Four kinds of community-based housing and case-managed home care programs were investigated for associations with subsequent institutional utilization. Across the four programs and a community housing sample, specific comparisons were made for four institutional risk subgroups (very low, low, some, high). Analyses of institutional placement rates and days indicated that significant effects of housing and case-managed home care services were limited to elderly in the high institutional-risk group.
Key Words: At-Risk groups, Institutionalization, Utilization, Home care, Case-managed

# Housing and Case-Managed Home Care Programs and Subsequent Institutional Utilization[1]

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Community alternatives such as housing and case management reflect an enduring concern for options to institutional placement (Birnbaum et al., 1984; Brown et al., 1985; Kane & Kane, 1980; Sherwood et al., 1975). Several assumptions underlie pursuit of this approach, including the prohibitive and ever-increasing costs of institutional care, restrictive environments, and dependencies caused by institutional care and inappropriate institutional placements. Thus, demonstration programs have been mounted to show how greater numbers of elderly could remain in the community and fewer placed in institutions through cost-saving community programs. Such programs have proliferated. Some have expanded upon existing services, others have been focused on moving elderly from institutions to less costly community settings; in still others, case management and triage mechanisms have been introduced in an effort to alter the pattern of institutional placements (Hicks et al., 1981; Sherwood et al., 1981; Skellie et al., 1982; Weissert et al., 1980a; Weissert & Scanlon, 1984; Yordi & Waldman, 1985).

When implemented as demonstrations, these innovative programs tended to target specially selected populations involving unique service and case-monitoring configurations. Although targeting efforts have proved difficult, and there is increasing skepticism concerning the likelihood of affecting short-term institutional placements, there are indications (Brown et al., 1985; Greer et al., 1986; Ruchlin & Morris, 1983; Sherwood et al., 1981) that decreased institutionalization rates may result for particular segments of the elderly population (e.g., those identified as being in crisis situations or those with a recognized need for environmental change). Unfortunately, many major demonstrations have not succeeded and others have been only marginally successful in altering institutional placement patterns (General Accounting Office, 1982; Hammond, 1979; Hicks et al., 1981; Hollahan & Stassen, 1981; Kemper et al., 1985; Weissert et al., 1980b).

It may be an ideal time to reevaluate how individuals with long-term care problems may best be served (Weissert, 1985). How can the rate of success in long-term care programs be increased? Did past efforts flounder because theories were deficient? Were implementation mechanisms inadequate or untimely? Or were client intake decisions governed by unwarranted assumptions? Providing definitive answers to these global questions is beyond the scope of this investigation. A contribution to a discussion of these issues, however, can be made by determining whether variations in institutional utilization occur as a result of use of different housing and case-managed home care programs, with each comparison made for relatively homogeneous subgroups of elderly, based on assignment to one of four institutional risk categories. (Subsequent investigations will build on these analyses by including evaluations of issues in community service utilization, the cost of service packages, the substitution of informal for formal services, and the quality of life outcomes associated with each of the models under study).

The analysis of institutional outcomes presented here goes beyond the more limited focus of single

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demonstrations. Several programs in general use, rather than unique interventions, have been compared. Issue is not taken with evaluating the efficacy of unique alternatives in the long-term care system (the authors themselves have evaluated a number of such programs: Morris et al., 1986; Ruchlin & Morris, 1981, 1983; Sherwood & Morris, 1981, 1983; Sherwood et al., 1981). Yet current public policy deliberations warrant an assessment of broadly used intervention strategies. Although reduced institutionalization may not be the only goal of service interventions, there is no question about the desirability of this objective, both from humane and cost perspectives. Recognizing the importance of case mix in such comparisons, this study was focused on the impact of programs for elderly individuals in comparable institutional risk groups in actual community settings.

