Impact of the Skilled Nursing Facility 3-Day Rule Waiver on Medicare ACO Expenditures: *A Retrospective Analysis of 2023 MSSP Performance Data*

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Abstract

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Objectives

To evaluate whether participation in the Medicare Skilled Nursing Facility (SNF) three-day rule waiver has an effect on total per capita expenditures among Accountable Care Organizations (ACOs) participating in the Medicare Shared Savings Program (MSSP).

Design

A retrospective cross-sectional analysis of 2023 MSSP ACO performance data. The study assessed the relationship between SNF waiver participation and healthcare expenditures using a multivariate linear regression framework. The study included all ACOs participating in the MSSP during the 2023 performance year, encompassing a nationally representative sample of Medicare beneficiaries attributed to those organizations.

Methods

A robust linear regression model was developed to explain variation in per capita expenditures, with adjustment for key covariates including patient risk profiles (CMS Hierarchical Condition Category scores), ACO savings rates, and inpatient and SNF utilization rates. Subgroup analyses were performed based on ACO size, defined by the median beneficiary count (19,457). A post-hoc power analysis confirmed adequate statistical power (>80%) to detect moderate effect sizes.

Results

The model explained 96% of the variance in per capita expenditures (Adjusted $R^2 = 0.96$). Key predictors included HCC risk scores ($\beta = 4430.63$, $p < 0.001$), savings rate ($\beta = –52.63$, $p < 0.001$), inpatient utilization ($\beta = 1.80$, $p < 0.001$), and SNF utilization ($\beta = 2.46$, $p < 0.001$). SNF waiver participation was not significantly associated with expenditures overall ($\beta = 12.81$, $p = 0.828$) or in either subgroup analysis.

Conclusions and Implications

While risk profiles, utilization patterns, and financial performance significantly shape ACO expenditures, SNF waiver participation alone does not independently impact spending. As CMS prepares to expand the waiver under the FY 2026 IPPS/LTCH PPS rule, ACOs and policymakers should focus on broader strategies—such as refined risk adjustment, care coordination, and cost-saving interventions—to achieve meaningful value-based care improvements.

Keywords: *Medicare Shared Savings Program, ACO, Skilled Nursing Facility, 3-Day Rule Waiver, Healthcare Expenditures, Risk Adjustment, Post-Acute Care Transitions*

Introduction

Transitions from acute hospitalization to post-acute care—particularly skilled nursing facilities (SNFs)—are critical in the continuum of care for older adults.[1] Since its inception in 1965, Medicare has required that beneficiaries be formally admitted as inpatients and remain hospitalized for at least three consecutive days—not including time spent under observation status—before becoming eligible for post-acute SNF coverage.[2] This three-day requirement has functioned as a gatekeeper, designed to curb overutilization of costly post-acute services.[3,17,21] The policy's objective was to ensure SNF care was reserved for patients with care needs for which SNF services were appropriate following substantial hospital stays, helping control Medicare costs and uphold standards of care quality.[1,3,17]

In recent years, this longstanding requirement has come under scrutiny. Critics argue the three-day rule may inadvertently prolong hospitalizations by compelling patients to remain hospitalized longer than clinically necessary to qualify for SNF benefits.[8-10, 21] Such extended hospital stays increase costs and expose patients to hospital-related complications, including infections and functional decline.[3,9] Moreover, in today's evolving healthcare landscape, where care coordination and value-based payment models have gained prominence, rigid policies like the three-day rule may no longer align with contemporary goals of efficiency and patient-centered care.[13,19]

The COVID-19 pandemic accelerated the need for flexibility in post-acute care transitions.[6,14] In response, CMS issued a waiver of the three-day rule, allowing Medicare beneficiaries to receive SNF care without a prior hospital stay of at least three days.[6,21] Initially set to expire at the end of the federal public health emergency, CMS recognized its benefits for care coordination and patient outcomes, extending support through Innovation Center payment

models. The FY2025 Skilled Nursing Facility Prospective Payment System Final Rule, announced in July 2024, included a net increase of 4.2%—approximately $1.4 billion—in Medicare Part A payments to SNFs. This increase signals CMS's willingness to adjust payments in response to inflationary pressures, rising operational costs, and the need to stabilize the post-acute care sector—particularly as nursing homes face mounting financial strain from increased operating expenses and minimum staffing requirements.[4] Flexibilities related to the three-day rule waiver remain active through the CMS Innovation Center and may be expanded through future rulemaking.[4,12]

