Published in final edited form as:
Health Aff (Millwood). 2011 July ; 30(7): 1366–1374. doi:10.1377/hlthaff.2011.0150.

THE CARE SPAN: Medicaid Savings Resulted When Community Health Workers Matched Those With Needs To Home And Community Care

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The Affordable Care Act of 2010 builds on earlier efforts to expand home and community-based alternatives to institutional long term care. Identifying people living in the community who have unmet long-term care needs and who may be at risk for entering nursing homes may be crucial to these efforts. The Arkansas Community Connector Program used specially trained community health care workers to identify such people in three disadvantaged counties and connect them to Medicaid home and community-based services. The result was a 23.8 percent average reduction in annual Medicaid spending per participant during the period 2005–08. Net three-year savings to the Arkansas Medicaid program equaled $2.619 million. Similar interventions may help other localities achieve cost-saving and equitable access to publicly funded long-term care options other than institutional care.

Increasing demand for long-term care services in the United States is imminent as the baby-boom generation ages.[1,2] Current projections indicate that by 2020, annual federal and state government spending for long-term care services will be in the range of $132–$140 billion, and state Medicaid programs will contribute 57–63 percent of those funds.[3] The largest portion of Medicaid spending will finance nursing home care.[4]

In an effort to "bend the curve" in long-term care costs and address consumers' preferences and court rulings,[5–7] the Affordable Care Act of 2010 included a number of provisions to expand publicly funded home and community-based services as alternatives to nursing home care.[8] These alternatives include such services as personal care, home modifications, and durable medical equipment that assist people with performing activities of daily living, such as eating, bathing, dressing, and using the toilet, so they can continue to reside in community settings. Because these services do not include room and board costs associated with nursing homes and may be delivered by staff with lower-level skills and who earn lower wages, home and community-based services have the potential to reduce long-term care costs. However, the cost effectiveness of such services has been mixed.[9–13]

Cost increases found to be associated with home and community-based services are thought to result from a "woodwork effect." That is, people unlikely to enter nursing homes even in the absence of noninstitutional options come "out of the woodwork" to take advantage of publicly funded home and community-based services, thereby incurring service costs while not reducing nursing home spending.[9] In other words, some people who end up using home and community-based services are not at high risk for institutionalization.

What may be needed is targeted outreach to people who are at risk of nursing home placement in the near term and who would benefit from home and community-based services. Research has shown that up to 12 percent of nursing home residents have mild -to-moderate functional limitations that could be managed effectively in home and community-based settings.[14] Research also has shown that 58 percent of elderly who have functional limitations and are dually eligible for Medicare and Medicaid report unmet long-term care

needs.[15] In addition, blacks are significantly more likely than whites to have unmet long-term care needs.[16]

A variety of programs have tested mechanisms for better matching the needs of long-term care recipients with community-based services and supports, including the National Long-Term Care Channeling Demonstration, the Cash and Counseling Demonstration, and the Program of All-Inclusive Care for the Elderly (PACE). These programs all used some form of case management -- combined in some cases with financial controls such as capitated payment or spending plans – to encourage appropriate matching of service delivery to care needs.

Studies of these programs have found strong evidence of positive effects on access to and use of home and community-based services and patients' satisfaction with care. In some cases, there was evidence of improved health status and reduced use of nursing homes as well. However, these studies found no evidence of overall cost savings.[9, 17–19] At the same time, these studies were designed to examine the impact of case management mechanisms and care management approaches that are applied once participants are identified, recruited, and enrolled in programs. We are not aware of any studies that have formally evaluated the effect of the initial mechanisms used for identifying and recruiting people in the community who are at risk for entering nursing homes or the use of targeted outreach for them.

More effective methods of identifying people at risk of entering nursing homes and linking them with appropriate home and community based services could achieve a better match between long-term care needs and service delivery. This, in turn, could reduce long-term care spending. Recognizing this possibility, Arkansas implemented the Community Connector Program, a novel Medicaid demonstration program that uses community health workers for targeted outreach to adults living in the community who have unmet long-term care needs.[20] This study investigates the program's effects on Medicaid long-term care service use and spending among the disabled elderly and on other, younger adults with disabilities.

