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Constructing a Measure of Private-Pay Nursing Home Days

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Abstract

Background—Nursing home (NH) care is financed through multiple sources. Although Medicaid is the predominant payer for NH care, over 20 percent of residents pay out-of-pocket for their care. Despite this large percentage, an accepted measure of private-pay nursing home occupancy has not been established and little is known about the types of facilities and the long-term care markets that cater to this population.

Objectives—To describe two novel measures of private-pay utilization in the NH setting, including the proportion of privately financed residents and resident days, and examine their construct validity.

Design—Retrospective descriptive analysis of US NHs in 2007–2009.

Measures—We used Medicare claims, Medicare Enrollment records, and the Minimum Data Set to create measures of private-pay resident prevalence and proportion of privately financed NH days. We compared our estimates of private-pay utilization to payer data collected in the NH

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annual certification survey and evaluated the relationships of our measures with facility characteristics.

Results—Our measures of private-pay resident prevalence and private-pay days are highly correlated ($r=.83$, $p<.001$ and $r=.83$, $p<.001$, respectively) with the rate of “other payer” reported in the annual certification survey. We also observed a significantly higher proportion of private-pay residents and days in higher quality facilities.

Conclusions—This new methodology provides estimates of private-pay resident prevalence and resident days. These measures were correlated with estimates using other data sources and validated against measures of facility quality. These data set the stage for additional work to examine questions related to NH payment, quality of care, and responses to changes in the LTC market.

Keywords

Nursing homes; long-term care; private-pay; financing; Medicaid

INTRODUCTION

Nursing homes (NH) provide post-acute and long-term care to more than 2.9 million individuals in the United States, annually. Because the Medicare benefit only covers short-term, post-acute care, the Medicaid program has become the predominant payer for care that exceeds the length of the Medicare benefit or for those residents who require non-skilled, long-term care.(1) Eligibility criteria for Medicaid can vary substantially from state to state, and individuals who do not qualify for Medicaid-financed long-term care must pay privately. Very few individuals have private long-term care insurance(2) so the majority of private payments are out-of-pocket. In 2011, total health expenditures for NH care were \$156.5 billion, and approximately \$58.2 billion of that was privately financed.(3) Private-pay NH prices have increased at a rate greater than overall medical care spending.(4) Because of the high costs for NH long-term care, which currently average over \$92,000 annually(5) for a private room, many individuals will “spend-down” their assets to a level of impoverishment before qualifying for Medicaid coverage.(6)

In response to the high costs of NH care and consumers’ preferences, lower cost options for individuals requiring some level of long-term services and support, such as assisted living, have expanded over the past decade. The growth in these alternatives has had an impact on the NH population and the way that care in these facilities is financed. For example, Grabowski and colleagues found that over a 14-year period (1993–2007), a 10% increase in county-level assisted living capacity was associated with a 1.4% reduction in the occupancy rates of residents with a payer other than Medicare or Medicaid.(7)

Nursing home financing can have important implications for both facilities and residents(1, 8–10) as shown in previous work documenting the relationship between residents’ payer sources and the overall quality of care.(1, 11–13) Much of this higher quality care is driven by the cross-subsidization that private-pay or Medicare-funded residents provide for the lower Medicaid payment rates.(14–16) Therefore, changes in the private-pay occupancy

rates and decreasing lengths of private-pay stays can have important implications for the financial performance and ultimately the quality of NH care. Unfortunately, a research methodology does not exist to measure the daily occupancy and length of stay of private-pay residents.

Previous work has examined payers within NHs using the federally required annual inspection data compiled in the Online Survey, Certification, and Reporting (OSCAR) system, the Minimum Data Set (MDS) assessments, or the “Nursing Home” component of the Medical Expenditure Panel Survey (MEPS).(7, 14, 17, 18) Although useful, these data do not provide day-to-day payment information. Rather, facility-level OSCAR data represent a snapshot of facilities taken annually and therefore do not allow for examining the trajectories of residents, including their lengths of stay. Secondly, the MDS 3.0 introduced in October 2010 does not record information on residents’ payer source, thereby prohibiting the identification of private-pay residents as was possible with the MDS 2.0.(14, 19) Finally, the NH component of the MEPS has not been conducted since 1996. As such, the purpose of this study was to generate novel measures of privately financed NH utilization and present their construct validity by documenting their relationships to facility characteristics and established measures of NH quality.

