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Outcomes After Shortened Skilled Nursing Facility Stays Suggest Potential For Improving Postacute Care Efficiency

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ABSTRACT Reducing postacute care in skilled nursing facilities (SNFs) in favor of home-based care is a leading cost-saving strategy in new payment models. Yet the extent to which SNF stays can be safely shortened remains unclear. We leveraged the exposure of fee-for-service Medicare beneficiaries without supplemental coverage to cost sharing after SNF benefit day 20 as a cause of shortened stays. Marked reductions in length-of-stay because of cost sharing shifted patients to home more than a week earlier than expected without cost sharing, producing a discharge spike. These reductions were not associated with clear evidence of compromised patient safety as measured by death, hospitalization for fall-related injuries, or all-cause hospitalization within nine days of the spike. Adverse consequences requiring hospitalization could not be excluded for a small proportion of shortened stays. These findings suggest potential for improving postacute care efficiency, as SNF stays may be unnecessarily long to ensure safety.

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Care in skilled nursing facilities (SNFs) accounts for nearly half of all postacute spending in Medicare and is thought to be a major source of wasteful health care spending.[1] The per diem basis for payment and lack of consensus on clinical indications for care in a facility, as opposed to at home, may contribute to unnecessary or excessively long SNF stays.[2] Accordingly, postacute care in SNFs has been a primary target for providers in new payment models.

Shifting patients from a facility to home, however, could be harmful to patients if they continue to require the twenty-four-hour in-person clinical monitoring uniquely provided in facilities to ensure their safety and prevent adverse events such as falls. Although there is interest in caring for more postacute patients in the lower-cost home setting through in-person or virtual care, an important prerequisite for this shift is ensuring patient safety. When this condition is met, there is the potential for greater use of home-based models, which could be improved to address other clinical goals where current home health care may fall short. A clearer understanding of the role of SNF care is critical as policy makers consider stronger and more widespread incentives to curtail this form of postacute care.

Much of the current evidence on the value of SNF care is descriptive, including the wide geographic variation in postacute spending in Medicare that is unrelated to outcomes.[3] Fewer studies have used quasi-experimental designs to directly assess the consequences of restricting institutional postacute care. Evaluations of accountable care organization and bundled payment models have found reductions in SNF use and length-of-stay without evidence of adverse outcomes, but the reductions have been modest.[4–7] To our knowledge, only four quasi-experimental studies have attempted to isolate the causal effects of potentially larger reductions

in postacute SNF care,[8–10] including only one that examined effects of shorter SNF stays conditional on hospital discharge to a SNF (as opposed to effects of hospital discharge to home versus a SNF).[11] That study examined SNF discharges hastened by cost sharing for Medicare patients that applies after day 20 of a SNF benefit period. Lacking data on supplemental coverage to compare patients exposed versus not exposed to cost sharing, the study focused on patients with multiple SNF stays within a Medicare benefit period and found that patients who reached benefit day 20 sooner during their second SNF stay (because their prior stay was longer) were discharged earlier and rehospitalized at a significantly higher rate.[11] However, these patients also were observably higher-risk, as might be expected from their longer initial SNF stays. Thus, the higher rate of rehospitalization could not be confidently attributed to earlier SNF discharge.

Building on this literature, we conducted two sets of analyses using national survey data on supplemental coverage and Medicare claims and enrollment data to characterize the extent to which SNF discharges accelerated by cost sharing were safe. The cost sharing that begins after day 20 of a SNF benefit period for Medicare beneficiaries without supplemental coverage is substantial (for example, a copayment of $158 per day in 2015)[12] and affects both demand-side and supply-side incentives. It not only presents an additional factor for patients and SNFs to weigh when considering stays beyond day 20 but also gives SNFs a financial incentive to discharge sooner, as some patients may be unable to pay the out-of-pocket expenses.

In our first analysis we quantified the shifts in patient location resulting from the onset of cost sharing. Among patients exposed to cost sharing after SNF benefit day 20 because of a lack of supplemental coverage, a large spike in SNF discharges entirely to home, for example, would be consistent with SNFs encouraging unnecessarily long stays. At the other extreme, a spike primarily in transfers to hospitals or other facilities, where patients without supplemental coverage would not face cost sharing, would be consistent with SNFs keeping only those patients in clear need of continued institutional care in the absence of cost sharing.

