

The Cost-Effectiveness of Noninstitutional Long-Term Care Services: Review and Synthesis of the Most Recent Evidence

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There has been significant expansion and change in the financing, coverage, and delivery of home- and community-based services during the past decade. This article reviews the cost-effectiveness of Medicaid waiver programs, consumer-directed care, capitated models that blend acute and long-term care services, and case management and subsidized community services for individuals with dementia. Generally, these new care models were found to be associated with increased costs, but greater client and caregiver welfare. Depending on the specific features of the program, capitated care models and consumer-directed care were identified as potential mechanisms toward providing services more efficiently. Importantly, however, most recent evaluations have relied on potentially confounded research designs, which leaves open the question of whether the findings relate to the programs or biased selection across the treatment and comparison groups.

Keywords: *home and community-based services; postacute services; Medicaid waivers; capitation; consumer-directed care; case management*

Public financing of long-term care has historically favored institutional care over noninstitutional care. However, there has been a great deal of inter-

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est in expanding home- and community-based services (HCBS) during the past two decades. The economic rationale for this expansion is based largely on two ideas. First, individuals generally prefer care in the home or community relative to a nursing facility. And second, for many individuals with less intensive care needs, it is possible to provide lower per capita cost care in the home or community relative to a nursing home.

Given these two points, a number of early demonstration projects were implemented to examine the economic implications of expanding HCBS. These demonstrations encompass a large empirical literature, which has generated a number of comprehensive literature reviews (e.g., Hughes 1985; Kane and Kane 1987; Kemper, Applebaum, and Harrigan 1987; Weissert, Cready, and Pawelak 1988; Weissert and Hedrick 1994; Wiener and Hanley 1992). The early demonstration studies found that HCBS slightly reduced nursing home use, but HCBS still increased aggregate long-term care spending, because the small decrease in nursing home utilization observed under HCBS was more than offset by increased HCBS spending on individuals who would not have entered a nursing home even in the absence of the HCBS program. In terms of effectiveness, very few of the studies based on randomized experimental designs found statistically significant differences between the treatment and control groups in either survival or physical and mental functioning. In subgroup analyses, patients who were younger, less disabled, and socially supported were found to benefit from HCBS. Importantly, studies generally supported the idea that psychosocial outcomes such as life satisfaction, social activity, social interaction, and informal caregiver satisfaction were higher under HCBS. Moreover, there was evidence that the number of unmet needs decreased under HCBS.

Thus, the early HCBS literature found that HCBS increased aggregate expenditures but improved effectiveness along certain dimensions. These early findings have led to more recent sets of programs and demonstrations. Some of the new models have closely mirrored the earlier HCBS demonstrations. For example, states have used waivers to greatly expand HCBS to the Medicaid population. Similarly, the Medicare Alzheimer's Demonstration program targeted case management and subsidized community services for individuals with dementia. However, other recent developments have departed significantly from the more traditional model by altering the delivery and financing of noninstitutional services. On the delivery side, consumer-directed home care has emerged as an alternative to the traditional agency-directed model. In terms of financing, capitated payment of long-term care services is an alternative to the traditional fee-for-service (FFS) model. Moreover, certain capitated systems have integrated the coverage of chronic

(i.e., Medicaid) and postacute (i.e., Medicare) services. Somewhat surprisingly, there has not been a comprehensive review of this most recent evidence.

NEW CONTRIBUTION

Although the early demonstration studies were quite useful in providing broad lessons regarding HCBS, they are less informative in evaluating the costs and benefits associated with the most recent generation of changes in the long-term care sector. First, because the majority of programs are evaluated relative to the status quo, the incremental costs and effectiveness associated with a particular program depend on the existing services already in place. With the strong presence of noninstitutional care in today's long-term care market, it is more difficult than ever to show the marginal effectiveness of new care models. Second, the mix of services currently in place is quite different from the types of services evaluated in the early demonstration studies. For example, capitated systems and consumer-directed models are relatively new phenomena. Similarly, the environment in which these long-term care services are delivered has also significantly changed during the past two decades. For example, certificate of need and construction moratorium policies in the nursing home sector were historically thought to hold down nursing home spending and encourage the use of noninstitutional services. However, because of declining occupancy rates in many markets, these policies have been found to be less relevant for the nursing home sector in recent years (Grabowski 2001). Given the absolute growth in HCBS, the new delivery, coverage, and financing mechanisms, as well as changes in the long-term care environment, there is a need to reevaluate the costs and benefits of different noninstitutional long-term care models.

As noted above, there has been no effort to systematically review and summarize recent changes in the availability and types of noninstitutional services in terms of their costs and effectiveness. This article examines four recent developments in long-term care: (1) the growth of Medicaid HCBS waiver programs, (2) the emergence of consumer-directed home health care, (3) the increase in demonstration programs incorporating capitation payments for long-term care services, and (4) a recent demonstration examining increased access to community-based services for individuals suffering from dementia. Although these models are quite distinct and serve different populations, they provide four separate tests of whether and how noninstitutional long-term care services might be provided cost-effectively.

CONCEPTUAL FRAMEWORK

State and federal policymakers have considered the expansion of noninstitutional services a mechanism that both increases client welfare and lowers costs. That is, individuals generally prefer care in the home or community, and for certain individuals with less intensive care needs, it may be possible to provide lower per capita cost care in the home or community relative to a nursing facility. However, the historic institutional bias in long-term care coverage relates partially to a perceived moral hazard problem (or woodwork effect) whereby publicly financed noninstitutional services substitute for informal services previously provided by family members and friends. Program administrators have found it very difficult to structure coverage such that only individuals who otherwise would have entered nursing homes use noninstitutional services. States have employed targeting (or screening) mechanisms in an attempt to limit care to only those individuals who otherwise would have accessed nursing home care.