The Community Connector Program

In 2005 Arkansas Medicaid, with support from the Robert Wood Johnson Foundation, funded the Tri-County Rural Health Network, a community-based nonprofit organization, to implement the Community Connector Program in a three-year (2005–08), three-county demonstration.[20] The intervention counties–Monroe, Lee, and Phillips Counties, Arkansas–lie within the heart of the Mississippi delta region. This region has perhaps the highest level of disparity in the United States with regard to health and health care because of a confluence of its rural location, disproportionately minority population, high rates of poverty, and concentration of aged and disabled people, resulting in part from a decades-long trend of younger and able-bodied residents' moving elsewhere.[21]

The Community Connector Program employs approximately six full-time community health workers to provide home and community-based long-term care outreach. It first identifies Medicaid-eligible adults with unmet long-term care needs and then "connects" them to agencies offering needed services. Research has shown that community health workers are effective in reaching underserved populations,[22–24] facilitating access to services, and promoting healthy behavior.[25–28] However, before this demonstration project, to our knowledge, no programs had used community health workers specifically for the purpose of providing targeted outreach to residents in need of home and community-based long-term care services.

The program sought community health workers who had at least a high school education, exemplified strong leadership skills, had knowledge of the targeted communities, and maintained a good relationship with the residents. Once hired, the workers received extensive initial and ongoing training in the program, covering such topics as how to identify and contact people in need; availability and eligibility criteria for services to ensure appropriate referrals; program record keeping; and confidentiality of records.

The community health workers identified Medicaid-eligible elderly and younger adults with physical disabilities who had potential unmet long-term care needs through a variety of techniques. They canvassed the community, going door to door, and passed out program literature at events. They received formal referrals from physicians, staff at county public health units, and hospital discharge planners and informal referrals from family, friends, and church leaders. The community workers then screened the identified individuals for unmet long-term care needs using self-reported characteristics and Arkansas Medicaid's criteria for nursing home admission, which includes assessing limitations in activities of daily living. In addition, the workers assessed interest in, and eligibility for, available services. Final need and eligibility determinations were later made by Arkansas Medicaid.

People identified as being eligible for Medicaid but not enrolled were first referred to Medicaid for enrollment. Those identified during screening as having unmet long-term care needs were informed of available long-term care options, including available home and community-based services, and were then connected to agencies offering such services. Community health workers followed up with those who were referred to agencies for services, and they provided assistance to those having difficulty navigating the system.

Thus, the community health workers attempted to increase consumers' knowledge and access by providing information about available home and community-based services and eligibility requirements for those services. These health workers often had existing relationships as peers, friends, neighbors, or relatives of those whom they served. Also, they shared similar socioeconomic status and race or ethnicity with those they served. This familiarity enabled the workers to operate within the context of prevailing social norms regarding what sources of knowledge are trusted and sought for advice, and it gave them a deep understanding of cultural norms related to family burden and caregiving expectations.

The community health workers were also well versed in the array of home and community-based services and other long-term care options, as well as the eligibility criteria for each. This enabled them to match available services to individuals' specific unmet long-term care needs.

Finally, the community health workers spent their days in the community, seeking out people with unmet long-term care needs–not sitting in an office, relying on people to come in or be referred to them.

Study Data And Methods

Research Design

Using a longitudinal, quasi-experimental research design, an intervention group of 919 Medicaid recipients served by the Community Connector Program for three years (2005–08), in three intervention counties, was observed before and after program enrollment and compared with a statistically matched, contemporaneous group of 944 Medicaid recipients located in five nearby counties (Ashley, Chicot, Desha, Drew, and Lincoln).

Evaluating program impact using a random assignment research design was not feasible because of the community-level design of the program and the limited resources available for implementation. Therefore, we used propensity score matching[29] to achieve approximate equivalence between the intervention and comparison groups. We tested the hypothesis that Community Connector Program participants experienced larger growth in the use of and spending for Medicaid home and community-based services, and smaller growth in overall Medicaid spending, compared to comparison-group members.

Study Measures

Annual measures for use of Medicaid services and spending for inpatient and outpatient medical services, nursing home services, home and community-based services, and other services were constructed from Medicaid records for each member of the intervention and comparison groups, and for each year before and after enrollment. Spending for outpatient prescription drugs was excluded because policy changes were implemented during the study period that resulted in important changes in drug spending unrelated to the program. Because spending measures were constructed from Medicaid records, they did not include Medicare payments for recipients who were eligible for both Medicaid and Medicare. Measures reflecting demographic and diagnostic characteristics were also constructed from Medicaid records.

Data Analysis

To construct the matched comparison group, we calculated a propensity score for each Community Connector Program participant and each Medicaid recipient in the comparison counties. We used logistic regression to estimate the likelihood of program participation as a function of demographics, health and functional characteristics, and Medicaid spending during the year prior to program participation. Each program participant was matched with a Comparison group member having the nearest propensity score within 0.05. We used chi-square tests and t tests to evaluate differences between the two groups.