Second, we examined whether shortened SNF stays resulted in higher rates of death, all-cause hospitalization, and hospitalization for fall-related injuries. We conducted difference-in-differences analyses comparing daily rates of these outcomes between patients more versus less exposed to cost sharing, before versus after the expected initiation of cost sharing. Although increases in mortality due to shortened SNF stays would provide clear evidence of unsafe discharges, increases in hospitalizations might not necessarily reflect adverse consequences of earlier SNF discharge. Appropriate shortening of a SNF stay could result in subsequent hospitalization for routine conditions or complications that would have occurred and been managed in the SNF if the stay had not been shortened. That is, remaining in a SNF may censor hospitalizations for clinical developments that occur independent of the timing of discharge. As a result, our analysis of all-cause hospitalization rates provides an upper bound on adverse consequences of accelerated SNF discharge that necessitate rehospitalization. We examined hospitalization for fall-related injuries as an adverse outcome that relates more specifically to the withdrawal of the intensive monitoring available in facilities.

To the extent that cost sharing causes unsafe SNF discharge decisions that would not occur in response to supply-side incentives only, our results may be interpreted more generally as an upper bound on the adverse consequences of provider-driven efforts to achieve similar reductions in SNF length-of-stay. Thus, our analyses help gauge the potential for reducing institutional postacute care safely even if results do not generalize directly to provider interventions encouraged by new payment models.

Study Data And Methods

STUDY POPULATION We used Medicare claims and enrollment data to examine all SNF benefit periods covered by Part A that were initiated for fee-for-service beneficiaries during the period 2007–15. In Medicare, a benefit period begins with the first SNF stay after no SNF care in the preceding sixty days (see online appendix section 1.5 for handling of multiple SNF stays per benefit period).[13] We limited our study cohort to beneficiaries who reached day 15 of the Medicare SNF benefit period, and we followed those beneficiaries for fourteen days (through day 28). This restriction minimized contamination from smaller discharge spikes associated with Minimum Data Set assessments before day 15 and on day 30 (appendix exhibit A5).[13] We excluded beneficiaries dually enrolled in Medicaid because of the unclear effects of Medicare cost sharing on SNF incentives for this group (appendix section 1.2).[13]

We identified three comparison groups with varying levels of exposure to cost sharing after day 20 of Medicare's SNF benefit period: a fully exposed group of Medicare Savings Program enrollees who receive state assistance for Medicare premiums but not for cost sharing, a high-

We found no clear evidence that earlier discharge from a SNF to home significantly compromised patient safety.

exposure group of beneficiaries with a low probability of having any supplemental coverage, and a low-exposure group with a high probability of having generous (Medigap or employer-based) supplemental coverage.

Although data on Medicare Savings Program categories are included in Medicare enrollment files, data on private supplemental coverage are not. Therefore, we used survey data on supplemental coverage from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) to predict supplemental coverage based on patient characteristics ascertained from linked Medicare claims and enrollment data. We applied model coefficients to the full study population to define the high- and low-exposure groups (appendix section 1.3).[13]

STUDY VARIABLES

▶ **TIME:** We followed patients for fourteen calendar days starting on benefit day 15, regardless of whether they were discharged from a SNF. Retaining discharged patients in the cohort was critical for valid estimation of the effects of cost-sharing exposure on postdischarge location and outcomes. Thus, although we refer to the study period as days 15–28, the day corresponds to the SNF benefit day only for patients who remained in a SNF. For all patients, it corresponds to the number of calendar days after benefit day 15 (for example, "day 28" is thirteen calendar days after benefit day 15).

▶ **PATIENT LOCATION:** We assessed each patient's location on each calendar day after SNF benefit day 15. Specifically, we assessed whether the patient was in a SNF, in any facility for acute or postacute care (that is, a SNF, hospital, inpatient rehabilitation facility, or long-term care hospital), or at home. We further distinguished between being at home receiving (or referred for) home health care and being at home without home health care. In a supplementary analysis we separated out the small proportion of patients in a long-term residential facility from those at home and determined whether patients were receiving hospice care (appendix section 2.4).[13]

▶ **DAILY RATES OF DEATH AND HOSPITALIZATION:** On each calendar day after day 15, we assessed whether the patient was hospitalized (from claims) or had died (from the Master Beneficiary Summary File). We used previously described methods[14] to identify hospitalizations for fall-related injuries—hospitalizations that might reflect the sequelae of unsafe discharges from SNFs with greater specificity than all-cause hospitalizations.