## Methods

### *The Community Programs*

Special emphasis was given to two of the basic building blocks of a long-term care system: case-managed home care and a variety of housing options, including private homes and apartments, age-segregated housing for elderly people, and congregate facilities. These two building blocks are, in fact, central to a number of demonstration projects (Capitman et al., 1986; Sherwood et al., 1981; Stassen & Holahan, 1980). In this research, study groups consisted of elderly persons with the following distinct housing and service arrangements: private housing, receiving case-managed home care; community housing for elderly persons (i.e., publicly or privately sponsored age-segregated housing environment) and not receiving case-managed home care; community housing for elderly people, receiving case-managed home care provided by an outside agency; enriched congregate housing in a publicly or privately financed age-segregated setting and receiving special support services under building auspices, including meals and other social services. For comparison purposes, a sample was added composed of elderly persons living in private housing (one's own home or apartment) and not receiving special case-managed home care. (In the tables that follow, this sample is listed first).

In delineating these housing and service arrangements, samples were aggregated from community-based studies conducted by the Department of Social Gerontological Research of the Hebrew Rehabilitation Center for Aged (HRCA) over the past decade, almost all of which were completed within the past 5 years. Study participants were drawn from five longitudinal data sets: a stratified random sample of 2,322 elderly (62 years of age or older) in Massachusetts living in the community at baseline (the sample used to construct the institutional risk instrument); a stratified random sample of 1,203 elderly clients served by Massachusetts Home Care Corporations (a state-financed, large-scale, case-managed home care program); 912 participants (experimentals and controls) in the National Congregate Housing Services Program, representing sites across 14 states; 132 tenants of the Highland Heights congregate housing facility in Fall River, Massachusetts, which offered formal home-based services; and 126 senior center clients from the state of Delaware.

It is important to emphasize that no attempt was made to include or to focus upon only a selected type of elderly person. For example, the study sample was not limited to cohorts of institutional applicants, nor to those with a previous history of hospitalization or long-term care institutional placement. Individuals without functional impairments were also not excluded. These three groups were represented in the overall sample to the extent that they occurred naturally in the study groups. Consequently, the study sample reflected both types of elderly people normally found within the five housing/service arrangements described, as well as types of individuals served by general community-based programs targeted at elderly people.

### *Assignment to Institutional Risk Subgroups*

Sample members were disaggregated into relatively homogeneous institutional risk subgroups. Separate comparisons were then conducted for each of these risk groups. Although researchers have recognized the need to assess programs for sample populations with different levels of vulnerability or institutional risk, few studies encompassed data sets of sufficient size to permit this type of analysis across a wide variety of housing and service arrangements. Assignments were made into four institutional risk categories (Inst-Risk) using a classification system recently developed by three of the authors (Morris, Sherwood & Gutkin, 1986). The four risk groups to which persons were assigned by the Inst-Risk system ranged from those with very low risk of institutional placement over a 24-month period to those with high risk of placement.

Building upon 24-month institutional data for the representative sample of Massachusetts elderly participants, the Inst-Risk categories were developed using a series of iterative comparative analyses. This effort involved a series of phases, each of which employed discriminant function and contingency table analyses. The discriminant function equation identified key variables, based on their ability to add to an equation predicting institutional placement; the contingency analysis helped to clarify how these variables related to institutionalization and ascertained specific combinations of measures that best characterized elderly persons with relatively high and low placement rates. The first phase involved the entire sample; the second phase consisted of repeating the process after excluding cases previously identified as falling into either the relatively high or low placement (risk) categories, and so forth. These iterative phases ceased when, in the sample that remained, subsets of elderly persons with significantly different placement rates could no longer be identified.

Four risk categories were identified (very low, low, some, and high) with a threshold of a 20% placement rate required for subset assignment into the high risk category (Morris, Sherwood & Gutkin, 1986). All other categories have a 24-month placement rate of 10% or lower. The model for the high-risk category is displayed in Chart 1. This category was found to include the majority of elderly persons with institutional placement over 12 and 24-month periods, with elderly assigned to this category having an increasing risk of placement over time. Although the rate of placement for high-risk elderly persons over a 12-month period may not appear to be extremely high, those in this category remained in high-risk status for protracted periods of time.

As shown in Table 1, there were elderly persons in all five study arrangements for each Inst-Risk group. Also shown in the Table are the underlying differences in distributions that occurred across the five program arrangements.

### *Data Sources*

The primary method for data collection in all samples was direct interviewing, with the baseline interview as the source of data for variables used in constructing the Inst-Risk categories. Follow-up data concerning institutional utilization were provided by the elderly person or a knowledgeable proxy, with record verification for the majority of cases.