Difference-in-difference analysis was used to profile changes in Medicaid spending for program participants before and after the intervention, and those estimates were compared with similar before-and-after changes in spending observed in the matched comparison group. This method controlled implicitly for any unmeasured differences between the groups that remained constant over the study period, thereby preventing these unmeasured differences from biasing the estimates of program impact.

As additional protection against estimation bias, multivariate regression techniques were used to adjust for possible differences between the groups in characteristics that changed during the study period. The regression models were estimated using a random-effects specification to account for repeated measures on the same individuals over time, and using a two-part, semi-logarithmic specification to address the extensive skewness commonly found in spending measures.

Limitations The results of this study may be limited by use of the propensity score method, which cannot account for systematic differences between the intervention and comparison groups that are not fully known and not fully observed (for example, all health conditions, living situation, or community supports). To minimize the risk of this estimation bias, in addition to the propensity score technique, a difference-in-difference analysis was used to control implicitly for any unmeasured differences between the groups that remained constant over the study period, and multivariate regression techniques were used to adjust for possible differences between the groups in characteristics that changed during the study

period. This combined approach limits this study's vulnerability to bias arising from systematic differences between the intervention and the matched comparison group.

Results were also limited to the 63 percent of Community Connector Program participants for whom records were successfully linked with Medicaid records. This limited the representativeness of results to all 1,473 eligible program participants. Reasons for failure to link records may include incorrect identifying information provided by program participants and clerical errors made by staff in capturing identifying information about program participants. These errors were probably randomly distributed, minimizing the likelihood of introducing bias into the estimates of program impact. (See the online Appendix for a full description of the methods.)[30]

Study Results

The Community Connector Program screened 2,122 adults for their long-term care needs in 2005–08. Among these, 69 percent (n= 1,473) were found to be in need of services. Of these 1,473 people, records for 63 percent of them (n=919) were matched with records of Medicaid beneficiaries (ranging from a 52 percent match rate in year one to a 71 percent match rate in year three).

Participants' Characteristics

Program participants were predominantly female and black, and they averaged 66.3 years of age. More than half were eligible for Medicaid through the blind or disabled eligibility categories, and one-third were eligible through the aged category; few were eligible through poverty-related categories. More than half of the participants were dually eligible for Medicare. Two-thirds of the participants were eligible for Medicaid in the year prior to their program participation. On average, participants had been enrolled in Medicaid for six years at the time they enrolled in the Community Connector Program. Seventeen percent of program participants were already enrolled in one of two Medicaid home and community-based services programs. Interestingly, only 10 percent had positive Medicaid spending during the year before their program participation, and these participants disproportionately represented Medicaid home and community-based services program enrollees. The average Charlson comorbidity index score[31] for program participants was less than 1.0, indicating a relatively low prevalence of medical comorbidities (Exhibit 1).[32]

The comparison-group members were comparable to the intervention group on most baseline characteristics, with few exceptions. Program participants were more likely than comparison-group members to be eligible for Medicaid through the Qualified Medicare Beneficiary category (3.9 percent versus 1.8 percent; Exhibit 1). Additionally, average prior-year Medicaid spending was somewhat lower in the comparison group than in the intervention group, which suggests that the comparison group may have included a less intensive case mix of Medicaid recipients (Exhibit 2). For these reasons, multivariate regression was used to adjust for baseline differences between the groups when estimating program impact.

Spending And Service Use

Annual Medicaid spending for program participants averaged $16,074 per person during the year before program participation. It increased to $19,174 per person during the last year of participation, resulting in an unadjusted increase of 19.3 percent over the three-year study period (Exhibit 2). In the matched comparison group, annual spending averaged $15,559 during the preprogram year and increased to $20,224 per person during the last year of participation, resulting in an unadjusted increase of 30 percent over the study period.

Among program participants in the intervention group, the largest increase in spending was for home and community-based services, which increased significantly–from $7,762 per person to $10,618 per person during the study period. In contrast, within the comparison group, the largest increase in spending was for nursing home services, which increased from an average of $1 per person to an average of $7,841 per person during the study period. Correspondingly, spending for home and community-based services declined from an average of $7,237 per person to $5,094 per person in the comparison group.

Overall, spending on home health services and home and community-based services increased significantly in the intervention group relative to the comparison group, while spending on nursing home services increased significantly in the comparison group relative to the intervention group. A total of 5.7 percent of program participants and 4.9 percent of comparison-group members died during the study (the difference was not statistically significant).