If targeting were perfect, then the noninstitutional treatment model would need to be only marginally less costly than the institutional model to generate savings. However, as targeting becomes less perfect, the aggregate savings from noninstitutional care need to increase to cover the increased costs associated with the woodwork effect. As Weissert (1993) noted in the title to a commentary on one demonstration, "If you spend too much it's hard to save money."

Historically, HCBS demonstrations have compared the cost-effectiveness of HCBS relative to institutional services. However, policy makers may prefer these programs, regardless of their cost-effectiveness relative to nursing home care, because they raise contentment among patients and caregivers. Many have argued eloquently that this is reason enough to expand these programs (e.g., Kane 1988). As Weissert, Cready, and Pawelak (1988) noted, society provides "nursing home care with little expectation of positive outcomes and complete certainty of increased expenditures." As evidence of a changing paradigm, the cash and counseling demonstration reviewed below examines the cost-effectiveness of consumer-directed care relative to agency-provided home care services. Conditional on providing a given level of community care, this approach identifies the most cost-effective means of providing services. The issues of moral hazard and targeting still apply in this framework. To show cost-effectiveness, program administrators must target coverage such that only individuals who otherwise would have consumed agency-based services use consumer-directed home care services.

One method of addressing moral hazard is through the use of a capitated payment arrangement in which providers receive a flat fee for each individual

enrolled in a managed health care plan. In theory, this arrangement should encourage lower overall utilization of services, which might also entail relatively more HCBS and less nursing home care. However, to the extent that overall long-term care use is controlled through the traditional managed care mechanisms, overall quality may be lower under a capitated system, because providers are no longer compensated for additional services.

As a final conceptual issue, it should be recognized that a cost analysis is distinct from a cost-effectiveness analysis. In the former, analysts focus only on costs, and in the latter, differences in costs are benchmarked against differences in effectiveness. Although costs are typically straightforward to measure, gauging the effectiveness of long-term care services is more nebulous. Unfortunately, different measures are often used across different studies and different care models. Effectiveness may include such dimensions as health and functioning, longevity, unmet needs, satisfaction with care, informal caregiver (e.g., spouse) support, life satisfaction and morale, and the degree of social interaction (Kemper, Applebaum, and Harrigan 1987). Thus, even if noninstitutional services are associated with higher aggregate costs, the services may still be cost-effective because of an even greater increase in aggregate effectiveness.

METHOD

The studies reviewed within this article were identified in a two-step process. The first step consisted of the identification of new financing, coverage, and delivery models of noninstitutional long-term care that have emerged in recent years. These models were identified based on searches of the terms *long-term care*, *home care*, and *community care* conducted in both the PubMed and Econlit search engines for the years 1996-2004 as well as discussions with state and federal policy makers and researchers.¹ In order for a model to be included within this review, at least one study evaluating the model must have examined costs.² On the basis of this search, four models of noninstitutional long-term care were identified: Medicaid HCBS waivers, consumer-directed care, capitated long-term care, and case management for persons suffering from dementia.

The second step of the literature review consisted of identifying studies of costs and outcomes under these different models. Studies were initially identified via the PubMed and Econlit search engines. However, a number of the studies evaluating the four models of care have not been published in the peer-reviewed literature. Because federal law requires an independent evaluation of all Medicare and Medicaid demonstration and waiver programs, the

final reports submitted to the Centers for Medicare & Medicaid Services (or the state governing body) were obtained where available.

RECENT MEDICAID WAIVER EVALUATIONS

The proportion of total Medicaid long-term care expenditures directed to HCBS has grown from 11 percent in 1988 to 27 percent in 2000, although some of this change can be attributed to spending for the mentally retarded and developmentally disabled (Wiener, Tilly, and Alexih 2002). One of the key sources of growth has been the Medicaid 1915(c) HCBS waiver program, which was authorized by Congress in 1981 to provide states with matching federal dollars to expand HCBS and facilitate a shift away from institutional long-term care services (Miller, Ramsland, and Harrington 1999). Despite the large growth in the use of HCBS Medicaid waivers, a review of the recent literature identified only two rather limited evaluations of aggregate program expenditures and no evaluations of program effectiveness.³

The first evaluation of waiver expenditures was conducted by the U.S. General Accounting Office (GAO 1994). In a study of Oregon, Washington, and Wisconsin, the GAO compared unadjusted average expenditures for an individual in a nursing home relative to an individual in the waiver program and concluded that the average expenditures on a Medicaid nursing home recipient exceeded the average expenditures on a HCBS waiver recipient. Moreover, the GAO observed that the number of nursing home beds decreased slightly in the three study states over the period 1982 through 1993, whereas beds increased by more than 20 percent nationally during this period. On the basis of these two findings, the GAO concluded that HCBS Medicaid waiver programs lower long-term care spending. However, the primary weakness in the GAO approach is that it considers *average costs per recipient*, rather than *aggregate* Medicaid spending in comparing HCBS waiver and nursing home expenditures. Given that nursing home costs include room and board, it is not surprising that nursing home care is more expensive on a per capita basis. Thus, although a state may decrease per capita costs by keeping individuals out of nursing homes, it potentially increases overall costs by serving individuals in the community who would not otherwise have entered a nursing home (i.e., the woodwork effect). Given this flaw, it is impossible to draw any meaningful conclusions from the GAO study regarding total spending under Medicaid HCBS programs.

In an attempt to address this issue, researchers from the Lewin Group and the American Association of Retired Persons (AARP) examined whether the growth in HCBS Medicaid spending was associated with overall Medicaid savings in three states: Colorado, Oregon, and Washington (Alexih et al.

