The Gerontologist
Vol. 44, No. 5, 644–654



# Two Models of Managed Long-Term Care: Comparing PACE With a Medicaid-Only Plan

Pamela Nadash, BPhil[1]

***Purpose:*** In this study an attempt is made to understand how a Medicaid-only managed long-term-care (MMLTC) plan for elders differs from the Program of All-Inclusive Care for the Elderly (PACE), a fully integrated model, in terms of structure, operations, patient population, and service utilization. ***Design and Methods:*** With the use of information from the Outcome and Assessment Information Set and administrative data from a MMLTC plan in New York City, enrollees were compared at the start of care and their first-year service utilization with PACE, using the PACE national data set. ***Results:*** The plans differ in the range of services covered and in the larger number of members served by the MMLTC plan. The served populations differ in their sociodemographic profiles and have levels of functional need that are high, but they also differ in their relative severity of dependency in activities of daily living and instrumental activities of daily living. During the first year of enrollment, the utilization of traditional home- and community-based services was higher in PACE than in the MMLTC plan, although MMLTC plan members received much more care in the home. Total hospital utilization was lower in PACE, but nursing home utilization was higher. ***Implications:*** MMLTC is a feasible option for serving a population whose level of impairment is similar to that of PACE. Whereas PACE's reliance on adult day centers is seemingly associated with a stronger medical focus and lower hospital use, the MMLTC plan's emphasis on home-based personal care seems to be linked with lower nursing home use.

*Key Words: Integrated care, Care coordination, Home- and community-based services, Dual eligibles*

Population aging presents the U.S. health care system with new challenges, among them how best to provide health and supportive services to older individuals with limitations in activities of daily living, a group that constitutes 17% of people over 65 years of age (Alecxih, 1997). The need to meet this challenge will grow as the population ages: whereas only about 12% of 65- to 74-year-olds have long-term-care needs, nearly 70% of those over 85 do (Alecxih, 1997). Many of these older adults have chronic conditions that are complex to manage. They are at risk for multiple hospitalizations and, eventually, for nursing home placement.

Among the approaches taken to improve the ways that the health of such individuals is managed, one of the most promising developments is integrated care. Integrated care aims to make "the acute and LTC [long-term care] systems work together to ensure that a patient's entire health and daily living needs are met" (Alper & Gibson, 2001, p. 103). Depending on the form it takes, integrated care theoretically could increase access to appropriate care, reduce unnecessary care, reduce the avoidable health problems that arise out of poorly allocated care (and therefore reduce utilization), reduce incentives for providers to cost shift, and increase ease of use for patients. However, there is disagreement about the best ways to integrate care. At one extreme, it is argued that full integration can only be achieved by making one entity responsible to pay and deliver the full range of acute, primary, and long-term-care services. On the other extreme, it is argued that linking services (by using a care coordinator or other mechanisms) can achieve many of the goals of integration (see Leutz, 1999; Leutz, Greenlick, & Capitman, 1994.)

Here I focus on a model for integrating care, known as Medicaid-only managed long-term care (MMLTC), that coordinates the delivery, but not the financing, of acute and long-term-care services. The model, developed in New York State, capitates Medicaid long-term-care services only and thus avoids many of the practical difficulties confronting a fully integrated Medicare and Medicaid model. (See Tumilson, Reester, & Missmar, 2003, for a full

Pamela Nadash is now a senior research associate with Medstat.
Address correspondence to Pamela Nadash, 62 Clark Road, Brookline, MA 02445-6030. E-mail: pnadash@earthlink.net
[1]Center for Home Care Policy and Research, Visiting Nurse Service of NY, New York, NY.

discussion of these difficulties.) The benefit package is comprehensive and includes all Medicaid long-term-care services, including institutional care. Capitation of these benefits creates incentives to keep plan members out of long-term-care institutions and keep them as functionally independent as possible. Plans are additionally responsible for coordinating out-of-benefit health services, such as primary and acute care.

Here I attempt to put MMLTC into context by using data from the largest MMLTC plan in New York State (referred to throughout the text as "the Plan") and comparing it with the Program of All-Inclusive Care for the Elderly (PACE), a fully integrated model of managed long-term care. The Plan was developed by a large nonprofit provider organization based in New York City. PACE, in contrast, is a well-established, nationally known program serving people with very high care needs in a number of sites across the country. PACE differs from MMLTC in, among other things, its financing, its service-delivery model, and the range of services it provides. Because of these differences, it provides a useful contrast to MMLTC, allowing us to consider whether MMLTC can serve a comparable population and to understand how the programs' different structures might affect the services they provide.

## Summary of PACE

Because PACE has been well described in the literature (Bodenheimer, 1999; Eng, Pedulla, Eleazer, McCann, & Fox, 1998; Hansen, 1999; Rich, 1999), its key features are summarized here. PACE, which began serving members in 1971, is perhaps the best-known and most well-established example of fully integrated care. It enrolls nursing-home-eligible individuals who are 55 and older into a capitated program that provides all Medicare and Medicaid acute and long-term-care services. Services are delivered primarily in an adult day services center, and they are managed by an interdisciplinary team that includes a geriatric physician as well as nurses, social workers, and therapists. The model appears to deliver high-quality care: A number of studies provide evidence that PACE is effective in reducing nursing home and hospital utilization and improving health status and quality of life (Chatterji, Burstein, Kidder, & White, 1998; White, Able, & Kidder, 2000).

Despite provisions in the Balanced Budget Act of 1997 that made setting up a PACE program administratively less difficult, growth in PACE has been limited. As of 2000, there were 24 PACE sites around the country serving nearly 7,000 individuals.