Estimates Of Program Impact

Estimates from the multivariate regression models indicate that the Community Connector Program had a statistically significant, negative effect on growth in Medicaid spending during the three year demonstration period, after differences between the intervention and comparison groups were adjusted for. Although per person Medicaid spending increased in both groups during the observation period, the growth in spending among Community Connector Program participants was lower by 23.8 percent (95% confidence interval: −32.1, −15.5) compared to the matched comparison group members. Year specific estimates indicate that the program achieved a modest reduction in Medicaid spending per program participant in year one (−6.0 percent [95% confidence interval: −4.2, 2.3]) and achieved its largest impact in the second and third years (in year two, −21.4 percent [95% confidence interval: −32.8, −10.0], and in year three, −22.3 percent [95% confidence interval: −35.4, −9.2]). Group spending differences began to narrow in the third year after program participation began.

Overall, the Community Connector Program produced total estimated savings of $3.515 million in Medicaid expenditures for 919 program participants during the three-year demonstration period. During this same period, the program incurred $896,000 in operational expenses, resulting in a net savings of $2.619 million for the Medicaid program, or a return on investment of $2.92 per dollar invested in the program.

Discussion

Estimates from this multiyear evaluation of the Community Connector Program indicate that program participants spent less on Medicaid services than did a similar group of Medicaid recipients who did not participate in the program. As a result, Medicaid realized a substantial return of nearly three dollars on each dollar invested in the program. Furthermore, measures of service use and spending indicated that program participants were more likely to use home and community-based services and to spend less on average for nursing homes than their counterparts in the comparison group. These differences in the use of long-term care services and spending account for most of the differences in total Medicaid spending observed between the two groups of Medicaid recipients.

Overall, these findings help dispel concerns that providing home and community-based services necessarily increases Medicaid spending by evoking a woodwork effect, instead of producing cost savings by reducing the use of institutional care. Moreover, the observed net savings and return on investment indicate that it can pay to actively seek out people with unmet long-term care needs and help them gain access to formal services.

Previous studies examining the effects of identifying people at risk for entering nursing homes may have failed to show positive outcomes because of the mechanisms that were used to identify those at risk. For example, to identify people with long-term care needs, the National Long-Term Care Channeling Demonstration sought referrals from health care providers, such as hospitals, home health agencies, physicians, and nursing homes, and from community members, including family, friends, and self-referral.[33]

Although the Community Connector Program did identify people in need through formal and informal referrals, it also deployed workers into the community to seek out Medicaid-eligible people with unmet long-term care needs and to inform them of available options–instead of leaving those workers seated at desks, awaiting requests and referrals. Standard outreach and targeting methods that require formal referrals or contacts initiated by people with unmet needs, including Internet-based inquiries, may be inadequate for various reasons. People are often unaware of the availability of home and community-based services or how to access them.[34] Traditional referral sources, such as physicians, are less aware of[35,36] and less willing to make referrals for noninstitutional services.[33] Older, minority, and low-income individuals may have limited ability to use electronic information,[37–39] which is becoming more prevalent.

Another reason for the Community Connector Program's unusual success may have been its ability to reach blacks, a group significantly more likely than whites to experience unmet needs for home and community-based services.[16] More than three-fourths of the Community Connector Program participants were black, whereas 73.3 percent of participants in the National Long-Term Care Channeling Demonstration were white.[33] Without efficient mechanisms to identify priority populations–including racial and ethnic minorities–and to target services appropriately, programs may fail to reach the full spectrum of people for whom home and community-based services can eliminate or delay the need for institutional care.

Similarly, the Community Connector Program homed in on residents of rural areas with limited sources of home and community-based services, who faced considerable geographic barriers to care. In the Arkansas Cash and Counseling study, which tested a consumer-directed care model for delivering Medicaid home and community-based services, two-thirds of the Arkansas recipients randomized to the control group did not receive any of the in-home personal care services for which they were eligible during their first year of enrollment.[19] This randomized trial found that the consumer-directed care model produced significant reductions in nursing home spending during a two-year period, even though it did not use an active targeting mechanism. This suggests that the program could have yielded net cost savings had it lasted longer.

Conclusion

The Community Connector Program is, to our knowledge, the first US initiative designed to test a mechanism of identifying priority populations with unmet long-term care needs, using the knowledge and skills of community health workers, and enabling people to gain access to home and community-based services. Community health workers have been described as "part of the [health care reform] solution."[40] Provisions in the Affordable Care Act seek to expand their use as a cost-effective component of the health care workforce.[41]

This study suggests that community health workers can help states cost-effectively direct home and community-based long-term care services to disabled and elderly residents who face elevated risks of entering nursing homes, particularly among underserved populations such as blacks and residents of rural areas. Specifically, the study suggests that community

health workers can do so without producing a woodwork effect that increases costs to Medicaid.