1996). These states were chosen because HCBS accounted for a significant proportion of total Medicaid long-term care recipients. This study compared projected and actual Medicaid long-term care costs over time, controlling for several key demand-and-supply side factors when data were available. Using the most conservative model assumptions, HCBS waiver spending generated \$33.8 million in savings in Colorado in 1994, \$27.9 million in savings in Oregon in 1993 and \$49 million in 1994, and \$1 million in savings in Washington in 1993 and \$57.1 million in 1994. Although these estimates are preferable to the GAO calculations, there are still important concerns with this approach including the selection of states,⁴ unmeasured state and time-varying factors, and the fact that the states pursued packages of options that went beyond simply liberalizing HCBS coverage. For example, states also employed nursing home diversion policies (e.g., preadmission screening), global budgeting, and other factors in an effort to control costs. Viewing the policy as simply "HCBS" is too simplistic. In sum, the limited methods employed in the two evaluations make it difficult to definitively conclude that the programs have, in fact, decreased expenditures.

CONSUMER-DIRECTED CARE

A recent development in the delivery of HCBS has been the emergence of programs that give clients greater control over services (Benjamin 2001). In contrast to the agency-directed model, the consumer-directed model of care, which is offered by some Medicaid and state-funded programs, gives the clients control to recruit, train, hire, supervise, and fire the provider of care. Some state-funded programs provide direct cash payments to beneficiaries with the idea that they will also handle all financial tasks related to their care, but federal regulations prohibit Medicaid-funded programs from providing cash to beneficiaries. Importantly, services are typically directed at a less disabled population that is not at risk of institutionalization. Thus, the issue is not whether this model is cost-effective relative to nursing home care but rather whether it is cost-effective relative to the agency-based model. By shifting control of supportive services from the home care agency to the consumer, the expectation is that consumer-directed care will improve consumer satisfaction, reduce unmet needs, and enhance quality of life without unduly compromising the safety, competence, or amount of care. From an economic perspective, consumer-directed care has also expanded with the expectation of savings, because this model potentially lowers service costs by eliminating home care agencies and case managers. The majority of the evidence is fairly descriptive with two notable exceptions.

Benjamin, Matthias, and Franke (2000) made use of a natural experiment in the In-Home Supportive Services (IHSS) program in California, which is funded through Medicaid with state and county shares. IHSS provides personal care, household, paramedical, protective supervision, and medical transportation to about 200,000 low-income recipients of all ages (including children) at any given time. State law mandates that the IHSS program be offered in all 58 counties within California. However, 12 counties exercised an option that allowed them to contract with home care agencies to deliver services to persons judged inappropriate for consumer direction by case managers. Thus, a stratified random sample of 1,095 IHSS recipients was drawn from all 58 counties for the consumer-directed group and from the 12 counties for the agency-directed group. Controlling for demographics and case mix, the consumer-directed group was associated with increased consumer satisfaction along five different measures, an increase in a sense of security and a decrease in unmet IADL needs. No statistical difference was found between the two groups in physical and psychological risk or unmet ADL needs.

In related work on the IHSS, consumer-directed workers report outcomes equal to or more positive than agency workers on most dimensions of stress and satisfaction (Benjamin and Matthias 2004). In addition, consumer-directed clients are at no greater risk than agency clients for worker abuse and neglect of clients (Matthias and Benjamin 2003). Finally, although the young-old (65-74) embraced the consumer-directed model more readily than the old-old (75+), most service outcomes showed no real differences by age (Benjamin and Matthias 2001).

The most important limitation with the IHSS study is that the two groups were not randomly assigned in the 12 counties that exercised the agency-based option. "Case managers are most likely to assign to agency-based services those eligible persons who express a preference for this model, those who live alone, those who are socially isolated and thus are expected to have difficulty hiring their own worker, and those with less severe needs" (Benjamin, Matthias, and Franke 2000, 354). Thus, unobserved differences between the two groups may confound the relationship between group status and the outcomes of interest within the study.

The second study of consumer-directed care is the ongoing three-state "cash and counseling" demonstration project in which Medicaid enrollees receive a monthly cash allowance to purchase personal assistance and related goods and services. An evaluation has been undertaken to examine the effects of the demonstration on consumers and their caregivers, public costs, and overall participation. Demonstration enrollment occurred between December 1998 and April 2001 in Arkansas and was open to any state resident who was at least 18 years of age and eligible for personal care under the state Medicaid

plan. After a baseline survey, the 2,008 enrollees were randomly assigned to direct their own personal care (treatment group) or to receive agency services (control group). The evaluation of the cash and counseling demonstration has examined effectiveness and costs across the two groups.⁵

The demonstration results from Arkansas indicate that consumers in the treatment group were more satisfied with their care compared with consumers in the agency-directed system (Foster et al. 2003). Specifically, they were more satisfied with the timing and reliability of their care, less likely to feel neglected or rudely treated by paid caregivers, and more satisfied with the way paid caregivers performed their tasks. The program also reduced some unmet needs and greatly enhanced quality of life relative to agency-directed services. The program produced these improvements without discernibly compromising consumer health, functioning, or self-care.

Initial estimates found that costs in Arkansas were higher for the treatment group relative to the control group during the 1st year after enrollment for two related reasons (Dale et al. 2003). First, a substantial proportion of the agency-directed control group did not receive any of the paid care for which they were eligible. And second, for individuals in the control group who did obtain paid care, they received only two thirds of entitled services. Thus, because individuals in the treatment group generally used the services for which they were eligible and individuals in the control group did not, program costs were higher for the consumer-directed group. In certain respects, this finding is a variation of the classic HCBS woodwork effect whereby a more appealing set of HCBS benefits increases the propensity to use services. However, there are also supply-side factors that might underlie this result including a tight labor market for agency workers and the difficulty in serving rural customers in Arkansas. Moreover, although the demonstration randomized individuals across the treatment and control groups, those individuals who volunteered were not representative of all recipients of Medicaid personal assistance services. That is, individuals who volunteered for the demonstration may have been dissatisfied with the paid care they were receiving prior to entry into the program and thus less likely to use paid care during the demonstration.

