Conversion Diversion: Participation in a Social HMO Reduces the Likelihood of Converting From Short-Stay to Long-Stay Nursing Facility Placement

Kathryn E. Thomas, PhD, Zachary D. Gassoumis, and Kathleen H. Wilber, PhD

Objectives: To determine the effect of a Social Health Maintenance Organization (S/HMO) on diverting older adults admitted into a nursing facility from converting to long-stay placement.

Design: Members of the SCAN S/HMO and those in Medicare Fee-For-Service were compared on successful discharge to the community after being admitted to nursing facilities between January 1, 2001, and December 31, 2003.

Setting: Skilled nursing facilities in 4 counties in Southern California (Los Angeles, Orange, San Bernardino, Riverside).

Participants: Data (N = 4635) were extracted from Minimum Data Set (MDS) 2.0 records for nursing facility residents in the S/HMO or the Medicare Fee-for-Service 5% sample who were aged 65 and older with an episode of care greater than 14 days.

Measurements: Predisposing, enabling, and need measures were used to predict successful discharge to the community within 90 days.

Results: After controlling for selected sociodemographics, comorbidities, behavioral issues, mental health conditions, and other risk factors, being enrolled in the S/HMO increased the likelihood of successful discharge by 26%.

Conclusion: With systemic increases in short-stay patients, research on diversion must look past the avoidance of unnecessary entry to nursing facilities, to the successful transition of short-stay residents to the community. As described in this study, the S/HMO model is an important but largely unaddressed method of avoiding the conversion to long-stay. **(J Am Med Dir Assoc 2010; 11: 333–337)**

Keywords: Nursing facility transition; conversion; diversion; community discharge; S/HMO

For more than 30 years, consumer advocates, academic researchers, and policy makers have worked to reduce avoidable and inappropriate institutionalization through the development of effective home- and community-based services. Until recently, studies have focused on approaches that divert or delay nursing facility entry (see Miller and Weissert[1]). However, over the past decade, a variety of demonstrations have been initiated to assist nursing facility residents to transition back to community settings. Policy and practice interest in transition is driven by 4 interrelated trends: (1) state and federal efforts to contain long-term care spending[2]; (2) consumer preferences for community living[3]; (3) increasing reliance on nursing facilities for short-term rehabilitation[4]; and (4) increased emphasis on administering care in the most integrated setting possible.[5,6] The expanded use of nursing facilities for rehabilitation means more people entering facilities for short stays in addition to the traditional role of custodial placement. The fourth trend is in response to the Supreme Court's 1999 *Olmstead Decision*, which declared unnecessary institutionalization a violation of the Americans with Disabilities Act.[7] Given these trends, nursing home use and transition outcomes are increasingly important topics in long-term care research, practice, and policy.

The present study was part of a larger project that explored the role of a community service health benefit, the National Social Health Maintenance Organization Demonstration (S/HMO), on nursing facility utilization. Developed in the 1980s, the S/HMO added home- and community-based services (eg, care coordination, personal care, transportation, respite) to the Medicare managed care model to help older

Andrus Gerontology Center, University of Southern California, Los Angeles, CA

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Address correspondence to Kathryn E. Thomas, PhD, University of Southern California, Ethel Percy Andrus Gerontology Center, 3715 McClintock Avenue, Los Angeles, CA 90089–0191. E-mail: katythomas@gmail.com

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Table 1. *Independent Variables*

