beck C, et al. Tailored biobehavioral interventions: A literature review and synthesis. Res Theory Nurs Pract. 2007; 21:271–285. [PubMed: 18236771]
10. Reuben DB, Tinetti ME. Goal-oriented patient care—an alternative health outcomes paradigm. N Engl J Med. 2012; 366:777–779. [PubMed: 22375966]
11. Szanton SL, Thorpe RJ, Boyd C, et al. Community aging in place, advancing better living for elders: A bio-behavioral-environmental intervention to improve function and health-related quality of life in disabled older adults. J Am Geriatr Soc. 2011; 59:2314–2320. [PubMed: 22091738]
12. Szanton SL, Wolff JW, Leff B, et al. CAPABLE trial: A randomized controlled trial of nurse, occupational therapist and handyman to reduce disability among older adults: Rationale and design. Contemp Clin Trials. 2014; 38:102–112. [PubMed: 24685996]
13. Petersson I, Fisher AG, Hemmingsson H, et al. The client-clinician assessment protocol (C-CAP): Evaluation of its psychometric properties for use with people aging with disabilities in need of home modifications. OTJR (Thorofare N J). 2007; 27:140–148.

14. Hibbard JH, Mahoney ER, Stock R, et al. Do increases in patient activation result in improved self-management behaviors? Health Serv Res. 2007; 42:1443–1463. [PubMed: 17610432]
15. Pho AT, Tanner EK, Roth J, et al. Nursing strategies for promoting and maintaining function among community-living older adults: The CAPABLE intervention. Geriatr Nurs. 2012; 33:439–445. [PubMed: 22651978]
16. Thomas S, Mackintosh S, Halbert J. Does the 'Otago exercise programme' reduce mortality and falls in older adults? A systematic review and meta-analysis. Age Ageing. 2010; 39:681–687. [PubMed: 20817938]
17. Katz S, Ford AB, Moskowitz RW, et al. Studies of illness in the aged. The index of ADL: A standardized measure of biological and psychosocial function. JAMA. 1963; 185:914–919. [PubMed: 14044222]
18. Lawton MP, Brody EM. Assessment of older people: Self-maintaining and instrumental activities of daily living. Gerontologist. 1969; 9:179–186. [PubMed: 5349366]
19. Lamers F, Jonkers CC, Bosma H, et al. Summed score of the Patient Health Questionnaire-9 was a reliable and valid method for depression screening in chronically ill elderly patients. J Clin Epidemiol. 2008; 61:679–687. [PubMed: 18538262]

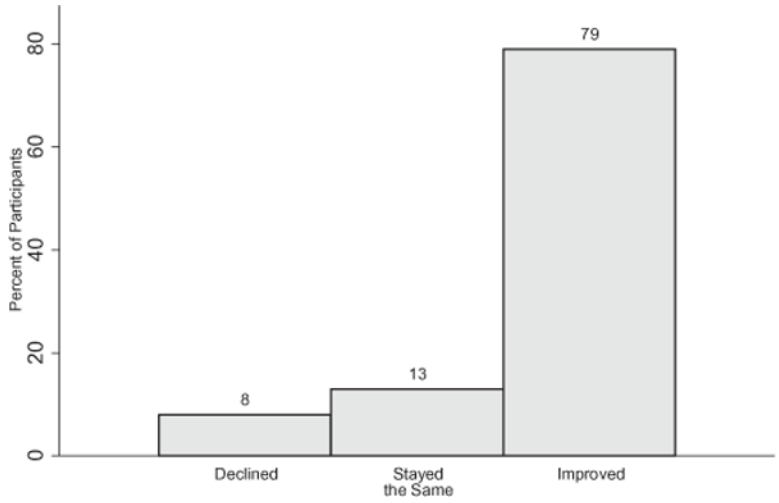

Figure 1.

Change in activity of daily living status at 5-month reassessment for the first 100 individuals to complete Community Aging in Place, Advancing Better Living for Elders.

Table 1

Top Ten Common Repairs or Modifications to Support Functional Goals of Community Aging in Place, Advancing Better Living for Elders Participants

Install railings in stairwells
Install or tighten railings at home entrances
Install grab bars in tub area
Install nonskid safety treads for tub or shower floor or supply rubber bath mats
Improve lighting (repairs, motion sensor lights, bulbs)
Repair holes, broken tiles, or tears in linoleum flooring
Install raised toilet seats
Add chain extensions to ceiling fans and lights
Install flexible shower hoses
Install doorbells

Table 2

Demographic and Clinical Data for First 100 Individuals Who Completed Community Aging in Place, Advancing Better Living for Elders at Baseline Visit

Characteristic	Value
Age, mean ± SD	74.1 ± 6.9
Race, %	
Black	83
White	15
Other	2
Female, %	87
Education, %	
<High school	42
High school or General Educational Development	48
Bachelor's degree	10
Live alone, %	49
Hospitalization in prior year, %	37
Moderate to severe pain, %	89
Chronic conditions, mean ± SD	3.5 ± 1.3
Number of activity of daily living difficulties, mean ± SD	4.1 ± 2.0

SD = standard deviation.