### *Dependent Variables*

Institutional utilization was operationalized in the traditional way, that is, by assessing placement in a nursing home or a chronic hospital, as well as by including acute hospital stays. (Hereinafter, the term nursing home refers to both nursing home and chronic hospital stays). More specifically, institutional placement was measured at each of two time periods (6 and 12 months), in three ways, based on whether institutional placement did or did not occur, the average number of days the elderly persons resided in an institutional setting, and absence of institutional placement for sample members alive through the end of the designated periods.

Findings are reported in the following sequence. The first findings are focused on nursing home placement, defined as the percentage of sample members with at least one placement during the 6 and 12 month follow-up period. Reported sequentially in the second set of findings is the average number of days of nursing home placement, and the average number of nursing home and acute hospital days, through the 6-month and 12-month periods. These values reflect days of care used for the small number of individuals placed during the periods and averaged across all members of the sample. The focus of the third, and last, set of findings shifted to those who remained in the community during months 1 to 6 or months 1 to 12. This analysis was limited to individuals who were alive at the end of the period under study, either at 6 months or 12 months. To be classified as spending all of the time in the community, the individual must have been alive during the entire period under study and have spent no time in an institutional residence. As was true in reporting the second set of findings, two definitions of institutional placement were used: the traditional, narrower definition of nursing home and chronic hospital placement, and the broader definition that also included acute hospital placements.

### *Analytic Strategy*

To answer questions concerning the differential impact of interventions with a classical design, participants were randomly allocated to the different types of situations. Because the aim was to study persons in their naturally occurring environments, it was impossible to apply a random assignment proce-

**Chart 1. Specification of Conditions Governing Assignment to High Inst-Risk Category**

| High-risk condition | Functional problem[a] | Age | Health-related issues | Social structure/ living status |
|---|---|---|---|---|
| 1 | 3 IADL[a] problems *AND* 2 or 3 ADL[a] problems | 75+ | | |
| 2 | 2 IADL problems *AND* 2 or 3 ADL problems | 80+ | | |
| 3 | 3 IADL problems *OR* 1, 2, or 3 ADL problems | 80+ | Fell in previous 3 months | |
| 4 | 3 IADL problems *OR* 1, 2, or 3 ADL problems | 75+ | Mental or emotional problem | |
| 5 | 1, 2, or 3 MSQ[a] errors | | Fell in previous 3 months | |
| 6 | 1, 2, or 3 MSQ errors | 85+ | | |
| 7 | 1, 2, or 3 ADL problems | 80+ | Previously in an institution | |
| 8 | 1, 2, or 3 ADL problems | 75+ | Has cancer | Does not live alone |
| 9 | 1, 2, or 3 IADL problems *AND* Zero ADL problems | 80+ | | Female — no children nearby |

[a]ADL is a 3-item index, IADL is a 3-item index, and MSQ is a 3-item index.

Table 1. Sample Distributions ($n$ = 4695)

| Program arrangements | Number in sample | Inst-risk categories | | | |
|---|---|---|---|---|---|
| | | Very low | Low | Some | High |
| Private Housing, not receiving case-managed home care | 2307 | 40.9% | 19.3% | 26.2% | 13.6% |
| Private Housing, with case-managed home care | 752 | 12.1% | 10.9% | 29.8% | 47.2% |
| Housing for the Elderly, not receiving case-managed home care | 350 | 22.3% | 18.0% | 17.1% | 42.6% |
| Housing for the Elderly, receiving case-managed home care | 415 | 8.0% | 11.6% | 42.3% | 38.1% |
| Enriched Congregate Housing | 871 | 29.7% | 11.6% | 9.0% | 49.0% |

dure. As in any nonrandom design, controls were necessary to counteract the possibility that differences in outcome might be due to factors other than the housing/service arrangements to which the elderly persons were exposed. To control for differences in the distributions in the types of elderly in each of the five arrangements, sample stratification and covariance adjustment procedures were used.

