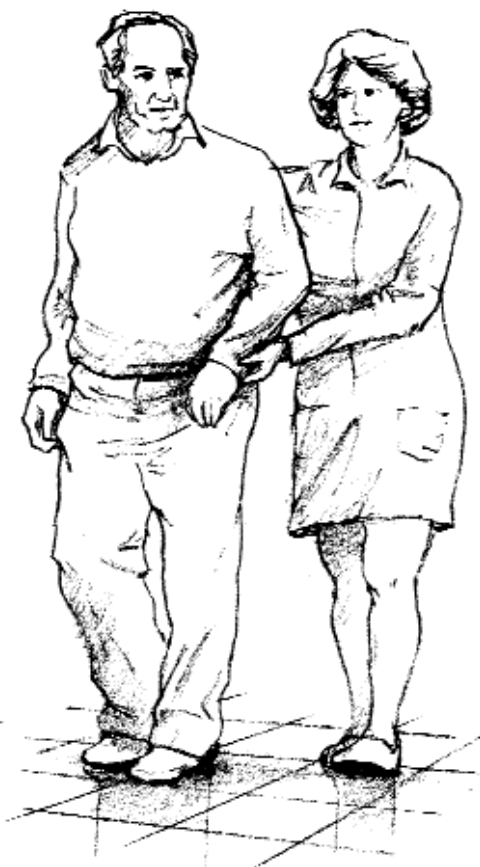




## Canes, Crutches and Home Care Services: The Interplay of Human and Technological Assistance

This brief reports the results of a study investigating the efficacy of canes, crutches, walkers, and wheelchairs for people who need assistance with everyday activities and asks the question, does low assistive technology replace human help for people with disabilities? Study results show that canes and crutches are low cost, versatile aids that can partially substitute for human assistance by reducing the overall number of hours of care required. They can also reduce out-of-pocket expenses for supportive services. Walkers and wheelchairs, on the other hand, appear to supplement, rather than substitute for, human assistance. The brief concludes by recommending that greater use of canes and crutches be actively encouraged to increase the independence of people who need help with daily activities.



*This?*



*Or This?*

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## The Problem: How to Provide Care at Home

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As the population ages and medical advances continue to lengthen human life expectancy, the demand for supportive services to keep people with health problems at home will grow. Today the majority of people who need help receive it from their families, who are clearly the greatest protection against the public costs of care. However, social trends, including high divorce rates, more women working outside the home, and decreases in family size, suggest that family caregivers may not be as viable a home care resource in future decades as they are today.

Paid home care services provide help when family members cannot meet an individual's need for care. However, the expense of paid home care may make this an unrealistic option for many. Therefore, as projections of need for long-term care escalate, the costs of care are a major concern to both families

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1 Russell, J., Hendershot, G., LeClere, F., Howie, L., & Adler, M. (1997). "Trends and differential use of assistive technology devices: United States, 1994." *Advance data from vital and health statistics*, no. 292. Hyattsville, MD: National Center for Health Statistics.

2 Manton, K.G., Corder L., & Stallard, E. (1993). "Changes in the use of personal assistance and special equipment from 1982 to 1989: Results from the 1982 and 1989 NLTCs." *The Gerontologist*, 33, 168-176.

3 Norburn, J.E., Bernard, S.L., Konrad, T.R., Woomert, A., DeFries G.H., Kalsbeek, W.D., Koch, G.G., & Ory, M.G. (1995). "Self-care and assistance from others in coping with functional status limitations among a national sample of older adults." *Journal of Gerontology*, 50B, S101-S109.

4 Agree, E. (1999). "The influence of personal care and assistive devices on the measurement of disability." *Social Science and Medicine*, 48, 427-443.

5 Agree, E., & Freedman, V. (2000). "Incorporating assistive devices into community-based long-term care: An analysis of the potential for substitution and supplementation." *Journal of Aging and Health*, 12, 426-450.

and public payers — particularly the Medicaid program, the major source of funding for both community-based and institutional long-term care.

*The recent Olmstead decision, in which the Supreme Court affirmed the right of people with disability to live in the community with appropriate supports, provides an additional incentive to develop home care options that are both efficient and effective. It is equally important that such options respond to peoples' nearly universal preference to be as independent as possible despite disability.*

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## One Possible Solution: Technological Assistance

