Managed Care for Long-Stay Nursing Home Residents: An Evaluation of Institutional Special Needs Plans

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ABSTRACT

OBJECTIVES: To evaluate the patterns of clinical service use for long-term nursing home residents enrolled in UnitedHealthcare's Medicare Advantage Institutional Special Needs Plans (I-SNPs), which provide on-site direct coordinated care for beneficiaries through the use of advanced practice clinicians.

STUDY DESIGN: Observational analysis of 8052 I-SNP members and 12,982 Medicare fee-for-service (FFS) long-term nursing home residents across 13 states.

METHODS: Multivariate analyses were performed to compare rates of emergency department (ED), inpatient, and skilled nursing facility (SNF) use between I-SNP members and Medicare FFS long-term nursing home residents.

RESULTS: In comparison with FFS institutionalized Medicare beneficiaries, I-SNP members had 51% lower ED use, 38% fewer hospitalizations, and 45% fewer readmissions, whereas their SNF use was 112% higher.

CONCLUSIONS: "At-risk" models, administered through specialized Medicare Advantage plans, that invest in clinical management in the nursing home setting have the potential to allow individuals to receive care on-site and avoid costly inpatient transfers.

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Many nursing home residents experience poor access to clinical care, which often leads to unnecessary healthcare utilization and poor health outcomes.[1-3] For long-term nursing home residents who will likely spend the remainder of their life in a facility, their care is typically either financed by Medicaid or paid out of pocket. However, all of their healthcare, including physician, hospital, postacute, and hospice care, as well as prescription drugs, is covered by Medicare. Thus, nursing homes typically have minimal incentive to invest in on-site clinical models because the payers of long-term nursing home care will not cover it and any savings from decreased hospital or emergency department (ED) utilization go to the Medicare program.[4]

Medicare Advantage (MA), which replaces traditional Medicare fee-for-service (FFS) coverage with a managed care model, has incentives and tools to promote high-value healthcare services.[5-7] Because MA plans are "at risk" for any healthcare spending, they have an increased incentive to invest in clinical care at the nursing home.[8] The basic financial model is that the MA plan is paid on a capitated basis by CMS, and contracted providers submit claims that would otherwise be submitted to CMS to the plan for payment. Long-term nursing home costs are covered by Medicaid or paid privately, but the MA plan is financially responsible for all Medicare-eligible costs, regardless of setting. Institutional Special Needs Plans (I-SNPs) are a specialized form of MA that is limited to Medicare beneficiaries who are long-term (ie, ≥90 days) nursing home residents or are certified as needing nursing home–level care. In 2017, 61,694 beneficiaries nationally were enrolled in these plans, which is a relatively small share of the almost 1 million long-term nursing home residents.[9] However, these plans were created, in part, to help align the financial incentives of the nursing home and Medicare and to improve care delivery across various healthcare settings.[10]

UnitedHealthcare offers a number of I-SNPs in numerous states. All of these plans include a model of care—formerly known as the Evercare model—that provides enhanced care in the nursing home through the use of advanced practice clinicians (ie, nurse practitioners and physician assistants). These on-site clinicians coordinate and deliver care in conjunction with I-SNP members'

primary care physicians, facility staff, and other providers at no additional cost to the facility or the patient. They are responsible for establishing a comprehensive plan of care for each I-SNP member, which is shared with all members of the care team. They provide primary, acute, and preventive care for I-SNP members, including biannual visits for comprehensive assessments and monthly visits for routine assessments. If the member develops an acute illness, the visits occur daily until the member has stabilized. Additionally, the advanced practice clinician facilitates family care conferences to help address medical, behavioral, and social needs; establish goals of care; coordinate care with specialists; and manage various therapies.

TAKEAWAY POINTS

In comparison with traditional Medicare fee-for-service nursing home residents, Institutional Special Needs Plan beneficiaries had lower rates of emergency department and inpatient use and higher rates of skilled nursing facility use. Managed care models that use advanced on-site clinicians to care for nursing home residents, in conjunction with a health plan being financially responsible for nursing home and medical care, may help prevent costly transfers to hospital settings.