Variable	Description	Type
Predisposing		
Age at admission	Subtract birth date from date of admission.	Continuous
Gender	Male or female.	Dichotomous
Marital status	Married or not married. Not married category includes never married, widowed, separated, and divorced.	Dichotomous
Race	White (not of Hispanic origin), Hispanic, African American, and Other (Asian/Pacific Islander and American Indian/Alaskan Native).	4 Dummy Variables
Education	Below average, average (completed high school), and above average.	3 Dummy Variables
Need		
Cognitively impaired	Used the MDS Cognitive Performance Scale.[12] Range of possible scores is 0 to 6, with higher scores corresponding to more severe impairment.	Scale 0–6 (Higher scores = More impaired)
Depressed	Depression Rating Scale uses items from the Mood and Behavior Patterns section of the MDS.[13] Range of possible scores is 0 to 14, with higher scores corresponding to more depressive symptoms.	Scale 0–14 (Higher scores = More depressed)
Comorbidities	Based on the Charlson Comorbidity Index (CCI),[14] a comorbidity scale that was created by summing the subset of CCI items available in the MDS: diabetes, congestive heart failure, dementia, cerebrovascular event, chronic obstructive pulmonary disease, cancer and renal failure. Each disease was given a weight of 1, except cancer and renal failure, which each received a weight of 2.	Scale 0–9 (Higher scores = More comorbidity)
Socially engaged	The Index of Social Engagement was created by summing the following 6 dichotomous items: at ease interacting with others, at ease doing planned or structured events, at ease doing self initiated activities, establishes own goals, pursues involvement in life of the facility, and accepts initiations to most group activities.[15]	Scale 0–6 (Higher scores = More social engagement)
Behavioral problems	Created using the 5 items in the behavioral symptom section: wandering, verbally abusive, physically abusive, socially inappropriate or disruptive behavioral symptoms and resisting care. If the individual exhibited at least 1 behavior in the previous 7 days that was not easily altered, the dichotomous behavioral symptom variable is coded as a 1; otherwise it is coded as 0.	Dichotomous
ADL score	The MDS Activities of Daily Living (ADL) Self-Performance Hierarchy is constructed using the following 4 individual ADLs: personal hygiene, toileting, locomotion, and eating.[16]	Scale 0–7 (Higher scores = More dependence)
Incontinence - Bladder	Bladder continence is measured on a scale from 0 to 4, where 0 represents complete control/continence and 4 represents severe incontinence.	Scale 0–4 (Higher scores = More incontinent)
Incontinence - Bowel	Bowel continence measures are ordered on a scale from 0 to 4, where 0 represents complete control/continence and 4 represents severe incontinence.	Scale 0–4 (Higher scores = More incontinent)
Recent fracture	Fracture in the past 180 days was created using hip fracture in the past 180 days and other fracture in the past 180 days. If the resident experienced a hip and/or other fracture in the past 180 days then fracture = 1, otherwise fracture = 0.	Dichotomous
Recent fall	If the resident experienced a fall in the past 180 days then fall = 1, otherwise fall = 0.	Dichotomous
Admitted-from location	Eight potential admitted-from locations were recoded into 3 dummy variables: home without home health, acute hospital, or other. The "other" category includes home with home health, assisted living/board and care, group home, rehabilitation hospital, psychiatric hospital, or another nursing home.	3 Dummy Variables
Enabling		
Lived alone	Resident lived alone prior to entry = 1. Did not live alone or lived "in another facility" prior to admission = 0.	Dichotomous
Legal responsibility	Legally responsible for self = 1; all other responsible parties = 0.	Dichotomous
Medicaid	Payment source: Medicaid per diem = 1; no Medicaid per diem = 0.	Dichotomous
SCAN	Insurance type: SCAN = 1; traditional fee-for-service Medicare = 0.	Dichotomous

Table 2. *Sample Characteristics, Total, and SCAN vs Medicare Fee-For-Service (FFS)*

	Total sample (n = 4635) Mean (SD) or %	SCAN (n = 2235) Mean (SD) or %	Medicare FFS (n = 2400) Mean (SD) or %	*t* or χ^2
Predisposing				
Age	83.0 (7.22)	83.5 (6.84)	82.5 (7.53)	–4.9‡
Female	66.9	64.1	69.5	15.4‡
Married	29.2	34.8	24.0	65.4‡
Race/ethnicity				
Caucasian	74.4	82.0	67.3	130.5‡
Hispanic	10.7	7.7	13.4	39.3‡
African American	7.9	7.0	8.7	4.5*
Race - Other	7.1	3.3	10.6	93.7‡
Education				
High education	27.0	27.7	26.3	1.2
Average education	48.4	50.7	46.1	9.7†
Low education	24.6	21.5	27.6	22.5‡
Need				
Cognitively impaired	1.9 (1.83)	1.9 (1.81)	2.0 (1.85)	1.9
Depressed	0.4 (0.93)	0.3 (0.81)	0.5 (1.02)	5.0‡
Comorbidities	1.4 (1.21)	1.4 (1.15)	1.5 (1.26)	3.8‡
Socially engaged	1.8 (1.25)	1.8 (1.24)	1.7 (1.25)	–1.8
Behavioral problems	9.5	8.7	10.3	3.1
ADL Score	3.7 (1.44)	3.8 (1.40)	3.7 (1.47)	–1.2
Incontinence - Bladder	1.6 (1.76)	1.6 (1.76)	1.5 (1.76)	–1.7
Incontinence - Bowel	1.7 (1.82)	1.8 (1.82)	1.7 (1.82)	–1.2
Recent fracture	17.0	17.1	16.9	0.0
Recent fall	42.3	45.7	39.1	20.7
Admitted-from location:				
Acute	81.4	79.7	82.9	7.7
Home	7.7	8.7	6.8	5.8
Other	10.9	11.5	10.3	2.0
Enabling				
Lived alone	25.2	27.5	23.0	12.7‡
Legally responsible for self	45.5	44.5	46.4	1.6
Medicaid	16.8	9.3	23.7	169.6