METHODS

Identifying Private-Pay Nursing Home Days

We estimated private-pay NH Medicare beneficiary days using the Residential History File (RHF) methodology (20) and data from calendar years 2007 through 2009. The RHF is a per-person chronological history of health service utilization, location of care, and payer source within a calendar year.(20) Using the Minimum Data Set (MDS) and Medicare inpatient, home health, and skilled nursing facility (SNF) claims, we were able to identify NH residents and the total number of days that each resident was present in each facility, during the year. The Medicare enrollment records also contain information about the monthly eligibility status of beneficiaries, including eligibility for Medicaid or Medicare Advantage.(11)

First, we summed the total number of NH resident days for each facility using the RHF and each resident’s length of stay. We then identified the proportion of total NH days for Medicare beneficiaries that were private-pay using the following logic: Private-pay NH days were NH days that are neither covered by the SNF benefit (as identified by Medicare claims dates) nor a time period when a resident was dually-eligible for Medicare and Medicaid (as indicated by the monthly flag in the denominator file).(11) For Medicare Advantage members, after day 100 of a consecutive NH stay, we assumed that these residents, if not dually-eligible, converted to private-pay. We aggregated these values to the NH-level using Medicare provider numbers.

Developing Facility-Level Measures for Private-pay

We created two facility-level measures of private-pay utilization using the methodology described above. First, we identified the proportion of private-pay days by dividing the

number of NH resident days in the year paid for privately with total NH days. The second measure was the prevalence rate of private-pay, defined as the proportion of residents who were private-pay on the date of CMS' annual inspection survey recorded in the Online Survey, Certification and Reporting (OSCAR) data. The OSCAR data contains all the data elements collected by surveyors during the annual inspection conducted at each NH for the purposes of certification for participation in the Medicare and Medicaid programs.

Assessing the Measures' Construct Validity

We examined the construct validity of our measures of private-pay utilization by comparing them to established measures of private-pay prevalence and indicators of NH quality. First, we tested the correlation between our measure of the prevalence rate of private-pay and our estimate of the proportion of private-pay days with the proportion of residents with "other payer" reported during the annual certification survey from the OSCAR data. As instructed in the State Operations Manuals, facilities must report the number of residents in the facility on the date of the survey whose current day of care is not covered by Medicare or Medicaid. Although this "other" category can include residents covered by the Veteran's Administration (VA), other local sources, and charity care, the majority of these residents will be private-pay. As such, we consider this a gold standard measure for testing the construct validity of our private-pay measures.

Second, we examined the relationships among our estimates of private-pay utilization with facility-level characteristics reported in an internal file from LTCfocUS.org. LTCfocUS.org combines variables from the OSCAR and the Minimum Data Set (resident-level data related to a resident's clinical and functional status that is aggregated to the facility level). From these data, we chose organizational characteristics that either serve as a proxy for NH quality or have also been shown to be related to NH quality in previous research: profit status, membership in a NH chain, resident demographics, the annual 30-day rehospitalization rate and the facility occupancy rate. We also downloaded the 5-star ratings published by Nursing Home Compare (www.medicare.gov/nursinghomecompare). Nursing Home Compare provides case mix-adjusted quality ratings of all Medicare- and Medicaid-certified NHs.(21) In this study we used the overall facility performance star-ratings from July of 2009 (the earliest year that 5-star data were reported) and compared our measures of private-pay utilization across levels of star ratings.

For categorical NH characteristics (i.e., profit status, chain ownership, and 5-Star rating), we tested for significant differences using two-way t-tests with unequal variances or ANOVA. For continuous variables, we used Spearman's rank ordered correlation coefficient to test for significant differences.