Under UnitedHealthcare's I-SNP model, the 3-day qualifying hospital stay requirement for Medicare Part A benefits in a skilled nursing facility (SNF) is waived. This waiver allows for skilled services within a SNF to be covered without a qualifying hospitalization. By identifying and treating a patient's change in condition early via appropriate medical management overseen by the I-SNP's advanced practice clinicians, combined with the coverage of SNF services not otherwise available under traditional Medicare absent a prior hospitalization, unnecessary and avoidable ED visits and hospitalizations can potentially be reduced.

Three bodies of literature help motivate our research question. First, evidence generally suggests that nursing homes with a nurse practitioner or physician assistant on staff have fewer avoidable hospitalizations among long-term residents.[11] In a systematic review of nurse practitioners in nursing homes, all 7 articles that were identified suggested a decrease in hospitalization rates when nurse practitioners were used as part of the team, and 5 of the studies found a decrease in ED transfers.[12] Second, MA plans that eliminated the 3-day rule over the span of 2006 to 2010 did not experience an increase in hospitalizations or SNF admissions.[13] Finally, a line of research has examined managed care models generally for long-term care recipients.[14] With regard to research focused on the nursing home population, MA and FFS beneficiaries exhibited little difference in the quality measures reported on the federal Nursing Home Compare website.[15] For residents with advanced dementia, a study of Boston-area nursing homes suggested better quality among MA recipients.[8]

The I-SNP model combines all of these elements: nurse practitioner staffing, elimination of the 3-day rule, and the capitated financing of managed care. An early CMS-sponsored evaluation of the I-SNP model obtained positive results.[16,17] The incidence of hospitalizations was twice as high among the comparison residents as the model participants. On average, each advanced practice clinician was estimated to save about $103,000 a year in hospital costs. These early results were promising, but limited in 2 regards. First, the data are more than 15 years old and, thus, they do not account for a number of changes in payment and delivery of services in nursing home settings. Second, the data focused on only a limited number of nursing homes in 5 markets. We estimate that in 2015, 40,733 long-term nursing home residents were enrolled in UnitedHealthcare I-SNPs from 1308 nursing homes in 270 counties in 26 states.

The objective of this research is to analyze whether an at-risk MA plan utilizing advanced practice clinicians on-site in the nursing home setting is associated with different healthcare utilization relative to nursing home residents in FFS Medicare.

METHODS

Data

This study used 2014 to 2015 data from 2 sources. To obtain information on I-SNP beneficiaries, we accessed a unique longitudinal UnitedHealthcare I-SNP database, which contained the claims for UnitedHealthcare I-SNP members submitted to the plan by the nursing homes and other plan providers (eg, physicians, hospitals).

Healthcare utilization for FFS Medicare beneficiaries was obtained from the CMS 5% Sample Limited Data Set, which includes Part A (inpatient) and Part B (physician, outpatient) claims (see **eAppendix** [available at **ajmc.com**] for additional details).

Sample Construction

The study period consists of 1 year following the start of long-term (≥90 days) nursing home care for residents in both the I-SNP group and the FFS Medicare comparison group.

Nursing home residents in the I-SNP group and the comparison group were selected from their respective databases if they began receiving long-term nursing home care during calendar year 2014. I-SNP beneficiaries were excluded if their nursing homes were not identified as "mature" in terms of their I-SNP model adoption (see eAppendix for details).

Given differences in local treatment patterns and state policies, individuals in the FFS Medicare comparison group were drawn from the same states as the I-SNP beneficiaries. We examined individuals from 13 states in this study: Arizona, Colorado, Connecticut, Florida, Georgia, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Washington, and Wisconsin. Importantly, we were unable to match individuals in FFS Medicare to a particular nursing home due to data limitations. As such, geographic matching of I-SNP and FFS Medicare individuals cannot occur below the state level.