▶ **PATIENT CHARACTERISTICS:** As covariates for analyses of patient location, hospitalizations, and mortality, we assessed age; sex; disability as the original reason for Medicare eligibility; a chronic condition count; and area-level measures of household income, poverty, educational attainment, and living alone (appendix section 1.5).[13]

STATISTICAL ANALYSIS We conducted two sets of analyses. First, we estimated models to quantify the discrete shifts after day 20 (that is, discontinuities in the daily trend) in patient location (appendix section 1.6).[13] We estimated these models separately for each group of beneficiaries with varying cost-sharing exposure and checked robustness to alternative model specifications (appendix sections 2.3 and 2.6).[13]

Second, we conducted difference-in-differences comparisons of daily rates of death and hospitalization (all-cause or fall-related) between cohorts with more versus less exposure to cost sharing after SNF day 20, before versus after the expected onset of cost sharing. To enhance the statistical power of these analyses, we combined the full- and high-exposure cohorts in comparisons with the low-exposure cohort. Specifically, we estimated linear models for each outcome as a function of time (fixed effects for each day of the study period), an indicator for cohort exposure, and an interaction between the cohort indicator and the days 20–28 period (when cost sharing would apply for those remaining in a SNF). The latter term estimated the effect of cost-sharing exposure on the outcome (the differential change associated with exposure). Models also included state, year, day of the week, and seasonal fixed effects, as well as patient covariates (appendix section 1.7).[13]

For the all-cause hospitalization outcome, we also added an interaction between the exposed cohort and days 20 and 21 to remove the contribution of SNF-to-hospital transfers induced by cost sharing (appendix exhibit A20).[13] Transfers to a hospital to avoid patient cost sharing effectively continue facility care and thus would not reflect an adverse consequence of a premature

discharge to home; such transfers also would not be expected in new payment models that reward lower episode or total spending. With days 20 and 21 removed, estimates may be interpreted as the effect of cost-sharing exposure on hospitalizations that potentially followed discharge to home. Mortality and fall-related hospitalizations were not subject to this interpretability issue related to transfers, as transfers do not mechanically increase recorded rates of falls or deaths.

The differential changes estimated by our model are population estimates of the effect of exposure to cost sharing on daily mortality or hospitalization. These estimates understate the effect of earlier SNF discharge induced by cost sharing on patient outcomes because cost sharing shortens stays for only a proportion of exposed patients (most patients incur the cost sharing). To facilitate interpretation of results as changes in outcomes due to earlier discharge (that is, treatment effects on the treated), we rescaled the population estimates to approximate the effect of spending one fewer day in a SNF from day 20 to day 28 on the cumulative incidence of death or hospitalization by day 28.

In the context of our study, results for all-cause hospitalizations were challenging to interpret and likely overstate adverse effects of earlier SNF discharge for two reasons. First, although we removed a transfer period on days 20 and 21 from our analysis of all-cause rehospitalization, cost sharing may have induced subsequent SNF-to-hospital transfers to avoid out-of-pocket expenses for patients, particularly on day 22 (appendix exhibits A17 and A20).[13] Second, remaining in a SNF may effectively censor some hospitalizations. For example, consider a patient who develops a urinary tract infection with associated delirium on day 27 of a SNF stay that is not shortened by cost sharing. The urinary tract infection is diagnosed and treated by the SNF. If, instead, the same patient were discharged to home a week earlier on day 20 because of cost sharing, the patient would develop the urinary tract infection and delirium at home, potentially requiring a brief hospitalization to treat the infection before safely returning home again. In this scenario, the patient may suffer no adverse clinical outcome from earlier SNF discharge, but the utilization pattern differs. Effectively, readmission from home reflects a different set of adverse events than readmission from a SNF, even when longer SNF stays have no protective effect; the meaning of the outcome thus changes upon discharge to home. For these reasons, our estimated differential changes in all-cause hospitalization rates present an upper bound for premature discharges that led to an adverse event requiring hospitalization.

Our findings suggest that efforts by risk-bearing providers in alternative payment models to limit SNF lengths-of-stay are well founded.

LIMITATIONS Our study had several important limitations. First, our results pertain to patients discharged in response to cost sharing after spending nineteen days in a SNF and might not generalize to other patients or other lengths-of-stay. Therefore, our study cannot provide guidance to risk-bearing providers about how much to restrict SNF use, but it does characterize the effects of a substantial reduction in length of SNF stays and thus helps gauge the potential for safely shortening stays for some patients.