Conducting Sensitivity Analyses

We conducted two separate analyses to test the sensitivity of our results. First, we excluded residents whose care was covered by the VA benefit as indicated on their MDS 2.0 assessments. Second, we included only the subset of facilities where 100% of their patients were age 65 or over (2007 n=1490; 2008 n=1502; 2009 n=1546). Because our private-pay measure was created using the RHF methodology and the Medicare enrollment record, we

would not have information on residents' Medicaid eligibility if they were not Medicare eligible. Therefore, we may be over-estimating the private-pay rates in our sample for the small proportion of residents under the age of 65, as the majority of these residents will not be Medicare eligible unless through disability. We repeated the analyses described above for both of these subsamples and compared the results. All analyses were conducted in Stata 14. (22)

RESULTS

We identified 44,563 facility-years in both the RHF and the OSCAR data from 2007 to 2009 (n=15,685 unique NHs). According to the RHF-derived private pay measure, the mean proportion of NH days that were private-pay across the U.S. was 20.6% during this period. This translates to a mean NH-level prevalence rate of 20.2% private-pay residents on the date of the annual inspection survey. The OSCAR data, in contrast, identified a mean NH-level rate of "other payer" of 24.6% during this period. These figures remain relatively constant across years, but a slight decrease can be observed in 2009 (see Table 1). In addition, the two prevalence measures were highly correlated ($r=0.83$, $p<0.001$, see Figure 1) as was the proportion of resident days with the OSCAR prevalence rate ($r=0.83$, $p<0.001$).

Our analysis of NH-level characteristics is presented in Tables 2 through 4. Not-for-profit NHs had a significantly higher private pay prevalence rate (27.5%) compared to for-profits (16.8%; $p<0.001$). Further, for-profit NHs had significantly fewer privately financed days (an average of 17.2%) compared to not-for-profit facilities (an average of 28.2%; $p<0.001$). A higher score on the Nursing Home Compare Five-Star ratings was also significantly associated with a higher prevalence rate of private-pay residents and proportion of private-pay days in 2009. Facilities rated as "1-star" on the overall rating averaged 14.9% private-pay days (SD = 10.3%) and a private-pay prevalence rate of 14.9% (SD = 10.8%). In contrast, facilities rated as "5-star" on the overall rating averaged 26.1% private-pay days (SD = 20.6%) and a private-pay prevalence rate of 26.4% (SD = 21.2%). Data for the specific components of the five-star ratings can be found in the appendix and follow a similar trend.

The remaining facility characteristics were weakly, but significantly, correlated with the proportion of private-pay days, the private-pay prevalence rate, and the proportion of residents with an "Other Payer" as reported in the OSCAR data (see Table 3). The private-pay measures were negatively correlated with facility chain status and positively correlated with the proportion of non-minority, white residents. The private-pay measures were also negatively correlated with bed size and the rate of the 30-day inpatient rehospitalization. Occupancy rate was negatively associated with our private-pay measures, but at a negligible level. All correlations were significant at $p<0.001$.

Our first sensitivity analysis suggested no significant differences between the main analytic sample and the sample excluding VA-paid residents. In total, less than 1,900 NHs in our sample had at least one VA-paid resident in 2007 and 2008 (1,906 in 2009) according to the MDS assessments, with an average of 4.8 VA-paid residents per facility. Our measures of the prevalence rate of private-pay residents on the date of the OSCAR survey with and without

VA residents were highly and significantly correlated ($r=0.99$, $p<0.001$). Results of analyses using the sample without VA residents were also consistent with the results presented above.

Our second sensitivity analysis suggested that facilities exclusively serving residents 65 and over (approximately 10% of facilities in our overall sample) had higher rates of private-pay residence (39.3% private-pay days). The private-pay prevalence rate was strongly correlated with the “Other Payer” variable on the OSCAR survey ($r=0.87$, $p<0.001$). Correlations with NH characteristics were overall similar to those presented. Complete results from our sensitivity analyses can be found in the online appendix.