It is important to note that there is considerable variation among individual PACE sites: They differ in their size (from the smallest, with 87 participants, to the largest, with 877) and location (National PACE Association, 2002). Sites also differ considerably in service-delivery characteristics. For example, some rely heavily on group housing. In Portland, OR, just over 90% of the population received overnight supervision in a group home (in 1997), whereas group housing was not an option at other PACE sites at that time. Some also rely more heavily on adult day services, with one averaging 15 days per month (Columbia, SC), and another averaging 8.5 days a month per participant (Portland). Demographic characteristics among sites also vary and reflect the wide range of geographic locations. Moreover, sites differ considerably in the disability levels of the populations they enroll and in the proportion of individuals with cognitive impairment (Mukamel, 1998).

## Description of the Plan

### *Development of the MMLTC Model*

New York State's commitment to providing residents with long-term care has resulted in high levels of expenditure on home- and community-based services (Kitchener, Carrillo, & Harrington, 2001) and on all forms of long-term care (Burwell, 2001). Consequently, the state has an interest in new approaches to managing long-term-care service provision and costs. In the early 1990s, the state, aided by The Commonwealth Fund, initiated a demonstration project in which Medicaid-funded long-term-care services are fully capitated and coordinated with fee-for-service care. Ten plans—nine nonprofit, one for profit—eventually became operational. (See Liu, Long, Storeygard, & Lockshin, 2001, and Nadash, 2002, for more details.) In 1997, the state enacted legislation (the Long Term Care Integration and Finance Act) to regulate plans and to encourage the development of a variety of capitated models for individuals who are dually eligible for Medicare and Medicaid.

MMLTC plans were seen as a first step toward the goal of full integration, and, from the state's perspective, as less complex, because capitation of long-term-care services required no waiver of federal Medicaid or Medicare requirements. Instead, the benefits capitated (in addition to home-based personal care) were equivalent to those included under the state's nursing home benefit—hence the inclusion of the pharmacy, dental, audiology, and optometry benefits (see Appendix to see how Plan benefits compare with PACE benefits). To meet the state's goal of fully integrating care, plans are additionally required to coordinate medical services not in the benefit package, including physician and hospital visits.

### *Eligibility and Enrollment*

At enrollment, Plan participants must be living in the community, meet state criteria for a nursing home level of care, be eligible for Medicaid, and require

long-term care for more than 120 days—requirements that apply to all MMLTC plan members in New York State. Although MMLTC plans may choose to focus on specific populations (one plan targets younger persons with disabilities, whereas another focuses on the visually impaired), the Plan studied in this report restricts eligibility to those 65 years of age or older; thus, virtually all (99.88%) of its members are dually eligible.

Enrollment in all MMLTC plans is entirely voluntary. As in the PACE program, direct cold calling or marketing to potential enrollees is prohibited. Consequently, plans rely on marketing to potential referrers such as physicians, home care agencies, community-based organizations, and local departments of social services. The bulk of referrals to the Plan studied in this report come from one of the Plan's related organizations. Marketing materials stress the advantages of members having their "own" nurse; the individualized attention received by members; the range of services and service providers available; the Plan's 24-hr help line; and the coordinated care that members receive.

Once referred, a potential member is assessed for eligibility and is provided with information about the advantages and disadvantages of enrolling. If the individual is interested, the Plan completes a comprehensive assessment and—with the prospective member, his or her family, physician, and other providers—a preliminary plan of care. The local department of social services provides the final approval for enrollment.

### *Financing and Payment*

All MMLTC plans are financed by capitation and are at full risk for all covered services. The state does not reinsure or limit risk for the plans in any way. Moreover, no one is prevented from enrolling or required to disenroll on the basis of level of need or cost of care.

Payment rates are case-mix adjusted on the basis of enrollee level of impairment, age, and county of residence; there are four rate cells. The rates, negotiated annually, are between 50% and 67% of the average monthly nursing home rates in the New York City area and cannot exceed 95% of the upper payment limit, which is the estimated historical fee-for-service expenditure for a like population.

### *Service Delivery Features of the Plan*

MMLTC plans have considerable flexibility in how they may deliver services. The Plan described here is sponsored by a large nonprofit home health care organization rooted in the principles of home- and community-based service delivery. Thus, it emphasizes responsibility for the "whole person," creativity in responding to members' needs, member participation in decision making, and a focus on improving outcomes. Although the Plan pays for institutional services, every effort is made to keep members living in the community.

As a managed-care entity, the Plan does not provide services directly. Rather, it arranges and pays for them, contracting with a broad network of providers and exerting influence through these contractual relationships. The provider network comprises a few thousand community-based providers and organizations throughout New York City. Although some providers (such as the nurse consultants) work exclusively for the Plan through a subcontract, for other providers (such as dentists, pharmacies, and transportation services), the Plan is only one among many sources of business.

At the core of the service-delivery network is the Plan's contract with its related organization to provide essential care management and home-based nursing and personal care services. These services are delivered through multidisciplinary teams, of which there are 14, each serving up to 200 members. The eight nurse consultants in each of these teams play a key role. Each is responsible for directly providing services, managing contracted services, planning care, and coordinating care for 20 to 25 members. Nurse consultants work with other disciplines as needed to create a person-focused multidisciplinary unit that includes a member-services representative (who acts as a point of contact and provides practical support to members), home health aide, and social worker, and that may also include rehabilitation therapists, nutritionists, nurse practitioners, and clinical nurse specialists.

### *Managing Risk*

The Plan manages risk through a variety of techniques. The most important methods are care planning, which aims to ensure the substitution of less expensive for more expensive services where appropriate, and care coordination, which aims to ensure that members receive an appropriate mix of both long-term care and other health services. The Plan also contracts with a pharmacy benefits manager to ensure the appropriate utilization of prescription drugs. Furthermore, the Plan conducts utilization reviews for selected individuals, uses its extensive information resources to track utilization, and negotiates with network providers to keep costs low.

### *Coordinating Long-Term Care with Acute and Primary Care*

One of the key challenges presented by the MMLTC model is the need to coordinate services that are not paid for by the program, such as physician and hospital care. Health professionals may be unaware that a patient is an MMLTC plan member and, in any case, may have few incentives to cooperate with plan staff.