The classification of sample members into Inst-Risk subgroups (the stratification approach) served to reduce the number of significant differences across the five program arrangements on key independent variables. In turn, to adjust for the remaining confounding variables not adequately controlled by Inst-Risk, a literature search was conducted to identify significant covariates of institutional and community service use. Due to the brevity of many published studies, a number of groups in long-term care health services research were also contacted and copies of unpublished reports detailing the covariates used in their work were obtained. As a result of this effort, potentially usable covariates were identified; these included measures of functional status, personal demographics, and service utilization. Unusable covariates specifically excluded were those measures conceptually identified as related to placement in the five program arrangements under study (e.g., whether the person owned his or her own home). To isolate the subset of variables to be used as covariates, a series of partial correlation matrices were examined, first controlling for Inst-Risk status. A split-half approach was employed, with the sample randomly divided into two halves. Variables with significant partial correlations in each of the split halves (and therefore representing relatively stable relationships) were further reduced to a minimal set of covariates using step-up regression analysis, once again first controlling for Inst-Risk.

Separate analyses of this type were completed for the five different types of utilization measures reported in this study. Listed in Chart 2 are the final covariates used in comparing the five study arrangements for each Inst-Risk category. When the overall $F$ from a covariance Manova comparison was significant at the .05 level or lower, a series of contrasts was completed to determine which of the program arrangements (or subset of arrangements) were significantly different from the remaining pool of housing and case-management service programs. These contrasts were initially derived from the covariance-based Manova procedures. They were subsequently validated using logit or singularly censured tobit regression procedures. The significant contrasts reported are limited to those identified by both of the procedures. In these analyses, significant contrasts are those with probability values of .05 or lower.

## Results

### *Nursing Home Utilization*

Covariance-adjusted institutional utilization estimates are presented in Tables 2 through 5, with a separate table for each of the Inst-Risk groups. Data included estimates for 6-month and 12-month periods, inter-arrangement significance values, and arrangement-specific contrasts (when the intermodality comparison was significant). The first comparisons in Tables 2 through 5 addressed nursing home placement over 6 and 12-month periods. There was no evidence of differences in these rates as a function of housing and case-management program arrangements. Differences were not observed for specialty or other housing groups nor were differences observed as a function of whether case-managed home care was provided within these housing environments. This finding was true for those in the high-risk category, as well as for those in all three of the lower-risk categories. For those in the very low risk group, about 1% entered a long-term care institution during the 12-month study period. In the two middle-risk groups, about 3% entered an institution. In the high-risk group, however, around 10% entered an institution.

The findings for the second institutional indicator, days of placement, revealed no evidence of differences in nursing home days across the five program arrangements for elderly in the three lower institu-

**Chart 2. Personal Characteristic and Service History Covariate Adjusters Identified for Each of the Dependent Utilization Measures**
(the "*" notation indicates where a variable was used as a covariate)

| | Dependent variables | | | | |
|---|---|---|---|---|---|
| Covariates | Nursing home placement | Average nursing home days | Average nursing home plus hospital days | Of those alive at designated periods– % with no N.H. placement | Of those alive at designated periods– % with no N.H. or hospital placement |
| Sex | | | | * | |
| Hospital admissions past year | | | | | * |
| N.H. placement history | | * | * | * | |
| MD visits in last year | | | | | * |
| Mental status (MSQ) | | * | * | * | |
| Uses walker, cane or wheelchair | * | | | * | * |
| Uses wheelchair | * | | * | | |
| Able to dress self | | * | * | | |
| Help with feeding | | * | | | |
| Able to do shopping on own | * | * | * | | * |
| Able to manage meds on own | * | * | | * | |
| # of health conditions | * | * | * | * | |
| Fell in previous 3 months | * | | * | | * |
| Lives with child | * | * | | * | * |
| Receives informal help | | | | * | |
| Lives alone | | * | | * | |
| Economic status | * | * | * | | |

tional-risk groups. The average number of days in a nursing home was also relatively low: less than 1 day a year for those in the very-low risk category; and between 1 and 5 days a year for elderly persons in the two middle institutional-risk groups.