Note: Mean, SD, and *t* are presented for continuous variables; percentage and χ^2 are presented for dichotomous and categorical variables
* $P < .05$,
† $P < .01$,
‡ $P < .001$

adults aged 65 and older avoid unnecessary hospitalization and nursing facility placement. Key components of the model included the following: (1) coordination mechanisms to integrate long-term care service delivery within medical care; (2) strong case management to identify care needs and direct at-risk members into additional services; (3) financing for home- and community-based care; and (4) limited respite services.[8] Research on whether the S/HMO reduced nursing facility placement is equivocal.[8,9] However, studies on the effects of the S/HMO or other home and community services on diverting older adults from becoming long-stay residents after nursing facility admission are lacking. Although the S/HMOs were converted to traditional Medicare Advantage plans in 2007, extensive data from the demonstration offer a means to examine the extent to which this model helped members in facilities avoid converting from short-stay residents into long-stay placements.

METHODS

We compared older adults in nursing facilities in 4 counties in Southern California according to whether they were insured under Medicare Fee-For-Service (FFS) or SCAN Health Plan, the S/HMO that served these communities. SCAN, located in Southern California, was one of the original sites of the S/HMO demonstration. As an S/HMO, SCAN provided the full range of Medicare benefits offered by standard Medicare HMOs plus additional services such as care coordination, prescription drug coverage, chronic care benefits, and home- and community-based services, including homemaker services, personal care services, adult day care, respite care, and medical transportation.

The parent study accessed nursing facility Minimum Data Set version 2.0 (MDS) records for all SCAN members and the Medicare FFS 5% random sample in the 4 counties where SCAN was available (Los Angeles, Orange, San Bernardino, and Riverside). Data used in the present study were drawn from this original sample. Specifically, we selected only those adults aged 65 and older who entered a nursing facility in 1 of the 4 Southern California counties between January 1, 2001, and September 3, 2003. The University's Institutional Review Board approved the study as exempt.

The unit of analysis was an individual episode, which was operationally defined as a nursing facility stay without an intervening discharge of more than 30 days. Stays separated by

Table 3. *Logistic Regression, Predicting Community Discharge within 90 days (n = 4547)*

	b	OR	Wald χ^2	95% CI
Predisposing				
Age	0.00	1.01	0.95	1.00 – 1.02
Female	0.31	1.36	15.62†	1.17 – 1.59
Married	0.40	1.49	22.81†	1.27 – 1.76
White				
Hispanic	0.00	1.00	0.00	0.78 – 1.27
African American	–0.17	0.84	1.64	0.64 – 1.10
Race - Other	0.05	1.05	0.11	0.79 – 1.39
Average education				
High education	0.12	1.13	2.19	0.96 – 1.33
Low education	–0.27	0.76	9.14*	0.64 – 0.91
Need				
Cognitively impaired	–0.24	0.79	84.00†	0.75 – 0.83
Depressed	–0.11	0.89	8.62*	0.83 – 0.96
Comorbidities	–0.04	0.96	2.26	0.90 – 1.01
Socially engaged	–0.05	0.95	2.63	0.90 – 1.01
Behavioral problems	0.03	1.03	0.06	0.81 – 1.32
ADL score	–0.06	0.95	3.45	0.89 – 1.00
Incontinence - Bladder	0.02	1.02	0.61	0.97 – 1.07
Incontinence - Bowel	–0.18	0.83	41.57†	0.79 – 0.88
Recent fracture	0.53	1.70	26.70†	1.39 – 2.08
Recent fall	0.01	1.01	0.01	0.87 – 1.17
Admitted-from acute				
From home	–0.66	0.52	23.09†	0.40 – 0.68
From other	–1.33	0.27	103.15†	0.21 – 0.34
Enabling				
Lived alone	0.02	1.02	0.05	0.86 – 1.20
Legally responsible for self	0.38	1.46	23.65†	1.25 – 1.70
Medicaid	–1.00	0.37	84.50†	0.30 – 0.46
SCAN	0.23	1.26	10.27*	1.09 – 1.45
Intercept	0.40		0.83	
Hosmer and Lemeshow's χ^2 (df)	11.47 (8)			
P value	0.1764			