The Plan in this study uses three main tools to facilitate coordination. First, member-service representatives provide support for members' practical and logistical needs by, for example, scheduling physician visits and organizing transportation. Second, the care-coordinator role is structured to ensure member access to the full range of services: For example, nurse consultants must abide by organizational guidelines addressing member care in hospitals and nursing homes. These specify, for example, minimum standards for nurse visits to nursing homes and hospitals. Nurses must also ensure the exchange of pertinent patient information and are heavily involved in managing transitions between service settings.

Last, the Plan provides training and organizational support for the challenges presented by these sometimes-difficult environments. For example, the Plan provides nurses with training in negotiation skills. Moreover, the organization promotes opportunities for nurses to develop strategies for improving communication with physicians, hospital staff, and nursing home workers through, for example, regular team meetings.

### *Census Growth and Consumer Satisfaction*

Census growth in the Plan has been rapid. The first member was enrolled in January, 1998. By 2000, enrollment had reached roughly 2,500, rapidly exceeding its initial target enrollment of 2,000. More recently enrollment has risen to 2,845 (in March 2003); the primary constraint to growth has been staffing shortages.

This rapid enrollment growth can no doubt be attributed to the extensive referral base the Plan has by association with its related organization. However, program design is also likely to be a factor. Having one's "own" nurse is attractive, as is the ability to retain existing arrangements for acute and primary care. Plan members also appear to be highly satisfied with their services, with overall satisfaction levels consistently averaging 98% from year to year (from a sample of 1,094, for members reporting that they are satisfied or highly satisfied from 1999 to 2001, using data collected on a quarterly basis by the Gallup Organization.)

## Methods

I compare sociodemographics and health and functional status for individuals newly enrolled in the two programs, as well as service utilization for the first 12 months following enrollment.

### *Data Sources*

Data relating to the Plan come from the Outcome and Assessment Information Set (OASIS) and from Plan administrative data. OASIS is a standardized assessment instrument, generally administered by a nurse, which has been mandated by the Centers for Medicare and Medicaid Services (CMS) for use by home health agencies. The tool is intended to allow CMS and states to monitor the quality of services provided and to adjust Medicare payments to reflect patient characteristics (General Accounting Office, 2001); it contains 79 demographic, clinical, and functional data items for assessing patients and assessing outcomes. Utilization data are derived from Plan administrative data, which are used to pay providers and monitor service utilization.

Although the Plan does not have access to Medicare-claims data, it does have information about certain Medicare-funded services. First, because of its responsibility to coordinate care, the Plan systematically collects information about hospitalizations. This information comes from a range of sources, but it primarily comes from nurse consultants, who know about and record planned hospitalizations as part of their clinical responsibility, and home health aides, who provide information about unplanned hospitalizations as part of their responsibility to report on any change in member status. Second, the plan has good information about Medicare-funded postacute nursing home stays, as nurse consultants are directly involved in discharge planning and normally arrange nursing home admissions. Third, Plan members who receive Medicare-funded home health services get them from Plan providers (which include a certified home health agency). Because these services are provided by a related organization, the Plan has access to complete information.

Data relating to PACE come from the PACE public-use data set, available from the National PACE Association and made possible through funding by the John A. Hartford Foundation and the former Health Care Financing Administration (now CMS). The data include demographic and program-related information for each member, items addressing their health and functional status, utilization records, and information about their informal support networks. Although centralized data management was carried out by one PACE site, each of the 12 sites contributing to this data set was responsible for ensuring the accurate and consistent collection of information. Thus, there may have been variations in data collection among sites.

### *Sample*

Plan data include the 1,297 individuals who enrolled between January 1, 2000, and December 31, 2000. PACE data include the 1,382 individuals who enrolled in 12 PACE sites between July 1, 1996, and June 30, 1997, the latest time period for which a year's worth of utilization data were available. (The complete data set includes information on

enrollees from January 1, 1990, to June 30, 1998.) PACE staff confirm that there is no reason to believe that enrollees from this time period would be different from those from any other time period (K. Gerow, personal communication, September 11, 2002). Actual sample sizes vary, depending on the analysis, because of missing information on some enrollees and because I compare only those over 65 years of age. The sample size for each analysis is reported in the Tables.

### Measures

I constructed scales assessing individuals' needs for assistance with activities of daily living (ADLs) and instrumental activities of daily living (IADLs) by matching OASIS functional status items with those found in the PACE national data set, counting any need for assistance as a one, and summing the items. Because PACE only counted individuals as needing assistance if it was needed in the absence of an assistive device, I recoded OASIS items accordingly. The two items not matching closely were M0690 (transferring) and M0700 (walking) in the OASIS instrument, where the lowest level of need included need for personal assistance *or* an assistive device. Thus, I present the data in three ways to allow the reader to assess the impact of this coding discrepancy on the results: The low estimate represents the population mean score when need for personal assistance or an assistive device was not counted as a need for assistance, the high estimate represents the mean score when it was counted as a need, and the line entitled "ADL Limitations (range = 0–5)" presents the sum of ADLs when the ambiguous items are excluded altogether.

Information regarding the Plan member diagnoses comes from the OASIS instrument, which collects information about conditions under active treatment by the home care agency and limits the maximum number of conditions to five. In contrast, the PACE data-collection instrument does not set a limit on the maximum number of conditions, nor does it collect information about conditions under active home care treatment only. Moreover, the Plan's information at start of care reflects a single clinician's initial assessment, as structured by the OASIS instrument, whereas PACE information at start of care reflects a more comprehensive assessment by an interdisciplinary team. Thus comparisons of health conditions experienced by the two populations are likely to underestimate their prevalence in the Plan. To improve estimates of the prevalence of cognitive impairment and depression and anxiety in the Plan, I used supplementary items from the OASIS. These included selected responses to M0220 (conditions prior to change in regimen or hospital stay within 14 days), M0560 (cognitive functioning), M0570 (confusion), M0590 (depressive feelings), and M0600 (patient behaviors). I chose the most prevalent conditions for presentation.