The findings for elderly persons in the high-risk category diverged from the above pattern. Those who received case-managed home care in elderly persons' or congregate housing experienced fewer days of nursing home placement, averaging 6 to 9 days a year, as compared to the 19-day average for those in their own homes who were not case-management clients. Those who received case-management services in their own homes, as well as those who lived in elderly persons' housing without case-management services, had intermediate values between the two extremes. These comparisons were significant for the 12-month, but not for the 6-month period, although the pattern of mean differences was the same for both time periods.

### *Nursing Home and Acute Hospital Days*

The next utilization measure in Tables 2 through 5 is the aggregation of both nursing home and acute hospital days. Here, no indication of differences occurred in the utilization rates across any of the program arrangements. Over 12 months, the noncommunity placements ranged from an average of 3 to 7 days for very-low risk elderly persons, from 5 to 11 days for those in the two middle-risk groups, and from 16 to 27 days for high-risk elderly persons. For those in the high-risk category, between 8 and 10 days of acute hospitalization were added to the previous average days of institutional placement. The resulting profile of means followed the same pattern as that of the earlier measure, institutional days of placement, although in this instance the relationship was not statistically significant.

### *Findings Concerning Continuous Community Residency*

In the final analyses presented in Tables 2 through 5, the general focus was reversed from institutional placement to the absence of such placements. These analyses were limited to persons alive during the entire study period: 6 months for one analysis, and 12 months for the second (There were no differences in death rates across the program arrangements within each of the four Inst-Risk categories).

In the set of comparisons preceding these, institutional placement was measured using two different dependent variables (one based on nursing home and chronic hospital placements; the other, on nursing home, chronic hospital, and acute hospital placements). In discussing community residency findings, the focus is on the absence of these two types of placements.

For the first of the dependent variables, continuous community placement based on an absence of nursing-home and chronic-hospital stays, significant findings were limited to elderly in the high Inst-Risk category. At 12 months, the lowest community residence rate applied to elderly persons in their own homes or apartments who did not receive case-managed home care, whereas intermediate rates characterized both those in their own homes or apartments who received case-managed home care and those in elderly persons' housing who did not receive case-management services. The highest rate of community placement applied to case-management clients who resided in either elderly persons' or congregate housing sites.

Table 2. Estimated Institutional Utilization Values Over 6 and 12-Month Periods for Inst-Risk Group: Very Low Risk

| Institutional variables | Resides in own home/apt without case-managed home care ($n$ = 944) | Resides in own home/apt with case-managed home care ($n$ = 91) | Housing for the elderly without case-managed home care ($n$ = 78) | Housing for the elderly with case-managed home care ($n$ = 33) | Congregate housing ($n$ = 259) | Significant differences across 5 study modalities |
|---|---|---|---|---|---|---|
| 1. Nursing home placements | | | | | | |
| Through month 6 | 0.5% | 0.3% | 1.1% | 0.0% | 0.0% | NS |
| Through month 12 | 1.1 | 0.3 | 2.2 | 1.8 | 0.9 | NS |
| 2. Average days in: | | | | | | |
| nursing home | | | | | | |
| Through month 6 | 0.3 Days | 0.4 Days | 0.5 Days | 0.0 Days | 0.0 Days | NS |
| Through month 12 | 1.1 | 0.5 | 3.3 | 0.4 | 0.1 | NS |
| Nursing home or hospital | | | | | | |
| Through month 6 | 1.5 Days | 2.6 Days | 2.9 Days | 2.2 Days | 2.0 Days | NS |
| Through month 12 | 4.0 | 4.8 | 7.3 | 2.6 | 3.3 | NS |
| 3. Continuous community residency | | | | | | |
| Of those alive percent with no nursing home admissions: | | | | | | |
| Through month 6 | 99.7% | 99.9% | 98.7% | 100.0% | 100.0% | NS |
| Through month 12 | 99.2 | 100.0 | 98.6 | 96.8 | 98.7 | NS |
| Of those alive percent with no nursing home or hospital admissions: | | | | | | |
| Through month 6 | 93.8% | 86.3%[a] | 90.8% | 80.0%[b] | 89.2% | .01 |
| Through month 12 | 87.0 | 74.3[c] | 82.3 | 71.4[c] | 80.0 | .001 |

*Note.* All values are covariance-adjusted estimates, controlling for available independent variables that have been identified in the literature and replicated in this research as unique multivariate correlates of institutional utilization.