Second, our comparison groups differed systematically in their characteristics, as expected for groups that differ in insurance coverage. However, as might be expected from the groups' common status as recently hospitalized and reaching SNF benefit day 15, they had nearly identical baseline SNF discharge rates, and their baseline outcomes did not differ markedly. Moreover, nonequivalent control groups are common in difference-in-differences analyses, which assume only that group differences in outcomes would stay constant in the absence of intervention. We found no evidence of departures from this assumption in comparisons of group trends before the onset of cost sharing. In a sensitivity analysis, we also excluded beneficiaries who qualified for Medicare based on disability to better balance the more- and less-exposed cohorts.

Third, we could assess supplemental coverage directly for Medicare Savings Program enrollees but relied on predictions based on CAHPS data to identify other beneficiaries with a low probability of having private supplemental coverage. We addressed the resulting measurement error by rescaling our estimates to reflect the effects of shortened stays as opposed to the effects of greater exposure to cost sharing.

Fourth, because we lacked data on functional status, we were unable to determine whether

earlier SNF discharge affected patients' functional recovery. Nevertheless, our study is well suited to test whether SNF patients can be safely discharged sooner, a precondition for continued rehabilitative therapy in lower-cost outpatient or home settings.

Finally, we could not assess the incremental burden of shorter SNF stays on caregivers.

Study Results

Patient characteristics differed substantially between groups with different exposures to SNF cost sharing (exhibit 1). Patient characteristics were strongly predictive of private supplemental coverage status, allowing identification of a low-exposure group with a high mean probability (0.72) of having Medigap or employer-sponsored supplemental policies and a high-exposure group with a low mean probability (0.26) of having any supplemental coverage (appendix exhibits A2 and A3).[13]

SHIFTS IN PATIENT LOCATION Discharge spikes on SNF day 20 were greater for patients in the full- and high-exposure groups than for those in the low-exposure group (exhibit 2). Discharge spikes also varied monotonically with the predicted probabilities of supplemental coverage used to derive the high- and low-exposure groups (appendix exhibit A4).[13]

Corresponding to these discharge spikes, the proportion of the full-exposure group remaining in a SNF sharply dropped by 9.24 percentage points (95% confidence interval: −9.61, −8.86) on day 21 (the sixth calendar day after benefit day 15), and the proportion at home sharply increased by the same amount, including a 2.83-percentage-point (95% CI: 2.69, 2.97) increase in the proportion at home without home health care (exhibit 3 and appendix exhibit A12).[13] Discontinuities in location followed a similar pattern among patients in the high-exposure group and were smaller in magnitude in the low-exposure group. On average, for the full-exposure and high-exposure groups combined, the discontinuous reduction in the proportion of patients in a SNF was 5.8 percentage points greater than for the low-exposure group

EXHIBIT 1

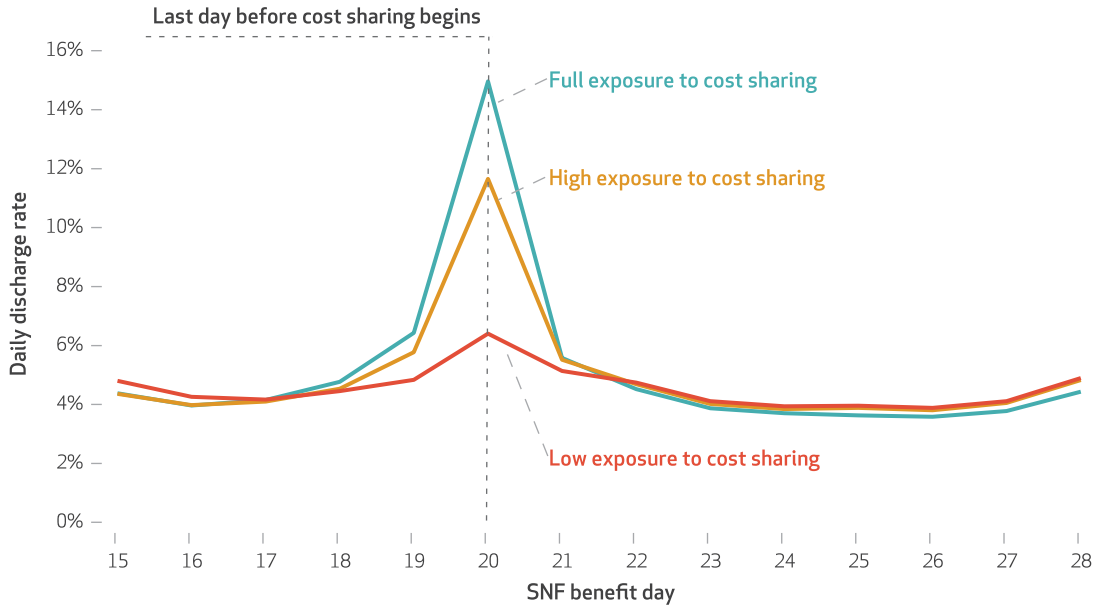
Characteristics of the study population of fee-for-service Medicare beneficiaries, by level of exposure to skilled nursing facility (SNF) cost sharing