We identified 8052 I-SNP members from 755 nursing homes in these 13 states that met the study criteria and 12,982 qualifying FFS

TABLE 1. Demographics and State of Residence for I-SNP and FFS Medicare Beneficiaries[a]

	I-SNP (n = 8052)	FFS Medicare (n = 12,982)
Demographics		
Female	69.1%	66.4%
Age in years		
<75	15.4%	28.6%
75-79	10.1%	10.3%
≥80	74.5%	61.1%
State		
Arizona	1.0%	2.2%
Colorado	7.9%	3.3%
Connecticut	11.2%	6.7%
Florida	2.7%	12.0%
Georgia	4.2%	3.6%
New Jersey	1.8%	7.6%
New York	31.5%	24.4%
North Carolina	12.6%	6.6%
Ohio	3.8%	11.5%
Pennsylvania	11.6%	13.1%
Rhode Island	5.8%	1.4%
Washington	4.1%	3.3%
Wisconsin	1.7%	4.3%

FFS indicates fee-for-service; I-SNP, Institutional Special Needs Plan.

[a]All differences are statistically significant at the 5% level or better except the "aged 75-79 years" category.

Source: Authors' calculations based on UnitedHealthcare data of I-SNP enrollees and the Medicare 5% sample of FFS beneficiaries.

Medicare beneficiaries receiving long-term nursing home care in these same states.

Study Outcomes

We examined several utilization outcomes in this study. Specifically, we separately examined ED, inpatient, and SNF utilization per 1000 long-term nursing home residents. Given the current policy interest in hospital readmissions from the SNF setting,[18] we also examined an all-cause 30-day readmission rate per 1000 residents. This measure was defined as a second acute hospital inpatient admission for any reason within 30 days of the original hospital admission.

Analyses

We compared mean utilization across the I-SNP and FFS Medicare samples using a nonparametric Wilcoxon text, which makes no distributional assumptions. We first examined unweighted utilization across the 2 groups. Next, we used a logit model to predict enrollment in the I-SNP model based on age, gender, and state of residence. Unfortunately, we were unable to include additional variables, such as Medicaid eligibility status, in our weighting due to data limitations; however, we know that the majority (87%) of I-SNP enrollees are dually eligible for Medicare and Medicaid. We used the inverse of the probability of treatment weights to propensity match the 2 groups. A balance table was constructed to examine model diagnostics.

To examine the potential spending implications of any observed differences in clinical care use across the I-SNP and FFS groups, we also calculated the change in FFS Medicare spending for long-term nursing home residents if we applied utilization estimates from the I-SNP sample. Given skewed healthcare spending, we first obtained the median spending estimates on inpatient, ED, and SNF episodes from our FFS Medicare sample. Our results are robust to using mean spending values. We then multiplied the I-SNP and FFS Medicare utilization estimates from our most conservative approach (adjusting for sample demographics) with these spending estimates. The difference provides an estimate of the spending change, assuming that FFS Medicare beneficiaries had the utilization patterns of I-SNP beneficiaries. Finally, we adjusted these numbers up to population-level estimates using the total number of long-term FFS Medicare residents in the United States.

The study was approved by the Harvard Medical School Institutional Review Board.

RESULTS

Sample Differences

The sample of I-SNP beneficiaries is statistically different from the sample of FFS Medicare beneficiaries in terms of state of residence, gender, and age (**Table 1**). Specifically, the I-SNP sample has slightly more women, fewer individuals younger than 75 years, and more individuals 80 years or older. Moreover, the I-SNP sample is drawn more heavily from particular states (CO, CT, GA, NC, NY, RI, and WA), due to the distribution of facilities that have contracted with UnitedHealth I-SNPs, relative to the FFS Medicare sample. After applying the propensity score weighting, the sample characteristics are quite similar across the I-SNP and FFS Medicare comparison groups (**Table 2**).