The utilization data differ in kind between the two data sets. Many PACE services discussed in this article are delivered in adult day services centers. Any encounter in the center on a particular day, however long or short, with a health professional in a single discipline is recorded as an instance of service utilization. Multiple encounters in a day are recorded as one encounter. Plan encounters, however, are home visits that normally last a minimum of a half hour. As a way to ensure comparability between programs, Plan service utilization data include Medicare-reimbursed home-based services.

I calculate length of stay in hospitals and nursing homes by using the period from admission to discharge *or* the last day of the period under study (whichever is shorter).

### Analysis

Here I present simple descriptive data. I used *t* tests of continuous data and chi-squared tests of dichotomous data to determine the statistical significance of differences between the two populations. I also used nonparametric tests such as the Wilcoxon Rank-Sum Test, where appropriate. In addition, I examined correlations. For the analysis of nursing home utilization and use of overnight supervision in group homes, I used logistic regression techniques.

## Results

### Sociodemographic Factors

The populations served by the PACE and the Plan are demographically quite different (see Tables 1 and 2). The average age on enrollment was the same for both plans. However, the age distribution differed considerably. Although most participants in both plans were in the age group from 75 to 84 years, PACE enrolled more people who are 85 or older as well as more people under 65.

The gender distribution was the same for both programs, with about 72% of the population being female. Plan members were more likely to be Hispanic and much less likely to be White, with the Plan's enrollment of Hispanics exceeding PACE's by about 25%.

Living arrangements differ considerably between the two programs. Plan members were 15% more likely to live alone than were PACE participants. Access to informal care also differs for the two populations. PACE participants were more likely to have a primary caregiver, and there were very large differences in the level of informal assistance received from primary caregivers: Whereas only 30% of those in the Plan who identified a primary caregiver received assistance with ADLs from them, more than 45% of those in PACE did. Differences in informal assistance

**Table 1. Age, by Program**

| Characteristics | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| Mean years | 78.7 | 78.7 | *ns* |
| Percent distribution | | | |
| Under 65 years | 0.6 | 6.1 | |
| 65–74 years | 32.3 | 25.8 | |
| 75–84 years | 43.6 | 39.9 | < .0001 |
| 85+ years | 23.6 | 28.2 | |
| All | 100.0 | 100.0 | |

*Note*: MMLTC = Medicaid-only managed long-term care ($n$ = 1,267); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,382).

with IADLs were even greater: Roughly 60% of those in the Plan who reported a primary caregiver received informal assistance with IADLs, whereas nearly all (98%) of those in PACE did.

## Health and Functional Status at Enrollment

Individuals entering into both PACE and the Plan had high levels of functional need. Although PACE participants had slightly higher IADL needs and higher levels of prevalence for complex medical conditions (see Table 3), Plan participants appear to have had higher ADL needs. Using the most conservative estimate of Plan members' ADL needs, I found that both populations had a mean of 3.8 ADL needs. However, when I used the higher estimate of ADL need, Plan members had a significantly higher level of ADL need, with 5.2 ADL limitations, as compared with PACE's 3.8. When I excluded the ambiguous ADL items, Plan members had an average of 3.6 ADL needs—significantly higher than the average of 2.9 among new enrollees in PACE—and had almost 20% more individuals with three or more ADL needs. The need for assistance with IADLs was slightly but significantly higher among PACE participants (5.6 in PACE, compared with 5.5 in the Plan, on a scale of 0–6, where 6 represents the highest level of need).

On enrollment, Plan members were significantly more likely to have diabetes or hypertension, and marginally more likely to have depression or anxiety. PACE participants, in contrast, were significantly more likely to have arthritis, chronic obstructive pulmonary disease, congestive heart failure, or cerebral vascular disease. Moreover, they were much more likely to have been cognitively impaired (Table 4), with nearly half of PACE participants having a diagnosis of dementia, compared with a third of Plan members.

## Home- and Community-Based Service Utilization

Use of traditional long-term-care services during the first year of enrollment varied markedly between the two groups (see Table 5), with PACE participants receiving a greater volume of skilled care. MMLTC Plan members saw a nurse, on average, twice a month, whereas PACE participants had an encounter with a nurse more than eight times a month on average. The average number of encounters with nurse practitioners, social workers, and ancillary (occupational, physical, and speech) therapists was also higher for PACE participants.

Much service utilization among PACE participants took place in adult day services centers. Nearly 30% of PACE participants received no home health aid or home-delivered personal care at all. In contrast, Plan members received more than four times as many hours of home health aid and home-delivered personal care as PACE participants. Nearly all PACE participants attended adult day centers, whereas only about 7% of Plan members did. Adult day services also differed in kind between the two plans: The centers used by Plan members do not provide medical services on site, in contrast with the centers participating in PACE.

**Table 2. Sociodemographic Characteristics, by Program**

| Characteristics | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| Percent female | 72.5 | 71.5 | *ns* |
| Race (%) | | | |
| Asian | 10.5 | 11.6 | *ns* |
| Black | 27.4 | 27.9 | *ns* |
| Hispanic | 36.7 | 11.5 | < .0001 |
| White | 24.1 | 48.7 | < .0001 |
| Percent living alone | 45.5 | 30.3 | < .0001 |
| Informal care (%) | | | |
| Has primary caregiver | 81.7 | 86.7 | 0.0011 |
| Primary caregiver assists with ADLs | 30.3 | 44.3 | < .0001 |
| Primary caregiver assists with IADLs | 59.9 | 97.8 | < .0001 |

*Notes*: Comparisons include only those participants who are 65 years of age or older. The PACE informal care sample was 1,119 (as a result of missing interviews). Race categories are not mutually exclusive.