These findings are notable in view of the prior lack of evidence to support the cost-reducing effects of targeted noninstitutional long-term care services in state Medicaid programs.

The ability to replicate these program effects in other community settings is not yet clear. However, the results indicate that continued state experimentation with community health worker models in long-term care is warranted. The Affordable Care Act provides state Medicaid programs with increased flexibility to expand coverage for home and community-based services, along with new sources of federal funding to develop community health worker programs. These opportunities provide states with promising new tools to use in addressing the confluence of rapidly escalating Medicaid spending, steadily growing elderly populations, and persistent disparities in care for minority and rural populations.

Acknowledgments

Funding for this study was provided through a contract with the Arkansas Department of Human Services, Division of Medical Services. The Arkansas Department of Human Services received support from the Robert Wood Johnson Foundation (for the intervention) and the Enterprise Corporation for the Delta (for the evaluation) and Medicaid administrative funds (for both the intervention and the evaluation). Support was also provided by the University of Arkansas for Medical Sciences Center for Clinical and Translational Research (Award No. 1UL1RR029884 from the National Center for Research Resources).

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Exhibit 1

Baseline Characteristics Of The Arkansas Community Connector Program (CCP) Intervention Group And Comparison Group

	CCP participants (n = 919)	Comparison group (n = 944)
Variable	**Mean**	**Mean**
Age in years (± SD)	66.3 (16.7)	66.8 (20.1)
Female	67.0%	68.1%
Race, black	76.9%	78.0%
Medicaid eligibility category		
Aged	33.8%	33.1%
Blind or disabled	57.5%	58.4%
Qualified Medicare beneficiary	3.9%	1.8%[a]
Poverty-related	4.5%	5.9%
Other	0.3%	0.8%
Dually eligible for Medicare	54.2%	54.0%
Enrolled in Medicaid in year prior to CCP	66.7%	66.4%
Years enrolled in Medicaid (± SD)	6.0 (6.6)	6.0 (6.4)
Enrolled in HCBS waiver for older adults	9.9%	8.8%
Enrolled in HCBS waiver for adults with physical disabilities	7.4%	5.8%
Comorbidity index (± SD)	0.6 (1.2)	0.7 (1.9)
Prior-year Medicaid expenditures ($1,000s)	16.1	15.6[a]

SOURCE. Authors' calculations using Medicaid eligibility and claims data.

NOTES. HCBS is home and community-based services, SD is Standard Deviation.

[a]Difference is statistically significant at $p < 0.05$.

Exhibit 2

selected Medicaid Service Spending For Arkansas Community Connector Program Participants and Comparison Group

	Spending per recipient		
Type of Service	**Mean before program[a]**	**Mean after program[b]**	**Total change**
Participant Group			
Inpatient hospital	1,739	1,306	−433
Outpatient hospital	343	337	−6
Physician office	997	731	−266
DME	728	1,421	693
Home health[c]	1,933	2,758	825
HCBS[c]	7,762	10,618	2,855[d]
Nursing home	1	3	2
All Medicaid services	16,074	19,174	3,100[d]
Comparison Group			
Inpatient hospital	2,166	1,453	−713
Outpatient hospital	290	442	152
Physician office	1,153	1,104	−49
DME	967	837	−130
Home health[c]	1,267	911	−356
HCBS[c]	7,237	5,094	−2,143[d]
Nursing home	1	7,841	7,840[d]
All Medicaid services	15,559	20,224	4,665[d]
Unadjusted Differences Between Participant and Comparison Group			
Inpatient hospital	−427	−148	280
Outpatient hospital	52	−105	−157
Physician office	−156	−373	−217
DME	−239	584	823
Home health[c]	666	1,847[d]	1,181[d]
HCBS[c]	525	5,524[d]	4,999[d]
Nursing home	0	−7,838[d]	−7,838[d]
All Medicaid Services	516	−1,049[d]	−1,565[d]

SOURCE. Authors' calculations using Medicaid eligibility and claims data. The Appendix exhibit shows more detail including spending for all Medicaid services (see NOTE 30 in text).

NOTES DME is durable medical equipment, HCBS is home and community-based services.

[a] Annual spending in dollars for year prior to program entry.

[b] Annual spending in dollars for last year of program participation.

[c] Home health represents medical and therapeutic services and HCBS represents nonmedical and non-therapeutic services.

[d] Difference is statistically significant at $p < 0.05$.