	Exposure to cost sharing after benefit day 20		
	More exposed		Less exposed
Characteristics	Full exposure	High exposure	Low exposure
No. of SNF episodes	202,342	292,715	1,221,333
Age, mean years (SD)[a]	76.2 (12.0)	80.8 (12.3)	81.9 (7.5)
Male, %[a]	30.8	24.7	42.9
Race, %[a]			
White, non-Hispanic	78.2	80.9	96.2
Black, non-Hispanic	15.7	13.6	1.3
Hispanic	4.5	3.6	1.0
Other	1.7	1.9	1.5
Disabled, %[a,b]	37.0	27.8	0.0[c]
Chronic condition count, mean (SD)[d]	8.9 (3.7)	7.2 (3.9)	8.8 (3.6)
In ZIP Code Tabulation Area:[e]			
Household income, median (SD)	$29,600 (10,000)	$31,200 (10,700)	$36,800 (12,900)
Living alone, %	28.2	29.3	28.0
Highest educational attainment, %			
College degree	14.6	15.4	19.6
High school diploma	60.3	62.9	69.4
Residents in poverty, %	11.8	10.5	7.6

SOURCE Authors' calculations using fee-for-service Medicare claims data, 2007–15. **NOTES** "Full exposure" to cost sharing represents Medicare Savings Program enrollees subject to cost sharing. "High exposure" to cost sharing represents Medicare beneficiaries unlikely to have supplemental coverage. "Low exposure" to cost sharing represents Medicare beneficiaries likely to have employer-sponsored supplemental or Medigap coverage. SD is standard deviation. [a]Patient characteristics obtained from Medicare enrollment file corresponding to year of SNF episode. [b]Disability status determined using beneficiaries' original reason for Medicare eligibility (includes patients who became eligible through end-stage renal disease). [c]Result is 0.0% because disabled beneficiaries were excluded from the low-exposure group. This was done to identify patients with a high probability of having supplemental coverage that covers SNF cost sharing. Additional details are in appendix section 1.3 (see note 13 in text). [d]Count of twenty-seven conditions from the Chronic Conditions Data Warehouse. [e]Characteristic in patients' residential ZIP Code Tabulation Areas using American Community Survey data.

EXHIBIT 2

Daily rates of discharge from skilled nursing facilities (SNFs) in the study population of fee-for-service Medicare beneficiaries, by exposure to cost sharing



SOURCE Authors' calculations using fee-for-service Medicare claims data, 2007–15. **NOTES** Levels of exposure to cost sharing are defined in the exhibit 1 notes. Daily discharge rates (the proportion of patients in a SNF on a given day who are discharged on that day) are plotted by benefit day. Rates are adjusted for state, year, and day of the week. The vertical line denotes the last day before cost sharing begins for exposed groups.

(data not shown).

Receipt of hospice care discontinuously increased on day 21 more in the full- and high-exposure groups than in the low-exposure group (appendix exhibit A11).[13] Results differed minimally when we treated long-term care facilities as a separate category from home (appendix exhibits A13 and A14), when we did not adjust for patient characteristics, and with alternative model specifications (appendix exhibit A16).[13] In supplementary analyses, discharge spikes in the full- and high-exposure groups were larger for patients with lower health risk and for lower-income groups (appendix exhibits A6–A10).[13]

EFFECTS OF COST-SHARING EXPOSURE AND EARLIER DISCHARGE ON OUTCOMES On average, for the combined exposed group (full and high exposure), the cumulative number of days spent in a SNF during days 20–28 was differentially reduced by 0.45 days relative to the low-exposure group (data not shown). This suggests a dramatic reduction in length-of-stay among those discharged because of cost sharing. For example, if this difference were attributable entirely to the 5.8-percentage-point differential shift out of SNFs on day 20 for the combined exposed cohort, a 0.45-day difference would suggest that those discharged early to avoid cost sharing spent 7.8 fewer days in a SNF (0.45 days/0.058) from day 20 to day 28.