MMLTC = Medicaid-only managed long-term care ($n$ = 1,262); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,298); ADL = activity of daily living; IADL = instrumental ADL.

## Hospital and Nursing Home Use

Total hospital utilization during the first year of enrollment was higher among Plan members than it was among PACE participants. Although Plan members were only slightly more likely to be admitted to a hospital, their stays were longer than were those of PACE participants.

Overall nursing home days during the first year of enrollment were higher for PACE participants than

Table 3. Functional Status, by Program

| Functional Status Measure | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| ADL limitations (range = 0–7) | | | |
| Low estimate | | | |
| *M* | 3.8 | 3.8 | *ns* |
| Percent with 0–2 | 20.6 | 33.8 | < .0001 |
| Percent with 3+ | 79.4 | 66.2 | |
| High estimate | | | |
| *M* | 5.2 | 3.8 | < .0001 |
| Percent with 0–2 | 9.3 | 33.8 | < .0001 |
| Percent with 3+ | 90.7 | 66.2 | |
| ADL limitations (range = 0–5) | | | |
| *M* | 3.6 | 2.9 | < .0001 |
| Percent with 0–2 | 20.8 | 39.2 | < .0001 |
| Percent with 3+ | 79.2 | 60.8 | |
| IADL limitations (range = 0–6) | | | |
| *M* | 5.5 | 5.6 | < .0001 |
| Percent with 0–2 | 0.5 | 1.6 | < .0001 |
| Percent with 3–4 | 9.1 | 6.7 | |
| Percent with 5 | 32.5 | 16.0 | |
| Percent with 6 | 57.8 | 75.8 | |

*Notes*: See the Methods section for a description of the ADL and IADL measures and definitions of the high and low estimates of ADL limitations. Comparisons include only those participants who are 65 years of age or older. MMLTC = Medicaid-only managed long-term care ($n$ = 1,140); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,277); ADL = activity of daily living; IADL = instrumental ADL.

Table 4. Percent With Chronic Conditions, by Program

| Percent With Conditions | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| Arthritis | 35.0 | 46.1 | < .0001 |
| Cognitive impairment | 32.9 | 49.1 | < .0001 |
| COPD | 7.2 | 13.2 | < .0001 |
| Congestive heart failure | 12.2 | 19.2 | < .0001 |
| Cardiovascular disease | 16.8 | 28.6 | < .0001 |
| Depression or anxiety | 32.9 | 29.3 | .0538 |
| Diabetes | 31.8 | 26.2 | .0021 |
| High blood pressure | 66.2 | 58.7 | < .0001 |

*Notes*: Comparisons include only those participants who are 65 years of age or older. Information regarding Plan member diagnoses comes from the Outcome and Assessment Information Set instrument, which records conditions under active treatment only and limits the maximum number of conditions to five. PACE data have neither of these restrictions.

MMLTC = Medicaid-only managed long-term care ($n$ = 1,140); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,298); COPD = chronic obstructive pulmonary disease.

they were for Plan members. In addition, patterns of nursing home use differed considerably between the two groups. PACE participants were more likely to have a nursing home stay than Plan members were, although differences in the mean length of stay for the two programs did not reach statistical significance (see Table 6). However, the median length of stay is shorter for PACE, indicating a skewing of the distribution toward longer stays for a minority of nursing home visits.

### *Further Investigation of Nursing Home Use*

The finding that PACE participants had a higher likelihood to have any nursing home stay prompted further investigation. I used logistic regression to model the likelihood of any nursing home admission for the aggregated sample, PACE alone, and the Plan alone (results not shown). Independent variables included sociodemographic variables (such as ethnicity, gender, living status, and levels of informal assistance), diagnoses, functional status (using an aggregated measure of ADL and IADL impairment, according to Spector & Fleishman, 1998), and nursing home and hospital utilization prior to admission to the programs. I also used the program (PACE or the Plan) as an independent variable in the aggregated sample. All of the regression models had good fit and were significant, but they had low psuedo-$R^2$ values, indicating that they omitted important variables.

For the aggregated sample, significant predictors of having a nursing home stay included having higher levels of functional impairment, cognitive impairment, and White ethnicity, and being enrolled in PACE. Having a hospitalization prior to program admission was marginally significant ($p$ = .0716). For the PACE sample, significant predictors were having higher levels of functional impairment, cognitive impairment, diabetes, White ethnicity, and bowel incontinence. For the Plan sample, however, the only variable that appeared significant was prior hospitalization. (All of the coefficients agreed in their directionality, however, with the exception of diabetes, which reduced risk for nursing home admission in the Plan.)

PACE participants also had access to residential options unavailable to Plan members that could affect their use of nursing homes. Just over 15% of PACE participants in our sample received overnight supervision in group homes, staying an average of 260 days during their first year of enrollment. (PACE also provides PACE-affiliated housing options to nearly a quarter of PACE participants.) When I used a logistic regression to predict the likelihood to receive overnight supervision in group homes, the following variables emerged as significant: having functional need, cognitive impairment, and high blood pressure; living alone; being White; and having a hospitalization prior to PACE admission. Moreover, a chi-square test shows that people receiving overnight supervision in group homes are just as likely as other PACE participants to enter nursing homes.