CAPITATED LONG-TERM CARE PROGRAMS

Another mechanism that has been proposed to control public long-term care spending has been the use of capitation payments (Rudolph and Lubitz 1999). In several states, demonstration programs have been implemented that have allowed Centers for Medicare and Medicaid Services (CMS) to waive certain provisions of the Medicare and Medicaid programs and both pay for services that would otherwise not be reimbursable and use different methods

of paying for these services. Under certain programs, postacute and long-term care services are integrated through managed care. The nature and scope of the demonstration programs are quite diverse, but the use of a capitated payment may encourage a more efficient production of health care services, which typically includes more HCBS. Moreover, capitation may control the woodwork effect somewhat differently than the standard HCBS model. In addition to using the standard preadmission screening mechanisms, capitation may rely on case management and provider-based incentives to direct clients toward HCBS. Six recent evaluations of capitated programs are considered below.⁶

PROGRAMS

The Program of All-Inclusive Care for the Elderly (PACE) is an outgrowth of the On Lok program, a CMS-funded program since 1979 that is based in San Francisco, California. PACE was originally authorized in the Omnibus Budget Reconciliation Act (OBRA) 1986 as a demonstration program with 10 sites nationwide. As of November 1998, 15 program sites in 10 states had been implemented with an additional 13 sites and 6 states under development through Medicaid-only capitation contracts (Rudolph and Lubitz 1999). Under the Balanced Budget Act (BBA) of 1997, PACE became a regular part of the Medicare program with a limited number of site expansions available each year. PACE targets individuals 55 years of age (65 in some states) who meet the Medicaid nursing home eligibility criteria. PACE is a voluntary program that integrates social and medical services primarily through a combination of adult day health care and home care. Through the use of a multidisciplinary team approach and a staff-model delivery system, PACE covers all primary, acute, and long-term care services including physician services, hospitalizations, nursing home care, therapies, pharmaceuticals, and equipment.

Unlike the voluntary PACE, the Arizona Long-Term Care System (ALTCS) is a mandatory statewide capitated program that was authorized by the state and federal governments as a demonstration program for elderly and physically disabled beneficiaries on January 1989 under the state's 1115 waiver. With the exception of the state's two largest counties that served as their own program contractors, managed care organizations were paid a capitated rate that covered both acute and long-term care services for all eligible individuals within a specified geographic area. Medicare services for entitled enrollees were paid on a FFS basis, which were typically provided by the same contractor.

The Wisconsin Family Care program is currently being piloted in nine counties under joint Medicaid 1915(b) and 1915(c) waivers. The Family Care

program has two major components: aging and disability resource centers, which are entry points where clients and their families can obtain information and advice about available community resources, and care management organizations, which manage and deliver long-term care services.

The STAR+PLUS program is designed to integrate the delivery of acute and long-term care Medicaid services through a managed care system within Harris County, Texas. Begun in 1998, the program enrolled 57,000 aged and disabled Medicaid recipients by June 2002. The primary emphasis of the program is care coordination provided by a health maintenance organization employee who coordinates all the enrollee's services; develops an individual plan of care with the enrollee, family members, and providers; and authorizes all long-term care services.

The Minnesota Senior Health Options (MSHO) is a voluntary demonstration program that integrates acute care and long-term care for individuals dually eligible for Medicaid and Medicare. The program is in seven counties in the Minneapolis/St. Paul area and offers a package of acute and long-term care services through a choice of three managed care plans (Rudolph and Lubitz 1999). The primary innovation under the MSHO is the consolidation of funding across the two programs. A number of approaches, including geriatric evaluation and management, disease management, outpatient group care, and more extensive use of geriatric nurse practitioners, can be found in some elements of the MSHO, but the extent of their implementation varies across plans and enrollees (Kane et al. 2003). Importantly, MSHO and PACE are the only two programs reviewed that integrate Medicaid and Medicare funding through managed care.

The second-generation Social/Health Maintenance Organization (S/HMO II) demonstration, targeting Medicare beneficiaries at risk of nursing home placement, was implemented in the Health Plan of Nevada in 1996. Although the exact services provided in the S/HMO II demonstration were determined by an assessment of the patient's medical and social needs, typical services included case management, personal attendant care, transportation, day care, prepared meals, respite care, and social services.

EVALUATIONS

A comprehensive evaluation of PACE was conducted by Abt Associates, Inc. (Chatterji et al. 1998; Irvin, Massey, and Dorsey 1997; White, Abel, and Kidder 2000). Using multivariate methods, PACE was evaluated by comparing individuals who voluntarily enrolled in PACE with those individuals who went through the PACE application process but decided not to enroll.

The Arizona Long-Term Care System (ALTCS) has also been the subject of a major evaluation (McCall et al. 1996; McCall and Korb 1997; Weissert et al. 1997). Because the program was universally adopted across the state, the identification of a natural comparison group for the ALTCS was problematic. Thus, two different multivariate strategies were employed. In the analysis of service utilization and quality of care, individuals from the bordering state of New Mexico were used as a comparison group. In the analysis of costs, actual spending in the ALTCS was compared with an estimate of projected spending if the ALTCS had not been implemented. For the cost analysis, comparison data on nursing home entry, length of stay, and costs were obtained from two national nursing home samples.

An independent review of the Texas STAR+PLUS program was conducted by the Public Policy Research Institute at Texas A&M based on standards determined by the Texas Department of Human Services, enrollee surveys, and provider surveys (Border et al. 2002). Access was measured by utilization of services compared to the year preceding the program's implementation. Quality of care was based on member and provider surveys along with focused studies of depression and diabetes patients to determine whether their care met state guidelines. The evaluation compared actual costs under STAR+PLUS with projected costs if STAR+PLUS had not been implemented, but there was no adjustment for potential confounders.