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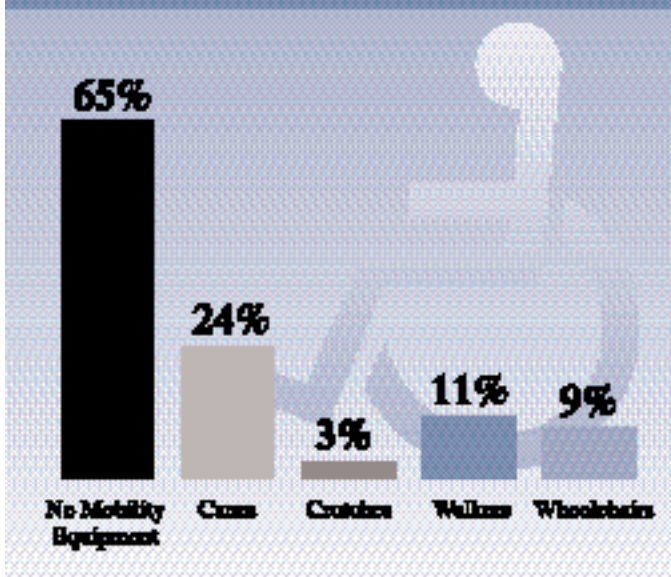
Technological assistance may provide such an option. This policy brief reports the results of research investigating the use of mobility equipment as a helping resource for adults with limitations in mobility and daily living activities. The potential for substitution of mobility equipment for human assistance is the major focus of this study. Because mobility equipment is efficient—initial cost is low and need for replacement infrequent—substituting such aids for human help may substantially reduce family and public burden, while also promoting the autonomy of the individual.

Research on technological assistance is in its early stages. However, some important findings from the field are included below:

- 7.4 million Americans used some form of mobility equipment in 1994, by far the most prevalent

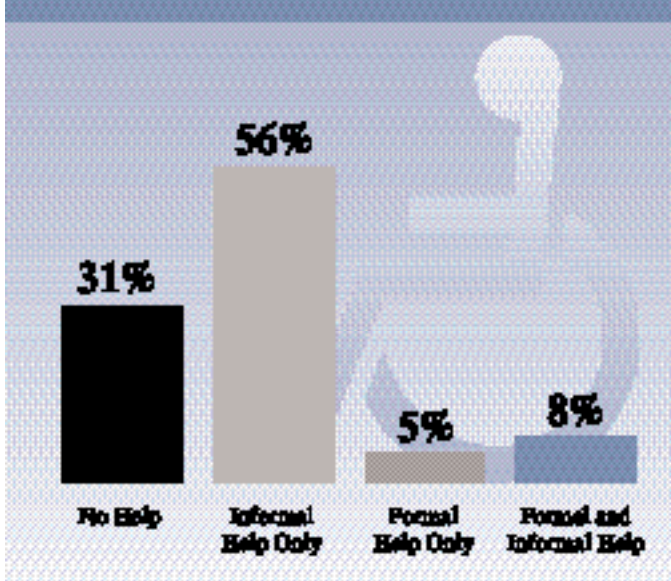
**Figure 1:**

**Use of Mobility Equipment by Adults with Limitations in Mobility and Daily Living Activities**



**Figure 2:**

**Human Help Received by Adults with Limitations in Mobility and Daily Living Activities**



type of assistive technology in use. Use of mobility equipment increased substantially between 1980 and 1994, including a 37% increase in the use of canes, a 70% increase in the use of walkers, and an 83% increase in the use of wheelchairs.<sup>1</sup>

- The number of people whose only form of assistance was human help decreased during a comparable time period (1982-1989), as more severely impaired individuals began to supplement their personal care with technical aids.<sup>2</sup>
- Elderly people who live alone are more likely to use technical aids and home modifications to minimize the effect of functional limitations than are people who live with family and/or friends, suggesting the possibility that technology substitutes for family care.<sup>3</sup>
- People whose only form of assistance is equipment report less difficulty in performing daily living tasks than do people who receive human help, whether they receive only human help or human help in combination with special equipment. However, this becomes less true as an individual's level of impairment increases in severity.<sup>4,5</sup>

Recent trends suggest that Americans with health problems have already begun to recognize the usefulness of mobility equipment and other technical aids as a helping resource. The objective of this study is to determine whether such technical assistance can actually substitute for human assistance. If so, the implications for policy and practice are substantial.

## Study Findings

### How many people use what kind of help?

Despite the fact that all the people in this study have limitations in mobility and daily living tasks, only slightly more than one third use mobility equipment. Canes and walkers were the most frequently used items. See Figure 1 for details.

Many more people (about two thirds of this study sample) report having human help. Figure 2 shows patterns of informal and formal assistance.

### Are people who use mobility equipment less likely to have a caregiver?

**No**, we did not find evidence of total substitution of mobility equipment for human help in this study. In fact, people who use any type of mobility equipment are more likely to have human help than people who do not use mobility equipment.