Greater exposure to cost sharing was not associated with a statistically significant differential change in daily rates of mortality, hospitalization for a fall-related injury, or all-cause hospitalization (exhibit 4 and appendix exhibit A17),[13] although the latter neared statistical significance ($p = 0.053$). When rescaled to reflect the effect of earlier SNF discharge, the 0.019-percentage-point differential increase in daily all-cause hospitalization rate due to cost-sharing exposure corresponded to a 0.29-percentage-point increase in the cumulative incidence of hospitalization during days 22–28 (exhibit 4) resulting from one fewer SNF day ([0.019 × 7 days]/0.45 days), or a 2.0-percentage-point increase resulting from a seven-day reduction in length-of-stay. In other words, hastening discharge by a week did not affect rehospitalization by day 28 for 98 percent of patients discharged early. In an exploratory analysis, we found evidence that at least some of this increase was for conditions that generally should not be caused by earlier discharge and can be treated in a hospital or SNF (for example, urinary tract infections or cellulitis) (appendix exhibit A21).[13]

We observed a small increase in transfers from SNFs to hospitals on days 20–21 that accounted for less than 1.0 percent of the increase in dis-

EXHIBIT 3

Effects of exposure to skilled nursing facility (SNF) cost sharing on patient location in the study population of fee-for-service Medicare beneficiaries

SOURCE Authors' calculations using fee-for-service Medicare claims data, 2007–15. **NOTES** Levels of exposure to cost sharing are defined in the exhibit 1 notes. Location of patients who were in a SNF on benefit day 15 is plotted by subsequent calendar day (numbered 16–28 for ease of interpretation) with fitted lines from regression discontinuity models. The adjusted percentages of patients in a SNF, at home (instead of an acute or postacute facility), and at home without home health care are presented for groups with different exposures to cost sharing after benefit day 20. The vertical dashed line indicates the initiation of patient cost sharing for those who remain in the SNF. The corresponding regression discontinuity estimates are in appendix exhibit A12 (see note 13 in text).

charges on day 20 (appendix exhibit A20);[13] we could not quantify subsequent transfers induced by cost sharing. In an analysis of a composite indicator of hospitalization or death, much of the nonsignificant increase in hospitalization was offset by a nonsignificant decrease in mortality associated with exposure to cost sharing (exhibit 4). For all outcomes, trends in daily rates before day 20 did not differ between comparison groups and were visually similar (appendix exhibits A17 and A19).[13]

Discussion

SHORTENED STAYS AND PATIENT SAFETY Despite marked shortening of SNF stays by cost sharing, we found no clear evidence that earlier discharge from a SNF to home significantly compromised patient safety. Discharges prompted by cost sharing shifted patients almost entirely to home, including a substantial proportion discharged to home without home health care (30 percent of the shift to home; appendix exhibit A12)[13] and thus without ostensible need for continued rehabilitative therapy or skilled nursing care.

The large reductions of more than a week in SNF length-of-stay also were not associated with a significant increase in mortality or hospitalization for fall-related injuries within nine days of the discharge spike at day 20. As an upper bound on adverse consequences requiring a hospitalization, the results for all-cause hospitalization suggest that, at most, a small percentage of patients whose SNF stays were markedly shortened were harmed and hospitalized as a result—a finding that was not statistically significant and was diminished further in importance by the largely offsetting nonsignificant reduction in mortality. We also found a discontinuous increase in hospice use associated with exposure to cost sharing, suggesting that SNFs may delay end-of-life care discussions and referrals to hospice when incentives to lengthen stays go unchecked.