Independent evaluations of the Wisconsin Family Care program were conducted by the Lewin Group (Alecix et al. 2002) and APS Healthcare, Inc. (2003). In evaluating unadjusted quality, Family Care participants were compared with participants in other community-based waiver programs within the state. The cost evaluation consisted of a multivariate analysis of a sample of Family Care enrollees who were on Medicaid prior to joining Family Care and a comparison group of Medicaid recipients who were similar to the Family Care participants.

An evaluation of the MSHO was conducted using baseline information between October 1998 and June 1999 (over 1 year after the implementation of the demonstration) and a resurvey between August 2000 and February 2001 (Kane et al. 2003; Kane and Homyak 2003). For the multivariate analyses, the sample consisted of MSHO enrollees and two comparison groups: dually eligible individuals living in the counties where MSHO was offered but who did not enroll in it and dually eligible individuals living in counties where the MSHO was not offered. For the cost analyses, only the first control group was used because of geographic variation in costs.

The evaluation of the S/HMO II examined the effects of the demonstration on health and functioning, service use, and quality of care of its members from July 1997 through April 1999 (Department of Health and Human Services

2003). Prior to the evaluation, the Health Plan of Nevada was operating as a Medicare risk plan in the Las Vegas area and delivering care through a network of more than 20 primary care sites. Using multivariate methods, the evaluation compared enrollees in S/HMO II sites with beneficiaries at other sites that continued to operate as regular Medicare risk plans. In addition, an assessment was conducted of whether the S/HMO II enrollees received additional services that were unique to S/HMO sites such as care coordination. The formal evaluation of S/HMO II is complemented by a case study of the demonstration program, which used health plan reports, claims data, and administrator interviews for the period 1999 through 2001 (Newcomer, Harrington, and Kane 2002).

QUALITY OF CARE UNDER CAPITATION

Quality of care and access to services were found to either improve or remain stable across all six programs. PACE was associated with the following statistically significant outcomes: greater adult day health care use, lower nurse home visits, fewer hospitalizations, fewer nursing home admissions, a higher probability of receiving ambulatory care, greater survival, an increased number of days in the community, better health, better quality of life, greater satisfaction with overall care arrangements, and better functional status. The PACE enrollees with the most severely limiting conditions at baseline experienced the largest gain.

Although the ALTCS was associated with better processes of care, there was only a limited evaluation of outcomes of care (McCall et al. 1996). A multivariate analysis indicated that Arizona nursing home residents were more likely to experience a pressure ulcer, a fever, and require indwelling urinary catheter use than their New Mexico counterparts. There was no statistical difference in nursing home falls and the number of psychotropic drugs prescribed. Although these measures cannot completely encompass nursing home quality and there are limited data suggesting both states have above-average quality along these measures, these findings do indicate some concerns with health outcomes in the ALTCS.

Relative to a comparison group from other Wisconsin waiver participants, Family Care participants reported more positive outcomes with regard to choice and self-determination, satisfaction with services, community integration, and health and safety. The report also compared the incidence of four indicators of quality of care across CMO enrollees and the remainder of the state. There were no statistical differences for hospital use, emergency room use, diagnosis of decubitus ulcers, and death for family care recipients. These unadjusted descriptive quality-of-life and quality-of-care findings are

intriguing, but further work employing more rigorous methods is warranted. Unadjusted quality of care was found to be adequate under the STAR+PLUS program based on member and provider surveys along with focused studies of depression and diabetes patients to determine whether their care met state guidelines.

A multivariate analysis of the MSHO did not show substantial differences in outcomes across function, satisfaction, and caregiver burden across the treatment and control groups. However, given the fact the intervention consisted primarily of funding consolidation, the stability in these outcomes is not altogether unexpected.

The S/HMO II was not found to improve health or functional status relative to the Medicare risk plan. There was also no evidence that the quality of care, as measured by the provision of routine preventive care, frequency of physician visits for individuals with certain chronic conditions, and rates of preventable hospitalizations, was any different under the S/HMO II relative to individuals in other Medicare HMO or individuals in traditional FFS Medicare.

UTILIZATION AND COSTS UNDER CAPITATION

The evaluations of capitated programs have produced mixed evidence regarding whether the programs have increased or decreased program costs. The PACE, Wisconsin, MSHO, and S/HMO II evaluations found higher program costs, and the ALTCS and the Texas STAR+PLUS evaluations found lower program costs under capitation.

Specifically, the total capitated payment to PACE enrollees was 9.7 percent higher in the 1st year of enrollment than the projected Medicare and Medicaid cost if the enrollees had continued to receive care in an FFS setting. Interestingly, the PACE program was associated with 42 percent lower Medicare spending, but 86 percent higher Medicaid spending. In Wisconsin, a sample of Family Care enrollees experienced a \$405 increase in average total monthly long-term care spending compared with a matched group of Wisconsin Medicaid recipients not in the program using pre- and postenrollment data.

In the MSHO, the Medicare capitated rate for MSHO was higher than the FFS rate in the control group for both community and nursing home residents after adjusting for demographic factors and prior health care utilization. In the evaluation of the S/HMO II, individuals in the program used more physician, nursing home, and home health care than the comparison group in a traditional Medicare risk plan. Overall, S/HMO II did not decrease hospitalizations except within a subgroup of patients with a history of prior hospitalizations. There was no statistically significant effect of S/HMO II on custodial

nursing home care, although the limited number of such admissions across both the treatment and control groups left limited precision to detect a significant effect.

