Variations on a Theme Called PACE

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Background. The Program for All-inclusive Care of the Elderly (PACE) has been hailed as successful but of limited appeal. This study contrasts the effects on hospital utilization of PACE and a more liberal variant, the Wisconsin Partnership Program (WPP).

Methods. Hospital and emergency room (ER) utilization data from two sites that used both PACE and WPP to serve elderly clients were compared. The analysis of utilization was conducted using a cross-sectional longitudinal approach. The statistical significance of the difference between WPP and PACE groups was calculated by using regressions that adjusted for gender, race (white/nonwhite), age, original reason for entitlement in Medicare (elderly/disabled), dual eligibility, diagnoses during the previous 6 months, and county of residence.

Results. The PACE enrollees had fewer hospital admissions, preventable hospital admissions, hospital days, ER visits, and preventable ER visits than the WPP enrollees had. There was no difference in the length of hospital stays.

Conclusions. PACE is more effective in controlling hospital and ER utilization than is the more flexible variant (WPP).

The Program for All-inclusive Care of the Elderly (PACE) has been hailed as a model of integrated care for elderly persons who are covered by both Medicare and Medicaid, and who are eligible for nursing home care but remain living in the community. An evaluation of PACE suggested that it achieved a substantial reduction in the use of institutional care (1). PACE is now part of Medicare Advantage. However, PACE has experienced some difficulties in attracting clients because it restricts the choice of physician and hospital and is firmly based in day care (2–6). As a result, several areas have begun to experiment with alternative variations on the PACE model.

PACE uses a staff model of medical care built around adult day care. The PACE approach emphasizes teamwork with shared values and goals and broad participation in regular care conferences by employees at all levels. PACE physicians are specifically hired by the programs to provide primary care to enrollees. PACE physicians spend considerable amounts of their time in PACE-related activities, and share the program’s values. This highly integrated model has been viewed as one of the strengths of PACE, but the concomitant restrictiveness inhibits its growth.

The Wisconsin Partnership Program (WPP) represents one effort to liberalize the PACE approach by allowing clients to retain their own physicians. Like PACE, WPP integrates funding from existing Medicaid and Medicare programs into one program through federal demonstration waivers. The combined benefits provide health and long-term care services to elderly and disabled enrollees, primarily those living in the community. WPP has adapted the PACE model of service delivery based on collaborative teams to an interdisciplinary case management team where professionals from several disciplines interact to arrive at a single course of action on an issue or problem. The teams typically consist of a WPP enrollee, his or her physician, a registered nurse, a nurse practitioner, and a social worker or social services coordinator. The nurse practitioner serves as the liaison to the physician, who usually does not directly participate in team meetings. Other team members may be added as the circumstances of a particular member’s needs necessitate. In contrast to that of PACE, the WPP approach allows enrollees to keep their primary physician. Whereas the PACE model relies on care through a day care center where there is access to primary care from a PACE-employed physician, WPP does not rely on such a center.

The stated purpose of WPP is to provide consumer-centered comprehensive and continuous care across settings and providers. Covered services include both long-term care and acute health care services, including physician services. Individuals enrolled in WPP are offered a choice of care, setting, and manner in which service is delivered. Participants are also able to choose a primary care physician within broad parameters.

Participation in WPP (and PACE) is voluntary. To be eligible to enroll in either program, individuals must either be elderly or have a disability determination. They must be eligible for Medicaid and meet the Wisconsin Medicaid nursing home level-of-care requirement (needing intermediate or skilled level of care). Individuals who are eligible for Medicaid alone and individuals who are eligible for both Medicaid and Medicare can enroll in the program if they meet the other requirements.

WPP has been implemented through four nonprofit community-based long-term care service organizations. These community-based organizations provide direct health care services as well as subcontract with hospitals, clinics, and other health care providers to deliver services to enrollees. Of the four community-based organizations, two focused exclusively on elderly clients, one served only disabled clients, and one served both groups. The evaluation discussed here focuses only on the effects on elderly clients in the two sites at which both PACE and WPP programs were offered.

This article reports on the utilization of inpatient and emergency room (ER) visits for the elderly WPP enrollees.
compared to the patterns of PACE enrollees. The basic question posed is whether the more open, and presumably more attractive, approach used in WPP is achieving the hospital utilization controls shown by PACE. A second concern is whether liberalization of the PACE model affects the quality of care, as reflected in the rates of preventable hospitalizations and ER visits.

METHODS

Study Sample

The Medicare requirement for voluntary enrollment precluded an experimental design. The study design used here compared all elderly WPP enrollees served by two sites that also offered PACE for elderly people to all PACE enrollees at those same sites. Elderly WPP enrollees from a third site were excluded for not having a comparable PACE control population. The study group does reflect the elderly population served by PACE nationally.