## Discussion

Although the MMLTC Plan analyzed here and PACE are both forms of managed long-term care,

**Table 5. Home and Community-Based Service Utilization, by Program**

| Utilization Measure | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| All HCBS services | | | |
| Percent users (per annum) | | | |
| Nursing | 99.92 | 100.00 | *ns* |
| Nurse practitioner | 18.12 | 66.64 | < .0001 |
| Social work | 93.75 | 99.64 | < .0001 |
| Ancillary therapists | 88.82 | 93.98 | < .0001 |
| Per member per month utilization (visits) | | | |
| Nursing | 2.20 | 8.42 | < .0001 |
| Nurse practitioner | 0.05 | 0.93 | < .0001 |
| Social work | 0.37 | 2.79 | < .0001 |
| Ancillary therapists | 0.73 | 6.43 | < .0001 |
| Home-delivered services | | | |
| Percent users (per annum) | | | |
| Nursing | 99.92 | 89.52 | < .0001 |
| Nurse practitioner | 18.12 | 13.49 | .0021 |
| Social work | 93.75 | 52.96 | < .0001 |
| Ancillary therapists | 88.82 | 43.85 | < .0001 |
| Home health–personal care | 90.36 | 70.37 | < .0001 |
| Average monthly hours of service | | | |
| Home health–personal care | 112.98 | 25.05 | < .0001 |
| Per member per month utilization (visits) | | | |
| Nursing | 2.20 | 1.16 | < .0001 |
| Nurse practitioner | 0.05 | 0.07 | .0054 |
| Social work | 0.37 | 0.35 | < .0001 |
| Ancillary therapists | 0.73 | 0.24 | < .0001 |
| Adult day center visits | | | |
| Percent users (per annum) | 7.02 | 99.18 | < .0001 |
| Visits per member per month | 0.23 | 11.38 | < .0001 |

*Notes*: Comparisons include utilization of Medicare and Medicaid visits for the first 12 months following enrollment only for participants who are aged 65 years or older. Ancillary therapists include occupational, physical, and speech therapists. Adult day center visits differ in kind. The Plan offers social day care only, whereas PACE provides medical day care.

MMLTC = Medicaid-only managed long-term care ($n$ = 1,297); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,097); HCBS = home- and community-based services.

**Table 6. Hospital and Nursing Home Utilization, by Program**

| Utilization Measure | MMLTC Plan | PACE | *p* |
|---|---|---|---|
| Hospital utilization | | | |
| All enrollees | | | |
| Percent users | 35.2 | 33.7 | .0362 |
| Proportion of days in hospitals | 2.0 | 1.0 | < .0001 |
| Hospital users only | | | |
| Mean LOS | 9.5 | 5.9 | < .0001 |
| Median LOS | 7.0 | 4.0 | < .0001 |
| Nursing home utilization | | | |
| All enrollees | | | |
| Percent users | 5.7 | 21.0 | < .0001 |
| Proportion of days in nursing homes | 0.9 | 4.5 | < .0001 |
| Nursing home users only | | | |
| Mean LOS | 37.2 | 44.2 | *ns* |
| Median LOS | 22.0 | 13.0 | .0004 |

*Notes*: Comparisons concern utilization for the first 12 months following enrollment only for participants who are 65 years of age or older. LOS for a hospital or nursing home stay is the difference between the day of discharge *or* the last day of the period under study (whichever occurs first) and the day an individual was admitted.

MMLTC = Medicaid-only managed long-term care ($n$ = 1,297); PACE = Program of All-Inclusive Care for the Elderly ($n$ = 1,298); LOS = length of stay.

the models of care they embody are significantly different. PACE pays for and provides the full range of acute and long-term-care services and relies heavily on adult day services centers to provide many medical and allied health services. In contrast, the Plan pays for long-term-care services only, but it is responsible for coordinating the full range of acute and primary-care services. It relies heavily on home-delivered services and provides a large quantity of home health aid and personal care services. Both rely on a team structure to coordinate care, but PACE teams include physicians (often geriatricians) in addition to the nurses, social workers, and ancillary therapists available in both programs. Another important difference lies in program scale: The Plan has roughly 2,800 members, whereas the average PACE site has only 274 participants (National PACE Association, 2002). Moreover, PACE sites differ considerably among themselves.

These differences hold advantages and disadvantages for members. PACE pays for, and consequently has a high level of control over, the full range of care. In contrast, the Plan can directly influence only the long-term-care services it pays for; it must rely on the persistence and communication skills of its nurses to influence the delivery of primary and acute care. PACE members must use the PACE network of providers for all Medicare- and Medicaid-covered services, whereas Plan members need not alter their arrangements for Medicare-funded services such as primary or acute care, nor must they attend adult day services centers, program features that may make MMLTC more attractive to some. In contrast, PACE participants may benefit from the broad range of services available under the fully capitated model and from the ease of access that results from having services readily available in the adult day setting. The organizational complexity and financial challenges, however, of establishing and operating a PACE program may limit the willingness of organizations to develop a PACE site, restricting the model's availability. In contrast, the Plan was relatively simple to establish. It did not have to set up its own adult day services sites (which, to conform to

the PACE model, must be able to support an array of medical services); nor did it require the state to seek a waiver of Medicaid requirements from the federal government. Consequently, the Plan was able to reach its current census of about 2,800 participants after only 4 years of operation.

The data presented here indicate that the populations enrolled by the two models are both highly impaired, but they differ in their patterns of impairment and experience of complex medical conditions. In addition, their sociodemographic profiles differ considerably—differences that are likely attributable to the Plan's New York City location. The potential impact of these differences makes it difficult to conclude that either of the programs enrolls a riskier population. Miller and Weissert's (2000) review of the literature on risk factors for hospitalization and nursing home placement indicates that both Plan members and PACE participants exhibit significant clinical risk factors for hospitalization. It also indicates that PACE members' higher rate of cognitive impairment would place them at increased risk of nursing home placement, a pattern I observed in the data. However, the demographic differences have less clear implications. Plan members are more likely to be Hispanic, more likely to be living alone, less likely to have a primary caregiver, and, among those with primary caregivers, less likely to receive ADL or IADL assistance from a primary caregiver. Although living alone is one of the strongest demographic risk factors for nursing home placement, use of informal care also increases risk (according to Miller and Weissert's review). In addition, it has long been suspected that people who choose to attend adult day services are likely to differ in important ways from people who prefer to stay at home, although there is currently little hard evidence on what these differences are and how they might affect utilization. (Dabelko & Balaswamy, 2000, provides some information.) Therefore, although differences between the populations enrolled in the two programs are likely to account for some of the differences in nursing home and hospital utilization, the overall high level of impairment in the two groups makes it likely that the observed differences are also due to differences in the programs' structures, operations, and locations.