ALTCS beneficiaries were less likely than those in the New Mexico Medicaid program to be hospitalized, to have an inpatient professional visit, to have a procedure, and to have a laboratory service. They were more likely to have an evaluation and management visit, an emergency room visit, and a prescription drug. Overall, the capitated system decreased many costly procedures and increased evaluation and management services. In comparing actual and projected costs, the ALTCS was estimated to save 35 percent of projected nursing home costs or \$4.6 million dollars over the 24-month period of study when benchmarked against comparison data from two national nursing home samples. These savings were attributed to several factors including stringent preadmission screening, the Health Care Financing Administration's cap on HCBS spending, a low payment rate for HCBS, and the incentive effects underlying an average capitation rate. Interestingly, McCall and colleagues (1996) presented evidence that total administrative costs associated with the Arizona program were large relative to 14 other state long-term care programs with a similar number of eligible beneficiaries. Using a similar (although unadjusted) methodology, the Texas STAR+PLUS program was benchmarked against projected spending had the program not been implemented. STAR+PLUS was estimated to generate a 17 percent increase in savings relative to traditional FFS Medicaid.

Given the different cost findings across programs, it is important to reflect on the factors potentially underlying these results. Although the STAR+PLUS program was associated with savings, the unadjusted statistical comparison in the evaluation makes this finding somewhat questionable. Thus, the ALTCS provides the best evidence to date that capitation can potentially save program resources, which leads to the inevitable question, How does the ALTCS do it? Although the ALTCS differs from the other programs in important ways, not least of which is its statewide adoption, two key aspects of the ALTCS are the particularly strong preadmission screening process and the efforts to contain HCBS spending. Going back to the conceptual framework, the former addresses the potential woodwork effect via stringent targeting, and the latter ensures that, even if this targeting is imperfect, a program can still generate aggregate savings.

LIMITATIONS

The most significant limitation of all six evaluations is the failure to incorporate a randomized study design or an appropriate statistical technique such

as instrumental variables to address the issue of selection bias across the treatment and comparison groups. Although every evaluation but STAR+PLUS controls for observable differences across the groups, there may be unobserved factors that differ across the two groups and bias comparisons of costs and outcomes. For example, the PACE treatment group consisted of individuals who volunteered for the program. In a comparison of the treatment and control groups at baseline, there was evidence that PACE experienced favorable selection (Irvin, Massey, and Dorsey 1997). Although the evaluators controlled for a number of covariates, the concern is that these observed factors may be correlated with unmeasured factors that bias the effect of PACE on costs and outcomes. As another example, it is unclear that elderly individuals in New Mexico are necessarily a good control group for the ALTCS evaluation given demographic and policy-related differences across the two states.

A second potential limitation is whether the results from the evaluations are generalizable to other parts of the country. For instance, the ALTCS is one of the few demonstrated examples where a state can provide generous HCBS coverage and apparently save significantly on costs.⁷ However, Arizona's mandatory system, which is unique to any other Medicaid program in the country, may not be cost-efficient or even politically viable elsewhere. A third limitation is the poor measurement of quality within the ALTCS evaluation. More research needs to be done in this area. A fourth limitation is the relatively short time frame of many of the evaluations. Program development, refinement, and acceptance do not occur instantaneously, and a longer evaluation period may provide a more complete picture (Newcomer, Harrington, and Kane 2002). A final limitation involves the weak methods used to evaluate the Texas STAR+PLUS program and quality of care in the Wisconsin Family Care program. The evaluations do not adjust for covariates that may confound observed differences across the treatment and comparison groups.

MEDICARE ALZHEIMER'S DISEASE DEMONSTRATION

An important subpopulation of long-term care users are those individuals with Alzheimer's disease and related dementia conditions. An estimated 4.5 million Americans, or roughly 1 in 10 individuals older than 65 and approximately half of all individuals older than 85, have Alzheimer's disease (Evans et al. 1989; Hebert et al. 2003). The disease is known to place a huge burden on informal caregivers such as deterioration in mental and physical health, labor force withdrawal, and disruption of family relationships. These burdens may necessitate earlier institutionalization of an individual, which ultimately results in increased public expenditures. Thus, the Medicare Alzheimer's Disease Demonstration was conducted to determine the effects of increased

access to community-based care on client and caregiver outcomes and overall expenditures. Given the high caregiver burden associated with Alzheimer's disease, there is the potential for the "woodwork effect" in that more generous coverage of community-based care would appeal to caregivers and clients, regardless of the likelihood of institutionalization. Thus, access to community-based coverage may add considerable value to individuals with Alzheimer's disease and their caregivers, but it is unclear whether these programs will ultimately result in lower public expenditures. Toward this end, the reduction of nursing home utilization was not an explicit goal of the demonstration (Miller, Newcomer, and Fox 1999).

Enrollment into the demonstration was voluntary, but individuals had to be Medicare-eligible, living in the community in one of the eight program sites, and have a physician-certified diagnosis of an irreversible dementia. The demonstration began enrollment in December 1989 and served clients and their families through November 1994. Eligible applicants were randomly assigned to a control group, which continued to receive standard care, or a treatment group. The intervention consisted of two components, case management and subsidized community services. Case management services were provided to the treatment group without charge, and these included caregiver education and training, caregiver support groups, caregiver/family mental health and counseling services, caregiver transportation to education and support groups, and caregiver and client case management. Caregivers faced a 20 percent coinsurance rate for demonstration-subsidized services including homemaker/chore services, personal care services, social or dementia-specific adult day care, and other community services.