Enrollment information was provided by WPP and PACE using the format common to that program (i.e., monthly, or by specific start and end dates). Based on enrollment information provided from these files, individuals were identified as enrolled in each program. Individual data files were checked for internal consistency and accuracy. We then converted each of the enrollment files into monthly records—per person per month—and created one overall enrollment file. Individuals were included in the study sample (either WPP or PACE) if they were enrolled in either program for at least 1 month during the study period (May 1, 1999 through December 31, 2001). People were excluded from the sample if they had end-stage renal disease, or if we were unable to resolve data conflicts resulting from merging data from different sources to correctly identify personal and enrollment information. Specific person-months were excluded if the individuals were not eligible for Medicaid in that month, if they were not enrolled in that month in the WPP or PACE programs being analyzed, if they did not meet our age definition of being 65 years old or older in that month, or if they were residing in a nursing home for longer than 3 months. Respectively, 93% and 94% of all WPP and PACE person-months available were included in the study sample. The final working sample consisted of 20,107 person-months and 1285 distinct persons.

Both WPP and PACE primarily drew new enrollees from traditional fee-for-service Medicare and Medicaid programs, sometimes with pre-existing additional support from home-based and community-based services. A small number of PACE enrollees converted to WPP. Enrollees in both programs must meet the state’s requirements for nursing home eligibility (certified as needing an intermediate or skilled level of care). Participants who enrolled in PACE or WPP prior to May 1999 (when the program began operating under a fully capitated funding mechanism) who were still enrolled for at least 1 month following May 1999 were eligible to be included in the study population, as were new enrollees.

Measures

All data for this study came from site billing records. DataPACE or other PACE-specific information systems were not used. Utilization variables of interest included inpatient hospitalizations and ER visits. Group differences in hospitalizations were examined by: months with an admission, hospital days in month, and average length of hospital stay. The numbers of ER visits in each month were counted whether or not they resulted in a hospitalization. In addition to billing data provided by the sites, we used enrollment and claims data provided by the State of Wisconsin for Medicaid and from Centers for Medicare and Medicaid Services for Medicare to obtain utilization and diagnosis information for months prior to enrollment for risk adjustment.

To measure quality, we assessed the effect of primary care in reducing hospitalizations and ER visits by using a subset of hospitalizations and ER visits considered largely preventable given proper ambulatory care. The definition of these preventable hospitalizations and ER visits was based on claims with the primary diagnosis of International Classification of Diseases, 9th revision (ICD-9) Clinical Modification (CM) codes that corresponded to the ambulatory care–sensitive conditions described by Billings and colleagues (7). Preventable diagnoses included conditions such as pneumonia, dehydration, hypertension, and urinary tract infections.

Our analysis of utilization and quality is subject to limitations presented by the quality and completeness of the data, most of which came from claims forms. Because WPP/PACE sites also provide direct care, some services provided by internal staff (such as physician services and home- and community-based services) may not have been reported in the claims files and were excluded from the analysis. Some of the claims data needed to be abstracted from paper claims; due to cost and time constraints, only inpatient claims were abstracted.

Merging billing data from the two WPP/PACE sites required that consistent definitions of services be used. In general, we used definitions of services based on standard definitions applied to Medicare data in other research studies.

Analysis

The analysis of utilization used a cross-sectional time series approach, which involved calculating the utilization for each month, creating, in effect, a new monthly sample each time. Assignment into a specific study group (WPP or PACE) occurred on a monthly basis. Thus a person could be outside the program one month and enrolled in the program the next. This approach yields a series of cross-sectional analyses that are then aggregated to create an average monthly rate. Utilization rates are presented as the average monthly percentage of persons receiving a particular service per 1000 enrollees. The cross-sectional approach uses the full sample available while taking into account the complexity of the study (nested design, repeated measures, missing observations), and produces results that are generalizable to the entire population. The cross-sectional analysis emphasizes the general effect of WPP compared with that of PACE.

The cross-sectional approach resulted in a time series of outcomes with 1-month time intervals. We needed to obtain estimations that represented outcomes in analyzed subgroups and that were stable over time. Some people can...
join or leave subgroups, or move from one subgroup to another; this process is not completely random. Any attempt to generalize the results across several months should take into account this transition. Although generalized estimating equations take into account the correlation between multiple observations of the same person, they are slow and require extensive computer resources. We found that models with independent correlation structures provided approximately the same results, but several times faster. They allowed us to use regular logistic and/or ordinary least squares (OLS) regression (depending on the outcome). According to this approach, multiple observations of the same person during consecutive months were viewed as independent, and the number of observations during different months was treated as approximately equal. During the exploratory phase of the project, we confirmed that both conditions were satisfied. Two types of regressions were performed: For discrete events (e.g., being admitted to the hospital), we used logistic regression; for continuous variables (e.g., length of stay), we used an OLS regression. The results of statistical adjustment are presented differently for the two types of models. For the OLS models, we show the actual coefficients. For the logistic models, we use adjusted odds ratios (ORs).