The PACE reputation for tight control of hospital utilization (Chatterji et al., 1998; White et al., 2000) is substantiated in these data; the average hospital length of stay for the PACE population during its first year of enrollment was 5.9 days, compared with the national average of 6.0 days for all Medicare beneficiaries in 2000 (CMS, 2001). In contrast, the Plan's average hospital length of stay (9.5 days) was more typical of New York State generally, which had an average length of stay of 8.3 days for all Medicare beneficiaries in the year 2000 (CMS).

Other important contrasts between programs include PACE's much higher utilization of certain long-term-care services, such as nurses, ancillary therapists, and social workers, likely the result of PACE's use of the adult day services setting for service delivery. The Plan, in contrast, has much higher utilization of home health aides and home-based personal care during the first year of enrollment.

Another intriguing finding is that although the two programs serve populations that are both highly impaired (albeit in different ways), the Plan has lower nursing home utilization during the first year of enrollment. This finding is somewhat surprising, given the expectation that a fully integrated model of health care delivery would reduce nursing home utilization relative to a partially capitated model. Although both plans have the financial incentive to limit use of expensive nursing facility care, it is thought that an integrated model would yield additional benefits.

There are a variety of potential explanations for this finding. First, the Plan's high level of support in the home may substitute for nursing-home placement. Second, PACE's higher proportion of individuals with cognitive impairment may increase members' likelihood to use nursing homes. Third, PACE and the Plan may use nursing homes differently. Although the mean nursing home length of stay for PACE does not differ from that of the Plan, PACE has a high proportion of short-stay visits and a smaller proportion of long-stay visits that inflate the mean, suggesting that PACE may use nursing homes mainly as respite or rehabilitation and have only a few permanent placements. In New York City, in contrast, rehabilitation may take place more frequently in hospitals, thus increasing the apparent length of stay for hospitalization in the Plan and decreasing its nursing home utilization figures. Certainly, among PACE sites there is variation in nursing home utilization (in one site only 3% had a nursing home stay in their first year of enrollment, whereas in another site 42% had one), supporting the possibility that local area variations in nursing home or hospital practices and capacities might influence utilization; so might the differences in populations among the sites. However, variation could also be due to operational differences among sites and between programs.

Last, some other factor associated with the Plan may account for its higher nursing home utilization. I explored this hypothesis in the analysis, which found that program model (PACE or the Plan), along with a range of other variables, was a highly significant factor in determining whether an individual had a nursing home stay or not. However, the model achieved a psuedo-$R^2$ of only 0.0617, indicating that important variables were omitted from the model. When modeling risk for nursing home admission in each program separately, I found that the variables that emerged as significant differ between the two programs. For PACE participants, the risk factors were fairly consistent with the literature. For the Plan, however, only one variable

emerged as significant (hospitalization prior to admission to the program). This latter null finding may indicate that risk factors for nursing home admission operate differently under the Plan.

Another element to consider when one is seeking to explain the differences in nursing home utilization is the availability of an additional housing option (overnight supervision in group homes) in PACE. However, this would normally be thought to reduce use of nursing homes. Moreover, it also means that a lower proportion of PACE participants lived in their own homes during their first year of enrollment, despite the higher levels of informal assistance they received (levels of which did not differ significantly for those receiving overnight supervision in group homes). A definitive answer to the question of higher nursing home utilization in PACE will require further research.

Yet another interesting finding was the high level of caregiver assistance that PACE members enjoy relative to Plan members. This finding is consistent with other findings that Plan members are more likely to live alone and lack an informal caregiver, and it supports the overall conclusion that the populations enrolled in the two programs are qualitatively different.

The data have some important limitations. First, information regarding Plan member diagnoses came from the OASIS instrument, which collects information about conditions under active treatment by the home care agency and limits the maximum number of conditions to five. In contrast, PACE data at start of care came from a more comprehensive multidisciplinary assessment; used a data-collection instrument that did not set a limit on the maximum number of conditions; and did not limit its conditions to those under active treatment only. Thus, my figures likely underestimate the number of the Plan members with certain conditions. The estimate of cognitive impairment is of particular concern, as it is a condition for which members are unlikely to be under active home care treatment; however, the measure of cognitive impairment was supplemented by other OASIS items. Second, ADL items were not perfectly matched. The data on functional status are presented in a variety of ways to allow the reader to assess the impact of the coding problem on the data. Third, PACE utilization data for services that take place in an adult day services center count every day in which an encounter with a staff member takes place as a visit, however long or short those encounters might be, in contrast to the Plan visits. Thus, PACE data may underestimate utilization if individuals have more than one encounter during a day, and may overestimate utilization if encounters are of short duration.

A further limitation of the study is that it compares only two models of managed long-term care and does not include cost data. To truly understand the comparative merits of managed-care techniques in serving the long-term-care population, researchers would need to consider the full range of managed long-term-care models across the country. (A partial list of these includes the Social HMO, the Arizona Long-Term Care System, the Wisconsin Family Care program, and the Texas Star+Plus program.) Key differences among these models include service-delivery approaches, benefit packages, populations served, and payment methodologies and levels. An important consideration is that other models are likely to have lower capitation amounts than either PACE (which benefits from a generous 2.39 "frailty factor" adjustment in its Medicare rate) or the MMLTC plan (which benefits from New York State's comparatively high levels of per capita spending on long-term care). Moreover, a more detailed analysis of differences among the many PACE sites may well yield important findings regarding operational differences and the effects of scale on program outcomes.