[a]The contrast comparison of the indicated group against the pool of remaining four groups is significant at the .06 through .10 levels.

[b]The contrast comparison of the indicated group against the pool of remaining four groups is significant at the .05 level or lower.

[c]Indicates a significance contrast at the .05 level or lower between the pooled set of indicated groups and the remaining groups.

Table 3. Estimated Institutional Utilization Values Over 6 and 12-month Periods for Inst-Risk Group: Low Risk

| Institutional variables | Resides in own home/apt without case-managed home care ($n$ = 445) | Resides in own home/apt with case-managed home care ($n$ = 82) | Housing for the elderly without case-managed home care ($n$ = 63) | Housing for the elderly with case-managed home care ($n$ = 48) | Congregate housing ($n$ = 101) | Significant differences across 5 study modalities |
|---|---|---|---|---|---|---|
| 1. Nursing home placements | | | | | | |
| Through month 6 | 0.1% | 0.9% | 1.7% | 1.8% | 0.7% | NS |
| Through month 12 | 1.5 | 3.1 | 2.2 | 3.5 | 2.9 | NS |
| 2. Average days in: | | | | | | |
| Nursing home | | | | | | |
| Through month 6 | 0.2 Days | 1.1 Days | 0.6 Days | 2.5 Days | 0.7 Days | NS |
| Through month 12 | 1.1 | 1.2 | 1.9 | 6.6 | 5.0 | NS |
| Nursing home or hospital | | | | | | |
| Through month 6 | 1.6 Days | 3.3 Days | 3.1 Days | 4.6 Days | 2.0 Days | NS |
| Through month 12 | 4.4 | 9.8 | 6.4 | 10.2 | 6.8 | NS |
| 3. Continuous community residency | | | | | | |
| Of those alive percent with no nursing home admissions: | | | | | | |
| Through month 6 | 99.8% | 98.9% | 98.4% | 98.2% | 99.4% | NS |
| Through month 12 | 98.7 | 97.3 | 98.0 | 96.9 | 98.0 | NS |
| Of those alive percent with no nursing home or hospital admissions: | | | | | | |
| Through month 6 | 92.5% | 90.2% | 87.9% | 88.4% | 88.1% | NS |
| Through month 12 | 87.0[a] | 68.3[b] | 79.7 | 73.2[b] | 73.9[b] | .001 |

*Note.* All values are covariance-adjusted estimates, controlling for available independent variables that have been identified in the literature and replicated in this research as unique multivariate correlates of institutional utilization.

[a]The contrast comparison of the indicated group against the pool of remaining four groups is significant at the .05 level or lower.

[b]Indicates a significance contrast at the .05 level or lower between the pooled set of indicated groups and the remaining groups.

Table 4. Estimated Institutional Utilization Values Over 6 and 12-Month Periods for Inst-Risk Group: Some Risk

| Institutional variables | Resides in own home/apt without case-managed home care (*n* = 604) | Resides in own home/apt with case-managed home care (*n* = 224) | Housing for the elderly without case-managed home care (*n* = 60) | Housing for the elderly with case-managed home care (*n* = 176) | Congregate housing (*n* = 78) | Significant differences across 5 study modalities |
|---|---|---|---|---|---|---|
| 1. Nursing home placements | | | | | | |
| Through month 6 | 1.2% | 1.9% | 1.6% | 0.7% | 1.3% | NS |
| Through month 12 | 2.7 | 2.8 | 1.6 | 1.8 | 2.9 | NS |
| 2. Average days in a: | | | | | | |
| Nursing home | | | | | | |
| Through month 6 | 0.7 Days | 0.9 Days | 0.3 Days | 0.2 Days | 2.3 Days | NS |
| Through month 12 | 2.8 | 1.4 | 3.1 | 1.2 | 4.0 | NS |
| Nursing home or hospital | | | | | | |
| Through month 6 | 2.9 Days | 3.1 Days | 2.0 Days | 2.1 Days | 4.2 Days | NS |
| Through month 12 | 7.4 | 7.2 | 7.0 | 6.0 | 11.4 | NS |
| 3. Continuous community residency | | | | | | |
| Of those alive percent with no nursing home admissions: | | | | | | |
| Through month 6 | 98.7% | 98.0% | 98.4% | 99.2% | 98.9% | NS |
| Through month 12 | 98.2 | 97.3 | 98.2 | 98.5 | 98.5 | NS |
| Of those alive percent with no nursing home or hospital admissions: | | | | | | |
| Through month 6 | 89.4% | 86.5% | 88.4% | 89.3% | 95.8% | NS |
| Through month 12 | 80.8 | 74.2 | 82.5 | 81.1 | 79.6 | NS |