As expected, the treatment group was more likely to use any community-based service relative to the control group, but somewhat counterintuitively, the treatment group did not, on average, consume a greater intensity of services relative to the control group who paid for these services out-of-pocket (Newcomer, Spitalny, et al. 1999). Given this finding, it is not surprising perhaps that the demonstration did not have large effects on caregiver burden or depression (Newcomer, Yordi, et al. 1999), client mortality (Newcomer et al. 2003), or nursing home entry (Miller, Newcomer, and Fox 1999). Moreover, the demonstration did not reduce Medicare Parts A and B expenditures, and after factoring in program costs, it was not found to be budget neutral in six of the eight sites (Newcomer, Miller, et al. 1999).

Although this demonstration provided novel evidence with respect to the community-based care of Alzheimer's patients, there were factors that limited the generalizability of these findings. First, similar to the recent cash and counseling demonstration reviewed above, the voluntary aspect of the demonstration may attract a population that is not representative of the broader

Medicare population with dementia. In addition, the results only apply to traditional Medicare FFS, and they do not address the Medicare HMO sector, which may increase in size in the coming years and present a different set of financial incentives.

CONCLUSIONS

This review article represents the first comprehensive summary of the evidence on the costs and benefits of the most recent generation of long-term care services. A series of lessons emerged from these studies (see Table 1 for a summary of the individual studies):

- Two recent multistate evaluations have argued that Medicaid waiver programs lower overall state Medicaid spending, but the evidence is weak.
- The initial evidence on consumer-directed care programs indicates better (or at least equivalent) client outcomes relative to agency-based care. However, data from the randomized cash and counseling demonstration indicates that consumer-directed care is more costly relative to an agency-directed model.
- Recent evaluations of capitated programs generally observed stable health care outcomes and mixed evidence with respect to spending, but the empirical methods used in these studies were somewhat limited.
- Greater access to community-based services in the Medicare Alzheimer's Disease Demonstration was found to lead to higher costs in most program sites with stable client and caregiver outcomes.
- In general, the evidence on current policies is relatively weak. Most recent studies have relied predominantly on a quasi-experimental design, which leaves open the issue of selection bias among the treatment and control groups.
- The accumulation of evidence on many of these issues has been quite slow. Thus, it is not surprising that the data regarding the more promising strategies such as managed care, and consumer-directed care are still being collected and analyzed.

Building on the final two lessons, there are potential studies that could greatly improve our understanding of the cost-effectiveness of different long-term care models. First, the issue of whether the expansion of Medicaid HCBS waiver programs is budget neutral (or even budget saving as some states argue) is still largely unresolved. One potential approach would be a multistate, multi-year study that incorporated state and year fixed effects to control for unobserved factors that may influence both HCBS Medicaid waiver use and long-term care expenditures. Thus, aggregate state Medicaid expenditures would be regressed on the proportion of the Medicaid budget attributed to HCBS, a set of supply-and-demand side factors, and state and

TABLE 1 Summary of Evaluations

<i>Program</i>	<i>References</i>	<i>Effectiveness</i>	<i>Costs</i>	<i>Randomized Design</i>	<i>Multivariate Methods</i>
Medicaid waiver evaluations Oregon, Washington, Wisconsin Colorado, Washington, Wisconsin Consumer-directed care	General Accounting Office (1994) Alexcixh et al. (1996)	NA NA	- -	No No	No Yes
California In-Home Supportive Services (IHSS) program	Benjamin and Matthias (2001, 2004); Benjamin, Matthias, and Franke (2000); Matthias and Benjamin (2003)	+	NA	No	Yes
Cash and counseling Capitated programs	Foster et al. (2003); Dale et al. (2003)	+	+	Yes	Yes
Program of All-Inclusive Care for the Elderly (PACE)	Chatterji et al. (1998); White, Abel, and Kidder (2000)	+	+	No	Yes
Arizona Long-Term Care System (ALTCs)	McCall et al. (1996); McCall and Korb (1997); Weissert et al. (1997)	+/-	-	No	Yes
Wisconsin Family Care	Alexcixh et al. (2002); APS Healthcare Inc. (2003)	+	+	No	No/Yes ^a
Texas STAR+PLUS	Border et al. (2002)	Stable	-	No	No
Minnesota Senior Health Options (MSHO)	Kane et al. (2003); Kane and Homyak (2003)	Stable	+	No	Yes
Social/Health Maintenance Organizations (S/HMO II)	Department of Health and Human Services (2003); Newcomer, Harrington, and Kane (2002)	Stable	+	No	Yes
Case management/ subsidized community services					
Medicare Alzheimer's Demonstration	Miller, Newcomer, and Fox (1999); Newcomer, Miller, et al. (1999); Newcomer, Spitalny, et al. (1999); Newcomer, Yordi, et al. (1999); Newcomer et al. (2003)	Stable	+	Yes	Yes

a. The quality results are unadjusted, but the cost study was adjusted.

year fixed effects.⁸ For example, Grabowski, Ohsfeldt, and Morrisey (2003) used a similar approach to analyze the effect of nursing home certificate of need repeal on state Medicaid long-term care expenditures for the period 1981 through 1998.

Second, the evidence on capitated programs would greatly benefit from more sophisticated analyses that controlled for the issue of selection. Clearly, the gold standard here would be a randomized study design. Once again, not a single evaluation of a capitated program meets this standard. The PACE, MSHO, Texas STAR+PLUS, Wisconsin Family Care, and S/HMO II programs would all be ideal candidates for the randomized assignment of individuals across a treatment and a control group. When randomization is viewed as too costly or infeasible, an instrumental variables approach can also be used to address the issue of selection. By finding an instrument that predicts program enrollment but not the outcomes of interest such as costs and health outcomes, this approach can be used to effectively “randomize” individuals even in a voluntary program. However, the identification of plausible and valid instruments in this context is quite challenging. A well-used instrument in health services research is distance to the provider or program (e.g., McClellan, McNeil, and Newhouse 1994). This instrument was tried in the PACE evaluation with limited success (Chatterji et al. 1998) but may be more appropriate in other settings. Other potential instruments may include transportation issues (e.g., bus or train routes), geographic barriers (e.g., lakes, rivers, mountains), or enrollment quirks (e.g., calendar timing).