Unadjusted Differences

When we compared utilization without any adjustment for demographics, the use of inpatient and ED services was significantly lower among the I-SNP group relative to the FFS Medicare group. Meanwhile, the use of SNF services was higher in the I-SNP group (**Table 3**). Specifically, there were 288 inpatient stays per 1000 I-SNP members relative to 524 inpatient stays per 1000 FFS Medicare beneficiaries. The I-SNP group experienced 218 ED visits per 1000 long-term residents relative to 452 per 1000 FFS Medicare beneficiaries. Additionally, 30-day readmissions were lower for I-SNP members (167 vs 334 per 1000 inpatient stays). Finally, I-SNP members had nearly twice the rate of SNF use (481 vs 253 stays per 1000 residents).

Adjusted Differences

When we weighted the analyses by demographics, the unadjusted results generally held. The differences in inpatient and ED utilization

across the I-SNP and FFS Medicare groups were slightly reduced, whereas the differences in SNF use slightly increased. Specifically, the I-SNP members had lower rates of inpatient stays (310 vs 500 per 1000 beneficiaries), ED visits (217 vs 441 per 1000 beneficiaries), and 30-day readmissions (175 vs 318 per 1000 inpatient stays), but higher SNF utilization (514 vs 242 per 1000 beneficiaries). In percentage terms, I-SNP beneficiaries had 38% fewer hospitalizations, 51% lower ED use, and 45% fewer readmissions, and the rate of SNF use was 112% higher.

Potential Spending Differences

In an effort to illustrate how these utilization differences might translate to potential spending differences for Medicare, we compared actual Medicare expenditures for inpatient, ED, and SNF services with projected expenditures using the utilization rates observed for I-SNP beneficiaries (**Figure**). We took the median cost of each of these services and multiplied these values by our utilization estimates for both sets of beneficiaries from the analyses adjusted for sample demographics.

For 1000 traditional Medicare beneficiaries, we estimated spending on inpatient services at $7.6 million, ED visits at $0.4 million, and SNF stays at $1.2 million for a total of $9.2 million. For 1000 I-SNP members, we estimated inpatient spending at $4.7 million, ED visits at $0.2 million, and SNF stays at $2.6 million for a total of $7.5 million. In total, if FFS Medicare beneficiaries exhibited the same inpatient, ED, and SNF utilization patterns as I-SNP beneficiaries, the Medicare program would spend $1.65 million less per 1000 beneficiaries. Given that nearly 1 million long-term nursing home residents nationwide are in FFS Medicare, the program would spend roughly $1.6 billion less annually on these services if we applied the rates from the I-SNP enrollees. Importantly, this number should not be viewed as net savings in that it is likely reflective of some differential selection into the I-SNP and FFS Medicare groups and does not account for the additional costs of operating the I-SNP model.

DISCUSSION

We observed a different pattern of healthcare utilization under the I-SNP model relative to that under traditional FFS Medicare. In particular, I-SNP members had lower inpatient and ED use but more SNF stays. This result illustrates the relationship between investment in clinical care in the nursing home and decreased institutional use outside the facility. Importantly, any potential savings from decreased inpatient and ED use would need to be offset by the increased spending on advanced practice clinicians and other services under the I-SNP model. Nevertheless, if traditional Medicare beneficiaries exhibited a similar utilization pattern to the I-SNP beneficiaries, it could result in a decrease of more than $1 billion in spending on ED and inpatient services annually.

The transfer of nursing home residents to the ED and hospital has emerged as an important area of interest for policy makers. These transfers are known to be frequent,[19-21] costly,[22] often preventable,[23-25] and potentially associated with negative health outcomes.[26,27] Given

TABLE 2. Balance After Propensity Score Weighting for I-SNP and FFS Medicare Beneficiaries