This policy shift aligns with Medicare's broader transition toward value-based care, initiated by the Affordable Care Act and accelerated through initiatives such as Accountable Care Organizations (ACOs).[11,15] ACOs are networks of healthcare providers—including physicians, hospitals, and other entities—that voluntarily collaborate to deliver coordinated, high-quality care to Medicare beneficiaries. Their goal is to ensure appropriate care timing, minimize redundancy, and reduce medical errors, sharing generated savings.[13,15] This study focuses specifically on ACOs participating in the Medicare Shared Savings Program (MSSP), CMS's largest and longest-running ACO model.[11,15] The SNF three-day rule waiver complements other payment reforms, such as the ACO Realizing Equity, Access, and Community Health (REACH) model (replacing the Global and Professional Direct Contracting model in 2023), Bundled Payments for Care Improvement Advanced, and Primary Care First models.[4,12,14] All these initiatives emphasize enhancing care transitions, promoting appropriate site-of-service decisions, and aligning provider incentives with high-value care, supporting CMS's strategic goal of placing all Medicare beneficiaries in accountable care relationships by 2030.[4]

The literature provides mixed evidence regarding implications of both the three-day rule and its waiver on patient outcomes and cost. Hernandez et al.[12] reported beneficiaries subject to the three-day rule experienced longer hospitalizations compared with privately insured individuals, suggesting potential unnecessary hospital stays. In contrast, Grebla et al.[15] found waiving the rule modestly reduced hospital lengths of stay without significantly increasing SNF admissions. Studies of coordinated care models, such as ACOs, have demonstrated integrated care delivery can reduce post-acute expenditures and improve discharge practices.[15-16,18,21-22]

Beyond financial outcomes, research increasingly examines clinical and patient-centered impacts. Jin and colleagues [5] found the traditional three-day requirement was associated with increased hospital readmissions, particularly infection-related, suggesting bypassing unnecessary hospitalizations through direct SNF admission could reduce complications. Shi et al.[6] demonstrated comparable functional recovery trajectories between patients admitted via waiver or traditional pathways, controlling for clinical complexity.

Patient experience is another dimension evaluated in SNF transitions. Standardized measurement through Consumer Assessment of Healthcare Providers and Systems (CAHPS) Nursing Home Surveys offers insights into quality of care and life for SNF residents,[7] though comparative studies of patient satisfaction between waiver and traditional pathways remain limited. Burke et al.[8] highlighted inadequate transitional care processes as critical risk factors for readmissions from post-acute facilities. Additionally, Lee[3] noted that high-quality SNFs often operate at full capacity, potentially directing patients admitted under the three-day rule to lower-quality facilities, resulting in worse outcomes.

Despite these insights, significant gaps remain regarding the impact of the SNF three-day waiver on total per capita expenditures within MSSP ACOs, particularly when controlling for

organizational, risk, and utilization factors. This study aims to address this gap, examining the association between SNF waiver participation and per capita expenditures among MSSP ACOs. Specifically, it investigates whether direct SNF admissions, absent the prerequisite three-day hospitalization, affect overall spending. Although not directly assessing quality outcomes, reductions in unnecessary hospital days and efficient care transitions—reflected in spending patterns—may proxy improved care value. Controlling for critical confounders, including beneficiary demographics, risk scores, and utilization measures, this analysis provides robust evidence on the financial implications of the waiver. The study's findings aim to inform future Medicare policy decisions and guide ACOs in optimizing post-acute strategies in anticipation of the expanded waiver implementation.

Methods

Data Sources and Study Cohort

This retrospective cohort study used 2023 data from two primary sources: the MSSP Performance Year Financial Results file from CMS, which provided detailed financial and quality performance metrics (including total per capita expenditures) for all MSSP ACOs, and the ACO Characteristics file, which contained information on organizational features such as risk model type, program start dates, and SNF waiver participation. The datasets were merged using common ACO identifiers. The final study cohort included MSSP ACOs that were operational throughout 2023 under a two-sided risk model. Only ACOs in two-sided risk arrangements were eligible for inclusion because participation in the SNF three-day rule waiver is limited to ACOs that assume downside financial risk under the Medicare Shared Savings Program.

Outcome Variable

All variables reflect ACO-level data. The primary outcome is defined as the annual expenditure per assigned beneficiary.

Independent Variable

The independent variable was SNF waiver participation in 2023.