OR, odds ratio; CI, confidence interval; df, degrees of freedom.
* $P < .01$,
† $P < .001$

less than 30 days were concatenated to create an aggregated episode of care. An episode ended when the resident either died or remained outside the nursing facility for more than 30 days (ie, no readmissions in the 30 days following discharge).

The dichotomous dependent variable was community discharge within an episode of less than or equal to 90 days, versus an episode length greater than 90 days or discharge to a comparable level of care. Building on the literature, we used the common demarcation of 90 days or more to distinguish a long stay from a short stay.[8,10,11]

Community discharge included discharge to home without home health, home with home health, or board and care/assisted living facility. Predisposing, enabling, and need variables are described in Table 1. Exclusion criteria included diagnosis of mental retardation, developmental disabilities, or permanent vegetative state; discharge to death within 90 days of episode start; and discharge to an acute hospital without return within 30 days; and episode length less than 15 days. To address right censoring, any resident whose episode started within 120 days of the end of the study also was excluded.

Independent variables (shown in Table 1) are taken directly or derived from the MDS 2.0 Full Assessment Admission Form and classified as predisposing, need, or enabling characteristics.[17] Bivariate statistics (*t* tests and χ^2), shown in Table 2, were used to compare characteristics across groups using the final analytical sample (N = 4635). Logistic regression was used to determine the effectiveness of SCAN on the dichotomous dependent variable, controlling for predisposing, enabling, and need variables that previous studies have linked with long-stay placement.[1,5,8]

RESULTS

As shown in Table 2, the average age of the sample was 83 years. The sample was 67% female, 29% married, and 74% White; 75% had at least a high school education. Compared with those in the Medicare FFS sample, SCAN members were significantly older, more likely to be male, be married, be white, have higher education, live alone, and not have Medicaid. Although there were fewer differences in need variables, SCAN members were less likely to be depressed and have fewer comorbidities and were more likely to have had a recent fall and be admitted from home. With the full complement of predisposing, enabling, and need variables included in the model (Table 3), being in SCAN increased the likelihood of community discharge by 26%. Two predisposing characteristics—being female and being married—resulted in increased likelihood of community discharge (36% and 49%), whereas low education resulted in a 24% lower likelihood of community discharge. Need variables that reduced the likelihood of discharge included cognitive impairment (21%), depression (11%), bowel incontinence (17%), and being admitted from home (48%) or another supportive care setting (73%). Having a recent fracture increased the likelihood of discharge by 70%.

All enabling characteristics had significant effects, except having lived alone before admission. Retaining one's own legal responsibility improved the likelihood of transition by 46%, whereas individuals funded by Medicaid were 63% less likely to be discharged to the community. The overall model has acceptable goodness of fit (Hosmer and Lemeshow's $\chi^2 = 11.47$, df = 8, $P = .1764$); *P* greater than .05 supports rejection of the null hypothesis that the model is poorly specified.

DISCUSSION

After controlling for a number of factors associated with long-stay placement, enrollment in the SCAN S/HMO increased the likelihood of community transition within 90 days by 26%. These results suggest that the S/HMO model may help avoid long-stay placement by supporting residents' transition from the nursing facility before converting to long stay.

Studies examining the extent to which the S/HMO model affected placement in nursing facilities have had conflicting results (see Fischer et al. for a summary[8]), perhaps reflecting the methodological challenges of comparing placement among different samples with different measures and different payment sources. The question of conversion from short stay to long stay, however, has not been examined. In the present study, we assume that MDS admissions and discharge data provided standardized measurement regardless of the payment source. Moreover, the use of MDS data allowed us to control for a variety of characteristics associated with risk for long-stay placement.