	I-SNP (n = 8052)	FFS Medicare (n = 12,982)	Difference	*P*[a]
Gender				
Female	67.5%	67.4%	0.14%	.838
Age in years				
<75	24.2%	23.4%	0.83%	.168
75-79	10.2%	10.3%	–0.16%	.705
≥80	65.6%	66.3%	–0.67%	.318
State				
Arizona	1.7%	1.7%	–0.06%	.749
Colorado	5.0%	4.8%	0.22%	.467
Connecticut	8.7%	8.8%	–0.13%	.738
Florida	8.4%	8.4%	0.04%	.927
Georgia	4.0%	3.9%	0.08%	.772
New Jersey	6.0%	5.4%	0.57%	.082
New York	27.3%	28.4%	–1.12%	.077
North Carolina	8.6%	7.8%	0.80%	.0404*
Ohio	8.7%	8.5%	0.20%	.619
Pennsylvania	12.4%	12.6%	–0.21%	.655
Rhode Island	3.1%	3.1%	–0.02%	.940
Washington	3.4%	3.4%	0.00%	.987
Wisconsin	2.9%	3.2%	–0.37%	.123

FFS indicates fee-for-service; I-SNP, Institutional Special Needs Plan.

*P <.05.

[a]P values indicate tests of statistically significant differences between the I-SNP and FFS groups.

Source: Authors' calculations based on UnitedHealthcare data of I-SNP enrollees and the Medicare 5% sample of FFS beneficiaries.

TABLE 3. Differences in Utilization Across I-SNP and FFS Medicare Beneficiaries[a]

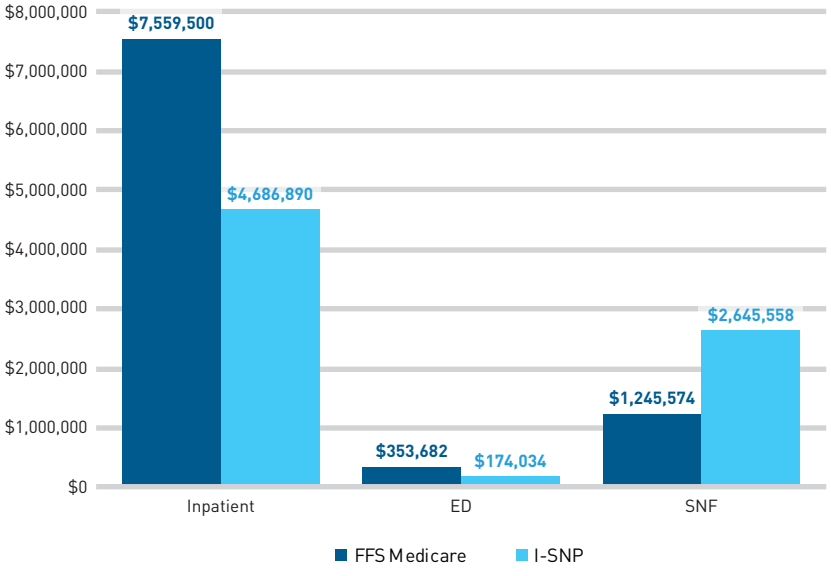
	Unadjusted Differences		Adjusted for Demographics	
Utilization Measure	I-SNP	FFS	I-SNP	FFS
Inpatient stays per 1000 residents	288	524	310	500
30-day readmissions per 1000 inpatient stays	167	334	175	318
ED visits per 1000 residents	218	452	217	441
SNF stays per 1000 residents	481	253	514	242

ED indicates emergency department; FFS, fee-for-service; I-SNP, Institutional Special Needs Plan; SNF, skilled nursing facility.

[a]All differences are statistically significant at the 5% level or better (adjusted and unadjusted). Demographic adjusters include age, gender, and state of residence.

Source: Authors' calculations based on UnitedHealthcare data of I-SNP enrollees and the Medicare 5% sample of FFS beneficiaries.

FIGURE. Actual Medicare Expenditures per 1000 Long-term Nursing Home Residents in FFS Medicare Versus Projected Expenditures Based on Utilization of I-SNP Beneficiaries



ED indicates emergency department; FFS, fee-for-service; I-SNP, Institutional Special Needs Plan; SNF, skilled nursing facility.