*Note.* All values are covariance-adjusted estimates, controlling for available independent variables that have been identified in the literature and replicated in this research as unique multivariate correlates of institutional utilization.

Table 5. Estimated Institutional Utilization Values Over 6 and 12-month Periods for Inst-Risk Group: High Risk

| Institutional variables | Resides in own home/apt without case-managed home care (*n* = 314) | Resides in own home/apt with case-managed home care (*n* = 355) | Housing for the elderly without case-managed home care (*n* = 149) | Housing for the elderly with case-managed home care (*n* = 158) | Congregate housing (*n* = 433) | Significant differences across 5 study modalities |
|---|---|---|---|---|---|---|
| 1. Nursing home placements | | | | | | |
| Through month 6 | 8.0% | 5.7% | 4.3% | 5.0% | 3.7% | NS |
| Through month 12 | 12.0 | 9.5 | 10.6 | 10.3 | 8.7 | NS |
| 2. Average days in: | | | | | | |
| Nursing home | | | | | | |
| Through month 6 | 6.0 Days | 3.4 Days | 4.9 Days | 2.6 Days | 2.3 Days | NS |
| Through month 12 | 19.2[a] | 13.9[b] | 15.3 | 8.6[b,c] | 6.2[b,c] | .05 |
| Nursing home or hospital | | | | | | |
| Through month 6 | 10.5 Days | 7.9 Days | 8.1 Days | 7.2 Days | 6.5 Days | NS |
| Through month 12 | 27.1 | 23.2 | 24.6 | 16.6 | 15.9 | NS |
| 3. Continuous community residency | | | | | | |
| Of those alive percent with no nursing home admissions: | | | | | | |
| Through month 6 | 90.2%[a] | 93.4% | 97.4%[b] | 96.3%[b] | 99.0%[b] | .01 |
| Through month 12 | 86.6 | 90.3 | 90.8 | 92.7[b] | 96.4[b] | .02 |
| Of those alive percent with no nursing home or hospital admissions: | | | | | | |
| Through month 6 | 79.2% | 83.4% | 81.5% | 79.1% | 79.1% | NS |
| Through month 12 | 72.1 | 71.1 | 61.8[b] | 68.8 | 61.2[b] | .02 |

*Note.* All values are covariance-adjusted estimates, controlling for available independent variables that have been identified in the literature and replicated in this research as unique multivariate correlates of institutional utilization.
[a]The contrast comparison of the indicated group against the pool of remaining four groups is significant at the .05 level or lower.
[b]Indicates a significance contrast at the .05 level or lower between the pooled set of indicated groups and the remaining groups.
[c]Indicates a significance contrast at the .05 level or lower between the pooled set of indicated groups and the remaining groups.

For the second of the utilization measures assessing continuous community residency, based on an absence of both nursing home and hospital placements, an indication of differences in placement for lower Inst-Risk groups occurred for the first time. Specifically, differences were found for elderly in the very low, low, and high Inst-Risk groups.

The nature of the findings was not consistent. For those in the very low and low-risk categories, case-management clients were among the least likely to have remained in the community without either a hospital or institutional placement. For those in the low-risk category (but not the very low risk category), this finding also applied to congregate housing tenants who received building-managed home care services.

Furthermore, for elderly in the high-risk category the findings were contradictory. Continued community residence over 12 months was least likely for high-risk congregate tenants, as well as for those in elderly housing who were not case-management clients.