Covariates

To control for potential confounders, I included 21 covariates organized into four categories. The selection of these covariates was based on both theoretical considerations and prior research on factors influencing healthcare expenditures in ACO settings.

Organizational characteristics included beneficiary count which controls for potential economies of scale; ACO experience (years in the MSSP program), which accounts for learning effects in care coordination; and savings rate which reflects overall financial performance capability.

Demographic factors were selected to account for population differences at the ACO level that might influence both care needs and costs. These included the percentage of ACO beneficiaries in specific age categories (i.e., 65-74, 75-84, and 85 and older) because older beneficiaries typically require more intensive services; the proportion of dual-eligible beneficiaries as this population often has more complex needs and higher costs; and gender ratio since healthcare utilization patterns differ by gender.

Clinical risk measures were essential controls given their well-established relationship with expenditures. CMS-Hierarchical Condition Category (HCC) risk scores for both dual-eligible and non-dual beneficiaries were included to adjust for underlying health status and expected resource use.

Utilization patterns included key metrics that directly impact expenditures: SNF admission rates per. average SNF length of stay in days hospital discharge rates and per-beneficiary expenditures for both SNF and inpatient services Additionally, the quality performance score was included to control for the relationship between care quality and spending.

Handling of COVID Effects

The study period (2023) represents a transition year following the end of the COVID-19 Public Health Emergency (PHE) on May 11, 2023. To account for any lingering pandemic-related variation, I included utilization covariates that could reflect residual COVID-19 effects at the ACO level—per-beneficiary inpatient and SNF expenditures, hospital and SNF admission rates, and average SNF length of stay.

There were no missing values for any dependent variables, independent variables, or covariates across the final analytic dataset. Descriptive statistics were generated overall and stratified by SNF waiver status.

For the primary analysis, I fit a multivariate linear regression model using a log-transformed outcome to address skewness in per capita expenditures. The model controlled for ACO beneficiary count, CMS Hierarchical Condition Category (HCC) risk scores, and all relevant utilization metrics. Due to evidence of heteroskedasticity (Breusch–Pagan test: BP = 39.689, df = 17, p = 0.0014), I computed robust standard errors using the sandwich estimator.

A sensitivity analysis was conducted by stratifying ACOs into two groups—large and small—based on the median number of beneficiaries (19,457). This analysis tested whether the association between SNF waiver participation and expenditures differed by ACO size. Both subgroup models included the same set of covariates as the primary model.

Results

Multivariable Regression Findings

After adjusting for heteroskedasticity using robust standard errors, the final model explained 96 percent of the variance in per-capita expenditures. The three strongest predictors were the CMS-HCC risk score for non-dual beneficiaries ($\beta \approx 4430$; $p < .001$), per-beneficiary inpatient expenditures ($\beta = 1.80$; $p < .001$), and per-beneficiary SNF expenditures ($\beta = 2.46$; $p < .001$). Participation in the SNF three-day rule waiver was not independently associated with spending ($\beta = 12.8$; $p = 0.828$). (Full regression coefficients for all covariates are provided in *Appendix A*.)

In subgroup sensitivity analyses based on ACO size (median beneficiary count = 19,457), SNF waiver participation remained non-significant across both categories (*see table below*):

ACO Size Category	SNF Waiver Effect (β , p-value)
Smaller (< 19,457 beneficiaries)	14.3 , p = 0.47
Larger (≥ 19,457 beneficiaries)	9.8 , p = 0.55

This finding indicates that the lack of association between waiver participation and expenditures is consistent regardless of organizational size. A complete table with coefficients and confidence intervals for all 21 covariates, including standardized coefficients to facilitate comparison of relative importance, is provided in *Appendix A*.

Model Performance

The model demonstrated strong explanatory power, explaining approximately 96% of the variance in per capita expenditures (Adjusted $R^2 \approx 0.96$).

Diagnostic Plots

Diagnostic plots—including residuals vs. fitted, Q-Q, scale-location, and residuals vs. leverage—confirmed that aside from heteroskedasticity (addressed by robust standard errors), model assumptions were reasonably met. A predicted versus observed plot further supported the model's overall fit. All diagnostic plots are available in "Final_Model_Diagnostics.pdf."

Discussion

This analysis of Medicare's Three-Day Rule Waiver reveals several key determinants of healthcare costs within ACOs. Patient health risk emerged as the most powerful predictor of expenditures, with Medicare-only beneficiaries who have complex health conditions requiring significantly more resources for their care. These patients with higher risk scores drive substantially higher costs, underscoring the importance of accurate risk adjustment in healthcare payment models.