Although we lacked data on other clinical outcomes and may have missed some adverse consequences of earlier SNF discharge, taken together, these findings suggest substantial potential for SNF stays to be safely shortened. Our

EXHIBIT 4

Effects of exposure to cost sharing and early discharge from a skilled nursing facility (SNF) due to cost sharing on patient outcomes in the study population of fee-for-service Medicare beneficiaries

Patient outcomes	Baseline daily rate (%)[a]	Unadjusted baseline difference between more and less exposed cohorts (PP)[b]	Effect of exposure to cost sharing on daily rate (PP)[c,d,e]	Cumulative effect by day 28 of spending 1 day less in a SNF because of cost sharing (PP)[d,f,g]
Mortality	0.22	0.026****	−0.007	−0.14
Fall-related hospitalization[h]	0.03	−0.001	0.002	0.03
All-cause hospitalization	0.78	0.049****	0.019*	0.29
Hospitalization or death	0.99	0.073****	0.008	0.12

SOURCE Authors' analysis of fee-for-service Medicare claims data, 2007–15. **NOTES** The "more exposed" group includes Medicare Savings Program enrollees subject to cost sharing (that is, at full exposure) and Medicare beneficiaries unlikely to have supplemental coverage (that is, at high exposure). The "less exposed" group includes Medicare beneficiaries likely to have employer-sponsored supplemental or Medigap coverage (that is, at low exposure). PP is percentage points. [a]Proportion of patients experiencing outcome on calendar day 19 in the more exposed cohort. [b]Mean difference in daily rate from calendar days 16–19 between the more-exposed versus the less exposed cohort (percentage points). [c]Difference-in-differences estimate of effect on daily rate (percentage points). [d]Estimates reflect percentage-point changes within nine days after the discharge spike at skilled nursing facility (SNF) benefit day 20. [e]Estimates for the daily rate of all-cause hospitalization refer to the differential change from days 16–19 to days 22–28 for patients who were more versus less exposed to cost sharing, omitting days 20 and 21 because direct transfers from SNFs to hospitals on those days resulting from cost sharing do not reflect unsafe discharges to home (appendix exhibit A17 confirms that increases in hospitalizations on days 20 and 21 were coded as facility-to-facility transfers; see note 13 in text). Estimates for death and fall-related hospitalizations, which were not subject to this limitation in interpretability, reflect the differential change from days 16–19 to days 20–28. Day 15 is excluded because we required patients to be in a SNF on day 15, but not on other days, to be included in the sample. [f]Rescaled to cumulative effect on outcome occurring by calendar day 28 associated with one fewer day in a SNF. [g]Approximated by dividing the effect of exposure to cost sharing on the cumulative incidence of the outcome through day 28 (third column multiplied by nine or seven days, depending on the outcome) by the effect of exposure on the mean number of days spent in a SNF through day 28 (0.45 fewer days). [h]Identified using the following *International Classification of Diseases*, Ninth Revision, codes in either the primary or secondary diagnosis field: e880, e881, e882, e884, e885, e888, 800–848, 850–854, 920–924. *$p < 0.10$ ****$p < 0.001$

findings are consistent both with evidence that SNF stays are often excessively long and with the early success of risk-bearing providers in curtailing SNF stays without adverse consequences evident so far.[3–6,15] Our results are inconsistent with one study concluding that shortening SNF stays meaningfully worsened outcomes based on an increase in all-cause hospitalization.[11] In comparison with that study, our study found a smaller increase in all-cause hospitalization associated with earlier SNF discharge, demonstrated it to be an upper bound on adverse events requiring hospitalization, additionally examined mortality and fall-related hospitalizations, and was robust to checks of inferential assumptions.

Policy Implications

Our findings are consistent with the notion that postacute care can be safely transitioned from a SNF to home earlier in the recovery period for many patients, and they suggest that efforts by risk-bearing providers in alternative payment models to limit SNF lengths-of-stay are well founded. Although the merits of innovation in home-based postacute care are beyond the scope of our study, our results do suggest opportunities for more efficient postacute care delivery, as current lengths of facility stays might not be necessary to ensure patient safety.

Relative to our findings, new payment models that incentivize providers to use SNF care more judiciously may pose less risk for adverse consequences than patient cost sharing. Whereas demand-side cost sharing can lead to reductions in both appropriate and inappropriate care because patients might not be well informed, supply-side incentives for better-informed providers might reduce inappropriate care more selectively. In other words, our findings do not generalize to supply-side interventions directly or exclude their potential for harm, but the findings do support the rationale for those interventions.

Conclusion

Our findings are consistent with overuse of SNF care in fee-for-service Medicare, and they contribute to the empirical basis for policies targeting the unnecessary use of institutional postacute care while monitoring for adverse consequences. ■

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