Given these results, what characteristics of the S/HMO model explain reduced conversion? Starting with the S/HMO's original purpose, possible answers include care coordination, links between acute and long-term care including monitoring of members during placement, and the opportunity for augmented home- and community-based services after placement. Our data do not allow us to disaggregate the S/HMO model into these components. The positive SCAN findings in this study suggest that, in addition to more than 30 years of studies on the effectiveness of home- and community-based services to reduce unnecessary institutionalization, effective transition from long-term placement should be explored as an important outcome of facility care.

The ability to support successful transition from nursing facility to home is an important but largely unexplored area. Although the S/HMO demonstration has been discontinued, it is worth exploring core elements of the model that may have contributed to the positive results seen in this study. Moreover, additional research is needed to identify ways to systematically use the rich MDS data to better understand how to increase the effectiveness and efficiency of those nursing home transition programs that help residents avoid unnecessary institutional placement, including inappropriate conversion from postacute to custodial care.

Although the MDS provides a valuable means to assess placement outcomes, several limitations must be considered. All independent variables were taken from each resident's admission assessment, negating any health, personal, or financial changes that occurred after admission which may affect discharge potential. Also, as these findings are based on a diverse sample from 4 large Southern California counties, researchers and practitioners must use caution when generalizing beyond these communities.

REFERENCES

1. Miller EA, Weissert WG. Predicting elderly people's risk for nursing home placement, hospitalization, functional impairment and mortality: A comparative review and analysis. Med Care Res Rev 2000;57:259–297.
2. Kaye HS, LaPlante MP, Harrington C. Do non-institutional long-term care services reduce Medicaid spending? Health Aff 2009;28: 262–272.
3. Bayer A-H, Harper L. Fixing to Stay: A National Survey of Housing and Home Modification Issues. Washington, DC: AARP; 2000.
4. Walter P, Wodchis WP. Physical rehabilitation following Medicare prospective payment for skilled nursing facilities. Health Serv Res 2004;39: 1299–1318.
5. Chapin R, Wilkenson DS, Rachlin R, et al. Going home: Community reentry of light care nursing facility residents age 65 and over. J Health Care Finance 1998;25:35–48.
6. Kasper J, O'Malley M. Nursing Home Transition Programs: Perspectives of State Medicaid Officials. Washington, DC: Kaiser Commission on Medicaid and the Uninsured; 2006.
7. Williams L. Long-term care after Olmsted v. L.C.: Will the potential of the ADA's integration mandate be achieved? J Contemp Health Law Policy 2000;17:205–239.
8. Fischer LR, Green CA, Goodman MJ, et al. Community-based care and the risk of nursing home placement. Med Care 2003;41:1407–1416.
9. Newcomer R, Harrington C, Friedlob A. Awareness and enrollment in the Social/HMO. Gerontologist 1990;30:86–93.
10. Judith Kasper J, O'Malley M. Changes in Characteristics, Needs, and Payment for Care of Elderly Nursing Home Residents: 1999 to 2004. Washington, DC: Kaiser Commission on Medicaid and the Uninsured. The Henry J. Kaiser Family Foundation 2007.
11. Gruneir A, Lapane KL, Miller SC, Mor V. Is dementia special care really special? A new look at an old question. J Am Geriatr Soc 2007;55: 1007–1014.
12. Morris JN, Fries BE, Mehr DR, et al. The MDS Cognitive Performance Scale. J Gerontol 1994;49:174–182.
13. Burrows A, Morris J, Simon S, et al. Development of a minimum data set-based depression rating scale for use in nursing homes. Age Aging 2000;29:165–172.
14. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. J Chronic Dis 1987;40:373–383.
15. Mor V, Branco K, Fleishman J, et al. The structure of social engagement among nursing home residents. J Gerontol B Psychol Sci Soc Sci 1995; 50:P1–P8.
16. Morris JN, Fries BE, Morris SA. Scaling ADLs within the MDS. J Gerontol A Biol Sci Med Sci 1999;54A:M546–M553.
17. Andersen R. Revising the behavioral model and access to medical care: Does it matter? J Health Soc Behav 1995;36:1–10.