As a broader point on the quality of the research to date, more of the evaluations of demonstrations need to find their way into the peer-reviewed published literature. In many cases, the results of the demonstrations are only available in an unpublished final report submitted to the funding agency. CMS, state agencies, and other funders are encouraged to make publication a necessary step in the independent evaluation of these demonstrations. This requirement will not only improve the quality of the research but also increase overall awareness of the demonstrations and encourage a greater interest among other researchers in this area.

In attempting to use the results of this literature review to direct public policy, it must be noted that the relative costs and effectiveness of these various programs are inevitably a function of the different comparison groups used across the studies. The HCBS waiver programs were compared with nursing home care, consumer-directed care was compared with agency-directed care, capitated care was compared with FFS, and case management for Medicare patients with dementia was compared with Medicare FFS. Given these different models and control groups, it is impossible to make global comparisons across all the programs. However, for policy makers with a defined objective,

the results of this literature review can speak to the cost-quality trade-offs underlying the different policy options.

Although the recent literature did not unequivocally support any one model, managed care and consumer-directed care were both identified as potential mechanisms toward providing services more efficiently, although this conclusion hinges on the specific features of the various programs. In light of the recent economic recession, public policy makers and payers will, more than ever, need to employ the most efficient models of care that minimize costs and maximize client and caregiver welfare. In a survey of state Medicaid officials, the Kaiser Family Foundation found that 49 states have either made plans or had already acted to reduce the growth in their Medicaid funding in response to state budget shortfalls for fiscal year 2003 (Smith, Gifford, and Ramesh 2003). For example, Kansas reported a reduction in benefits for home health care, and Wisconsin chose not to expand the capitated Family Care program to additional counties. In conjunction with the recent shift to a prospective payment system for Medicare home health care, there will undoubtedly be fewer public dollars spent on noninstitutional services. Yet withdrawing support of managed long-term care, for example, to achieve short-term savings may not be a prudent long-term strategy. In fact, it could be argued that prudent policy makers should use the concerns raised by the current fiscal crisis as a powerful rationale for strengthening the mechanisms with the greatest promise of enhancing effectiveness and efficiency and continuing to explore (on an incremental, demonstration basis) new payment and service models that offer the prospect of further gains in long-term care effectiveness and efficiency.

We have seen a large expansion in noninstitutional long-term care models during the past two decades. Clearly, this growth reflects a strong societal preference for these services. In a period of fiscal retrenchment, it is important to understand which programs are most effective at both constraining long-term care spending and improving client and caregiver welfare. Toward this end, this article can serve as an initial guide for policy makers with the idea that future demonstrations with rigorous study designs will be necessary to complete the picture.

NOTES

1. Expert opinion from policymakers and researchers on different models of care was obtained during the Information Brokering for Long-Term Care Conference sponsored by the Visiting Nurse Service of New York on July 17, 2003, in New York City.
2. Given this criterion, the assisted-living model was not included in this review. There are several studies examining outcomes across assisted living and nursing

home care (e.g., Frytak et al. 2001; Sloane et al. 2003; Zimmerman et al. 2003), but no work was identified in the literature examining costs.

3. The U.S. General Accounting Office (GAO 2003) recently reported that federal oversight of the quality of care in the Medicaid home- and community-based services (HCBS) waiver programs is very limited. In the absence of detailed federal requirements, states' waiver applications and annual reports often contained little or no information on the mechanisms used to ensure quality or the actual quality of care provided.
4. The potential for selection bias in examining only a minority of states is nicely illustrated by GAO's (1994) study. The report concludes that there was a negative association between nursing home bed growth and HCBS spending in the three primary study states (Oregon, Washington, and Wisconsin). However, as noted in footnote 10, "Some states (for example, Colorado and Michigan) had limited growth in the number of nursing facility beds, but also had relatively low spending for Medicaid home and community-based care. Other states (such as North Carolina and Massachusetts) had greater than average growth in the number of nursing facility beds along with relatively high home and community-based care spending" (p. 14). Based on this statement, it is hard to draw any conclusions about the effect of increased HCBS spending on nursing home bed growth.
5. Although administrative costs were not explicitly included in the comparison of the two groups, the evaluation did account for the costs associated with bookkeepers and counselors, but not the costs to the state of transferring money to consumers' spending accounts each month. However, it appears that these costs are not much different from the costs of paying agencies for services to consumers, so any differences are likely negligible.
6. Wiener and Skaggs (1995) conducted a review of the first generation of capitated programs. The programs reviewed in their study included Social/Health Maintenance Organizations (first generation), On Lok/Program of All-Inclusive Care for the Elderly (PACE) (early reports and articles), Medicare Tax Equity and Fiscal Responsibility Act (TEFRA) HMOs, and the Arizona Long-Term Care System (ALTCS; early reports and articles). Several conclusions emerged from this review. First, the early programs may have benefited from a favorable selection of enrollees (Manton et al. 1994; Newcomer et al. 1995). Second, the programs were generally able to reduce hospital utilization, but not the utilization of nursing home care and other long-term care services. Third, capitated programs had an inconclusive effect on enrollees' health and well-being. Finally, enrollees in capitated programs were generally satisfied with the care they received, but some studies reported that more impaired enrollees were relatively less satisfied than less impaired enrollees.
7. Importantly, although the ALTCS offers generous coverage of services, Medicaid beneficiaries must meet relatively stringent income and asset Medicaid tests to qualify for services compared with other states (Kasner and Shirey 2000).
8. Some may argue that HCBS expansion is endogenous to overall spending. If so, one could incorporate an instrument for HCBS expansion that is uncorrelated to overall expenditures.

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