## Discussion

The findings concerning days of institutional placement supported a limited benefit from providing case-management services in congregate and elderly housing settings. The benefit is primarily limited to those in the high Inst-Risk category and suggests that high-risk elderly will do well when placed in age-segregated housing with service oversight and support. These data also suggested that days of deflected institutional placement can be attributed to the greater likelihood that nursing home placements will be avoided by those who remain alive over the entire 12-month study period. Such elderly are about one-third as likely to enter an institution over this period, suggesting that the case-management efforts are most effective with those who are likely to have ongoing need for care and that the significant reductions in nursing home days might become more distinct were these samples to be followed over extended periods of time.

For the two lower Inst-Risk groups, case management appeared to lead to an increased admission rate to acute hospitals but not to an increased length of stay. (The cost implications of this will be addressed in a subsequent paper). The reason for this impact is unclear, and a variety of explanations may be hypothesized. For example, it could result from intake of clients during a hospital admission-discharge cycle. Alternately, it might be the result of case-management triage decisions. Subsequent investigators may wish to deal with this issue.

At the same time, as in any quasi-experimental comparison, the absence of institutional effects for the three lower Inst-Risk categories could conceivably relate to a failure to introduce necessary controls. This possibility should be noted. Extensive controls, however, have been introduced through the use of the Inst-Risk stratification variable and the introduction of covariate adjustors in the Manova-based analyses.

When findings regarding the three lower Inst-Risk categories are focused on, the need to rethink motives in providing case-managed home care is indicated. There was no evidence of either differences in long-term care placement rates or of days spent in such a setting as a function of housing and case management arrangements. These findings are provocative, suggesting that, in general, elderly persons in the three lower Inst-Risk categories who currently live in private or specialized age-segregated housing, with or without case management by social agencies, as well as those in enriched congregate housing, experienced the same types of institutional outcomes over 6-month and 12-month periods. These findings indicated that case management can have positive results in reducing rates and stays in institutional settings only in limited circumstances. The data for the three lower Inst-Risk categories certainly supported the concerns of those who have been skeptical of the extent to which these types of generic alternative long-term care programs can prevent institutionalization, particularly over a 12-month time frame.

In short, the findings suggested that ongoing provision of case-managed services to elderly persons at large (except for those in the high institutional risk category) can be called into question when the major purpose of such services is to reduce institutional utilization. It must be recognized, however, that such programs have other goals as well. In subsequent papers, the attainment of these goals will be addressed.

Findings from this research may be viewed as a challenge to the future. Stocks of congregate and age-segregated housing are already in place, and pressure to expand the stock of such housing is likely to be sustained as the number of aged in the population increases. Scrutiny and creativity on the part of researchers and policymakers regarding admission to these facilities thus appear to be especially timely, and they should consider the likely outcomes for those admitted.

These findings represent a particular challenge to those who believe that formal case-managed home care should be made more generally available to the elderly. How is such expansion to be justified? What is unique in the new programs to be tried, and why should this uniqueness be related to outcomes that will be different for elderly in the three lower Inst-Risk categories?

Although specification of particular options for high-risk elderly are suggested by the data presented here, it is hoped that the subsequent analyses of cost, service utilization, and quality of life outcomes will shed additional light on these program arrangements for elderly in the three lower Inst-Risk groups. This type of knowledge is of critical importance in targeting services and in selecting community alternatives for persons with long-term care needs. As the authors and others (Brown et al., 1985; Ruchlin et al., 1982; Sherwood et al., 1986) have indicated in prior studies, decisions concerning access to institutional alternatives are highly problematic, and for an alternative to be viable, priority must be given to elderly persons for whom other community options are not possible.

The concern is that future efforts will not be sufficiently focused on providing access to service-oriented community alternatives for those about to enter institutions, or those in institutions who might have the potential to return to the community. These are two groups for whom interventions have been shown to be effective (Brown et al., 1985; Sherwood & Morris, 1983; Sherwood et al., 1981). If current economic pressures prevail, it is unlikely that services and housing stock will increase significantly. At the same time, it is reasonable to assume that pressures for generalized and widespread use of available services and specialty housing will continue as the number of elderly persons in society increases. This decreases the probability that these options will be readily available to those with special needs, such as the high-risk elderly. Purposeful steps are needed to counter these types of pressures, so that access for such individuals becomes the rule rather than the exception.

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