## Conclusions

This article provides evidence that the Plan is a feasible and distinctive option for serving a population whose level of impairment is roughly similar to but differs in important ways from that of PACE. The Plan's structure varies considerably from PACE, a variation that allows it to serve more than 10 times the members served by an average PACE site. The Plan relies on a different service-delivery model, using home health services heavily, whereas PACE provides a greater quantity and uses a broader range of services, relying heavily on services delivered in an adult day setting. The nursing home utilization figures presented here show that the Plan is effective in keeping its members out of nursing homes, relative to all PACE sites; however, its ability to control hospitalizations appears to be somewhat constrained by its inability to significantly influence the delivery of primary- and acute-care services.

### References


Alecxih, L. M. (1997). What is it, who needs it, and who provides it? In B. L. Boyd (Ed.), *Long-term care: Knowing the risk, paying the price* (pp. 1–17). Washington, DC: Health Insurance Association of America.

Alper, J., & Gibson, R. (2001). Integrating acute and long-term care for the elderly. In S. L. Issaacs & J. R. Knickman (Eds.), *To improve health and health care 2001* (p. 103). Princeton, NJ: The Robert Wood Johnson Foundation.

Bodenheimer, T. (1999). Long-term care for frail elderly people—The On Lok Model. *The New England Journal of Medicine, 341,* 1324–1328.

Burwell, B. (2001). Medicaid long-term care expenditures in Fiscal Year 2000. *The Gerontologist, 41,* 687–691.

Centers for Medicare and Medicaid Services. (2001). 100% MEDPAR inpatient hospital fiscal year 2000. Baltimore, MD: Author. Accessed December 16, 2002, from http://www.cms.gov/statistics/medpar/shtstay00state.pdf

Chatterji, P., Burstein, N. R., Kidder, D., & White, A. J. (1998). *Evaluation of the Program of All-Inclusive Care for the Elderly (PACE) demonstration: The impact of PACE on participant outcomes. Final report.* Cambridge, MA: Abt Associates.

Dabelko, H. I., & Balaswamy, S. (2000). Use of adult day services and home health care services by older adults: A comparative analysis. *Home Health Care Services Quarterly, 18*(3), 65–79.

Eng, C., Pedulla, J., Eleazer, G. P., McCann, R., & Fox, N. (1998) Program of All-Inclusive Care for the Elderly (PACE): An innovative model of integrated geriatric care and financing. *Journal of the American Geriatrics Society, 45,* 223–232.

General Accounting Office. (2001). *Medicare home health care: OASIS data use, cost, and privacy implications* (Report GAO-01-205). Washington, DC: U.S. Government Printing Office.

Hansen, J. C. (1999). Practical lessons for delivering integrated services in a changing environment: The PACE model. *Generations, 23*(2), 22–28.

Kitchener, M., Carrillo, H., & Harrington C. (2001). An analysis of state variation in the growth of Medicaid home and community-based services. San Francisco: University of California–San Francisco, Department of Social and Behavioral Sciences.

Leutz, W. N. (1999). Five laws for integrating medical and social services: Lessons from the United States and the United Kingdom. *The Milbank Quarterly, 77,* 77–110.

Leutz, W. N., Greenlick, M. R., & Capitman, J. (1994). Integrating acute and long-term care. *Health Affairs, 4,* 58–74.

Liu, K., Long, S. K., Storeygard, M., & Lockshin, A. (May, 2001). *Integrating care for the elderly: A case study of a Medicaid long-term care capitation program in New York.* New York: The Commonwealth Fund.

Miller, E. A., & Weissert, W. G. (2000). Predicting elderly people's risk for nursing home placement, hospitalization, functional impairment, and mortality: A synthesis. *Medical Care Research and Review, 56,* 259–297.

Mukamel, D. B., Temkin-Greener, H., & Clark, M. L. (1998). Stability of disability among PACE enrollees: Financial and programmatic implications. *Health Care Financing Review, 19,* 83–100.

Nadash, P. (2002). *New York State's Medicaid-Only Managed Long-Term Care Program.* New York: The Center for Home Care Policy and Research.

National PACE Association. (2002). *PACE profile.* Alexandria, VA: Author. Retrieved June 23, 2002, from http://www.npaonline.org/content/research/profile_2001.asp

Rich, M. L. (1999). Description and impressions of a capitated model of long-term care for the elderly. *Care Management Journals, 1*(1), 62–70.

Spector, W. D., & Fleishman, J. A. (1998). Combining activities of daily living with instrumental activities of daily living to measure functional disability. *Journal of Gerontology: Social Sciences, 53B,* S46–S57.

Tumilson, A., Reester, H., & Missmar, R. (2003). *Limitations in Medicare managed care options for integration with Medicaid.* Lawrenceville, NJ: The Center for Health Care Strategies.

White, J., Able, Y., & Kidder, D. (2000). *A comparison of the PACE capitation rates to projected costs in the first year of enrollment.* Baltimore, MD: Abt Associates Inc. for the Health Care Financing Administration.

*Received April 9, 2003*
*Accepted October 15, 2003*
*Decision Editor: Linda S. Noelker, PhD*

## Appendix: Program Benefits

| MMLTC Plan | PACE |
|---|---|
| All Medicaid LTC services, including these: | All Medicare Part A & B services: |
| Skilled home health care | Inpatient and outpatient hospital care |
| Personal care | Physician services |
| Care coordination (of covered and uncovered services) | Diagnostic tests, durable medical equipment, and medical and surgical supplies |
| Assistive technology | Outpatient mental health |
| Transportation | Preventive services |
| Nursing home stays | Postacute skilled nursing facility care |
| Prescription drugs | Home health care |
| Dentistry, podiatry, optometry | Hospice |
| | All Medicaid services |

*Note*: LTC = long-term care; MMLTC = Medicaid-only managed LTC; PACE = Program of All-Inclusive Care for the Elderly.