Different subgroups might have different compositions. The cross-sectional approach uses retrospective adjustments that control statistically for the effects of the variables that might have affected the outcome of interest. The choice of adjustment variables is driven by the goal of correcting for factors that are attributable to the client characteristics but are not attributable to the intervention. Variables used in the adjustment included gender, race (white/nonwhite), age, original reason for enrollment in Medicare (elderly/disabled), dual eligibility (with correction for left censoring), and medical status. We used the Centers for Medicare and Medicaid Services Hierarchical Condition Categories (HCC) predictive cost model in our analysis to adjust for medical status. The clinical classification system, Diagnostic Cost Group (DCG), found in the HCC model, uses ICD-9-CM diagnostic codes to classify patients based on clinical similarity and to create complete clinical profiles at the individual member level. HCCs reflect the clinical relationship between specific diseases and expected resource use. Data for the HCC score was obtained from all diagnoses available month was presented.

The overall quality of risk adjustment was limited by two groups of factors: (i) the small number of variables available in the data set that were believed to be causally or substantively related to outcomes, and (ii) the small sample size and the impossibility of using externally developed and validated risk adjustment models. Person-months in which any of the adjustment variables was missing were not included in the adjustment model. Approximately 90% of the study population had sufficient data available from all sources to calculate an HCC score used in the fully adjusted regression model.

**RESULTS**

We compared the two groups based on gender, age, dual eligibility, race, and HCC status. Table 1 presents information on all persons who contributed at least 1 month to the study. Age, dual eligibility status, and HCC level can change over time. For these variables, the value at the first available month was used. The first available month was May 1999 or the month of enrollment, whichever occurred later.

WPP and PACE enrollees were predominantly female. PACE enrolled slightly more women than did WPP (PACE 81% female vs WPP 73% female, Pearson’s chi-square = 11.9, p < .001). Women enrollees were somewhat older than men, and PACE women were significantly older than WPP women (women: 80.3 vs 76.8 years, t test = 5.782, p < .001; men: 76.0 vs 74.2 years, t test = −1.695, not significant). The PACE sample was older on average than the WPP sample. Although the majority of enrollees in both groups were white, the PACE group had a higher percentage of minority enrollees than did the WPP (45.9% vs 36.9% nonwhite, Pearson’s chi-square 10.77, p < .001).

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**Table 1. Demographic Characteristics by Study Group**

Notes: The N for the Wisconsin Partnership Program (WPP) enrollees was 634, and the N for Program for All-Inclusive Care of the Elderly (PACE) enrollees was 651.

*For measures which can change over time, the information from the first available month was used. The first available month was May 1999 or the month of enrollment, whichever occurred later.

HCC = Hierarchical Condition Categories.

PACE enrolled slightly more women than did WPP (PACE 81% female vs WPP 73% female, Pearson’s chi-square = 11.9, p < .001). Women enrollees were somewhat older than men, and PACE women were significantly older than WPP women (women: 80.3 vs 76.8 years, t test = 5.782, p < .001; men: 76.0 vs 74.2 years, t test = −1.695, not significant). The PACE sample was older on average than the WPP sample. Although the majority of enrollees in both groups were white, the PACE group had a higher percentage of minority enrollees than did the WPP (45.9% vs 36.9% nonwhite, Pearson’s chi-square 10.77, p < .001).

Although the majority of individuals enrolled in both WPP and PACE were dual eligible as opposed to Medicaid only, PACE had slightly fewer persons who were Medicaid only (6% vs 8%, Pearson’s chi-square 3.92, p < .05). Additionally, the adjusted historical HCC diagnosis status at the first available month for PACE women was slightly more severe (0.70 for PACE women vs 0.68 for WPP women, t test = −2.381, not significant), but there was no statistical difference between that of the men in the two programs. These and additional variables were controlled for in the analysis of utilization.

Table 2 shows the mean monthly rates per 1000 enrollees. In calculating this number, the monthly rate for each
measure is first calculated, and then the average of the monthly averages is reported. This approach downplays months with particularly high numbers of persons. The table also shows the results of the fully adjusted regression models. The results of statistical adjustment are presented differently for the two types of models used: logistic regression and OLS regression. For the OLS models used for discrete events, we show the actual coefficients. For the logistic models used for continuous variables we use ORs, which should be read as the comparison of the PACE group to the WPP group; therefore, an OR of 2 means that a PACE person is twice as likely to experience that type of utilization as is a WPP person. An OR of 0.5 indicates that he or she is half as likely to utilize the particular service. The tables explicitly state whether regression results are presented as coefficients or ORs.