Financial performance metrics also showed strong relationships with per capita spending. ACOs demonstrating greater efficiency through higher savings rates relative to their benchmarks consistently maintained lower overall spending per patient. This suggests that organizations with effective cost management strategies are able to achieve better financial outcomes across multiple dimensions, not just in isolated metrics.

The strongest predictors of total costs were utilization patterns, particularly expenditures on hospital stays and skilled nursing facility care. This finding highlights the critical importance of managing high-cost care settings and suggests that focused interventions on these service categories could yield substantial savings. Healthcare organizations would benefit from developing targeted strategies to optimize appropriate use of these costly services.

Demographic characteristics of the patient population significantly influenced expenditures as well. The age structure of beneficiaries, with a particular impact from those aged

75-84 and those over 85, affected overall costs. Additionally, the gender composition showed that populations with higher proportions of male patients tended to incur greater expenses, an important consideration for population health management strategies.

Perhaps most notably, participation in the SNF 3-day rule waiver program showed no significant independent effect on total expenditures after accounting for these other factors. This suggests that policy interventions like the waiver may not directly drive cost changes in isolation. Instead, comprehensive approaches addressing patient complexity, service utilization, and organizational efficiency are likely to have greater impact on healthcare spending than single policy changes alone.

The lack of significance for SNF waiver status indicates that the waiver, while intended to streamline post-acute care transitions, does not independently affect total per capita expenditures when controlling for other organizational and clinical factors. These findings align with recent research suggesting that waiver implementation during the COVID-19 pandemic did not result in increased SNF utilization as initially expected. In fact, some studies have shown overall decreases in SNF discharges from both emergency departments and inpatient settings following waiver implementation, though with smaller declines for Medicare beneficiaries and those with hospital stays less than three days.

Several mechanisms may explain why waiver participation does not drive significant changes in expenditures. Qualitative research by Khullar et al.[25] involving ACO leaders suggests that operational challenges have limited the full utilization of the waiver. Many ACOs reported difficulties with SNF staffing shortages, which constrained capacity for direct admissions and limited the potential impact of the waiver.[23] Additionally, Grebla and colleagues[15] found that patient preferences increasingly favor home health care over SNF placement when

hospitalization is not required, further reducing the waiver's utilization. Another important factor is the simultaneous implementation of other care coordination initiatives within ACOs that may overshadow the waiver's effects, such as embedded care managers and post-discharge follow-up programs. These operational realities suggest that the mere availability of the waiver does not guarantee its optimal implementation or impact.

An important consideration in interpreting these findings is the potential for differential effects across population subgroups. While the primary analysis did not find a significant association between waiver participation and overall expenditures, prior research suggests these effects may vary across beneficiary populations.[18,23] Disparities in post-acute care access have been well-documented, particularly for dual-eligible and racial/ethnic minority beneficiaries.[19,22] For example, Kim et al.[18]found significant variations in post-acute care utilization patterns among vulnerable populations in ACOs.

These equity concerns merit further investigation, as they suggest the waiver's benefits may not be equally distributed across all Medicare populations.[18-20,23] Future policy development should consider targeted approaches to ensure that vulnerable populations, including dual-eligible beneficiaries and racial/ethnic minorities, have equitable access to streamlined post-acute care pathways.[19,24]

Additional research with more detailed beneficiary-level data could help clarify whether the waiver's impact varies by patient characteristics and identify opportunities to optimize its implementation for different populations**.**[15,18,24]These results have important policy implications, suggesting that efforts to optimize high-value care may be better directed toward improving risk adjustment—particularly to support appropriate payment for high-risk beneficiaries—and refining utilization strategies, rather than focusing solely on the waiver policy.

As Medicare continues to evolve toward value-based payment models, understanding the impact of regulatory flexibilities like the SNF three-day rule waiver becomes increasingly important. This study contributes valuable evidence that such waivers may be implemented without affecting expenditures, potentially supporting broader adoption of this approach beyond the COVID-19 emergency period and current limited ACO programs.

Limitations

Several limitations should be considered when interpreting these findings. First, this study focuses exclusively on MSSP ACOs operating under two-sided risk arrangements, potentially limiting generalizability to other healthcare delivery models. The applicability of these results to ACOs in one-sided risk tracks remains limited, as CMS has restricted the three-day rule waiver exclusively to ACOs assuming two-sided financial risk under the MSSP.