DISCUSSION

Our proposed methodology successfully estimates private-pay NH utilization at the resident-day level, providing a number of opportunities for future research. Our results suggest that the private-pay prevalence rate and private-pay days are significantly correlated with the “other payer” variable in the OSCAR data, which is strong support for the construct validity of our measure. In addition, our results are consistent with past work finding a relationship between payer source, organizational characteristics, and indicators of NH quality.

Our study is the first to our knowledge to employ the RHF, a data infrastructure specifically designed for research purposes, to identify NH residents’ payers and the distribution of payers across days spent in the NH. Previous work has relied on existing administrative data sources that were limited in their ability to estimate many details of private-pay NH utilization, including daily estimates of private-pay occupancy and resident-level private pay days. While some studies used the MDS 2.0 combined with Medicare claims to identify private pay residents,(11) with the introduction of the MDS 3.0 and removal of payer source indicators, that was no longer an option.

A number of important research questions hinge on a valid measure of private-pay days that until now, was not available. For example, several studies have examined how private-pay nursing home residents cross-subsidize quality for Medicaid residents(14, 23, 24) and one study has suggested that there is a causal relationship between quality and private pay resident census.(25) Now, we can examine how the number as well as the length of stay of private-pay residents is related to the quality of care provided to nursing home residents. As another example, nursing home payer mix has been found to change due to different strategic behaviors by nursing homes such as the construction of an Alzheimer’s special care unit.(26, 27) With our new private-pay days measure, we can investigate how NHs’ strategic decisions translate into changes in the length of stay of private pay residents. Or, additional investigation into the ways in which changes in the market for LTC (e.g., growth in assisted living) is related to changes in the occupancy and length of stay of private pay NH residents would be possible.(7) A resident-level measure of private pay days has the potential to allow for further examination into the rates of spend-down in NHs.(6) Furthermore, these measures will be useful to NH providers who wish to track how their quality improvement initiatives have impacted their private-pay resident census and lengths of stay. In many ways, having a daily indicator is most useful over the point-in-time estimate in that it allows

researchers and providers to track not only changes in the resident composition, but also in the length of time that private pay residents spend in NH settings.

Our results are subject to several limitations. First, our private-pay category is likely heterogeneous, as it may include individuals with other types of government payment (e.g., VA/CHAMPUS). However, our results suggest that according to MDS data, only a small proportion of NHs in our sample had Veterans with VA-paid NH care during this time period. Second, although the RHF is a data tool designed for research, its contents are sourced from data collected for administrative purposes and are therefore subject to some measurement error. Third, we were only able to identify Medicaid enrollment from the Medicare denominator file, which excludes residents who are not Medicare beneficiaries. Further, identification of Medicaid enrollment relies on a monthly indicator in the enrollment record. Therefore, we likely have greater heterogeneity in our estimates of private-pay NH days for younger residents and it is not specific to the day that residents may have transitioned to Medicaid-funded care. Future work using Medicaid claims should explore the payer mix of younger residents in greater detail and how the exactness of timing affects our estimates. Finally, the precision of our estimate is limited by our approach to assigning Medicare Advantage days. We know from previous work that co-pay structure and SNF coverage varies by Medicare Advantage plan.(28) Without knowing each residents' specific plan information, we are unable to assign the exact day that Medicare Advantage plans cease to pay the NH for skilled care. With our conservative estimate of 100 days, we likely underestimate private-pay prevalence for MA beneficiaries with our methodology. This may account for some of the discrepancy and lower rate that we observed with our measure compared to the OSCAR data.

In this study, we provide a new way to calculate NH private-pay utilization at the resident-day level and validate our facility-level measures against existing estimates of private-pay residents in the NH setting. Our new measures showed strong agreement with extant indicators and provided additional insight into NH characteristics related to payer sources, which should be expanded upon in future work. These facility-level variables will be made publicly available for download by registered users on the website Long-Term Care: Facts on Care in the US (LTCfocUS.org). Given past work documenting the relationship between payer mix and NH quality, these measures will serve as an important tool for future work exploring the effect that changes in private-pay utilization have had on NH quality and residents' health outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.
Prevalence Rate of Private-Pay* Compared to “Pay Other” from the OSCAR Data, (2009)
Note: Points represent nursing homes along each measure of private-pay/other payer occupancy in 2009.
* The proportion of private-pay residents on the date of the annual inspection survey.