Source: Authors' calculations based on UnitedHealthcare data of I-SNP enrollees and the Medicare 5% sample of FFS beneficiaries.

the silo-based payment of nursing home care relative to other healthcare services, nursing homes have the narrow interest of limiting their own costs and little financial incentive to take responsibility for broader care management or quality of care. For dually eligible nursing home residents, Medicaid pays for their long-stay nursing home care and Medicare pays for their healthcare services. State Medicaid programs do not typically pay a higher rate to help nursing homes cover enhanced care within the facility. When an adverse health event occurs, nursing homes often have the incentive to transfer sick dually eligible residents in order to limit the burden on their staff and also improve their potential standing with surveyors. Also, if an FFS Medicare beneficiary is transferred and has a 3-day qualifying inpatient stay, they can return to the nursing home as a higher-reimbursed Medicare SNF patient. Thus, nursing homes have little financial motivation to discourage transfers from the nursing home setting. Our findings suggest that the I-SNP model studied here is a potential payment and delivery innovation that can overcome these misaligned incentives to encourage increased clinical investment in the care of residents in the nursing home.

Policy makers interested in lowering the rate of hospital transfers should also consider what clinical resources are needed to help nursing homes and other providers realize these savings in a safe manner. In accordance with this need, CMS has been evaluating a series of potential interventions to address the underinvestment in clinical services in long-term care settings.[27] The results of this evaluation and other prior research have suggested that both the quantity and the type of clinical staffing may be means of decreasing potentially avoidable hospitalizations.[2,11,28,29] The lower rates of hospital and ED transfers observed under the I-SNP model, which utilizes advanced practice clinicians within the nursing home, are consistent with these earlier findings.

Another important element of the I-SNP model that may have contributed to the lower rates of hospital and ED use is the relaxation of the rule in FFS Medicare that beneficiaries must have a 3-day hospital stay to qualify for SNF care. Not surprisingly, in the absence of this rule, we observed higher SNF use under the I-SNP model. We were unable to differentiate between necessary and unnecessary SNF utilization, but some of this increased use was likely substituting for higher-cost inpatient care. Although many policy makers have been reticent to relax the 3-day rule in traditional Medicare FFS due to fear of increasing utilization, this flexibility is an important element of MA plans and other at-risk models (eg, accountable care organizations, bundled payment initiatives) that facilitate the delivery of skilled care in a lower-cost setting.[13,30]

Limitations

The adoption of the I-SNP model by a nursing home is not random. Although the I-SNP nursing homes in our sample were relatively similar to national averages in terms of for-profit ownership, they were more likely to be chain-owned and larger in size. Moreover, the type of individual who enrolls in an I-SNP may be different from an individual who does not, even though they may reside in the same nursing home. We attempted to address these selection issues by drawing nursing homes from the same state and then weighting our analyses based on observable demographic characteristics. However, other unmeasured facility and individual factors may bias our estimates. In particular, we were not able to control for particular nursing home characteristics or direct measures of resident health status. Consideration was given to adjusting our analyses for health status using a claims-based risk-adjustment model such as the Hierarchical Condition Categories.[31] We chose not to use such adjustments because of the greater coding intensity that has been documented in MA, which could make the I-SNP beneficiaries appear less healthy relative to the FFS Medicare group.[32] Future research with alternate measures of beneficiaries' clinical need and complexity is needed to better understand the role of patient selection in explaining the observed patterns of clinic care use.

As we describe in the Methods section, we excluded I-SNP enrollees in nursing homes that did not meet certain criteria. Thus, our results only pertain to beneficiaries in those "mature" nursing homes and not the universe of I-SNP enrollees. Finally, limitations

in our data prevent the comparison of physician, outpatient, and drug spending across the I-SNP and FFS Medicare beneficiaries.

CONCLUSIONS

A major focus in long-term care policy has been to improve access to on-site clinical care in order to rebalance medical care utilization away from the ED and inpatient settings. By providing on-site advanced practice clinicians and making the insurer financially responsible for care in and out of the nursing home, the I-SNP model tested here was shown to have lower ED and inpatient utilization and higher SNF utilization relative to FFS Medicare. Our results suggest that this I-SNP model is one potential approach to shift care to less costly clinical settings and can help inform the development and implementation of other value-based payment models in the SNF population. ■

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