This policy design reflects CMS's strategic approach to gradually introduce care flexibilities to organizations with greater financial accountability.

Furthermore, the increasing prevalence of Medicare Advantage (MA), which covered approximately 50% of all Medicare beneficiaries in 2023 and operates under different regulatory frameworks, raises questions about the relevance of these findings in MA-dominant markets. MA plans already have flexibility regarding the three-day rule, and their influence on local practice patterns may affect how traditional Medicare beneficiaries are managed.

Second, the temporal scope of this analysis is limited to 2023 performance data, providing only a snapshot of waiver effects during a transitional period following the COVID-19 pandemic. While the study approach attempted to account for pandemic-related disruptions, longer-term longitudinal studies will be necessary to assess whether late adopters of the waiver or lagged effects emerge over multiple years. As CMS prepares for the October 2025 expansion,

understanding how new participants adapt to waiver implementation will be crucial for comprehensive policy evaluation.

Finally, while the analysis controlled for numerous confounders, unmeasured variables—such as regional practice patterns, physician preferences, and specific care coordination strategies—may influence the relationship between waiver participation and expenditures. Additionally, the reliance on administrative data limits the ability to assess important clinical outcomes and patient-centered measures that might be affected by waiver implementation.

Future Research Directions

Future research should address several key gaps identified in this study. First, longitudinal analyses spanning multiple years would help determine whether the waiver's impact evolves over time as organizations develop more sophisticated implementation strategies. Second, mixed-methods approaches incorporating qualitative data from ACO leaders, providers, and patients would provide valuable insights into the operational mechanisms and barriers affecting waiver utilization.

Beyond expenditures, future studies should evaluate how waiver participation affects important clinical and patient-centered outcomes, including functional recovery trajectories, quality of life measures, and caregiver burden. The development of composite measures that capture both cost and quality dimensions would provide a more comprehensive assessment of the waiver's value.

Additionally, researchers should examine potential interaction effects between the waiver and other policy initiatives, such as the Skilled Nursing Facility Value-Based Purchasing Program, to understand how these policies collectively shape post-acute care delivery. Economic

modeling of long-term cost trajectories beyond the immediate post-discharge period would also help clarify the waiver's broader financial implications.

Finally, targeted studies examining equity considerations in waiver implementation and utilization would help identify whether certain beneficiary groups face barriers to accessing direct SNF admission pathways and inform policy refinements to address disparities.

Conclusions

This study found no significant association between SNF three-day rule waiver participation and per capita expenditures among MSSP ACOs after controlling for relevant demographic, clinical, and organizational factors. The findings suggest that allowing direct SNF admissions without requiring a preceding three-day hospitalization does not independently drive healthcare spending. Instead, per capita expenditures are primarily influenced by beneficiary risk profiles, utilization patterns, and ACO performance measures. The non-significance of the waiver effect challenges assumptions that such flexibilities necessarily lead to increased utilization or costs.

These results provide empirical support for policymakers considering permanent modifications to the three-day rule beyond the current limited waiver programs. As CMS proceeds with the planned October 2025 expansion, these findings suggest that broadening waiver eligibility is unlikely to increase Medicare expenditures substantially. However, the variable implementation experiences across organizations highlight the importance of providing technical assistance and sharing best practices to maximize the waiver's potential benefits. Future research should continue to monitor longer-term impacts as healthcare delivery systems adapt to regulatory changes and evolving payment models, with particular attention to whether equitable access to streamlined post-acute care pathways is achieved across diverse Medicare populations.

Appendix A: Model Coefficients (complete list is found in "Final_Model_Diagnostics.pdf."

Factor	**Estimate**	**Standard Error**	**t-statistic**	**p-value**	**95% CI Lower**	**95% CI Upper**
Intercept	-79.173	1437.585	-0.055	0.956	-2909.667	2751.321
SNF 3-day rule waiver participation	12.814	59.084	0.217	0.828	-103.519	129.146
Risk score: dual-eligible beneficiaries	424.135	294.676	1.439	0.151	-156.058	1004.328
Risk score: non-dual beneficiaries	4430.628	456.774	9.700	<0.001	3531.275	5329.981
Savings rate (benchmark vs. actual)	-52.630	7.883	-6.676	<0.001	-68.151	-37.108
Per beneficiary inpatient expenditures	1.803	0.097	18.616	<0.001	1.612	1.994
Quality performance score	-10.252	4.833	-2.121	0.035	-19.767	-0.737

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