### Do people who use mobility equipment have fewer hours of human help?

**Yes**, we found evidence of partial substitution of mobility equipment for human help. People who use canes are likely to use approximately one less hour of formal help and nearly four fewer hours of informal help per week. Also, use of crutches saves about two hours of formal help and nine hours of informal help per week. People who use walkers and wheelchairs, on the other hand, receive more hours of both formal and informal help.

### Do people who use mobility equipment require human help with fewer tasks?

**Yes**, study results also point to the efficacy of canes and crutches in reducing the number of daily living tasks for which human help is required. Supporting analyses indicate that canes and crutches can completely substitute for human help with some tasks, particularly with toileting and transferring in and out of bed and chairs, activities for which the ability to balance is essential. However, use of canes and crutches does not substitute for human help with more complex activities such as housework and shopping, and use of walkers and wheelchairs is related to the receipt of human help with more, rather than fewer, daily living tasks.

### Does use of mobility equipment result in lower out-of-pocket costs for paid helping services?

**Yes**, compared to people with physical limitations who do not use mobility equipment, people who use canes and crutches save about \$70 a year in out-of-pocket costs for paid helping services (the average for sample members who used services was \$561 per year). In the Disability Followback Survey (DFS), out-of-pocket cost information was collected for four services related to mobility and daily living tasks, namely, transportation services, adult day care, personal care attendant services, and independent living services.

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## Conclusions

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- Canes and crutches are low cost, versatile aids that can partially substitute for human assistance by reducing the overall number of hours of care required. Furthermore, canes and crutches can completely substitute for some tasks, particularly tasks of a simple nature that require the ability to balance.
- In addition to their relatively low cost, canes and crutches can also reduce out-of-pocket costs for paid supportive services.
- Use of walkers and wheelchairs appears to supplement, rather than substitute for, human assistance. Use of these more complex types of equipment appears to indicate a higher level of need for human help that is unlikely to be offset by mobility equipment alone.

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## Implications for Policy and Practice

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Use of mobility equipment in this study is relatively low, despite the fact that all study members have limitations in mobility and daily living tasks. The data suggest that such people are likely to depend on friends and relatives instead, or formal helpers in the absence of informal support, and may not realize the unnecessary loss of autonomy associated with this “choice.”

## Study Methods

- Data for this research were collected as part of the Disability Followback Survey (DFS), Phase II of the Disability Supplement to the 1994 and 1995 National Health Interview Survey. The DFS was designed to yield in-depth information on disability-related issues, including home care needs and unmet needs, and use of health care and supportive services.
- From the full DFS sample of 25,805 adults age 18 and older with a variety of health conditions and disabilities, a total of 9,230 adults who reported a mobility limitation and limitation in performing at least one out of thirteen possible daily living activities were selected for this study.
- Use of four types of mobility equipment was examined, including canes, crutches, walkers, and wheelchairs. Use of human help, both informal (family) and formal (paid help), was also studied.
- Data were analyzed to determine whether there was complete substitution of mobility equipment for human help (i.e., are people who use mobility equipment less likely to have a caregiver?), as well as partial substitution (i.e., do people who use mobility equipment have fewer hours of human help? And, do people who use mobility equipment require human help with fewer tasks?). We also tested whether use of mobility equipment results in lower out-of-pocket costs for paid helping services.
- All analyses held constant the effects of severity of functional limitation, the availability of human help, and other indicators.

**Several steps could be taken to eliminate barriers to this promising home care resource:**

- **Policy Change.** Facilitate access to canes and crutches through the Medicare and Medicaid programs by eliminating requirements of physician authorization. Social workers, case managers, discharge planners, family members and people with disabilities themselves should have the authority to determine need for canes and crutches to assist mobility and aid performance of daily living activities.
- **Provider Initiatives.** Educate health care and social service providers to encourage their patients and clients with physical limitations to use canes

and crutches. This low cost, highly versatile assistive technology should be recommended as a form of secondary prevention rather than as a part of crisis management.

- **Public Health Interventions.** Media campaigns can both disseminate information about the relatively easy availability of canes and crutches, and also reduce stigma associated with their use. Transforming the message “Canes are for old people” into “Canes are Cool!” may promote greater autonomy and quality of life for people with disability while reducing the monetary and opportunity costs of care.

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For more information about this study, see Allen, S.M., Foster, A., and Berg, K. (2001) “Receiving help at home: The interplay of human and technological assistance.” *Journal of Gerontology: Social Sciences* 56 B(6): S1-S9

Illustrations rendered by Thomas Draplin



**THE HOME CARE RESEARCH INITIATIVE:**  
A PROGRAM OF THE  
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FOUNDATION  
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The Home Care Research Initiative, a program of The Robert Wood Johnson Foundation, was established to support research and analysis that will improve the knowledge base underlying home care policy and practice. It is based at the Center for Home Care Policy and Research at the Visiting Nurse Service of NY.

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