For each regression, the statistical significance is marked and confidence intervals are provided. The sign of the regression coefficient is positive when the PACE rate is higher than the WPP rate and negative when it is lower. Caution should be used when directly comparing regression results to the mean monthly rates, because the two methods do not weight each person-month equally. Discrepancies between the two approaches are greatest when there is wide variation in utilization rates over time and great variation in sample sizes between months. Direct comparison between regression coefficients and the mean monthly rates are also complicated by the facts that: (i) adjusted coefficients are used versus unadjusted rates and (ii) coefficients are based on a person–month, whereas rates are based on 1000 person-months. Except for analyses of length of stay, all coefficients are off by a factor of 1000 even after accounting for the other corrections.

As shown in Table 2, the PACE enrollees had fewer hospital admissions, preventable admissions, hospital days, ER visits, and preventable ER visits than the WPP enrollees had. Hospitalizations and preventable hospitalizations were analyzed as binary variables, whereas other outcomes were treated as continuous. The mean monthly hospitalization rate was 52.8 hospitalizations per 1000 WPP persons compared to 35.7 per 1000 PACE persons (OR: .682, \( p < .001 \)). When examining preventable (ambulatory care–sensitive) hospitalizations, the comparable rates were 13.3 and 8.6 (OR: .589, \( p < .01 \)). There was no difference in the length of hospital stays between the two groups. Hospitalization (as measured as the average number of hospital days originating in a month) was mildly significant at \( p < .05 \), with PACE persons showing fewer hospital days after adjustment. WPP persons showed an average monthly rate of 82.3 ER visits per 1000 persons compared to 62.2 in the PACE population (regression coefficient: \(-0.024, \ p < .001 \)). Preventable ER visits showed mildly significant differences between groups (\( p < .05 \) with WPP again being higher). Figures 1–3 provide a graphical representation of the unadjusted mean rates for hospital admissions, length of hospital stay, and ER visits for WPP and PACE enrollees.

**DISCUSSION**

Like PACE, WPP has two major potential modes of lowering the rates of use of expensive inpatient services in an acute care hospital setting, ER, or nursing home (long-term stays). WPP can either change the venue of such services (i.e., treating people in the community instead of...
hospitalizing them) or they can prevent the untoward events by providing more intensive primary care and ambulatory services, such as office visits provided by physicians and nurse practitioners. When hospitalizations occur, it is expected that the length of stay will decrease because of active efforts to return patients to the community as soon as possible. Rates of short nursing home stays may increase as a means to shorten hospital stays.

The effort to broaden PACE’s appeal by loosening its restrictions came at a price. The greater control under the PACE program has some payoff. The PACE model appears to be more effective in controlling hospital and ER admission rates. The flexibility given to WPP clients to retain or choose their own primary care physicians, viewed as critical to encourage potential clients to select the demonstration program over other care options, affects the overall utilization found in this study. Participating physicians each served only a small number of WPP clients. At the time of this study, the average WPP participating physician served about six WPP clients. This modest level of individual physician involvement stands in sharp contrast to that of PACE physicians, who work full- or part-time for PACE and are mutually selected because they endorse the PACE concepts. Much more modest participation by WPP physicians makes it unlikely that they will change their basic practice styles to meet the needs of WPP clients. Making the transition to a style of chronic disease care is not easy; it involves a number of fundamental changes in the approach to care, many of which are not supported by a fee-for-service payment scheme (8).

Any effort to change the overall pattern of care will likely have to involve physicians as active participants. A lesson from the PACE program seems to be that changing fundamental practice styles is a key element in changing utilization patterns. The WPP differed from PACE in a number of ways. This study does not provide information regarding the relative importance of these changes in the reduction of effectiveness.

Conclusions drawn from this evaluation need to be made within the context of the strengths and limitations of the analyses. Measures of outcomes and quality were limited by the data available. Many potential outcome and quality measures could not be analyzed in this evaluation. In addition, in the study we examined information from only the first three operational years of the demonstration. Changes that have occurred since the conclusion of data collection and outside this evaluation could impact utilization, cost, and quality. Program staff point to improvements they have made in the program since the evaluation period.

ACKNOWLEDGMENTS
This work was performed as part of contract HCFA 500-96-0008, Task Order 3 with the Centers for Medicare and Medicaid Services.

The opinions presented here are those of the authors and should not be interpreted to represent any official government policy.

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Received July 20, 2005
Accepted November 10, 2005
Decision Editor: Luigi Ferrucci, MD, PhD