Table 1

Facility-Level Estimates of Private-Pay Utilization and Other Payers Reported on the Annual Survey (2007–2009)

	2007	2008	2009	Overall
N	14,640	15,046	14,877	44,563
Prevalence Rate [*] of Private-Pay Residence, Mean (SD)	21.24 (16.07)	21.36 (16.21)	19.93 (16.33)	20.84 (16.22)
Proportion of Total Nursing Home Days in the Year that are Private-Pay, Mean (SD)	21.09 (15.23)	21.13 (15.52)	19.68 (15.65)	20.63 (15.48)
Proportion of Residents with “Pay Other” from OSCAR, Mean (SD)	24.51 (18.03)	24.62 (17.78)	24.58 (17.63)	24.57 (17.82)

Notes.

OSCAR = Online Survey, Certification, and Reporting Data.

* = The proportion of private-pay residents on the date of the annual inspection survey.

Table 2

Nursing Home Private-Pay Measures by Facility Ownership (2007–2009)

	For Profit	Not for Profit	Member of a Chain	Not a Member of a Chain
Prevalence Rate[*] of Private-Pay Residence, Mean (SD)	16.81 (12.23)	27.50 (19.42)	18.70 (14.29)	21.91 (17.01)
Proportion of Total Nursing Home Days in the Year that are Private-Pay, Mean (SD)	17.23 (11.88)	28.15 (19.33)	19.20 (14.09)	22.34 (16.83)
Proportion of Residents with “Pay Other” from OSCAR, Mean (SD)	21.00 (14.82)	32.33 (21.00)	23.39 (16.50)	25.97 (19.12)

Notes. Differences between facility characteristics (for profit vs not for profit; member of a chain vs. not a member of a chain) were assessed with t-tests and were all statistically significant, $p < 0.001$.

OSCAR = Online Survey, Certification, and Reporting Data.

^{*} = The proportion of private-pay residents on the date of the annual inspection survey.

Table 3
Nursing Home Private-Pay Measures by Nursing Home Compare Five Star Rating, 2009

Private-Pay Measure	1-Star	2-Star	3-Star	4-Star	5-Star
Prevalence Rate * of Private-Pay Residence, Mean (SD)	14.94 (10.77)	17.24 (13.26)	19.21 (14.84)	23.54 (18.34)	26.36 (21.15)
Proportion of Total Nursing Home Days in the Year that are Private-Pay, Mean (SD)	14.89 (10.27)	17.09 (12.97)	19.02 (14.34)	23.27 (17.64)	26.08 (20.57)
Proportion of Residents with "Pay Other" from OSCAR, Mean (SD)	19.54 (12.54)	21.74 (14.85)	24.16 (16.07)	28.13 (19.09)	30.47 (22.45)

Notes. Nursing Home Compare Ratings come from July, 2009.

All differences between 5-Star ratings were statistically significant at $p < 0.001$ using ANOVA.

OSCAR = Online Survey, Certification, and Reporting Data.

* = The proportion of private-pay residents on the date of the OSCAR survey.

Table 4

Correlation * between Private-Pay and Other Payer Measures and Nursing Home Characteristics (2007–2009)

	Proportion of Total Nursing Home Days in the Year that are Private-Pay	Prevalence Rate ** of Private-Pay Residence	Proportion of Residents with “Pay Other” from OSCAR
Proportion of Non-Minority Residents	0.36	0.34	0.35
Total Number of Beds	−0.28	−0.27	−0.20
Facility Occupancy Rate	−0.01	−0.05	−0.01
Annual 30-Day Rehospitalization Rate	−0.24	−0.23	−0.18

Notes.

OSCAR = Online Survey, Certification, and Reporting Data.

* = Estimates represent Spearman Correlation Coefficients. All relationships are statistically significant, $p < 0.001$.

** = The proportion of private-pay residents on the date of the OSCAR survey.